## EXAMINATION OF THE LOCAL TELECOMMUNICATIONS NETWORKS AND RELATED POLICIES AND PRACTICES OF AT&T CALIFORNIA AND FRONTIER CALIFORNIA

Study conducted pursuant to the California PUC Service Quality Rulemaking 11-12-001, Decision 13-02-023, and Decision 15-08-041

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April 2019



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### **NOTICE**

Nearly all of the information contained in the various AT&T California and Frontier California (including former Verizon California) data files, responses to data requests, and other source material ("ILEC Data") that has been provided to ETI in the course of this examination has been identified by the carriers and/or by the Commission as CONFIDENTIAL AND PROPRIETARY AND SUBJECT TO CPUC GENERAL ORDER 66, PUB. UTIL. CODE SECTION 583 AND D.16-08-024, REGARDLESS OF WHETHER OR NOT A DOCUMENT OR FILE HAS BEEN EXPRESSLY LABELED AS CONFIDENTIAL. Under the terms of our Agreement no. 17PS5007 including the incorporated Confidentiality of Data/Nondisclosure Agreement (Section 9. Exhibit E), all of the contents of this report are, by default, being treated as CONFIDENTIAL AND PROPRIETARY ILEC DATA whether or not expressly identified as such.

It is our understanding that the Communications Division anticipates that a public, redacted version of this report will be released in due course, once determinations have been made by CD Staff and counsel as to which portions of its contents may be made publicly available. However, for the present, THE ENTIRETY OF THIS DRAFT REPORT IS TO BE TREATED AS CONFIDENTIAL AND PROPRIETARY AND SUBJECT TO CPUC GENERAL ORDER 66, PUB. UTIL. CODE SECTION 583 AND D.16-08-024.



## PREFACE

In December 2011, the California Public Utilities Commission (CPUC) opened Rulemaking (R.) 11-12-001 to (a) review telecommunications carrier performance in meeting the GO 133-C/D service quality standards and measures in 2010; (b) assess whether the existing GO 133-C/D service quality standards and measures meet the goals of the Commission to adequately protect California customers and the public interest; (c) determine whether the existing GO 133-C/D standards are relevant to the current regulatory environment and market; and (d) determine whether there is a need to establish a penalty mechanism for substandard service quality performance. The Commission's Communications Division was directed to oversee an examination of the network facilities of AT&T California and (then) Verizon California, the state's two principal local wireline telecommunications utilities, and to engage an independent consultant to perform this examination under a contract to be managed by Commission staff.

Economics and Technology, Inc. ("ETI") was pleased to have been selected to perform this study. We adopted a "data-driven" analysis methodology utilizing the extensive service quality data that the two carriers have been regularly submitting to the Commission as required by General Order 133-C/D, together with their responses to data requests, other CPUC and public data sources, and input from the Communications Division Staff's on-site inspections. This report provides the results of our work. ETI did not, and was not required to, undertake to audit or otherwise verify the accuracy or completeness of the data that was provided to us. Various inconsistencies and gaps in the data were identified, and we used our best efforts to resolve them. Where such efforts were not successful, we noted the problems and utilized the data as best we could.

The project was conducted under the direction of Dr. Lee L. Selwyn, President of ETI, with a team consisting of ETI staff members Colin B. Weir, Vice President, Andrew J. Kearns, Senior Economic Consultant, and Daniel W. Maggio and Elle G. Tibbits, Economic Analysts. Our work has greatly benefitted from the extensive input and assistance that we received from the Communications Division Staff, including in particular Louise E. Fischer, who served as Project Manager with respect to our work, and Karen Eckersley, which we gratefully appreciate and acknowledge. We also appreciate the cooperation that we received from both carriers in the course of this work.

Boston, Massachusetts April 2019



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Introduction			
Competition ar	Competition and deregulation		
AT&T Californ services being brand names	AT&T California remains the underlying provider of most retail local network services being offered under the AT&T California or other AT&T affiliate brand names		
The AT&T Cal diminishing, as allocated to the	The AT&T California component of parent AT&T Inc. revenues have been steadily diminishing, as has the share of the overall AT&T capital budget that is being allocated to the California ILEC.		
AT&T Californ has not been to rate increases s as long as they	AT&T California's response to the rapidly eroding demand for legacy POTS services has not been to cut prices to retard such "cord-cutting," but instead to implement large rate increases so as to "harvest" as much revenue from the remaining POTS customers as long as they continue to retain their service		
AT&T Californ infrastructure.	nia has been consistently disinvesting in its California local network	380	
Persistent disinvestment, extensive affiliate transactions at self-serving transfer prices, extraordinarily large rate increases, and deteriorating service quality all point to "harvesting" as AT&T California's overarching strategy for its legacy services and customers.			
Wireline voice services have not been the focus of AT&T California's capital investments over the 2010-2017 period.			
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# **EXECUTIVE SUMMARY AND OVERVIEW OF THIS REPORT**

### **Organization of this Chapter**

This chapter is organized into five sections that are intended to provide a concise summary of our extensive examination of the network infrastructures of California's two largest Incumbent Local Exchange Carriers ("ILECs") – AT&T California and Frontier California:

(1) Key Conclusions and Recommendations resulting from this study	1
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### Key Conclusions and Recommendations resulting from this study

#### **Conclusions**

Following is a brief summary of the principal conclusions resulting from Economics and Technology, Inc.'s ("ETI's") examination of the network infrastructures and quality of service of California's two principal Incumbent Local Exchange Carriers ("ILECs"), AT&T California and Frontier California.

- Deteriorating service quality. The quality of AT&T and Frontier voice services has steadily declined over the 8-year period from 2010-2017 that is covered by this examination, with the number of outages increasing and the service restoration times getting longer.
- *Persistent disinvestment*. Over the 2010-2017 period covered by this study, both AT&T California and Frontier California (both before and after its 2016 acquisition from Verizon)



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made capital additions to their respective local exchange service networks that were less than their cumulative depreciation accruals, resulting in a decrease in the net book value of each ILEC's asset base, in effect, *disinvesting* in infrastructure overall, and most pronounced in the more rural and low-income service areas.

- Decline in the number of POTS customers. AT&T no longer actively markets legacy Plain Old Telephone Service ("POTS") and is instead actively promoting broadband service to customers in order to maintain and grow its revenue steam. As a result, AT&T has allowed POTS service quality to degrade over time. This strategy may explain why AT&T has failed to improve POTS service quality or achieve the minimum GO 133-C/D standards. For AT&T, the potential revenue from migrating customers to its broadband services is far greater than any financial penalty imposed by the Commission for violating the minimum service quality standards.
- *Focus upon broadband, not POTS.* Investments that were made have been primarily directed toward supporting new broadband services such as high-speed Internet access, Voice over Internet Protocol ("VoIP"), and Internet Protocol Television ("IPTV"). These broadband-focused upgrades have, however, conferred some benefit in improving POTS service quality. In locations where such investments have been made, POTS service quality has improved. Broadband-enabled wire centers achieve a better service quality performance under most General Order 133-C and D (GO 133-C/D) metrics. These upgraded wire centers have experienced fewer out-of-service incidents on a per line basis, their average outage duration was shorter, and the percentage of outages cleared within 24 hours was higher than for wire centers not upgraded.
- Failure to adapt network infrastructure to withstand varying weather and environmental conditions. This study provides evidence of a strong relationship between significant adverse weather conditions and an increase in the number of service outages. This pattern suggests that the networks of AT&T and Frontier are not as robust as they need to be. The occurrence of extreme weather events in California certainly can be anticipated to a certain degree and incorporated into the companies' engineering, design and construction, and maintenance practices. These networks must be able to withstand all types of inclement weather and provide safe and reliable service to customers.
- *Investment focus on higher income communities*. There is an inverse relationship between household income and wire center service quality performance. AT&T wire centers that have been upgraded with fiber optic facilities and other broadband-related investments disproportionately serve higher income communities. Consequently, the AT&T wire centers serving areas with the lowest household incomes tend to exhibit the highest trouble report rates, the longest out-of-service durations, and the lowest percentages of outages cleared within 24 hours.



- Increased focus on areas most heavily impacted by competition. Both carriers have experienced a persistent and massive erosion in demand for POTS lines over the 2010-2017 study period. The greatest drop-offs in some locations of as much as 80% or more have occurred primarily in the more densely populated urban and suburban areas where customers have a wider choice of available providers and services. Notably, it is the areas with the lowest POTS drop-off rates that have experienced the steepest deteriorations in service quality. AT&T and Frontier appear to have focused most of their attention in those communities where competition and the potential for loss of customers is greatest.
- *Financial Capability*. AT&T has the financial resources to maintain and upgrade its wireline network in California, but has yet to do so. Frontier has a strong interest in pursuing such upgrades, but lacks the financial capacity to make the necessary investments. Both of these conditions and the commitments of the respective corporate parent companies to maintain and upgrade their California ILEC operations must remain a central focus of CPUC attention.

### Recommendations

Based upon our analysis of AT&T and Frontier service quality reports, annual financial reports submitted to the Commission, and the two companies' respective data request responses, ETI offers the following recommendations for the Commission to consider when addressing service quality going forward:

- **<u>Recommendation 1:</u>** Expand the financial penalties for carriers that fail to meet the minimum GO 133-C/D service quality standards.
- <u>Recommendation 2:</u> In an effectively competitive market, persistently poor service quality would drive customers to take their business elsewhere. Where competition is not present, fines imposed due to an ILEC's failure to meet service quality standards should be high enough so as to have the same financial consequences as poor service quality under competitive market conditions.
- <u>Recommendation 3:</u> The GO 133-C/D maximum Customer Trouble Report Rates of 6%, 8% or 10% (depending upon wire center size) of switched access lines per month are far too generous, and failure rates as high as these can hardly constitute acceptable service quality. The carriers have had little difficulty in meeting these standards, and they should be revised downward.
- <u>Recommendation 4:</u> Unless carriers can offer technically valid explanations as to how and why smaller wire centers experience the poorest service quality, the minimum GO 133-C/D standards should be applied uniformly for all wire centers.



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- <u>Recommendation 5:</u> The GO 133-D fines should vary based upon the extent of a carrier's failure to meet any service quality standard, rising in magnitude as the extent of the shortfall increases.
- <u>Recommendation 6:</u> The Commission should retain its requirement that URF carriers maintain their Part 32 Uniform System of Accounts ("USOA") regulatory accounting records and submit annual ARMIS-type financial reports. The requirement should be expanded to also include wire center level accounting data, similar to those that ETI had obtained through multiple data requests in the course of this study. Carriers should be required to submit these to the Communications Division on a semi-annual basis.
- **<u>Recommendation 7</u>**: The Commission should establish a process to proactively examine the alternatives that would be available to maintain adequate service to Frontier California customers in the event that the parent company no longer has the financial resources to provide safe and reliable services in California.

### The Genesis of this Study

In December 2011, the Commission opened Rulemaking (R.)11-12-001 to (a) review telecommunications carrier performance in meeting the GO 133-C service quality standards and measures in 2010; (b) assess whether the existing GO 133-C service quality standards and measures meet the goals of the Commission to adequately protect California customers and the public interest; (c) determine whether the existing GO133-C standards are relevant to the current regulatory environment and market; and (d) determine whether there is a need to establish a penalty mechanism for substandard service quality performance. In the Scoping Memo issued the following September, the Administrative Law Judge (ALJ) and the then-Assigned Commissioner noted that:

In order to maintain acceptable levels of service quality for California customers, it is necessary to ensure that carriers have access to an adequate network of infrastructure. ... As a part of our review of the factors that may affect service quality, Communications Division shall oversee an examination of carriers' facilities. This examination will focus on the facilities of AT&T and Verizon, and will be conducted by an independent consultant under a contract managed by Commission staff. ...

In responding to the Communications Division's Request for Proposals ("RFP") from consultants to undertake this examination, ETI outlined a data-driven approach that would rely upon the extensive amount of data regularly being submitted by the two carriers as well as on various other public sources, along with the results of the Communications Division Staff's on-site inspections and carrier responses to future data requests.


#### **Organization of this Report**

This Report is organized into twelve (12) chapters, as follows:

- This Chapter 1 provides this Executive Summary of the Study, its methodology, and conclusions.
- Chapter 2 reviews the history of GO 133 and the Commission's efforts to monitor and regulate the quality of services provided by the state's two largest ILECs, AT&T California and Frontier California. It describes the specific GO 133-C/D performance standards and the process that the Commission has utilized to measure and monitor ILEC compliance, with a particular focus upon service outages affecting legacy voice telephone services, generally referred to as "Plain Old Telephone Service" or "POTS."
- Chapter 3 provides an overview of the physical network infrastructures of AT&T California and Frontier California, and the two companies' progress in upgrading their networks with fiber optic feeder and distribution plant.
- Chapter 4 is divided into three sections. The main section describes the market environment for POTS, noting how both companies, and the industry nationally, have experienced a precipitous drop-off in demand for these services over the 8-year study period. Legacy POTS residential customers have been shifting to wireline broadband services being offered by AT&T and Frontier, as well as by cable television operators such as Comcast and Charter. Legacy business voice service customers have also been shifting to competing providers, primarily those offering Voice over Internet Protocol ("VoIP") services. AT&T and Frontier have retained some of these residential and business customers by offering similar VoIP services of their own. However the largest factor in customers migrating away from wireline voice services has been the growth of mobile wireless services.

The two other sections of Chapter 4 – Chapters 4A and 4F – examine the trouble report and out-of-service performance data compiled from the service quality reports submitted by AT&T California (Chapter 4A) and by Frontier California which includes the former Verizon California (Chapter 4F). Service quality is examined both on a companywide basis and at the wire center level, based upon five separate criteria: (1) whether or not the company invested capital to upgrade the wire center to offer high-speed broadband services, (2) wire center size based upon the number of access lines served, (3) the extent of decline in the number of access lines in service over the study period, (4) population density of the area served by the wire center, and (5) how the company provided for maintenance of the wire center. With a few specific exceptions, the quality of AT&T and Frontier legacy voice services has steadily declined over the study period, with outages occurring more frequently and service restoration times getting longer.



- Chapters 5 and 6 examine AT&T and Frontier's policies regarding infrastructure investment and maintenance. These chapters explore the extent to which the two companies are devoting their capital and operating expense resources towards maintaining the facilities and equipment used to provide legacy POTS services. AT&T has spent little in this regard, while Frontier has not provided specific information regarding investments made for infrastructure rehabilitation.
- Chapters 7 and 8 examine parent company corporate investment policies at a general level. They address the radically different levels of commitment by the two parent companies, AT&T Inc. and Frontier Communications, Inc., towards their operations in California. AT&T's corporate focus has been directed elsewhere, towards wireless, broadband, and video distribution and content. Frontier purchased Verizon California in 2016 as part of a three-state deal that also included Verizon's ILEC assets in Texas and Florida. Prior to that transfer, Verizon's attitude toward the wireline ILEC business was similar to that of AT&T and, indeed, Verizon had for a number of years been engaged in systematically divesting itself of many of its ILEC operations primarily those that it had acquired in the 2000 Bell Atlantic/GTE merger. Frontier, on the other hand, continues to focus almost exclusively upon wireline local exchange telephone service.
- Chapters 9 and 10 examine the safety, redundancy and resiliency of the AT&T and Frontier networks, focusing primarily upon route diversity, redundancy and backup for E911 emergency calls directed to Public Safety Answering Points ("PSAPs").
- Chapter 11 provides ETI's overall conclusions and specific recommendations.
- Chapter 12, drafted by Communications Division Staff, provides a summary of Staff's conclusions following a series of on-site visits to multiple AT&T and Frontier wire centers.

## **Chapter Summaries**

## 2: INTRODUCTION AND BACKGROUND FOR THIS STUDY

In the Scoping Memo issued in September 2012 in R.11-12-001, the ALJ and the then-Assigned Commissioner noted that:

In order to maintain acceptable levels of service quality for California customers, it is necessary to ensure that carriers have access to an adequate network of infrastructure. Without infrastructure that is adequately maintained, customers' services will degrade. In extreme cases, facilities failures will lead to a complete loss of service, including E911, to customers served by those facilities.



The Scoping Memo identified five (5) principal issue areas for initial examination:

- 1. Are telecommunications facilities being appropriately maintained to ensure quality of service is being, and will continue to be, provided to retail and wholesale customers?
- 2. How have telecommunications corporations performed since 2009, relative to the service quality standards adopted in GO 133-C?
- 3. Are telecommunications companies providing reliable services of sufficient quality to ensure public safety and meet Commission directives and fulfill their obligations under state law?
- 4. Are existing service quality standards and reporting requirements reasonable, appropriate, and/or sufficient to ensure that California consumers receive adequate service and support public safety?
- 5. If new service quality standards are adopted or existing standards are maintained, should enforcement mechanisms such as financial penalties apply when telecommunications carriers fail to meet those standards?

This study has focused in particular upon two main GO 133 service quality standards:

- Customer Trouble Reports (CTR): A maximum of six (6) trouble reports per 100 working lines for reporting units with 3,000 or more working lines, eight (8) reports per 100 working lines for reporting units with 1,001-2,999 working lines, and ten (10) reports per 100 working lines for reporting units with 1,000 or fewer working lines (§3.3(c)).
- (2) *Out-of-service (OOS) repair interval:* Measured by taking the total number of the repair tickets restored within less than 24 hours divided by the total outage report tickets. The minimum standard is to repair 90% of all out of service trouble reports within 24 hours (§3.4(b), (c)).

The first of these requirements is so easily satisfied that it has never been missed by either of the two ILECs even as their overall service quality has deteriorated. It is our conclusion that the CTR standards need to be revised downward. The incidence of just under 6%, 8% or 10% of all access lines in service (depending upon wire center size) experiencing failures that would result in the creation of a trouble ticket in any given month could not be considered to constitute "good" or "acceptable" service quality. Indeed, when viewed on an annual basis,



and assuming that no single customer experiences more than one trouble condition in any given year, these standards would allow ILEC trouble reports per 100 access lines of as high as 72%, 96%, and 120% for the three wire center size categories, respectively, each year.

The requirement to clear a minimum 90% of out-of-service reports within 24 hours has never been met by AT&T since 2010. Verizon/Frontier met the OOS standard in only two of the 96 months covered by this study. In D.15-12-005, the decision approving the sale of Verizon California to Frontier, the Commission noted that "Verizon consistently failed to meet the Commission's standard for OOS repair intervals and its performance on this metric worsened over time" and required that prior to closing the transaction, "Verizon shall fully comply with GO 133-C and complete a minimum of 90% of out of service repairs within 24-hours of receiving notice of the out of service condition." With a powerful \$10.5-billion financial incentive to achieve the required compliance, Verizon managed to meet this condition. However, this brief two-month result appears to be an anomaly, because Frontier has consistently failed to achieve the OOS cleared within 24 hours standard for the remainder of 2016 and 2017.

## 3: CALIFORNIA ILEC NETWORK OVERVIEW

Both AT&T California and Frontier California provide legacy basic wireline voice services utilizing circuit switching and outside plant facilities that have been in place for several decades or longer.

*Central office switches.* The two companies' switching and local distribution area infrastructures rely upon what (in other contexts) might be viewed as ancient technology. Both companies' central office (CO) switches are between 15 and 30 or more years old and are out-of-date by several technology generations. AT&T's CO switch entities have a combined capacity of 18.8-million voice dial connections, roughly seven times the number of switched access lines in service as of the end of the study period. Frontier's switch entities have a combined capacity of 3.3-million voice dial connections, roughly four times the number of switched access lines in service as of the end of the study period. Many of the switches still in service were initially acquired and installed more than three decades ago, with all but one switch acquisition pre-dating the 2006 AT&T Corp./SBC merger. All of Frontier's central office switches pre-date its 2016 acquisition of Verizon California. These machines are for the most part, second generation stored program control digital electronic switches built in the mid-1980s and 1990s. In almost any other application, such vintage hardware would have been replaced years or even decades ago. AT&T's recent central office switch plant additions have been mainly for packet switches – about \$3.1-billion over the study period – with no significant additional investment in legacy circuit switch technology.



Packet switches are ideally suited for such broadband applications as VoIP, high-speed Internet access, and IPTV, but are generally not being used to support legacy POTS services.

*Distribution facilities.* The two companies have adopted very different approaches to their local outside plant distribution networks that connect individual customer premises to the carriers' central offices (wire centers). AT&T's outside plant distribution network is still largely copper-based. AT&T utilizes mainly twisted-pair copper in its distribution infrastructure, extending fiber optic cables only to "Nodes" in individual neighborhoods. This is done in order to reduce the physical length of the copper segment and allow the provision of Digital Subscriber Line (DSL) at higher speeds than would be possible if the copper loop spanned the entire distance from the wire center facility to customers' homes. 48.9% of the homes covered by AT&T are served by this "Fiber-to-the-Node" ("FTTN") network architecture. AT&T has deployed some Fiber-to-the-Premises ("FTTP") facilities in a small number of wire center areas and, where deployed, to only a small number of customer locations. FTTP technology is currently available to only about 315,000, or 1.8%, of the nearly 17.8 million homes within AT&T California's operating areas. Although these fiber upgrades are intended to support broadband services, they are also used for POTS in some cases, and such use may result in improved POTS service quality.

Verizon, on the other hand, had been deploying FTTP facilities beginning around 2006 to support its *FiOS* brand broadband service offerings. By the April 2016 date when Frontier acquired Verizon California, FTTP facilities deployed by Verizon were available to about 38%, of the total population in areas served by the company. By the end of 2017, Frontier had expanded its FTTP availability to more than two-thirds of all people living in Frontier-served areas.

## 4: ILEC RESPONSES TO SERVICE OUTAGES

Chapter 4 is organized into three sections. The first provides a general overview of the Commission's Customer Trouble Report and Out-of-Service reporting requirements, the types of data submitted by AT&T California and by Frontier California (formerly Verizon), as well as ETI's methodologies for analyzing the companies' submissions. The second and third sections provide detailed analyses of AT&T and Frontier performance in the Customer Trouble Report and Out-of-Service standards over the 2010-2017 study period.

GO 133-C/D requires AT&T and Frontier to provide the underlying ("raw") trouble report data for every customer reported billing and non-billing related call. The companies use this raw data to prepare the required quarterly service quality reports. AT&T submitted approximately 6.1-million individual trouble report records during the January 2010-December 2017 study period, of which roughly 5.0-million were identified as Out-of-Service ("OOS") conditions of varying lengths. Prior to Frontier's 2016 acquisition,





Figure 1.1. Precipitation and service outages in the greater Los Angeles area.

Verizon California had submitted approximately 1.6-million individual OOS reports through December 2015. After the completion of the transaction in April 2016, the new Frontier California provided the Commission with the last three months of Verizon's out-of-service records (approximately 200,000), and through December 2017 has submitted approximately 1.5-million additional records covering its own ownership period.

Demand for residential POTS has declined significantly over the past decade due to the growth of alternative wireline and wireless services. The number of POTS lines in service and the total number of trouble reports decreased over the full 8-year study period. AT&T lines in service and trouble reports decreased at similar rates. However, for Verizon/ Frontier, the relative decrease in trouble reports was greater than the drop in POTS lines, indicating a net improvement in service quality when viewed on a per-access line basis.

*External factors affecting service quality.* The number of OOS reports the companies experienced varied widely on a month-to-month basis. One of the key factors in these fluctuations are outside weather and other environmental events. After analyzing the service quality data from AT&T and Frontier/Verizon, ETI identified a strong relationship between the level of precipitation and the number of service outages. This compels the conclusion that both carriers' networks are not as robust as they should be. Significant weather events are a fact of life in California. While the exact location and timing cannot be known in advance, weather events can be anticipated to a certain degree and taken into consideration in developing engineering, design and construction, as well as ongoing preventive maintenance practices. Utility networks need to be built so as to withstand multiple types of significant weather conditions, many of which are entirely predictable.

## 4A: SERVICE QUALITY PERFORMANCE – AT&T CALIFORNIA



AT&T California's service quality and performance with respect to the GO 133 C/D metrics have deteriorated since the beginning of the study period in 2010. As shown on Figure 1.2, during the study period AT&T has never met the GO 133-C/D requirement that 90% of service outages be cleared within 24 hours. AT&T has, however, met the Customer Trouble Reports per 100 access lines standard in every month. ETI examined AT&T's level of compliance with the OOS standard, as well as the length of time it took for AT&T to clear 90% of its outages. As shown on the plotted (red) trend line, over the 8-year study period, AT&T has shown a slight improvement in the percentage of outages cleared within 24 hours, but has consistently failed to meet the minimum 90% standard.



**Figure 1.2**. AT&T California has not come even close to meeting the GO 133 requirement that 90% of outages are to be cleared within 24 hours.

## AT&T California's response to competition for POTS service: "Harvest" those customers that remain.

While legacy circuit-switched POTS service has steadily declined in recent years, many customers steadfastly retain their POTS lines for several reasons, such as insufficient competitive alternatives, being able to retain service during a power outage, or simply customer inertia. If the overall market for POTS was sufficiently competitive, we would expect the greatest loss in customer demand to occur in wire centers exhibiting the poorest service quality. However, the opposite appears to be the case, suggesting that AT&T's POTS customers are its lowest priority.

AT&T appears to have adopted a "harvesting strategy" for its legacy POTS services. The company has ceased active marketing of POTS, has degraded POTS service quality, and instead relies upon successive price increases and customer inertia to maintain its

declining POTS revenue stream. AT&T has increased monthly rates for residential service by 152% since 2006, made minimal investments in outside plant rehabilitation, and has also allowed service quality for its legacy services to decline. Notably, despite a 72% decrease in demand for POTS services over the 2010-2017 study period, as a result of these massive rate increases and the successful migration of customers to other (nonregulated) services, total AT&T California revenues fell by only 11.04% over the same period.

#### Sources of variation in service quality performance

In addition to examining service outages on a companywide basis, ETI also analyzed service outages in groups of individual wire centers according to the following five attributes: (1) investment in facilities upgrades, (2) wire center size, (3) drop-off in access line demand, (4) population density, and (5) the AT&T maintenance organization responsible for the wire center.

(1) Effect of investment in facilities upgrades. AT&T has deployed fiber optic facilities in roughly half of its California wire centers. While these are primarily in the feeder plant supporting a Fiber-to-the-Node ("FTTN") architecture, the fiber has facilitated the availability of various AT&T high-speed broadband offerings. The presence of fiber in any given wire center indicates that AT&T has made capital investments in that area. In general, wire centers that have been upgraded with fiber facilities performed noticeably better in all GO 133 service quality metrics. In non-fiber wire centers, the long-term trend of monthly OOS incidents significantly increased. Fiber-equipped wire centers also experienced a rise in the number of OOS incidents, but at a lower rate than those wire centers where no fiber investments have been made. Notably, while the decision to invest in fiber has been driven primarily to support AT&T's various broadband service initiatives, service quality gains realized by POTS customers has been an important, if not ancillary, benefit.

(2) Wire Center Size. While there has been an increase in the number of out-of-service reports per 100 POTS lines in all wire center size categories, the largest consistently outperform the smaller wire centers with respect to the various GO 133-C/D metrics. The largest wire centers also exhibit the highest percentages of all outages cleared within 24 hours (unadjusted) and the fewest number of days to clear 90% of all out-of-service incidents (unadjusted).

(3) Access line losses over the study period. The extent of decline in AT&T POTS lines over the full 8-year study period varied widely across individual wire centers, from a low of 5.1% in the Sierra City wire center to a high of 85.3% in Palmdale East. Large losses in POTS lines likely resulted in a reduction of maintenance personnel, impacting the Company's ability to respond to OOS situations. Alternatively, a large drop in the number of working lines could result in additional spare capacity that might be available for rapid deployment to replace defective plant. However, persistent and



increasing service quality problems likely would contribute to more customers shifting to alternative services or providers.

Notably, the wire centers with the lowest rate of POTS line losses had experienced the largest increase in the frequency of outages per line. Wire centers with POTS line losses in excess of 80% show virtually no change in the average duration for outages exceeding 24 hours. For wire centers experiencing the smallest rate of line loss, outage durations exceeding 24 hours increased significantly.

(4) Population density – Urban/Suburban/Rural. AT&T's responses to out-of-service conditions has generally deteriorated, except in the most densely populated areas. The number of OOS reports per 100 lines (unadjusted for certain excluded conditions) has been increasing except in the wire centers located in the most densely populated areas. The average duration of outages exceeding 24 hours, on an unadjusted basis, has increased in all areas. The percentage of all outages being cleared within 24 hours remains lowest in the least densely populated areas. Finally, the number of days required for AT&T California to achieve the objective of clearing 90% of OOS conditions has increased, except in the most densely populated urban areas.

(5) AT&T Maintenance Organization. AT&T California's principal network maintenance organization, *Technical Field Services West (Core)*, ("TFS"), "is responsible for the installation and repair of Legacy and IP voice and broadband data services (from central offices, through outside cable plant, terminals, and to the customer premises), as well as network infrastructure support and maintenance of those same central office and outside cable plant network facilities." The Los Angeles/Bakersfield and San Gabriel districts, both of which serve wire centers in the greater Los Angeles metropolitan area, have shown significant improvements in the OOS metric. The poorest performing TFS Districts are the Bay/Central Valley and the Northern California districts.

The unadjusted average duration for outages lasting more than 24 hours almost doubled in the Northern California TFS district. The Bay Area/Central Coast TFS District fared only slightly better. Both the San Gabriel and Los Angeles/Bakersfield TFS Districts showed significant improvement in their percentage of unadjusted outages cleared within 24 hours, as well as in in the number of days it took them to meet the 90% cleared objective. The Northern California and Bay Area/Central Coast TFS Districts, on the other hand, performed the worst among the five Districts in both of these metrics.

Notably, the differences in performance among the five TFS Districts may be explained by the amount of money being invested in fiber optic facilities for each of these areas. However, while investments in wire center upgrades may account for an overall service quality improvement, it is not clear why those Districts with the smallest percentage of wire





center upgrades have experienced so substantial a degradation in service quality over the study period from 2010-2017.

#### 4F: SERVICE QUALITY PERFORMANCE – VERIZON/FRONTIER CALIFORNIA

The company now known as Frontier California, existed as Verizon California for 75 of the 96 months covered by this study, January 2010 through March 2016. Differences in the two companies' data collection and reporting methods created challenges in our attempt to provide a comprehensive assessment of their performance over the full 8-year study period.

#### Verizon/Frontier Service Quality Performance

The percentage of out-of-service incidents decreased by 88.3% from 2010-2017, while the number of POTS lines in service decreased by 68% over those same eight years. Thus, unlike AT&T, the Verizon/Frontier data suggests a significant decrease in the relative number of out-of-service reports over the study period.

#### Duration of out-of-service incidents

The average duration of all service outages had been steadily declining under Verizon's ownership, but then spiked immediately following Frontier's takeover. However, over the next several quarters, OOS durations have once again been trending downward. The average duration for those outages extending beyond 24 hours increased during the Verizon ownership period, but have also shown improvement under Frontier.

#### Out-of-service incidents cleared within 24 hours

The average duration of all Verizon/Frontier OOS reports decreased over the 2010-2017 study period. However, with the exception of the two months immediately preceding the transfer of control from Verizon to Frontier, neither Verizon nor Frontier had ever met the GO 133-C/D requirement to resolve a minimum of 90% of outages within 24 hours. Their ability to clear OOS incidents within 24 hours varied widely, with Verizon's OOS repair percentage remaining relatively constant, whereas Frontier's performance in the OOS metric saw improvements.

As with AT&T, ETI's other approach to examining the requirement to clear 90% of outages within 24 hours is to calculate the average length of time it took for Verizon and Frontier to reach the 90% benchmark. On an adjusted basis, the number of days required to clear 90% of outages decreased slightly under Verizon, but then increased after the Frontier acquisition. In the first quarter of 2011, Verizon took 3.26 days to meet the 90% cleared requirement, spiking in mid-2016 immediately following Frontier's takeover.



Over the entire 8-year study period, it was only in the final two months before Frontier completed its acquisition that Verizon California succeeded in meeting the GO 133 OOS requirement to resolve a minimum of 90% of outages within 24 hours. As a condition of its approval of the sale, the Commission required Verizon to meet the OOS standard in the final months before Frontier could complete the transaction. While neither company has satisfied the requirement to resolve 90% of outages within 24 hours, it generally took fewer days for Verizon/Frontier to meet the 90% benchmark than for AT&T.

#### Sources of variation in service quality performance

As with AT&T, ETI constructed five different attribute dimensions. This analysis produced several important conclusions.

(1) Effect of investment in facilities upgrades. Verizon, and subsequently Frontier, have been deploying a Fiber-to-the-Premises ("FTTP") architecture to support the offering of *FiOS*, the Verizon-branded high-speed broadband service that provides voice, Internet access, and IPTV. The fact that a particular wire center has been upgraded to FTTP indicates that Verizon/Frontier had made capital investments in that location. By the end of the study period, some 67% of Frontier's wire centers have received FTTP upgrades. Using FTTP availability as a surrogate for capital investment, the availability of FTTP in any given wire center area has had a positive impact upon POTS service quality. Upgraded wire centers experienced a lower number of OOS incidents per 100 POTS lines in service, they had a shorter average duration, and the percentage of outages cleared within 24 hours was higher than those wire centers without broadband.

(2) Wire Center Size. All wire centers, except those serving 20,000 or more lines, experienced a decline in service quality performance over the study period. These smaller wire centers experienced an overall increase in the number of OOS reports, a larger percentage of OOS incidents lasting longer than 24 hours, as well as the an increased number of days to resolve 90% of their outages.

(3) Access line losses over the study period. Prior to Frontier's acquisition, Verizon's POTS access lines dropped from 2.78-million in January 2010 to 1.29-million at the end of 2015. By December 2017, active POTS lines had decreased to only 724,752, a drop of 73.9% over the full 8-year study period. Those wire centers with the greatest loss in POTS lines experienced service quality improvement both in the number of OOS incidents and in their average duration. Wire centers with the smallest decrease in POTS lines fared far worse in terms of most service quality metrics. The deterioration in service quality in these small wire centers, generally serving communities with the fewest number of competitive providers, suggests that the company has been devoting more of its resources and efforts to those communities most impacted by competition for traditional POTS services.



(4) Population density – Urban/Suburban/Rural. Under Verizon, OOS incidents occurred less frequently and were cleared more quickly in the largest urban wire centers. All five categories of population density improved in three of the four service quality metrics. The number of out-of-service reports per 100 access lines decreased, with the largest decreases occurring in the most densely populated areas. The average OOS duration decreased, except for the lowest density areas, where it remained the same. The percentage of outages cleared within 24 hours got worse in the three lowest density categories, but remained constant in the two categories of wire centers with the highest population densities. However, for those outages not cleared within 24 hours, the number of days required to clear the 90% benchmark improved in all five categories of population density, with the largest improvements being in those wire centers with the highest population density. Due to the relatively short period of time available for study following Frontier's acquisition of Verizon through the end of 2017, Frontier's results during this 21-month period of Frontier ownership are inconclusive.

(5) Frontier Maintenance Organization. Frontier has established six "Operating Areas" ("OPAs") that it has designated as Beach Cities, Costal, Desert, Gateway, Inland, and Northern. There is considerable variation in the out-of-service performance across the six operating areas. However, one possible explanation for these variations may relate more to the geographic location of the wire centers in each OPA, rather than to any inherent differences in OPA management. For example, wire centers within the "Beach Cities" and "Coastal" OPAs have higher density populations, while the Northern California OPA generally covers the lower densely populated wire center areas.

## 5: INFRASTRUCTURE POLICIES AND PROCEDURES: AT&T

Over the full 2010-2017 study period, AT&T California's total Gross Plant Additions (covering all Telecommunications Plant in Service ("TPIS") categories) amounted to \$10.16-billion. However, AT&T California has directed only a small portion of its total capital and maintenance spending toward its legacy circuit-switched voice services. Less than 1% of all AT&T capital spending on network plant additions was for outside plant rehabilitation projects. AT&T Construction and Engineering (C&E) outside plant rehabilitation projects, identified by AT&T, involved plant additions of just under \$47-million. Thus, when taking the full eight-year period into consideration, AT&T California devoted only 0.46% of its network capital investments to POTS-related outside plant projects.

A correspondingly small portion of total maintenance expenses was directed toward outside plant rehabilitation. AT&T provided data on maintenance costs incurred by its Technical Field Services (TFS) organization on OSP rehabilitation projects, but only for five years, 2013 through 2017. According to AT&T, aggregate TFS spending on OSP rehabilitation over the five-year period was \$30.9-million. However, over that same



period, total AT&T California maintenance outside plant expenses totaled \$3.57-billion. The TFS Rehabilitation projects described by AT&T as POTS-related thus amounted to only 0.86% of their total outside plant maintenance costs over from 2013-2017.

The investment and maintenance data is consistent with our finding that service quality and responses to out-of-service incidents have largely been declining. The exception to this is with those wire centers that have received fiber optic plant upgrades that support VoIP, broadband internet access, and video (IPTV) services. Thus, the only areas where AT&T has maintained POTS service quality at consistent levels over the study period are those where the company has invested in these revenue-driven advanced services. The potential for new revenues from these services, rather than the threat of fines or other regulatory measures in response to deteriorating service quality, appears to be a stronger incentive for AT&T to make capital investments in its network.

## 6: INFRASTRUCTURE POLICIES AND PROCEDURES: VERIZON/FRONTIER

A substantial portion of the ongoing management and operation of the Verizon California entity was carried in several "centralized service organizations" – subsidiaries of the parent company that assumed specific areas of responsibility for management and certain specific functions of the various Verizon ILECs nationwide. In its assessment of the economic efficacy of the proposed purchase of the three Verizon entities in California, Texas and Florida, Frontier had concluded that the inter-corporate transfer payments Verizon had been extracting from its ILECs in these states for centralized affiliate services were excessive, and that Frontier could realize significant cost savings by transferring these functions to its own organization.

Frontier anticipated potential annual savings of some \$700-million by year 3, due primarily to the avoidance of certain Verizon "allocated costs" associated with the affiliates furnishing centralized services furnished to the three Verizon entities. The process of transferring these functions to Frontier, which began when Frontier completed its acquisition of Verizon in April 2016, likely contributed to the various transition problems in the immediate aftermath of the transfer of control to Frontier.

#### Frontier California's Outside Plant Maintenance, Inspection, and Repair Programs

Frontier provided only a general overview of its maintenance and inspection practices in its "Outside Plant Maintenance, Inspection, and Repair Programs," which by themselves teach little about the actual extent to which the company follows these practices, priorities and performance metrics. Four specific programs are identified:

• *Maintenance programs*, consisting of (1) a Copper Rehabilitation Program that tracks trouble areas and aids in identifying copper plant for repair and replacement, and (2) the California Copper Rehab website, which also tracks issues that require repair or replacement



and (3) Pole Maintenance.

- *Quality Inspection Program*, which is described as a long-standing quality inspection program intended to proactively identify and repair problems with outside plant.
- *GO 95 Inspection and Maintenance Program* addressing the design, construction, maintenance and safety requirements for electrical and communications aerial plant, specified at GO 95, Rule 18.
- Maintenance of Underground Facilities in Accordance with General Order 128.

#### Fiber-to-the-Premises upgrades

While the investments in Fiber-to-the-Premises distribution plant made by Verizon and Frontier cannot be directly attributed to individual wire centers, we do know that Frontier has considerably expanded the availability of FTTP and *FiOS* services. As of the April 2016 closing date, Verizon had upgraded 55 wire centers with FTTP distribution facilities. Frontier has since expanded that deployment to another 59 wire centers, bringing the number of *FiOS*-capable wire centers to 114. At the end of 2017, some 68.4% of the population in areas served by Frontier California were capable of being served via FTTP distribution facilities. In the non-FTTP portions of Frontier's operating territory, about 900,000 people (23.8%) live in areas where Frontier offers some form of broadband, and the approximately 300,000 remaining customers have no access to any type of broadband service.

## 7: AT&T CORPORATE AND CALIFORNIA ILEC INVESTMENT POLICIES

Over the 2010-2017 period, AT&T Inc. has experienced significant growth in its overall gross revenues. The primary sources of this growth include wireless services, where the number of AT&T Mobility connections nationwide grew by 41.2% between 2010 and 2016 and from acquisitions, primarily from DirecTV. The 2018 acquisition of Time Warner will push AT&T Inc.'s revenues up even further. As a result, AT&T senior management's interest in its legacy wireline operations has largely been supplanted by its wireless operations and the recent satellite TV and video content acquisitions.

AT&T California revenues, on the other hand, have moved in the opposite direction. In 2010, AT&T California gross revenues were \$9.70-billion, dropping to \$8.63-billion in 2017. The California ILEC's share of AT&T Inc.'s total revenues has fallen by an even greater amount, from 7.80% in 2010 to 5.37% in 2017.

As its revenues from wireline services have diminished, AT&T California's investments in its local network infrastructure have also been decreasing. AT&T has been consistently disinvesting in its California local network infrastructure. Cumulatively, over the full 8-year



period, AT&T California had total net after-tax income of \$3.4-billion, but paid out \$7.6-billion to its parent company, AT&T Inc, thereby eroding the California company's capital base by roughly \$4.2-billion and impairing its ability to maintain and upgrade its aging infrastructure. The parent company has also been investing less in its infrastructure than its annual depreciation accruals and retirements – a policy that facilitates the payment of dividends that exceed earnings.

AT&T California's Gross Telecommunications Plant in Service ("TPIS") remained relatively constant, at between \$38- to \$41-billion over the 2010-2017 study period. However, total Gross Plant Additions were exceeded by the total depreciation accruals over the corresponding period, representing a net disinvestment of \$2.33-billion. In addition, some \$11.55-billion in retirements occurred, more than 43% in 2017 alone, bringing net TPIS down to only \$5.06-billion.

But even AT&T California's nominally reported revenues, expenses and net income cannot by themselves provide a complete or accurate picture of the company's financial performance. The AT&T California ILEC entity engages in extensive intra-corporate purchases from and sales to a number of other AT&T affiliates. Since both the seller and buyer are wholly owned by the same parent company, the nominal transfer price at which these transaction take place has little or no effect upon the parent company's bottom line. However, if the parent company's goal is to extract revenue from AT&T California, setting an inflated transfer price can accomplish this as effectively as making a dividend payment to the parent, but with far less exposure. In four out of the last five years, more than 50% of AT&T California's total operating expenses net of depreciation and amortization were paid to other AT&T affiliates for services rendered.

Persistent disinvestment, extensive affiliate transactions at self-serving transfer prices, extraordinarily large rate increases, and deteriorating service quality all point to "harvesting" as AT&T California's overarching strategy for its legacy services and customers. Moreover, those capital investments that AT&T has made in its California ILEC have not been directed toward legacy basic voice services. AT&T's "harvesting" philosophy explains why the ILEC has failed to improve service quality for its legacy services at least to the point where the GO 133-C/D standards can be achieved. The potential gains that AT&T California can realize by raising prices and curtailing investment and maintenance expenditures far exceed any financial penalties it might suffer from persistently poor service quality.

## 8: VERIZON/FRONTIER CORPORATE AND CALIFORNIA ILEC INVESTMENT POLICIES

There are stark differences between Frontier and AT&T with respect to each of the two ILECs' financial situation and their respective ability and willingness to invest in the ongoing maintenance and upgrading of their California local service infrastructure. Whereas AT&T's legacy ILEC operations are increasingly less important to the parent company, Frontier's primary, if not only, goal is the success and profitability of the ILECs in its nationwide portfolio. Thus, whereas AT&T has the financial resources, but not the interest, in maintaining and



upgrading its local wireline network, Frontier has a strong interest in pursuing such upgrades, but lacks the financial wherewithal to undertake all that is required.

Frontier has been operating under significant financial stress for the past several years. Frontier last posted positive earnings per share in the first quarter of 2016, and has been posting losses for every quarter since then. Frontier has been hemorrhaging customers in all major service categories across all of its 29-state footprint since its last major acquisition in 2016.

Each of Frontier's ILEC acquisitions produced a large, one-time spike in revenues from its newly-expanded customer base, followed in each instance by revenue erosion from the new immediate post-acquisition level – producing a sort of "sawtooth" effect. Frontier's expansion/ acquisition strategy of pursuing a succession of large ILEC acquisitions into a market that was already in a steep decline was, at the very least, ill-timed.

Frontier spent some \$22.4-billion on its various acquisitions, which had been financed by \$10.5-billion in new equity and some \$11.9-billion in new debt. By the end of 2017, Frontier's total debt had reached nearly \$17-billion. Frontier's annual debt service (interest and amortization) had, by 2017, escalated to \$1.9-billion. Together with the persistent drop-off in customers and revenues, this resulted in severe cash flow challenges and major earnings erosion despite the revenue growth overall. At year-end 2017, Frontier's debt-to-revenue ratio was 1.86. Frontier's cost of debt now averages 8.99%, well into the junk bond range. Thus, some \$1.5-billion out of the total \$1.9-billion in annual debt service represents interest on that debt. Total 2017 debt service payments account for some 20.8% of total Frontier 2017 operating revenues.



**Figure 1.3**. Each of Frontier's major ILEC acquisitions produced a large, one-time revenue spike followed in each instance by revenue erosion during the immediate post-acquisition period, producing a sort of "sawtooth" effect.

Frontier's net income declined following each successive acquisition, to the point where it



has now been negative for seven consecutive quarters. Frontier's shareholders have come to understand that Frontier had grossly overpaid Verizon for the three ILECs purchased in 2016, and have discounted the value of the company's stock far below its nominal book value.



**Figure 1.4**. While its various acquisitions produced large increases in the number of customers and total operating revenues, their impact upon Frontier's net earnings was a succession of steep declines. [Source: Frontier 10-K Reports 2005-2017].

Still, Frontier California remains the underlying provider of most retail local network services offered within its service area. In addition to legacy POTS-type circuit-switched services, the scope of Frontier California's direct retail offerings also includes bundles of voice, high-speed Internet access and video marketed under the *FiOS* brand.

Verizon California and post-acquisition Frontier California have not implemented the extreme succession of significant price increases for its legacy residential POTS services. And unlike AT&T, there is no evidence of a "harvesting strategy" on the part of Frontier or even Verizon before the transfer. Frontier, as a "pure-play" ILEC, has a strong incentive to maintain and to grow its customer base, not to allow it to dissipate. These are all positives for Frontier's future if it is somehow able to reverse its financial decline.

Unlike Verizon California's diminishing importance to its parent company prior to the 2016 sale, Frontier California represents a major component of its new parent, Frontier Communications Corporation. But with the parent company's worsening financial condition, Frontier California's financial condition and investment policies will be dictated by conditions that are largely beyond the CPUC's control.



# 9: ASSESSMENT OF SAFETY, REDUNDANCY AND RESILIENCY OF NETWORK(S): AT&T

#### Central office route diversity

Most AT&T California central offices that serve end user customers (known as "Class 5 central offices" or "end offices") are connected to the public switched telephone network ("PSTN") via a single physical transport facility linking the end office to another switching facility within the local network, usually a so-called " tandem" switch. Tandem switching functions may be housed in a stand-alone switch entity that performs only these interoffice connections, but are often combined with end office functions in the same physical switch.

While there is extensive redundancy and routing diversity designed into the interoffice and interexchange levels of the PSTN, in most cases there is only a single connection between an individual Class 5 end office and the tandem switch that serves as a gateway to the rest of the world. If that connection is interrupted, the connection from that end office to the PSTN is severed, thus isolating the end office and its customers until a repair can be made. AT&T has identified a total of 36 central offices that perform tandem switching functions and have any physical and/or logical diverse connections to the PSTN. No Class 5 end offices that do not also perform tandem switching functions were identified as having any such physical or logical route diversity.

#### PSAPs

A "Public Safety Answering Point" ("PSAP") is a facility that receives emergency "9-1-1" type calls and dispatches police, fire, medical or other emergency assistance as needed. In California, PSAPs are typically operated by a local city, county or other government entity and serve defined geographic areas. PSAPs are supported by a customer database, so when a 9-1-1 call is placed from a legacy wireline or fixed VoIP telephone line, the calling number, associated customer name, and location data are displayed at a 9-1-1 operator terminal.

Routing 9-1-1 calls to the applicable PSAP is accomplished at the wire center serving the caller's access line. There are 368 PSAPs within AT&T California's operating area, which are hosted by 233 AT&T wire centers. Based upon the data that AT&T has provided, there are 27 central offices hosting PSAPs that do not provide for diverse connections.



# 10: ASSESSMENT OF SAFETY, REDUNDANCY AND RESILIENCY OF NETWORK(S): FRONTIER

#### Wire Center connection redundancy

As electromechanical wire center switches were replaced by analog electronic and ultimately by digital electronic switches beginning in the mid-1980s, then-GTE consolidated groups of individual central offices that had been serving relatively small rural communities into "host/remote" configurations. Multiple "Remote Service Units" ("RSUs") are connected to a common "host" end office switch that provides the computer processing for all of the RSUs in the group. Each RSU-host connection typically involves a single digital transport facility capable of supporting between 24 and 672 voice-grade channels, depending upon the capacity needs of the RSU and the community it serves. These individual "umbilical" links between the RSUs and the host offer no route diversity or redundancy – if the digital transport facility is interrupted, the RSU and the community that it serves are effectively cut off from the rest of the world.

More densely populated urban and suburban areas are typically served via stand-alone switches. Frontier's network appears to offer route diversity among the individual and host central offices, but with minimal or no route diversity within each host/remote consolidation. According to Frontier, 170 out of its 270 wire centers (which includes remotes) in California currently support some type of diverse connectivity to the PSTN, although the precise details of this claim regarding route diversity have not been provided.

#### Public Safety Answering Points ("PSAPs")

Because PSAPs need to be reached immediately when an emergency arises and need to provide immediate assistance, they have a special need for route diversity. There are 93 PSAPs in California which are served out of 79 wire centers. In order for a 911 call that originates from a location other than a PSAP host wire center to be completed, an interoffice connection will need to be established. This underscores the need for network route diversity. In addition, if a PSAP becomes overloaded (e.g., in the case of a natural disaster than affects large numbers of people) or becomes disabled (e.g., by the natural disaster itself), the routing of 911 calls to an alternate PSAP is necessary. Of the 93 PSAPs identified by Frontier, 41 have diverse connections, 17 have connections that are described as "Not Diverse," 42 are shown as having "Non-FTR Segments-Inconclusive," while three have connections that are described as "currently being reviewed." 32 connections are described as diverse under Frontier, but are transported via a third party (e.g., by AT&T California), and it is unknown whether those connections remain diverse.

#### Back-up power

Frontier identified 241 central offices that are equipped with at least eight (8) hours of back-up power. FCC regulations however, specify 24 hours and a minimum of 72 hours of



back-up power for wire centers that support Selective Routers for E911 calls. Frontier did not provide sufficient data on back-up power supplies to support any conclusions as to the company's resiliency and/or ability to meet FCC regulations.

#### Disaster recovery

Frontier has indicated that it can mobilize resources nationwide in the event of a major emergency, but has not provided details or written practices as to the specific measures to be taken in such circumstances.

## 11: CONCLUSIONS AND RECOMMENDATIONS

While a substantial portion of the demand for legacy circuit-switched residential POTS services has been supplanted by alternatives – both technological and competitive – it would be wrong as a policy matter to conclude that these services have outlasted their usefulness and that ongoing regulatory attention is no longer required. The highest drop-off rates – in excess of 70% since 2010 – have occurred primarily in the most densely populated areas; substantially lower drop-off rates have prevailed elsewhere in the state. The persistence of these geographic disparities in the adoption of technological and competitive alternatives despite massive and persistent price increases compels the conclusion that, for many customers, legacy services remain essential.

Whether deliberate or not, AT&T's investment policies have tended to favor higher-income communities, and have thus had a disproportionate impact upon the state's lowest income areas. For example, the weighted average 2010 median annual household income for wire center serving areas that had benn upgraded with fiber optic feeder facilities to support broadband services was \$72,024, vs. only \$60,795 for wire centers without such upgrades Using 2010 US Census data, we find a clear inverse relationship between household income and all of the principal service quality metrics. Wire Centers serving areas with the lowest household incomes tend to have the highest trouble report rates, the longest out-of-service durations, the lowest percentages of outages cleared within 24 hours, and the longest times required to clear 90% of service outages. The opposite is the case for the highest income communities.

AT&T's record on service outages has deteriorated over the 2010-2017 period (the subject of this study). AT&T's overarching approach to its stewardship of the California ILEC infrastructure has been a "harvesting strategy" that relies upon customer captivity and inertia, rather than providing good quality service. "Harvesting" of this legacy service customer base allows AT&T to maintain revenue levels and to extract the maximum amount of capital from the California ILEC entity in order to support the parent company's wireless, video distribution, video content, and other business initiatives – activities that have captured the overwhelming bulk of management's attention.

Unlike AT&T, whose interest in its legacy wireline operations had been in decline for many



years, Frontier's only business is that of operating ILECs in some 29 states across the country. But while Frontier's priorities are in maintaining and growing its ILEC properties, the company's financial resources have become so deteriorated as to threaten its ongoing ability to pursue these priorities going forward. Frontier's common stock price has dropped by around 98% since its high in February 2015, and as of April 10, 2019 its market cap was at \$261.2million – notably, Frontier has invested more than that in California alone over the first 21 months of its ownership. The parent company's earnings have been consistently negative since the second quarter of 2016. Its annual debt service payments are now consuming more than onefifth of its total operating revenues, making prospects for raising additional debt or equity financing extremely challenging. It is now abundantly clear that Frontier's decision to purchase Verizon California in 2015 was both ill-timed and ill-conceived.

Frontier's current financial condition is precarious, yet its operations in California remain a critical component of the state's telecommunications infrastructure. Approximately 25% of all California ILEC legacy voice access lines are served by Frontier. Unlike AT&T, which has made minimal investments in upgrading its ILEC infrastructure to support high-speed broadband services, Verizon, and Frontier after its takeover, have been actively pursuing FTTP upgrades throughout the study period, and by the end of 2017, FTTP had become available to slightly more than two-thirds of all people living in Frontier-served areas. However, the company's ongoing financial ability to maintain and to further upgrade these facilities is in serious doubt. Under these conditions, the Commission should make the development of contingency plans in the event of a Frontier financial collapse a critical priority. This and the other specific recommendations resulting from this study are summarized at the beginning of this Executive Summary chapter.

## 12: COMMUNICATIONS DIVISION STAFF SITE VISITS

Chapter 12 of this report was prepared by the CPUC Communications Division staff. CD Staff conducted a series of site visits to selected AT&T California and Frontier California wire centers. Section 2.2.1 of the Request for Proposal (RFP) defined the criteria for selecting locations to be physically inspected, which included areas having out-of-service (OOS) records for periods greater than the statewide average duration, and other randomly selected areas. CD Staff focused on wire centers from both companies that had the highest number of out-of-service troubles lasting more than 24 hours per 100 access lines. Additional criteria included wire centers contiguous to poorly performing areas; wire centers benefitting from the carriers' General Order (GO) 133-D alternate investment plan; and locations where customers filed outage-related complaints with the CPUC's Consumer Affairs Branch (CAB). CD Staff completed physical examinations of the AT&T and Frontier Wire Centers identified below:



PHYSICAL SITE SURVEY LOCATIONS				
County	Wire Center	Carrier		
Marin	Nicasio, Inverness, San Geronimo	AT&T		
Mendocino	Boonville, Fort Bragg, Hopland, Potter Valley	AT&T		
Sutter	Pleasant Grove, Nicolaus	AT&T		
El Dorado	Georgetown, Placerville	AT&T		
Nevada	Lake of the Pines	AT&T		
San Mateo	Menlo Park	AT&T		
Santa Clara	Los Altos	AT&T		
Santa Clara	Los Gatos-Montebello, Los Gatos-Blossom Hill	Frontier		

In advance of each site visit, CD Staff requested that AT&T and Frontier provide network maps and addresses of customer outages in order to determine areas with clusters of outages occurring closely together. At each location, CD Staff observed and documented the condition of the central office building and equipment, inquired about sufficiency of labor and staffing resources, and surveyed the overall design of the network with respect to the geographical layout of the exchange, and gathered area information from AT&T and Frontier personnel. Specific outside plant inspections focused on the pre-determined "outage clusters" or neighborhoods with high incidences of trouble reports.

CD Staff photographed outside plant facilities and other equipment that showed signs of deterioration or deferred maintenance. Common examples that might be attributed to deferred maintenance include a lack of cable guards in areas where tree branches are encroaching on cables; de-lashing of the strand on non-self-supported copper cable; improperly sealed splice closures; improper attachments of aerial plant; insufficient cable clearances between utilities on poles; excessive sagging of cables between poles; deficiencies in bonding/grounding of facilities; faulty terminal attachments; and sloppy aerial and buried cable/drop maintenance practices.

#### Central Office Staffing and Back-up Power Resources.

AT&T's central offices in rural exchange areas contained remote switching systems that are controlled by a host switch located at a different central office. None of the rural locations that CD Staff visited had a full-time employee stationed in the building. Technicians assigned to the district are instead rotated through buildings based on workload. The two central offices CD Staff visited in Frontier's territory each have full-time staffing.

All central offices are equipped with back-up battery systems and diesel generators. In the event of a loss of commercial power, most central offices can keep systems running for at least 72 hours, depending on call load. As long as there is fuel available to power the generator, a



central office can maintain power indefinitely.

#### Outside Plant Conditions and Staffing Resources.

In both AT&T and Frontier's service areas, CD Staff observed outside plant conditions that indicated a lack of maintenance as well as facilities that were observed to be in service beyond their usable lifespan. One of the most common causes of out-of-service conditions is water intrusion, primarily from rain or flooding. While precipitation is a known problem with copper facilities and rainfall in California is largely predictable, both companies should be maintaining their networks at a level that is robust enough to withstand rain, snow and other environmental conditions. Outside plant personnel reported that many troubles are also caused by conditions outside their control, such as rodents chewing on cables, vandalism, construction accidents caused by heavy equipment, overgrowth of tree branches, and lightning strikes.

Additionally, personnel from both companies indicated that AT&T and Frontier are not actively hiring or otherwise replacing technicians who retire or leave through attrition. This reduction in staffing resources could negatively impact service quality. If dispatch loads for customer troubles contain more jobs than can be cleared in a day, any unfinished jobs are pushed out to the next day thus extending the time that the customer is out of service.

*Network Design and Subscriber Pair Gain Electronics.* Another condition that contributed to poor service quality is the size of the area served by a central office. The wire centers visited by CD Staff in Northern California cover large geographical areas and require either long copper loops or the use of electronic pair gain systems. Subscriber loop carrier (pair gain systems) provide telephone service to areas with a high density of subscribers and can be deployed far from the central office (to serve subscribers located beyond 18,000 cable feet from the CO). These are active systems that are enclosed in cabinets, rely on commercial power, and come equipped with battery backup systems. While they are designed to be installed outdoors, they can be a frequent source of customer troubles if they lose power or in instances where the cabinet is exposed to direct sunlight and the temperature exceeds the upper design limit of the electronic components. In wire centers without fiber-fed facilities, customers that are located farther away from the serving central office (long loops) have a higher number of potential points of failure; this often contributes to a higher rate of outages and a longer duration for the out-of-service conditions to be cleared.



#### Principal observations and takeaways

## 2: INTRODUCTION AND BACKGROUND FOR THIS STUDY

- The ongoing failure of the carriers to meet the specified minimum GO 133-C/D service quality standards may warrant additional corrective measures, including revision of existing minimum standards and imposition of financial incentives and penalties.
- The GO 133 maximum Customer Trouble Report Rates of 6%, 8% or 10% of switched access lines per month (based on wire center size) are unduely generous because failure rates as high as these can hardly constitute acceptable service quality.
- The only time that either ILEC has met the GO 133-C/D requirement of 90% of out-of-service conditions cleared within 24 hours occurred during the last two months of Verizon's ownership, and only because the Commission required such compliance as a condition for approval of the sale of the ILEC to Frontier:

## 3: CALIFORNIA ILEC NETWORK OVERVIEW

- AT&T California's decision to retain its decades-old central office switches in service may be a practical strategy in light of the formidable economic, technology and regulatory challenges to any wholesale involuntary migration of its legacy voice service customers to current packet switched VoIP technology.
- Most of AT&T's recent central office plant additions have been for packet switches that are not used to provide legacy POTS services.
- Frontier's central office switches were all acquired before Frontier's 2016 purchase of Verizon, with the majority pre-dating the 2000 merger of Bell Atlantic and GTE. Many of the switches that are still in service were installed more than three decades ago.
- As of the April 2016 date when Frontier took over the company, FTTP plant deployed by Verizon was available to roughly 1.44-million – or about 38.4% – of the population in areas Verizon served. Since the acquisition, Frontier has added 59 wire centers serving areas with another 2.32-million people to its FTTP network and, by the end of 2017, FTTP was available to slightly more than two-thirds of all people living in Frontier-served areas.
- AT&T has never committed to deploying FTTP on a large scale, although the company has constructed FTTP at a small number of customer locations in the state. Overall, only 1.8% of homes passed by AT&T California have been upgraded with FTTP.



Broadband upgrades provide service quality benefits to basic POTS customers, but a
carrier's decision to invest in broadband is driven mainly by factors that have little direct
bearing upon improving service to legacy POTS customers. California ILECs are under no
legal obligation to invest in broadband, but fines imposed pursuant to GO 133-D, if scaled
correctly with respect to the extent of the shortcoming, have the potential to provide the
necessary incentives to encourage such investments.

## 4: ILEC RESPONSES TO SERVICE OUTAGES

- ETI's analysis of the condition of AT&T and Frontier's networks in California is, among other things, based upon the approximately eight million Customer Trouble Report records submitted by the two companies over the 2010-2017 Study Period.
- The source of most service outages is being attributed by the ILECs to weather-driven and other failures in outside plant rather than to their central office switches or associated equipment.
- Telephone service outages appear to be highly dependent upon weather conditions, specifically, the amount of precipitation in the area served.
- The strong relationship between rainfall and the rate of service outages provides a strong indication that the AT&T distribution network is not as robust as it needs to be, and lacks the resiliency to withstand significant weather events.
- FCC data indicate that, for California, the demand for all wireline voice services provided by all carriers combined decreased by 30.1%, from 20.9 million in 2008 to 14.6 million in 2016. During the same period, the number of wireless subscriptions in California increased by 32.7%, from 32.2 million to 42.7 million. Overall, there are 3.4 million more wireless subscriptions than the total population in California, which was 39.3 million people at the end of 2016.
- The decline in customer demand for legacy POTS over the 2010-2017 period has been greatest in the larger, more metropolitan wire center areas. These same metropolitan area wire centers also exhibit the highest levels of service quality and greatest availability of alternative wireless and broadband services.
- Over the full period, there has been a net increase of approximately 15.5% in the trend of OOS incidents per 100 POTS lines in service over the full study period.





## 4A: SERVICE QUALITY PERFORMANCE – AT&T CALIFORNIA

- The greatest demand drop-offs for legacy POTS services generally occurred in the largest wire centers.
- Over the 2010-2017 study period, ATT's average OOS duration over 24 hours per 100 access lines has increased by roughly 12%.
- Some individual wire centers have experienced significant increases in the incidence of out-of-service conditions that had remained uncleared after 24 hours, while in other wire centers there have been improvements.
- The trend in average duration of all out-of-service conditions, excluding those cleared within one hour, for AT&T has been steadily increasing over the study period.
- 49.6% of the roughly 5-million out-of-service conditions (46.4% on an "adjusted" basis) remained uncleared after 24 hours. To satisfy the GO 133-C §3.4(c) requirement, these percentages would need to drop to less than 10%.
- On an adjusted basis, the number of days required for AT&T to clear 90% of all out-of-service conditions ranged from a low of 1.9 (in the first quarter of 2012) to a high of 8.8 (in the first quarter of 2011). In 2017, the adjusted number of days to achieve 90% OOS cleared falls in the 5.8 to 6.7 range.
- AT&T appears to have adopted a "harvesting strategy" for legacy POTS services. AT&T has ceased active marketing of POTS and has degraded POTS service quality and its responses to trouble reports, relying instead upon successive price increases and customer inertia to maintain its revenue stream, albeit decreasing, for an extended period of time.
- Wire centers upgraded with fiber to support broadband services achieve better service quality performance scores in every category – lower numbers of Trouble Reports per Hundred Access Lines ("TRPH"), higher percentages of out-of-service conditions that are being resolved within 24 hours, and where out-of-service situations arise, their average durations are in all cases decidedly shorter.
- Broadband upgrades, for high-speed Internet, VoIP, and IPTV video services confer a direct benefit to legacy POTS customers as they are migrated to the new distribution architecture. But however these new plant upgrades and acquisitions are being utilized, there is a reasonable expectation that some overall improvement in POTS service quality should result.
- There appears to be a strong relationship between the number of POTS lines in a wire center



and the quality of service provided. The number and the rate of increase in OOS per 100 POTS lines have been lowest in the very largest (over 20,000 lines) wire centers.

- The largest increases in service outages occurred in wire centers with the lowest POTS drop-off rates; the incidence of service outages increased more slowly or remained almost constant in wire centers with successively larger drop-off rates.
- There is little effective competition for POTS services. If the market were sufficiently
  competitive, the greatest loss of demand would occur in wire centers exhibiting the poorest
  service quality, with only minimal losses where service quality is being maintained or
  improved. Instead, the greatest drop-off in demand occurred in wire centers with the best
  service quality records.
- Except in areas with the highest population density, AT&T's response to out-of-service conditions has generally deteriorated over the study period.
- Of the five AT&T maintenance (TFS) districts, LA/Bakersfield and San Gabriel have shown significant improvements in most OOS metrics. The poorest performing districts are the Bay/Central Valley and Northern California. Northern California, for example, has seen a 34% increase in the rate of OOS per 100 POTS lines in service over the study period. By contrast, the San Gabriel district saw a 16% improvement.
- Since the bulk of AT&T's investments in its ILEC network have been aimed at upgrades that support broadband services, the TFS Districts with the smallest percentage of such upgrades have experienced substantial degradations in service quality over the period. This result underscores the pressing need for infrastructure investment irrespective of AT&T's pursuit of the broadband market.

## 4F: SERVICE QUALITY PERFORMANCE – VERIZON/FRONTIER

- From January 2010 through December 2017, total Verizon/Frontier California POTS access lines in service dropped by 73.9%, from 2,778,584 to 724,752.
- In contrast to our findings regarding AT&T, our analysis of the data provided by Frontier indicates a noticeable improvement under both ownerships in the relative number of out-of-service cases over the same 8-year period.
- The trend in average duration of all out-of-service conditions excluding those cleared within one hour for Verizon and Frontier has been steadily deceasing over the full study period.



- There appears to be a strong relationship between the number of POTS lines in a wire center and the quality of service provided. The number and the rate of increase in OOS per 100 POTS lines have been lowest in the very largest (over 20,000 lines) wire centers.
- The largest increases in service outages occurred in wire centers with the lowest POTS drop-off rates; the incidence of service outages increased more slowly or remained almost constant in wire centers with successively larger drop-off rates.
- In areas with the highest population density, Verizon/ Frontier's response to out-of-service conditions has generally improved over the study period, compared to more rural areas.
- Of the six Frontier maintenance Operating Areas, those serving wire centers in the largest metropolitan areas (Los Angeles and Orange Counties) continue to show the best results and significant improvements in most OOS metrics. The poorest performing Operating Areas are those primarily serving rural communities.
- The Operating Areas within which most of the Verizon and Frontier FTTP upgrades have occurred have experienced the lowest number of OOS incidents and the shortest outage durations for those that do occur.

## 5: INFRASTRUCTURE POLICIES AND PROCEDURES: AT&T

- Over the full 2010-2017 period, less than 1% of all AT&T capital spending on network plant additions, just under \$47-million, was for outside plant rehabilitation projects.
- Extraordinarily small portions of AT&T California's Plant Additions and Maintenance expenditures have been directed at legacy POTS services over the 2013-2017 period.
- Despite the clear service quality objectives as set out at GO 133-C/D, the only areas where AT&T California has maintained POTS service quality in its network were in those wire centers where the company has invested in revenue-driven advanced broadband services.



## 6: INFRASTRUCTURE POLICIES AND PROCEDURES: VERIZON/FRONTIER

- In its economic assessment of the 2016 purchase of the three Verizon ILECs, Frontier had concluded that the intra-corporate transfer payments that the three companies had been making to various Verizon centralized services affiliates were excessive, and that Frontier could realize some \$700-million in annual cost savings by capturing these functions within its own organization.
- Frontier began shifting functions previously provided by Verizon service affiliates to its own organization almost immediately after completing the acquisition in April 2016. This strategy may well have contributed to many of the transition problems that Frontier had encountered.
- The general overview that Frontier has provided of its maintenance practices and policies does not provide any information as to the extent to which these policies and practices are actually being followed.
- Both Verizon and Frontier have invested heavily in upgrading and expanding Fiber-to-the-Premises ("FTTP") services both before and after the April 2016 closing of the transaction. FTTP facilities are now available to more than two-thirds of all people living in Frontier-served areas.

## 7: AT&T CORPORATE AND CALIFORNIA ILEC INVESTMENT POLICIES

- AT&T California's potential revenue from raising prices and curtailing investments in its legacy POTS services far exceed any financial penalties imposed for its failure to meet the GO 133-C/D service quality standards.
- To support its "harvesting" strategy and maintain revenues despite a massive drop-off in demand, AT&T California has raised its rates for legacy flat-rate residential service by 152.6% since the service was de-tariffed by the CPUC in 2009.
- AT&T senior management's interest in and attention to its legacy wireline ILEC operations has been largely supplanted by its wireless operations and the recent satellite TV and video content acquisitions.
- AT&T California financial statements show an incomplete assessment of the ILEC's financial condition due to the large volume of inter-affiliate transactions made at transfer prices that are not set on the basis of arm's length negotiations.



- Cumulatively, over the full 8-year period, AT&T California had total net after-tax income of \$3.4-billion, but paid out \$7.6-billion to its parent company, AT&T Inc, thereby eroding the California company's capital base by roughly \$4.2-billion and impairing its ability to maintain and upgrade its aging infrastructure.
- AT&T, Inc. has also been eroding its California ILEC's capital base by investing less in its infrastructure than its annual depreciation accruals and retirements.
- AT&T's "harvesting" philosophy explains why AT&T has failed to improve service quality for its POTS services at least to the point where the GO 133-C/D standards can be achieved, because the gains it can realize by raising prices and curtailing investment and maintenance far exceed any financial penalties it might suffer from persistenly poor service quality.

## 8: VERIZON/FRONTIER CORPORATE AND CALIFORNIA ILEC INVESTMENT POLICIES

- In contrast to AT&T, which has the financial resources but not the interest in maintaining and upgrading its local wireline network, Frontier has a strong interest in pursuing such upgrades, but lacks the necessary financial resources to do so.
- Frontier's primary goal is to ensure the success and profitability of all of the wireline operations in its nationwide portfolio.
- Frontier's expansion/acquisition strategy was clearly ill-timed: Frontier was pursuing massive acquisitions into a market wireline circuit-switched voice telephony that was already in a steep decline.
- Frontier's precarious and highly leveraged financial structure raises serious concern as to its ongoing access to sufficient capital to maintain and upgrade its California network.
- Frontier's net income declined following each successive acquisition, to the point where it has now been negative for seven consecutive quarters.
- Unlike AT&T, which had raised its legacy flat-rate residential POTS rates by 152% since the onset of URF, Verizon's rates for this service had risen by only 31% as of the date of the sale to Frontier, and Frontier has not effected any rate increase since the acquisition.
- As a "pure play" ILEC holding company, Frontier Communications has a strong financial incentive to stabilize and grow its ILEC operations in California and elsewhere but if it is not able to stabilize and strengthen its overall financial health, some sort of rescue may become necessary.



# 9: ASSESSMENT OF SAFETY, REDUNDANCY AND RESILIENCY OF NETWORK(S): AT&T

- The only AT&T central offices that provide physical route diversity to the Public Switched Network are those that also perform tandem switching functions.
- PSAPs are being hosted by only about a third of AT&T central offices and, except for those that are connected to COs that also support tandem switching functions, most PSAPs have no physical or logical route diversity to the public switched network or in their connection to the communities they serve.
- 45 AT&T central offices that host or otherwise provide connections to PSAPs fail to meet the minimum back-up power required by FCC regulations (72 hours).
- AT&T has sufficient procedures to address nationwide service outage emergencies but is unable to identify a minimum threshold for response. There is a strong basis to conclude that AT&T California lacks the resiliency to proactively withstand disasters.

## 10: ASSESSMENT OF SAFETY, REDUNDANCY AND RESILIENCY OF NETWORK(S): FRONTIER

- In rural areas and over a number of years, multiple stand-alone central office switches have been consolidated into "host/remote" configurations, offering minimal route diversity within each such consolidation.
- Stand-alone switches and tandem routing of interoffice calls, rather than host/remote configurations, are used in more densely populated urban and suburban areas.
- Frontier advises that 170 out of its 270 central offices in California currently support diverse connectivity to the Public Switched Network.
- 135 Frontier central offices, serving approximately 100,000 access lines, do not currently have redundant physical connections to the Public Switched Network.
- Only 41 out of the 93 PSAPs hosted at Frontier central offices currently have confirmed diverse connections.
- Frontier identified 241 central offices that have been equipped with at least 8 hours of back-up power; however, FCC regulations specify 24 or (for COs that support Selective Routers for 911 calls) a minimum of 72 hours of back-up power.



- Frontier did not provide sufficient data on back-up power reserves to support any conclusions as to Frontier's resiliency or ability to meet FCC regulations.
- Frontier indicated it can mobilize national resources in the event of a major emergency but failed to provide realistic measures of how that is accomplished.

## **11: CONCLUSIONS AND RECOMMENDATIONS**

- Wire centers with the lowest rates of customer drop-off have experienced the poorest levels of service quality. The likely reason for this is that a large number of customers still depend upon their legacy wireline service and lack meaningful access to competitive or alternative services.
- AT&T's investments in fiber upgrades have tended to favor higher-income communities, such that wire centers that serve areas with the lowest household incomes are also characterized by the poorest service quality.
- Despite Frontier's pervasive financial challenges, its California ILEC remains a critical component of the state's telecommunications infrastructure. Roughly 25% of all legacy POTS access lines in service in California as of December 31, 2017 were being provided by one of the Frontier ILECs.

## **12: COMMUNICATIONS DIVISION STAFF SITE VISITS**

- In some AT&T areas, outside plant technicians' reporting locations (garages) are a long distance from their assigned distribution areas resulting in long travel times to customer locations.
- Most AT&T central offices in rural areas are not staffed on a full-time basis; outside plant technicians engaged in troubleshooting must drive to the central office and perform the necessary tasks or wait for a CO technician to be dispatched.
- In rural areas served by both AT&T and Frontier, the distance from the Central Office to many users is well beyond 18,000 feet resulting in long loops or the use of electronic pair-gain equipment; both conditions require a higher level of preventative maintenance and have higher rates of failure.
- In some areas, non-management outside plant workers who leave through attrition or retirement are not replaced resulting in fewer well-trained resources.



- Cable maintenance technicians' workload has shifted from a balance of preventative maintenance work and "chasing troubles" to mostly working on customer trouble tickets.
- In rural areas, customers have fewer (if any) competitive options.



#### Recommendations

- **Recommendation 1:** Expand the financial penalties for carriers that fail to meet the minimum GO 133-C/D service quality standards.
- <u>Recommendation 2</u>: In an effectively competitive market, persistently poor service quality would drive customers to take their business elsewhere. Where competition is not present, fines imposed due to an ILEC's failure to meet service quality standards should be high enough so as to have the same financial consequences as poor service quality under competitive market conditions.
- <u>Recommendation 3:</u> The GO 133-C/D maximum Customer Trouble Report Rates of 6%, 8% or 10% (depending upon wire center size) of switched access lines per month are far too generous, and failure rates as high as these can hardly constitute acceptable service quality. The carriers have had little difficulty in meeting these standards, and they should be revised downward.
- <u>Recommendation 4</u>: Unless carriers can offer technically valid explanations as to how and why smaller wire centers experience the poorest service quality, the minimum GO 133-C/D standards should be applied uniformly for all wire centers.
- <u>Recommendation 5:</u> The GO 133-D fines should vary based upon the extent of a carrier's failure to meet any service quality standard, rising in magnitude as the extent of the shortfall increases.
- <u>Recommendation 6:</u> The Commission should retain its requirement that URF carriers maintain their Part 32 Uniform System of Accounts ("USOA") regulatory accounting records and submit annual ARMIS-type financial reports. The requirement should be expanded to also include wire center level accounting data, similar to those that ETI had obtained through multiple data requests in the course of this study. Carriers should be required to submit these to the Communications Division on a semi-annual basis.
- <u>Recommendation 7:</u> The Commission should establish a process to proactively examine the alternatives that would be available to maintain adequate service to Frontier California customers in the event that the parent company no longer has the financial resources to provide safe and reliable services in California.



# 2 INTRODUCTION AND BACKGROUND FOR THIS STUDY

#### Principal observations and takeaways

- The ongoing failure of the carriers to meet the specified minimum GO 133-C/D service quality standards may warrant additional corrective measures, including revision of existing minimum standards and imposition of financial incentives and penalties.
- The GO 133 maximum Customer Trouble Report Rates of 6%, 8% or 10% of switched access lines per month (based on wire center size) are unduely generous because failure rates as high as these can hardly constitute acceptable service quality.
- The only time that either ILEC has met the GO 133-C/D requirement of 90% of out-of-service conditions cleared within 24 hours occurred during the last two months of Verizon's ownership, and only because the Commission required such compliance as a condition for approval of the sale of the ILEC to Frontier.



#### INTRODUCTION AND BACKGROUND FOR THIS STUDY

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#### The Genesis of this Study

In December 2011, the Commission opened Rulemaking (R.) 11-12-001 to (a) review telecommunications carrier performance in meeting the GO 133-C/D service quality standards and measures in 2010; (b) assess whether the existing GO 133-C/D service quality standards and measures meet the goals of the Commission to adequately protect California customers and the public interest; (c) determine whether the existing GO 133-C/D standards are relevant to the current regulatory environment and market; and (d) determine whether there is a need to establish a penalty mechanism for substandard service quality performance.<sup>1</sup> In the Scoping Memo issued the following September, the ALJ and the then-Assigned Commissioner noted that:

In order to maintain acceptable levels of service quality for California customers, it is necessary to ensure that carriers have access to an adequate network of infrastructure. Without ubiquitous functional infrastructure that is adequately maintained, services provided to customers will degrade. In extreme cases, facilities failures will lead to a complete loss of service, including E911, to customers served by those facilities.<sup>2</sup>

The Scoping Memo noted that

the OIR suggested several related issues potentially within the scope of this proceeding, including an assessment of the condition and maintenance of telecom-munications facilities, and an examination of telecommunications corporations' internal policies and practices that could affect the quality of service experienced by consumers. The OIR further allowed for the scope of this proceeding to include various technological approaches to providing voice telecommunications services, including the use of wire line, wireless, and potentially other ways of accessing voice services through the telecommunications network.<sup>3</sup>

The Scoping Memo identified five (5) principal issue areas for initial examination:

1. Are telecommunications facilities being appropriately maintained to ensure quality service is being, and will continue to be, provided to retail and wholesale customers?



<sup>1.</sup> Order Instituting Rulemaking to Evaluate Telecommunications Corporations Service Quality Performance and Consider Modification to Service Quality Rules, R.11-12-001, December 1, 2011, at 3-4.

<sup>2.</sup> September 24, 2012, R.11-12-001 Assigned Commissioner's Scoping Memo and Ruling, at 12.

<sup>3.</sup> *Id.*, at 5, citations omitted.

- 2. How have telecommunications corporations performed since 2009 relative to the service quality standards adopted in GO 133-C/D?
- 3. Are telecommunications companies providing reliable telecommunications services of sufficient quality to ensure public safety and meet their obligations under state law11 and Commission directives?
- 4. Are existing service quality standards and reporting requirements reasonable, appropriate, and/or sufficient to ensure that California consumers receive adequate service and support public safety?
- 5. If new service quality standards are adopted or existing standards are maintained, should enforcement mechanisms such as penalties apply when telecommunications carriers fail to meet those standards?<sup>4</sup>

#### The Scoping Memo finds that:

In order to maintain acceptable levels of service quality for California customers, it is necessary to ensure that carriers have access to an adequate network of infrastructure. ... As a part of our review of the factors that may affect service quality, Communications Division shall oversee an examination of carriers' facilities. This examination will focus on the facilities of AT&T and Verizon, and will be conducted by an independent consultant under a contract managed by Commission staff. I expect that this study will be a foundational activity in this proceeding, providing valuable information that will assist parties and the Commission in addressing the issues within the scope as outlined above.

This examination is likely to include, but may not be limited to, physical inspection of network facilities throughout the state and a review of carrier policies, procedures, and documents. Policies and procedures related to investment, maintenance, and problem ticket response will be assessed, among other subjects. The Communications Division will select a qualified team to conduct the examination via a Request for Proposal (RFP), and will manage the resulting study contract. ... I anticipate that the cost of this study will not exceed \$1 million.<sup>5</sup>

<sup>5.</sup> *Id.*, at 12-13.



<sup>4.</sup> Id., at 8-11; affirmed by the Commission at D. 13-02-023, at Ordering Paragraph 1.

In D.13-02-023, a "Decision Affirming Provisions of The Scoping Memo and Ruling," the Commission reaffirmed the need to examine the AT&T CA and Verizon CA networks, and directed that a consultant be engaged to undertake such a study.

This decision also affirms the finding in the scoping memo that an evaluation of carrier network infrastructure, facilities, and related policies and procedures is a necessary foundational activity within this proceeding, and further requires AT&T and Verizon to split the costs of this study, which we estimate will be approximately \$1 million. ...<sup>6</sup>

The Request for Proposals ("RFP") for the Network Study was initially issued on June 5, 2017 followed by two subsequent revisions.<sup>7</sup> In responding to the second revised RFP, ETI outlined a "data-driven" approach that would rely upon the extensive amount of data that had been submitted by the two ILECs pursuant to GO 133-C/D and other CPUC and public data sources, together with the results of the CD Staff's on-site inspections and data requests to be drafted by ETI. ETI was notified of the award of this contract to us on January 12, 2018, and was authorized to commence work under the contract as of February 26, 2018. This report is the result of that undertaking.

RF

This Study relied on a "data-driven" analysis methodology utilizing the extensive GO 133-C/D data that the ILECs had submitted, on ILEC responses to data requests, on other CPUC and public data sources, and on the results of the CD Staff's on-site inspections.

#### 6. D.13-02-023, at 3.

7. The budget for the Network Study was subsequently cut to \$500,000. The June 5, 2017 RFP would have required, among other things, that the consultant conduct on-site physical inspections of up to 25 AT&T-CA and 25 Frontier-CA wire centers (RFP 16PS5014, June 5, 2017, at 4; RFP 16PS5014 Questions & Answers, July 17, 2017, Comment#1, at 2.). ETI determined that the scope of the project, including these 50 on-site inspections, could not be accomplished within the specified budget limit. CD advised that no qualified bidders had responded to this RFP. On August 31, 2017, CD issued a revised RFP that retained the on-site physical inspection requirement. Once again, ETI declined to submit a bid for the same reason as in the initial RFP. CD advised that no qualified bidders had responded to this revised RFP.

On October 31, 2017, CD issued yet another revision to the RFP that assigned the responsibility for all on-site physical inspections of AT&T and Frontier facilities to "the CPUC communication division staff," thus eliminating all on-site visits from the consultant's scope of work (RFP 17PS5007, October 31, 2017, at 8; see also RFP 17PS5007 Questions & Answers, 11/15/2017, Item 2: "Staff has a telecommunications engineer on staff, however this engineer will not be performing outside plant tests. The work plan for locations will be agreed with staff according to availability. The staff will be able to take pictures of outside plant to inform the consultant's findings in the area requested. Service quality data available to the CPUC is at the line level and physical address can be requested from the telephone corporation.") With the modifications to the scope as set out in the second revised RFP, ETI concluded that it could undertake and complete the revised scope of work within the specified budget, and submitted a proposal for the project.



#### Overview of OIR.11-12-001 to evaluate URF ILEC Service Quality performance

Public Utilities Code Section 451 requires that telecommunications carriers provide a level of service "...as necessary to promote the safety, health, comfort, and convenience of its patrons ... and the public." As the Commission observed at the outset of this OIR:

The Commission has a statutory duty to ensure that telephone corporations provide customer service that includes reasonable statewide service quality standards including, but not limited to, standards regarding network technical quality, customer service, installation, repair and billing.<sup>8</sup>

The Commission's concern about telecommunications carrier service quality has a long history. The initial version of General Order 133 was adopted in Case No. 9353 in1972, at D.80082. In that Order, the Commission viewed the new GO 133 as "represent[ing] a completely new approach to this area of regulation." The Commission explained that the General Order defined "a range of performance wherein service would be considered to be adequate. Each individual reporting unit would be expected to generally provide service at levels within the standard range. Reporting service levels are established so as to indicate reporting units which are performing significantly below standard service ranges and to provide an indication of inadequate service."<sup>9</sup> There have been several revisions to GO 133, the most recent of which occurred in August 2016, when the current GO 133-D was issued.<sup>10</sup>

The adoption of "price cap" type incentive regulation in 1989 – the "New Regulatory Framework" ("NRF") – raised new concerns about service quality. A central feature of incentive regulation is that, unlike the traditional "cost plus" approach to economic regulation of public utilities, under incentive regulation carriers are permitted to retain some, or perhaps even all, of any additional profits they are able to amass through implementation of efficiencies and other profit-enhancing measures. But short-run profits could also be increased by "cutting corners" – i.e., by scaling back on infrastructure investment and ongoing expenditures on maintenance.

To protect against such tactics, incentive regulation plans would often require that certain minimum service qualify standards be maintained and, in the event of a failure in that regard, impose financial penalties upon the carriers. The *New Regulatory Framework* order, D.89-10-031, contains an extensive discussion of this issue. However, rather than impose specific finan-

10. D.16-08-021, 2016 Cal. PUC LEXIS 458 (Cal. P.U.C. August 18, 2016)



<sup>8.</sup> D.09-07-019 at 12; P.U. Code § 2896.

<sup>9.</sup> Invest1gation into the Need and Requirements for a General Order Governing Standards of Telephone Service to be Furnished by Telephone Utilities in the State of California, CPUC Case No. 9353, D.80082, 1972 Cal. PUC LEXIS 1071, 73 CPUC 426.

cial penalties for failing to meet service quality targets, the Commission instead adopted an earnings sharing and earnings cap mechanism as a means for protecting consumers against ILEC measures that would otherwise result in excess profits.<sup>11</sup> Notably, other state PUC price cap plans adopted at around the same time as the NRF did impose specific service quality benchmarks and financial penalties for failure to achieve them. For example, in adopting price cap regulation for Illinois Bell in 1994, the Illinois Commerce Commission adopted a service quality component based upon a structure that had actually been recommended by the ILEC itself:

... the Commission concludes that it will adopt a service quality component in the price cap formula. We recognize that one of the theoretical risks of price regulation is that the Company may, while seeking to maximize its income, reduce expenditures in certain areas in such a manner as to impact service quality adversely. This is especially true for residential services which are the most inelastic services and are unlikely to be exposed to competitive pressures in the near term.

[Illinois statutes] Section 5/13-506.1 (b)(6) requires the Commission to find that an alternative regulation plan will maintain the quality and availability of telecommunications services (emphasis added). The Commission believes that the best way to eliminate the Company's incentive to reduce service quality will be to adopt a service quality component which penalizes the Company for not maintaining service quality but does not provide additional reward for exceeding current performance. Therefore, we will adopt the Company's eight separate quality of service measures using the Company's average actual performance in 1990 and 1991 as performance benchmarks. Since the Company has exceeded the Commission's Part 730 rules, which are intended to be minimum standards which all LEC's must satisfy, [\*128] it is necessary to establish these higher standards to safeguard against erosion of service quality.

Each measure is given equal weight in calculating the service quality component. For each measure, the Company receives a score of zero if it meets the benchmark, and a score of -.25 if it fails to meet the benchmark. Under this scenario, the price regulation formula will be GDPPI [Gross Domestic Product Price Index] minus 4.3% minus 0.25% for each service measure in which the Company fails to meet its benchmark. If, for example, the Company fails to meet its benchmark in all eight measures the regulation formula will be GDPPI minus 6.3%. This should provide a considerable



<sup>11.</sup> *I/M/O* Alternative Regulatory Frameworks for Local Exchange Carriers.; In the Matter of the Application of Pacific Bell (U 1001 C), a corporation, for authority to increase intrastate rates and charges applicable to telephone services furnished within the State of California, D.89-10-031, I.87-11-033, 1989 Cal. PUC LEXIS 576; 33 CPUC2d 43; 107 PUR 4th 1.

incentive for the Company to meet its benchmarks and not allow quality to deteriorate.  $^{\rm 12}$ 

In 2006, the Commission replaced the NRF with the Uniform Regulatory Framework ("URF") that was intended to apply to all carriers – incumbents and entrants alike – and to largely eliminate price and earnings regulation with respect to most ILEC services that had by then been deemed to have become subject to competition.<sup>13</sup> The ILECs that were to be subject to the URF (AT&T-CA and Verizon-CA) had argued that further monitoring of their service quality was no longer necessary since the operation of a competitive market would force them to maintain a high level of service quality or risk losing business to competitors.<sup>14</sup> But in adopting GO 133-C in D.09-07-019, the Commission concluded that:

Consistent with the general agreement of the parties that competitive environments act to apply a natural pressure for carriers to ensure adequate service quality, it is reasonable to simplify the existing reporting requirements. *At the same time, we do not believe a complete elimination of service quality reporting is warranted or reasonable because this Commission has a statutory duty to ensure customers receive adequate service quality pursuant to Public Utilities Code §§ 709, 2896 and 2897.* Accordingly, today's decision adopts GO 133-C containing a minimum set of service quality measures. *We believe continued reporting of these measures will ensure that telecommunications carriers provide relevant information to this Commission so that we may adequately protect California consumers and the public interest.*<sup>15</sup>

The Commission's concerns as expressed in 2009 were soon borne out. As discussed extensively in its November 2011 Order initiating this Rulemaking, the Commission observed that:

In December 2010 and early January 2011, a series of severe rainstorms battered Southern California, resulting in flooding that led to the Governor's

15. Order Instituting Rulemaking on the Commission's Own Motion into the Service Quality Standards for All Telecommunications Carriers and Revisions to General Order 133-B, D.09-07-019, July 9, 2009, at 2-3, emphasis supplied, citations omitted.



<sup>12.</sup> Illinois Bell Telephone Company: Petition to Regulate Rates and Charges of Noncompetitive Services Under An Alternative Form of Regulation et al, Ill. Commerce Comm'n, Docket No. 92-0448, 1994 Ill. PUC LEXIS 437, October 11, 1994, at \*126-\*128.

<sup>13.</sup> Uniform Regulatory Framework, D.06-08-030.

<sup>14.</sup> See, D. 09-07-019, §4.2.2, at 28: "AT&T and Verizon contend that all service quality measures and reporting requirements should be eliminated. They assert that in view of the development of competitive markets and the Commission's policy direction in URF, continued reporting to the Commission is unnecessary because competition is sufficient to protect consumers' interests." Citations omitted.

declaration of state of emergency in twelve counties in Southern California. These rainstorms caused over 250,000 AT&T and Verizon customers to lose telecommunications service for various periods of time. The outage event attracted State Senator Alex Padilla's attention, and he requested that the Commission obtain additional information regarding the carriers' service restoration efforts. On February 4, 2011, the Senate Energy, Utilities and Commerce Committee chaired by Senator Padilla held a hearing because of the significant impact of the outages on customers.

From Senator Padilla's hearing inquiry, CD noted that, although approximately 50% of the affected customers had service restored within four days, many customers remained without service for ten days, and in some cases for as long as 30 days. CD observed in its March 2011 report that the December 2010 GO 133-C service quality report did not include outage information for the December 2010 rainstorm events in Southern California. This was due to the order's specific exclusion of data compiled during catastrophic events. CD also cited in its report that GO 133-C lacked specificity as to when a state of emergency ended, what information should be included in the raw data to support carriers' reported results, and in what format the raw data should be submitted to allow CD to reproduce carrier results. For example, one carrier provided raw data that included less than one half of the service tickets received for the First Quarter 2010, and in numerous other instances, carriers provided raw data in a PDF or picture format that did not show the formula for the underlying calculations.

In 2010, CD found that AT&T's first and second quarter supporting raw data files were truncated and required several re-runs and resubmissions of the data to provide a full reporting of Out-of-Service repair tickets. CD's staff recommended in its report that the Commission open an OII or OIR to review the service quality standards, and specifically address why some carriers consistently could not or did not meet the Out-of-Service Repair or Answer Time standards in 2010, and to consider whether to adopt new standards, modify current standards and adopt penalty mechanisms.<sup>16</sup>

Finally, in the *Assigned Commissioner's Scoping Memo and Ruling* issued on September 24, 2012 (which was subsequently affirmed by the Commission at D. 13-02-023), the ALJ summed up the various observations and concerns as expressed in the 2009 and 2010 CPUC rulings:

In D.09-07-019, the Commission found that competition in the California telecommunications market should provide an incentive for carriers to provide



<sup>16.</sup> R.11-12-001, at 7-8.

high quality service to their customers. Specifically, the Commission stated that "URF carriers operate in competitive markets that provide greater external pressure to ensure service quality and customer satisfaction." This finding provided support for the Commission's determination in 2009 that only minimal service quality standards should be needed to meet the Commission's responsibility to ensure customers receive adequate service quality. *One possible conclusion that could be drawn from the service quality results contained in the March 2011 CD report is that existing competitive forces and minimal standards are not sufficient to provide the service quality the Commission is required to ensure, and the level of public safety the Commission is committed to upholding.<sup>17</sup>* 

Notably, the level of competition for traditional legacy circuit-switched ILEC voice services – generally referred to as "Plain Old Telephone Service" or "POTS" – was relatively small at the time that the URF was adopted in 2006, when GO 133-C was adopted in 2009, or even when this OIR was initiated in 2011. But over the period under examination in this Study (2010-2017), the two URF ILECs have seen a massive erosion in the demand for their legacy services. Some of that demand has been replaced by other services offered by the same ILECs or their affiliates, including wireline Voice over Internet Protocol ("VoIP") and wireless Commercial Mobile Radio Services ("CMRS"). ILECs have also lost considerable market share to cable Multi-System Operators ("MSOs") such as Comcast and Charter.

Competition for basic voice services has seen much of the growth that the CPUC had anticipated when it adopted its Uniform Regulatory Framework ("URF") in 2006, the concurrent improvement in ILEC service quality that the Commission had also expected to result from this increased competition has failed to materialize.

Had the Commission's initial URF-related expectations that increasing competition would assure high service quality been borne out, continued improvement in service quality should have occurred. But this has not happened. Ongoing service quality monitoring by the Commission's Communications Division has confirmed the persistence of service quality shortcomings. In September 2014, CD released a staff report that discussed the service quality results of the principal California ILECs over the 2010-2013 period. CD's analysis, which was derived from the data submitted pursuant to the measures and standards established in GO 133-C, <sup>18</sup> found that:

<sup>18.</sup> CD's September 2014 Report ("CD 2014 Report") is available at http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M111/K579/111579788.PDF.



<sup>17.</sup> R.11-12-001, Scoping Memorandum and Ruling, September 24, 2012, at 6, emphasis supplied, citations omitted.

- For the period 2010 through 2013, AT&T CA and Verizon CA, who collectively operated 88% of the working lines reported in California, did not meet the minimum standard for the out of service repair interval,
- The length of time that both companies combined required to clear 90% of out-ofservice conditions was 96 hours, i.e., four days, whereas the GO 133-C objective called for 90% cleared within 24 hours.<sup>19</sup>
- The specific remedial measures to improve service that had been proposed by each carrier did not result in noticeable improvements to GO 133-C reported service quality results.
- CD concluded that the ongoing failure of the carriers to meet the specified minimum standards of service quality measures warranted consideration of revising the current measures and adopting penalty/incentive methodologies to motivate the carriers to improve performance.<sup>20</sup>

As we discuss in detail in Chapter 4 of this Report, our analysis of the AT&T and Frontier data has confirmed that the two ILECs' performance with respect to the GO 133-C/D service quality measures has deteriorated with respect to legacy POTS services– precisely the opposite result that should, in theory, have occurred under competitive market conditions.



The ongoing failure of the carriers to meet the specified minimum GO 133-C/D service quality standards may warrant additional corrective measures, including revision of existing minimum standards and imposition of financial incentives and penalties.

# The GO 133-C/D Service Quality measurements applicable to URF ILECs

GO 133-C/D differentiates between General Rate Case ("GRC") ILECs – those that are still subject to cost-plus rate-of-return type regulation – and the two large ILECs that are subject to the Uniform Regulatory Framework. GRC carriers are subject to five (5) GO 133-C/D service quality measures. However, only three (3) service quality measures apply to URF ILECs:

 Customer Trouble Reports – number of Trouble Reports per Hundred ("TRPH") access lines in service (§3.3);

20. Id., at 3.



<sup>19.</sup> Id., at 16.

- (2) Out of Service Repair Intervals percentage of Out-of-Service ("OOS") conditions that are cleared within 24 hours (§3.4); and
- (3) Answer Time for trouble reports and billing and non-billing inquiries (§3.5).
- GO 133-C/D has established a specific performance objective for each of these three measures:
  - For Trouble Reports per Hundred access lines (TRPH), a maximum of six (6) trouble reports per 100 working lines for reporting units with 3,000 or more working lines, eight (8) reports per 100 working lines for reporting units with 1,001-2,999 working lines, and ten (10) reports per 100 working lines for reporting units with 1,000 or fewer working lines (§3.3(c));
  - (2) For out-of-service (OOS) repair interval, subject to certain adjustments and exclusions, the commitment is measured by taking the total number of the repair tickets restored within less than 24 hours divided by the total outage report tickets. 90% of all out of service trouble reports within 24 hours is the set minimum standard (§3.4(b), (c)); and
  - (3) For Answer Time, 80% answered within 60 seconds when speaking to a live agent or 80% answered within 60 seconds when speaking to a live agent after completing an IVR or ARU system (§3.5(c)).

The scope of this Study includes only measures (1) and (2) – i.e., Trouble Reports per Hundred access lines and out-of-service conditions cleared within 24 hours.

# Trouble Reports per Hundred access lines ("TRPH")

The GO 133-C/D specification for TRPH – a maximum of 6, 8 or 10 per 100 access lines depending upon the size of the "reporting unit" (typically a wire center) – appears unduly generous. As will be detailed in Chapter 4, even the poorest performing wire centers for each of the two ILECs under examination here are consistently well below these limits. As a result, both AT&T-CA and Verizon/Frontier-CA have consistently met this standard. As will be discussed in greater detail in Chapter 11, ETI believes that the TRPH standards need to be revised downward. The incidence of just under 6%, 8% or 10% of all access lines in service experiencing failures that would result in the creation of a trouble ticket in any given month could not be considered to constitute "good" service quality. Under these standards, and assuming for the sake of discussion that no single customer experiences more than one trouble condition in any given year, these standards would allow failures of 72%, 96%, and 120% respectively each year.

For example, consider the case of AT&T's Oroville East wire center which, in 2017, had one of the highest Trouble Report counts among all AT&T wire centers. In that year, Oroville East had an average of 1,786 access lines in service, which puts it in the 1000-3000 line (mid-



size) category. For a wire center in this size range, the "standard" maximum number of Trouble Reports per Hundred access lines would be 8.0 *per month*, if the "per month" interpretation of this requirement is to be maintained. Over the full 2017 year, the average TRPH per month for the Oroville East wire center was 7.12. While among the highest TRPH counts in AT&T territory and the highest TRPH in the 1000-3000 line size category, Oroville East was still below the maximum of 8.0 threshold that is being considered as acceptable for a wire center of this size.

But looking beyond a single month suggests a different picture. Over the full year 2017, there were 1,526 trouble reports in Oroville East, or 85.44 trouble reports per hundred access lines. There were many instances where the same customer had experienced multiple trouble conditions. In 2017, a total of 826, i.e., 46.25% of the 1,786 average number of access lines in the Oroville East wire center, had experienced at least one trouble condition at some point during the year. It is difficult to imagine that this high an incidence of service problems in a single wire center would still be considered as "acceptable."

In fact, ETI's reading of GO 133-C/D suggests the possibility that the TRPH standards set forth therein may well have been misinterpreted and misapplied. §3.0(c) reads as follows:

Minimum Standard Reporting Level. Report number of trouble reports per 100 working lines (excluding terminal equipment reports). Six trouble reports per 100 working lines for reporting units with 3,000 or more working lines, eight reports per 100 working lines for reporting units with 1,001-2,999 working lines, and 10 reports per 100 working lines for reporting units with 1,000 or fewer working lines.

Note that no specific time frame (e.g., per month, per quarter, etc.) is specified – only the number of reports per 100 access lines. \$3.3(e) may shed some light on this lack of specificity:

Reporting Frequency. Compiled monthly, reported quarterly.

Thus, while the *compilations* are to be accomplished on a monthly basis, the "reporting" is to be done on a *quarterly* basis. The term "Reporting" (not compilation) also appears at §3.3(d), which refers to "Reporting unit" as an "Exchange or wire center, whichever is smaller."

The 6%, 8% and 10% minimum standard reporting levels make much more sense if interpreted as applying *quarterly* rather than monthly. Viewed on an annual basis, they would still consider as satisfactory trouble report rates for the three "reporting unit" sizes of just under 24%, 32% and 40%. It seems difficult to believe that annual trouble rates in excess of these levels could or would ever be deemed to be acceptable.



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The GO 133 maximum Customer Trouble Report Rates of 6%, 8% or 10% of switched access lines per month (based on wire center size) are unduly generous because failure rates as high as these can hardly constitute acceptable service quality.

#### 90% out-of-service conditions to be cleared within 24 hours

The apparently overly generous standard adopted at §3.3 for Trouble Reports per Hundred access lines is in stark contrast to the requirement, at §3.4, that 90% of all out-of-service conditions are to be cleared within 24 hours. In fact, with the exception of the unique situation extant during the months of February and March 2016, this requirement *has never been met* by either AT&T or by Verizon/Frontier either on a companywide or on an individual wire center basis. In its September 2014 report on "California Wireline Telephone Service Quality Pursuant to General Order 133-C Calendar Years 2010 through 2013," CD summarized the companywide percentages of OOS cleared within 24 hours for the years 2010 through 2013 as follows:

PERCENT OUT-OF-SERVICE CLEARED WITHIN 24 HOURS			
Year	Pct cleared within 24 hours – AT&T	Pct cleared within 24 hours – Verizon	
2010	50%	75%	
2011	67%	72%	
2012	70%	71%	
2013	67%	70%	

GO 133-C/D requires that this measure be reported on a companywide basis, but also requires that the raw data upon which the calculations have been based be provided. As discussed more fully in Chapter 4, ETI has analyzed approximately 6.1-million AT&T and 1.8-million Verizon/Frontier trouble report records and, from that raw data, we have calculated the required GO 133-C/D measures on an individual wire center basis. In reviewing all 96 months worth of data for AT&T, ETI has found no instance where the 90% OOS cleared within 24 hours standard had been met for any month either for the company as a whole or for any individual wire center.

Verizon had a similar track record with the exception of its performance during the last two months (February and March 2016) that immediately preceded the transfer of its ILEC



operations to Frontier. In D.15-12-005, the CPUC's Order approving the transfer, the Commission noted that:

Verizon consistently failed to meet the Commission's standard for OOS repair intervals and its performance on this metric worsened over time. GO 133-C requires that a minimum of 90% of OOS repairs should be completed within 24 hours. Verizon's performance on this metric declined from 72% of repairs completed within 24 hours in 2010 to 68% in 2014, even though the number of Verizon's working landlines decreased by 43% during that period.

Verizon had 146 outages that met the FCC's criteria for major outages (a loss of 900,000 or more user minutes) and 208 outages that met the E911 reporting criteria. Although the average number of such outages per year decreased during this period, the average impact of the outages, measured in lost user minutes, increased.<sup>21</sup>

Based upon this record, the Commission ordered that:

In response to the continuing under performance of Verizon on critical OOS metrics, we will require that in the interval between the issuance of this decision and the closing of the Transaction, Verizon shall fully comply with GO 133-C and complete a minimum of 90% of out of service repairs within 24-hours of receiving notice of the out of service condition.<sup>22</sup>

Following the April 1, 2016 closing date, on May 13, 2016, Frontier California submitted the Company's General Order 133-C/D Quarterly Service Quality Standards Report for the first quarter of 2016, the last three-month period "between the issuance of [D.15-12-005] and the closing of the Transaction," According to that report, Verizon had actually cleared 91.58% and 92.64% of OOS conditions "within 24-hours of receiving notice of the out of service condition" for the months of February and March 2016, respectively, thus seemingly meeting the D.15-12-005 requirement as the Commission had directed to be achieved as a precondition for the closing. Faced with a powerful \$10.5-billion financial incentive to do whatever was necessary to meet this condition, Verizon managed to make it happen – perhaps by importing personnel from some of its other ILEC operations outside of California. However, this two-month compliance as reported in the May 13, 2016 filing was clearly an anomaly. When Frontier filed its GO 133-C/D report for the second quarter of 2016 on August 15, 2016, it showed 24-hour completion percentages for April, May and June 2016 of only 42.92%, 20.85%, and 72.35%, respectively. And from subsequent filings for the remainder of 2016 and through the fourth quarter of 2017,



<sup>21.</sup> D.15-12-005, *Decision Granting Application Subject to Conditions and Approving Related Settlements*, December 9, 2015, at 66, citations omitted.

<sup>22.</sup> Id., at 67, emphasis supplied.

Frontier never repeated Verizon's one-time surge and exceed the 90% of OOS cleared within 24 hours threshold.

The only time that either ILEC has met the GO 133-C/D requirement of 90% of out-of-service conditions cleared within 24 hours occurred during the last two months of Verizon's ownership, and only because the Commission required such compliance as a condition for approval of the sale of the ILEC to Frontier.

While it may be convenient to examine companywide results, companywide averages are of little comfort to customers being served out of poorly-performing wire centers (as economists sometimes put it, "it is still possible for one to drown in a lake that is on average only six inches dcep"). It is thus appropriate and necessary that the GO 133-C/D standards be applied at the individual wire center level. As will be detailed in Chapter 4, there is a wide variation across each company's individual wire centers insofar as the GO 133-C/D measurements are concerned. ETI has examined both the absolute levels of performance for individual wire centers, but has also calculated long-term trends over the 8-year study period. For many individual wire centers, the trend lines indicate a deterioration in performance. For others, small improvements can be observed.

One particularly interesting finding is that in those wire centers where the ILEC has invested in upgrades to feeder and distribution plant to enable broadband services such as AT&T's U-verse branded or Verizon/Frontier's FiOS branded high-speed Internet access, VoIP telephone service, and IPTV, the various GO 133-C/D service quality measures perform better than for those wire centers where no fiber has been deployed.<sup>23</sup> Although the principal focus of this Network Examination is upon legacy circuit-switched voice services, the availability of broadband services provides an indication that the ILEC has invested capital in that location to upgrade its capabilities overall. These investments appear to have had the ancillary benefit of improving service quality and reliability even for legacy circuit-switched voice services that had not by themselves provided the impetus for the broadband upgrade. The GO 133-C/D data indicate that, for offices where no broadband services are offered, the trouble report rates are higher and the percentage of out-of-service conditions cleared within 24 hours is lower than for locations where U-verse or FiOS services are available. Moreover, while the service quality measures for broadband-capable wire centers have remained relatively constant over the study

<sup>23.</sup> FiOS is based upon a "Fiber-to-the-Premises" ("FTTP") network architecture. U-verse generally requires the availability of fiber to neighborhood "remote terminals" or "Nodes" where the fiber feeder plant is cross-connected to copper distribution cables. These Nodes must be placed relatively close to the end user customer so as to support reasonably high-speed Digital Subscriber Line ("DSL") service. In geographically concentrated wire centers where total distances to some customers are relatively short, AT&T appears to have been able to offer U-verse branded services without fiber upgrades, but likely with some upgrades to and replacement of older copper plant.



period, for offices where no such investment has been directed, there is a clear trend of service quality degradation.



In wire centers where the ILEC has invested in outside plant upgrades that enable it to offer broadband services, the GO 133-C/D legacy POTS service quality measures consistently perform better than where no such upgrades have occcurred.

# Sources of data used in this Study

ETI has assembled and relied upon a broad range of data sources in conducting this Network Examination. Principal among these were the following:

- Reports and raw data that AT&T, Verizon (prior to the transfer of its California ILEC operations to Frontier on April 1, 2016), and Frontier have been required to provide to the CPUC on an ongoing basis pursuant to GO 133-C/D regarding customer trouble reports and the respective companies' responses thereto.
- AT&T and Frontier responses to data requests submitted by ETI and by CPUC Communications Division Staff.
- Annual financial reports filed by AT&T California, Verizon California, and Frontier California that conform to the FCC's Automated Regulatory Management Information System ("ARMIS") reporting requirements. While largely discontinued by the FCC after 2007, the CPUC has continued to require that these reports be filed on a confidential basis by the URF ILECs.
- Public financial data and disclosures obtained from annual, quarterly and special reports

   10-K, 10-Q and 8-K reports as filed by the two ILECs' parent companies AT&T
   Inc., Verizon Communications, Inc. and Frontier Communications, Inc. with the
   Securities and Exchange Commission ("SEC"), as well as Annual Reports to
   Shareholders and other shareholder communications issued by the various parent
   companies.
- Industry data and reports published by the CPUC and FCC.
- Statewide and county-wide industry data for California published by the Federal Communications Commission.



• Other government data sources, including the US Census Bureau, the Bureau of Labor Statistics, various California state agencies, and the National Oceanographic and Atmospheric Administration (NOAA).

#### The AT&T and Verizon/Frontier GO 133-C/D submissions

One consequence of the April 1, 2016 transfer of control from Verizon to Frontier within the time period covered by this Network Examination was a disruption in both the form and content of the ILEC's GO 133-C/D data submissions over the transition. Some data for the January-March 2016 period – the last three months for which Verizon retained management responsibility for the ILEC's operations – is missing, and the data subsequently submitted by Frontier following its takeover on April 1, 2016 was in an entirely different format. Certain data elements that had routinely been submitted by Verizon were not present in the Frontier compliance filings. While ETI has attempted to reconcile the two disparate data sources, in some cases we have been compelled to provide separate results for the entity's operations under each of the two parent companies that controlled it over the study period. In this report, we may refer to the Frontier California ILEC entity as "Verizon/Frontier" in situations where the time period and the data under discussion extends across both parent companies' ownership.

Over the period January 2010 through and including December 31, 2017, AT&T provided the Commission with the required quarterly summary reports and the approximately 6.1-million individual Trouble Report records upon which these reports were based. Roughly 5.0-million of the AT&T Trouble Report records were associated with Out-of Service ("OOS") conditions of varying lengths. Frontier California and its predecessor Verizon California provided a corresponding set of quarterly summary reports and the raw underlying Trouble Report data. The Verizon submissions covered the period from January 2010 through March 2016, when the ILEC was acquired by Frontier and was renamed Frontier California. ETI was provided with approximately 1.6-million Trouble Report records covering the Verizon period, and another 0.2-million records for the post-acquisition period from April 2016 through December 2017.

There was considerable variation both in format and content both within and across the AT&T and the two Verizon/Frontier datasets, making it difficult to achieve direct comparability of results across all three ILEC entities. Individual data elements were present in some time periods and missing in others. The scope and even the definitions of seemingly corresponding data elements also differed among the three individual datasets. ETI was thus required to analyze and refine the data as submitted and, in some instances, to perform certain calculations that were present in some records but missing in others. In some cases, ETI was required to generate missing data elements from others present in a particular dataset, either by computation, transformation, or inference. While different naming conventions and designations had been used, all three datasets included, or were refined so as to include, similar data elements, as summarized in Table 2.2.



Table 2.2				
PRINCIPAL GO133-C/D TROUBLE REPORT DATA ELEMENTS				
Element Description				
Trouble Ticket	Serial number assigned to Trouble Ticket			
Billing Telephone Number	The 10-digit number designating the customer account			
Circuit ID	Generally the same as the Billing Telephone Number except for multiline customers			
Wire Center	For AT&T, a 6-digit wire center code; for Verizon and Frontier, the "Common Language Location Identifier" ("CLLI") code. AT&T 6-digit wire center codes were mapped into their corresponding industry-standard CLLI codes.			
Class of Service Name	To identify a customer as Residential or Business			
Out of Service Indicator	=1 if a service interruption had been involved; otherwise =0			
Receive Date Time	Date/Time that the trouble report was received by the ILEC			
Receive Day of Week Number	Day of week that the trouble report was received by the ILEC			
Restored Date Time	Date/Time when service was restored			
Closed Date Time	Date/Time when the trouble ticket was closed			
Cause Code	A code designating the cause or source of the trouble condition			
Disposition Code	A code designating the type of action that was taken in response to the trouble report			
CPUC Duration adjusted for weekends/holidays	An adjusted length of the out-of-service conditions where a weekend or holiday intervened between the customer trouble report and the date/time of service restoration			
Request Flag	An adjustment to the out-of-service duration where the customer had requested a specific data/time for a service technician visit			
"Excluded" indicator	An indication that the source of the outage was beyond the ILEC's control $-$ e.g., a fire or earthquake			
Computed actual duration	The actual elapsed time between the date/time receipt of a Trouble Report involving an out-of-service condition and the date/time when cleared			
Computed adjusted duration	The elapsed time between the date/time receipt of a Trouble Report involving an out-of-service condition and the date/time when cleared adjusted to exclude weekend/holiday hours or other conditions for exclusion			

#### **Financial data**

ETI relied upon a number of public and proprietary sources of financial data in the course of this study. Up until 2007, the FCC required large ILECs to provide detailed financial and operational data on an annual basis, much of which was available for public examination through the FCC's Automated Regulatory Management Information System ("ARMIS"). While ARMIS



reporting requirements were discontinued by the FCC after 2007,<sup>24</sup> the CPUC has continued to require them,<sup>25</sup> although most of these submissions are treated as proprietary and not available for public inspection.

The AT&T and Verizon/Frontier CPUC ARMIS-type filings provide an overview of the ILECs' network investment and plant retirement policies and practices, but only on an aggregate, company-wide basis. To supplement this data, ETI requested additional accounting data at the individual wire center level in order to ascertain not only what types of network plant were being acquired and retired, but where these plant additions and retirements were located.

We also examined public financial data as submitted by the ILECs' parent companies to the Securities and Exchange Commission ("SEC") and to their respective shareholders. However, these data were of limited use because they generally failed to disclose information at the individual operating entity level.

Supplementing the California-specific CPUC financial data, various trade publications and financial analyst reports were reviewed for background and corroborative material. State and federal census and economic data was also compiled. For our examination of a potential relationship between environmental (weather) conditions and the incidence of service interruptions, we relied upon precipitation data obtained from the National Oceanographic and Atmospheric Administration (NOAA).

#### Data analysis

In performing the required analysis and integration of the various sources of data that were compiled in the course of this Study, ETI's work benefitted from a widely used data management and statistical analysis software package known as STATA.<sup>26</sup> STATA is commercially available (for sale) to all researchers who conduct statistical analysis, and is widely used in the profession: "STATA is distributed in more than 200 countries and is used by hundreds of thousands of professional researchers in many fields of research."<sup>27</sup> STATA combines highly sophisticated data management tools with a full range of statistical analysis

<sup>27.</sup> http://www.stata.com/why-use-stata/



<sup>24.</sup> Petition of AT&T Inc. for Forbearance Under 47 U.S.C. § 160(c) From Enforcement of Certain of the Commission's ARMIS Reporting Requirements; Petition of Qwest Corporation for Forbearance from Enforcement of the Commission's ARMIS and 492A Reporting Requirements Pursuant to 47 U.S.C. § 160(c), WC Docket No. 07-139 et al. Memorandum Opinion and Order and Notice of Proposed Rulemaking, Rel. September 6, 2008, FCC 08-203: (2008).

<sup>25.</sup> GO 104-A; D. 93-02-019.

<sup>26.</sup> STATA is published by StataCorp LLC, College Station, Texas 77845.

capabilities. The system is widely used and accepted in academic institutions worldwide in a variety of industrial data management and analysis applications.

Using STATA, ETI assembled an integrated database consisting of nearly 8-million individual trouble report records submitted by AT&T California and by Verizon/Frontier California over the 2010-2017 study period. These were combined with a range of data on the nearly 900 individual telephone central offices (wire centers) operated by the two companies, and augmented by the various financial and other data that we were able to collect and organize. STATA's statistical analysis tools were used to develop linear regression and trend analyses between and among various data series and to prepare and produce numerous data tabulations and graphs. These datasets and the associated STATA analysis scripts (programs) will provide a useful and ongoing analytical tool that the Commission can maintain and expand into future periods.



In conducting this Study, ETI has employed widely accepted data management and statistical analysis tools that will be available to CPUC Staff to support ongoing monitoring and analysis of ILEC service quality performance.

#### Consistency among the various sources of data

While our work has benefitted from access to a broad range of data and data sources, we have encountered numerous inconsistencies and disparities with respect to datasets that should, in principle, be consistent. In some cases, the lack of direct, one-for-one correspondence may have arisen due to different data collection and analysis methods employed by each of these sources; in others, methodological revisions that had occurred from time to time appear to have been responsible for at least some of the disparities. For example, AT&T furnished a number of different tabulations of its California wire centers that differed from one another both with respect to the identities of the individual wire centers as well as their total number. There was a total of 612 wire centers included in AT&T's quarterly service quality data submissions made to the CPUC pursuant to the requirements of GO 133-C/D. But elsewhere, AT&T had identified 615 California wire centers in its response to Data Request 01A, Item 3, Attachment 4; 624 wire centers in its response to DR-03A, Items 1, 2 and 6, Corrected Attachment 1; 622 wire centers in its response to DR-03A, Corrected Attachment 2; and 626 wire centers in its response to DR-03A, Corrected Attachment 2 and DR-03A, Corrected Attachment 4. We may thus refer to different numbers of AT&T wire centers based upon the data source pertinent to the matter being discussed at various points in this report."

Verizon's GO 133-C/D service quality submissions had identified 270 individual wire centers within the Verizon California operating area. Upon acquiring control of the company in April 2016, Frontier implemented what can best be described as an administrative consolidation



of a number of these wire centers for certain purposes, reducing the total count from the preacquisition 270 to only 211. These were in no sense physical consolidations of multiple buildings, and it has never been made clear to us as to what purpose was being served by the change. However, as a result of this change, we were not able to trace the numbers of access lines in service for each of the 270 individual wire centers in the Frontier California service area over the entire 8-year study period. Notably, in our data request 02-F, Frontier was asked to provide a variety of statistics at the individual wire center level as well as maps showing the types of distribution technologies being employed within each wire center serving area. The requested statistics included such items as descriptions of the principal geographic characteristics of the area being served (urban, suburban or rural), the primary customer base (residential or commercial), certain physical properties of the area being served by the central office building (flat, mountainous, rivers, lakes, wetlands), a list of all census tracts served by the central office building, and the area (in square miles) of the territory served by the central office building. In this response, Frontier had provided the requested data, and maps, for the same full set of 270 wire centers that it had acquired from Verizon.

These discrepancies in the data supplied by each of the two ILECs has created certain analytical challenges that we have attempted to resolve as best we can. However, where we have been unable to reconcile the disparate data sources, we have utilized the one(s) most directly applicable to the specific subject being addressed. Consequently, the reader may encounter different figures for what should be the same information – e.g., 612 vs. 615 AT&T California wire centers. These are not mistakes or typographical errors, but were necessitated by the nature of the data that has been supplied to us.



# 3 CALIFORNIA ILEC NETWORK OVERVIEW

#### Principal observations and takeaways

- AT&T California's decision to retain its decades-old central office switches in service may be a practical strategy in light of the formidable economic, technology and regulatory challenges to any wholesale involuntary migration of its legacy voice service customers to current packet switched VoIP technology.
- Most of AT&T's recent central office plant additions have been for packet switches that are not used to provide legacy POTS services.
- Frontier's central office switches were all acquired before Frontier's 2016 purchase of Verizon, with the majority pre-dating the 2000 merger of Bell Atlantic and GTE. Many of the switches that are still in service were installed more than three decades ago.
- As of the April 2016 date when Frontier took over the company, FTTP plant deployed by Verizon was available to roughly 1.44-million – or about 38.4% – of the population in areas Verizon served. Since the acquisition, Frontier has added 59 wire centers serving areas with another 2.32-million people to its FTTP network and, by the end of 2017, FTTP was available to slightly more than two-thirds of all people living in Frontier-served areas.
- AT&T has never committed to deploying FTTP on a large scale, although the company has constructed FTTP at a small number of customer locations in the state. Overall, only 1.8% of homes passed by AT&T California have been upgraded with FTTP.
- Broadband upgrades provide service quality benefits to basic POTS customers, but a carrier's decision to invest in broadband is driven mainly by factors that have little direct bearing upon improving service to legacy POTS customers. California ILECs are under no legal obligation to invest in broadband, but fines imposed pursuant to GO 133-D, if scaled correctly with respect to the extent of the shortcoming, have the potential to provide the necessary incentives to encourage such investments.



## CALIFORNIA ILEC NETWORK OVERVIEW

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# The relationships between the two largest California ILECs and their respective corporate parents: A brief history.

Each of the two ILECs that are the subject of this Study are wholly-owned subsidiaries of parent corporations with extensive multi-state operations. While the nature and identities of both corporate parents have changed several times over the past four decades, AT&T's California ILEC – Pacific Bell d/b/a AT&T California – has seen fewer disruptions to its corporate structure and ownership in recent years than what is now Frontier California. The parent company AT&T Inc. has diversified its overall business activities beyond local telephone company ILEC operations and AT&T's ILECs have become an increasingly smaller component of AT&T's overall business.

Verizon's corporate evolution has been similar. This has not, however, been the case with Frontier Communications, Inc., which acquired Verizon's California ILEC business in 2016. Unlike AT&T and Verizon, Frontier's business is primarily that of operating incumbent local exchange carrier (ILEC) affiliates. Unlike AT&T and Verizon, Frontier does not have any consequential interest in any mobile wireless, video content, Internet content, long distance, or video distribution businesses except, in the case of video distribution, as an adjunct to its ILEC operations. From the perspective of the ILEC and its customers, the 2016 transaction brought the third parent company owner of the company in less than two decades – from GTE to Verizon in 2000, and from Verizon to Frontier in 2016.

#### **AT&T** California

AT&T California and Frontier California are the two largest ILECs in the state. As of December 31, 2017, AT&T operated 615<sup>28</sup> wire centers across 51 of the state's 58 counties, and served approximately 2,245,171 residential and small business legacy circuit-switched (POTS) access lines. AT&T California is a wholly-owned subsidiary of AT&T Inc., a company that was formed in 2005 as a result of acquisition of AT&T Corp. by SBC Communications.<sup>29</sup> The parent AT&T Inc. is headquartered in Dallas, Texas. AT&T California also provides several types of broadband digital services to the residential and small business market, including high-speed Internet access, video services, and VoIP-based digital residential telephone service, under the *U-verse* brand name (offered individually and in bundles). AT&T also offers wireless Commercial Mobile Radio Services (CMRS) through its AT&T Mobility affiliate, satellite

<sup>29.</sup> In the Matter of SBC Communications Inc. and AT&T Corp. Applications for Approval of Transfer of Control, WC Docket No. 05-65, 20 FCC Rcd 18290, 2005 FCC LEXIS 6385, 37 Comm. Reg. (P & F) 321, November 17, 2005.



<sup>28.</sup> AT&T furnished several tabulations of its California wire centers, with differing numbers of wire centers, over the course of the study (615 in its response to DR-01A,Data Request 3, Attachment 4; 624 in response to DR-03A, Data Requests 1,2, and 6, Corrected Attachment 1; 622 in DR-03A, Corrected Attachment 2; 626 in DR-03A, Corrected Attachment 2, DR-03A, Corrected Attachment 4). The GO 133-C/D service quality data covers only 612 wire centers.

television service through its DirecTV affiliate acquired in 2015, and a range of video content through its recent (2018) acquisition of Time Warner. AT&T Inc.'s consolidated gross revenues for 2017 were \$165.5-billion.<sup>30</sup> Total revenues derived from all of its "legacy voice and data services" were \$17.85-billion, of which only about \$3.92-billion came from legacy residential and small business POTS-type services.<sup>31</sup> Only about 10.8% of all AT&T Inc. 2017 revenues were derived from the services that are the principal focus of this study.

#### **Frontier California**

As of December 31, 2017, Frontier California operated 270 wire centers across 35 of the state's 58 counties, and served 857,467 residential and small business legacy circuit-switched (POTS) access lines. The Company was acquired by Frontier Communications Inc. as part of a three-state purchase that also included Verizon ILEC operations in Texas and Florida.<sup>32</sup> All of these ILEC operations had been owned by GTE prior to its 2000 merger with Bell Atlantic to form Verizon. Frontier had its genesis as Rochester Telephone Corporation<sup>33</sup> ("RTC"), an ILEC whose service area consisted of the Rochester, New York metropolitan area. RTC was at the time the largest Independent telephone company not affiliated with any other ILEC system or holding company.<sup>34</sup>

32. Two other Frontier ILEC affiliates, Frontier Citizens Telecommunications Company (U-1024-C) and Frontier Communications of the South West (U-1026-C), operate 50 and 6 wire centers, respectfully, in 16 California counties and served approximately 82,047 access lines as of the end of 2017. Both of these Frontier ILECs' existence pre-dates the parent company's 2016 acquisition of Verizon California, and is not included within the scope of this Study.

33. Frontier Corporation 8-K filing, April 2, 1996, at 1.

34. As far back as 1993, RTC had proposed an innovative restructuring arrangement to accommodate the thenemerging competition in the local exchange market. It proposed to split itself into separate "retail" and a "wholesale" entities, with the latter providing underlying network services to RTC's retail operation as well as to competing local carriers. The retail entity would compete with other potential providers, buying service in bulk and as a reseller would not be subjected to full regulatory oversight as would the wholesale entity. Rochester Telephone Corporation, Form 8-K, November 18, 1994, at 2. Although the specific RTC plan was never implemented as envisioned, it is noteworthy that the wholesale/retail structure ultimately adopted by the UK Office of Communications ("Ofcom") for British Telecom bears a striking resemblance to the original RTC plan. "[British] Telecom splits retail and wholesale," http://www.nbr.co.nz/article/telecom-splits-retail-and-wholesale [accessed on July 15, 2015]



<sup>30.</sup> AT&T Inc. 2017 Annual Report, Selected Financial and Operating Data, at 14.

<sup>31.</sup> *Id.*, at 18, 20. AT&T Inc. breaks down its operations into several business segments. The "Business Solutions Segment" provides services to business customers; the "Entertainment Group Segment" provides services to consumers. Business Segment "Legacy Voice and Data Services" revenues for 2017 were \$13.93-billion; the Entertainment Group Segment "Legacy Voice and Data Services" revenues for 2017 were \$3.92-billion.

With the GTE acquisition, Bell Atlantic (Verizon) expanded its ILEC footprint across 28 states,<sup>35</sup> from Maine to Hawaii. Within a few years following the merger, Verizon initiated the process of shedding large portions of its wireline operations. Although most of these divestitures were of former-GTE operating companies, Verizon also sold off four legacy Bell territories in Maine, New Hampshire, Vermont and West Virginia. The bulk of the GTE divestitures were sold to Frontier. Nearly all of Frontier's investments over the past 20 years have been in wireline operations, which have included the acquisition of a number of former-GTE territories from Verizon. In 1993 RTC acquired half a million access lines from pre-Verizon GTE. Just six years later, the company made a series of acquisitions from pre-Verizon GTE in Arizona, California, Minnesota, Nebraska, and Illinois that amounted to 361,000 additional access lines.<sup>36</sup> In 2007, the company acquired nearly half a million access lines in Pennsylvania from Commonwealth Telephone Enterprises, Inc. In that same year, Frontier acquired small ILEC properties in California from Global Valley Networks, Inc. Frontier's largest acquisition was in 2010 when it acquired roughly half of the former GTE ILEC properties from Verizon. Frontier's most recent acquisition was from AT&T, adding nearly one million access lines in Connecticut. Its most recent major acquisition was the California/Texas/Florida deal with Verizon. As of the April 1, 2016 date when that 3-state deal closed, Frontier served 5.77-million voice access lines in 29 states nationwide.<sup>37</sup> Frontier is today the nation's fourth largest ILEC with roughly 4.9million residential and business customers across 29 states.<sup>38</sup>

The transition of the three states acquired in 2016 from Verizon to Frontier experienced complications. There were numerous service interruptions and protracted technical and operational issues.<sup>39</sup> Frontier hemorrhaged access lines from the outset. Between April 1, 2016 and December 31, 2017, the Company's California access lines dropped by 29.4%, from 1.25-million to 883,000. On the date that Frontier announced its deal with Verizon (February 5, 2015), Frontier common stock closed at \$7.71, which was equivalent to a post- 1-for-15 share reverse split price of) 115.65.<sup>40</sup> By the end of 2017, the equivalent post-reverse split share price

38. Frontier, 2018 Form 10-K, March 1, 2018, at 2.

39. Frontier Communications, Inc. Forms 10-Q, Second Quarter 2016. See also Table 8.1 infra.

40. On July 10, 2017, Frontier announced a 1-for-15 "reverse split" of its common stock – i.e., shareholders would receive one 1 new share for each 15 shares owned. The pre-reverse split shares closed at \$7.71 on February 5, 2015. "Frontier Communications to Implement Reverse Stock Split on July 10, 2017" Press Release, July 7, 2017 http://investor.frontier.com/news-releases/news-release-details/frontier-communications-implement-reverse-stock-sp lit-july-10 [accessed on October 9, 2018].



<sup>35.</sup> GTE Corporation, 1999 Form 10-K, March 30, 2000, at 2.

<sup>36.</sup> Application, at 33, fn. 55.

<sup>37. &</sup>quot;Frontier Communications Completes Acquisition of Verizon Wireline Operations in California, Texas and Florida," Press Release, April 1, 2016 http://investor.frontier.com/static-files/ce1429d7-39d8-4e7f-aae3-63f5a24eb1e1 [accessed on October 3, 2018].

had dropped by 94.02%, to 6.92. As of January 14, 2019, Frontier (post reverse-split) stock closed at 2.58, down 97.8% from its February 2015 level. To put all of this in context, Frontier paid Verizon a total of \$10.54-billion in cash for the California/Texas/Florida ILEC operations, and financed that purchase through a combination of \$2.75-, \$1.5- and \$6.6-billion in new debt.<sup>41</sup> Based upon its January 14, 2019 closing stock price, Frontier market cap is currently about \$271-million.

Unlike AT&T, where legacy wireline operations represent a tiny fraction of the Company's total business, for Frontier, legacy ILEC operations *are its principal business*. Although Frontier does provide video services under the "Vantage TV by Frontier" and *FiOS* brands using the same types of digital transport facilities that also provide high-speed Internet access, the Company has no wireless affiliate, no content affiliate, and no cable TV affiliate.<sup>42</sup> Just ILECs. With the 2016 Verizon deal, Frontier acquired approximately 1.26-million revenue-producing access lines. Frontier California facilities passed some 2.63-million households within the former Verizon California operating footprint. Approximately 1.52-million of these were passed by fiber-to-the-premises ("FTTP") facilities, capable of providing broadband digital voice, Internet access, and TV under the *FiOS* brand name.<sup>43</sup> The three-state Verizon acquisition enabled Frontier to offer high-speed Internet access and video in these markets, and perhaps to use this as a springboard for a wider broadband buildout. But its financial collapse subsequent to that 2016 purchase has made any major expansion not financially viable.

Prior to its Verizon California acquisition, Frontier had already acquired two other small ILECs in California – Frontier Citizens Telecommunications Company (U-1024-C) and Frontier Communications of the South West (U-1026-C).<sup>44</sup> This study is limited solely to those Frontier exchanges that were acquired from Verizon (U-1002-C).

#### The ILECs' service areas in California

Figures 3.1 and 3.2 provide maps of the areas served by AT&T California and Frontier California, respectively. The two companies together serve approximately 95.7% of all ILEC access lines in California; including CLECs, they serve 51.77% of all voice access lines in the



<sup>41.</sup> Frontier, 2016 Form 10-K, February 25, 2016, at 2.

<sup>42.</sup> Frontier Communications Corporation, 2017 Form 10-K, March 30, 2000, at 3.

<sup>43.</sup> Data derived from CPUC Broadband Availability Database. See Reply Testimony of Lee L. Selwyn (redacted) on behalf of ORA, A.15-03-005, July 28, 2015, at 53.

<sup>44.</sup> CPUC *Total Number of Working Telephone Lines from 27 Carriers Reporting Under General Order 133-D*, as of June 2017. available at (accessed 10/3/18): ftp://ftp.cpuc.ca.gov/Telco/ServiceQualityReports/2017/CARRIER%20LINE%20COUNTS%20FOR%20JUNE%20

<sup>30%202017.</sup>pdf



Figure 3.1. AT&T California ILEC service areas.





Figure 3.2. Frontier California ILEC service areas.



state. Two other Frontier operating affiliates, not included within the scope of this study, bring the total for both AT&T and Frontier to 56.99%. Most of the other legacy voice service access lines are provided by CLECS (41.8%), with a small number (0.83%) furnished by small, non-URF ILECs.<sup>45</sup>

### **AT&T California**

AT&T California maintains extensive operations across all portions of the state. It is the largest ILEC both statewide and in all major metropolitan centers. The Company has 615 exchanges spread across 51 of the state's 58 counties. It serves all of the state principal metropolitan centers – Los Angeles, San Francisco/East Bay, San Jose, San Diego and Sacramento – and most of their suburbs. The AT&T California ILEC also provides service (under the AT&T Nevada brand) to northern Nevada, mainly in the Reno/Tahoe/Carson City area.

AT&T California is organized into five "Technical Field Services" ("TFS") districts for purposes of network maintenance, and five "Construction & Engineering" ("C&E") districts that are responsible for plant upgrades and expansions. TFS projects are generally booked as maintenance expenses, whereas C&E projects are recorded as gross plant additions. The TFS districts are summarized on Table 3.1, and the C&E districts are summarized in Table 3.2, below. Figure 3.3 and 3.4 provide maps indicating the geographic responsibilities of the TFS and C&E districts, respectively.

Table 3.1			
AT&T CALIFORNIA TECHNICAL FIELD SERVICES DISTRICTS			
TFS District	No. of Wire Centers		
Bay / Central Coast	126		
Greater LA / Bakersfield	85		
Northern CA / Central Valley / NV	286		
San Gabriel	13		
Southern CA	105		
TOTAL	615		
Source: AT&T California response to CD Data Request 01A.			

45. Id.



Table 3.2			
AT&T CALIFORNIA CONSTRUCTION & ENGINEERING (C&E) DISTRICTS			
C&E District	No. of Wire Centers		
Вау	81		
LA	98		
North / NV	234		
South	105		
Valley	97		
TOTAL 615			
Source: AT&T California response to CD Data Request 01A.			

Table 4A.12 identifies the TFS districts associated with each AT&T wire center.





Figure 3.3. AT&T California Technical Field Services ("TFS") Districts.





Figure 3.4. AT&T California Construction & Engineering ("C&E") Districts.



# **Frontier California**

Frontier California's footprint embraces large areas of the state, including a number of rural areas in addition to its presence in several major metropolitan markets. The company has exchanges in 35 of the state's 58 counties. Frontier's largest concentration is in southern California, and covers large portions of Los Angeles County, where its territory includes Santa Monica, parts of West LA, and portions of the San Fernando Valley. Some 41% of Frontier California's customers are in Los Angeles County. Frontier also serves large portions of Ventura, Orange, Riverside and San Bernardino Counties. The Company's presence in northern California is more limited, serving several isolated Bay Area exchanges in Marin and Santa Clara Counties. The remainder of Frontier California's operations are mainly in low-density rural areas; its largest market outside of southern California and the Bay Area is in Fresno.

Table 3.3			
FRONTIER CALIFORNIA GEOGRAPHIC OPERATING AREAS			
Operating Area	No. of Wire Centers		
Beach Cities	31		
Coastal	31		
Desert	58		
Gateway	64		
Inland	23		
Northern	66		
TOTAL	273		
Source: Frontier California response to CD Data Request 01F.			

Frontier has organized its operations into six geographic areas, as follows:

Figure 3.5 provides a map indicating the geographic regions that are the responsibility of each of Frontier's six Operating Areas, respectively. Table 4F.12 identifies the Operating Area associated with each Frontier wire center.





Figure 3.5. Frontier California Operating Areas ("OPAs").



#### **Central Office Switch Technology**

#### **AT&T** California

AT&T has a total of 615 central offices, some of which have more than one switching entity in the building. AT&T's CO switch entities cover a broad mix of switch types. In total, these entities have a combined capacity of 18.8 -million voice dial connections. Many of the switches still in service were initially acquired and installed more than three decades ago – some as early as 1983 – and most even pre-date the 1997 merger of Pacific Telesis Group and SBC Communications; all but one switch acquisition pre-date the 2006 AT&T Corp./SBC merger.<sup>46</sup> These machines are, for the most part, second generation stored program digital electronic switches built in the mid-1980s and 1990s utilizing computer technology extant at that time. In almost any other communications application, this type of vintage hardware would have been replaced years or even decades ago. The most recent switch acquisition identified by AT&T occurred in 2008.<sup>47</sup> Table 3.4 below summarizes the number of entities and total capacity of each type of switch.

Table 3.4					
AT&T CALIFORNIA CENTRAL OFFICE SWITCHES AND CAPACITIES					
InstallationNo. ofTotal capaSwitch typeDescriptiondatesswitches(access li					
5ESS	No. 5 ESS digital host	1983-2002	161	6,300,891	
NT DMS 100 (all types)	Northern Telecom DMS 100 host switch	1984-2000	163	7,371,963	
DRSCS	Dual Remote Switching Center - SONET	1990-1997	14	141,952	
TSCS	Remote Switching Center - SONET	1988-1999	24	164,144	
Remotes (other types)	Includes remote switch modules, line multiplexers/concentrators	1985-2002	215	2,674,968	
COs with multiple switches	Multiple host switches, combination of host and remote switches (individual capacities not provided)	1984-1993	35	2,114,159	
Misc (other types)	MG9000-ABI VoIP Gateway, NT DMS 100/200	1985-2008	3	20,608	
TOTALS			615	18,788,685	
Source: AT&T response to DR 01-A.					

46. AT&T Response to DR-01-A, "05 - Attachment 4 - Network Evaluation DR 1 - Question 3.xlsx"

47. *Id*.




Most AT&T central office switches are at least fifteen years old, and some switches still in service were first installed in the mid-1980s.

Despite their advanced age, the combined capacities of AT&T California's central office switch inventory –18.8-million legacy circuit-switched voice (POTS) telephone lines – grossly exceeds – by a factor of more than eight times – AT&T California's current demand which, as of the end of 2017, was under 2.3-million POTS lines. This huge gap between capacity and demand may not be easily resolved. Circuit-switched technology is outdated, and there is no current vintage of these switches currently being manufactured. Switches can be consolidated, but relocating existing wire centers is typically not a practical measure because this would necessitate reconstruction of existing feeder and distribution cables to re-home them at the new wire center site. When switches are consolidated, buildings that had previously hosted both a switch and loop terminations will typically retain the latter function, with a high capacity umbilical cable linking that building to the new switch location. AT&T's current switch inventory includes multiple remote switches whose presence may already reflect prior switch consolidations.

AT&T has been migrating customers served by circuit switches to packet switches utilizing Voice over Internet Protocol (VoIP) technology as part of its overall marketing program that includes bundles of Internet access and/or video, in addition to voice telephone service. In the past, migration of customers from an older to a newer technology – e.g., from electromechanical to electronic switching, or from analog electronic switching to digital – has been both involuntary and largely transparent from the customers' perspective. The newer technology may have made certain additional service features (e.g., call waiting, caller ID, voice mail) available, but all were offered on an entirely optional basis. With few exceptions, customers were not forced to purchase services and features that they did not want.<sup>48</sup> This has not been the case for migrations from circuit-switched to packet-switched technology primarily due to the different regulatory regimes governing the legacy vs. the newer services.

Additionally, a complete circuit-switching to VoIP migration is practical only in wire centers capable of supporting geographically ubiquitous DSL services such as those being marketed by AT&T under its *U-verse* brand. As of the end of 2017, only 338 of AT&T's 615 California wire centers have been upgraded with the capability to provide these services. Packet switches could be adapted to provide analog circuit-switched type services by equipping them with customer-facing equipment capable of translating VoIP to POTS (and *vice versa*), thus enabling the packet

<sup>48.</sup> One exception to this was in the case of Touch Tone dialing. When first introduced, Touch Tone was available for an additional charge. However, in 1989, the CPUC ordered that Touch Tone be bundled into basic dial tone service, and increased basic rates on a revenue-neutral basis. *I/M/O Alternative Regulatory Frameworks for Local Exchange Carriers.; Application of Pacific Bell (U 1001 C), a corporation, for authority to increase intrastate rates and charges applicable to telephone services furnished within the State of California, D.89-10-031, 1.87-11-033, 1989 Cal. PUC LEXIS 576; 33 CPUC2d 43; 107 P.U.R.4th 1, at FOF 8; Ordering Paragraph 1. Customers who had been paying the surcharge got a small decrease in their total monthly bill, while those who had retained rotary dial service saw an increase in their basic service rate.* 

switch to provide analog type services over legacy copper plant to POTS customers. However, this would require additional investment in transition technology hardware, investment that could be avoided by simply retaining the functioning legacy circuit-switch central offices in place.

Finally, even if these economic and technical challenges were not present, PU Code §710, enacted by the California legislature in 2013, summarily deregulated all VoIP services, effectively creating a regulatory impediment to any involuntary circuit switched-to-VoIP migration that has the potential to subject affected customers to large rate increases for what is then a deregulated service.



AT&T California's decision to retain its decades-old central office switches in service may be a practical strategy in light of the formidable economic, technology and regulatory challenges to any wholesale involuntary migration of its legacy voice service customers to current packet switched VoIP technology.

It remains unclear whether AT&T's decision to retain these machines in service is driven by the obvious extent of excess capacity or simply by a corporate-level capital budgeting decision to channel its investment dollars toward lines of business other than legacy circuit-switched voice services.

In fact, AT&T Uniform System of Accounts (USOA) regulatory accounting data for the 2010-2017 period shows Gross Plan Additions in Account 2212 – Digital Electronic Switching equipment – at \$1.48-billion for the full 8-year period.<sup>49</sup> However, Account 2212 is divided into two subaccounts – 2212.1 (legacy circuit-switched central office switches such as the No. 5 ESS or DMS 100), and 2212.2 (packet switches that support a variety of advanced consumer and commercial services that do not include legacy circuit-switched residential and small business access lines). Notably, of the roughly \$1.48-billion that was invested in both Account 2212 subaccounts over the study period, \$1.34-billion of those Gross Plant Additions were identified as packet switches, with only \$148-million falling into the legacy circuit-switch category. Additionally, in 2010, AT&T transferred approximately 1.7-billion of Gross Plant out of Subaccount 2212.1 (circuit switching) and over to Subaccount 2212.2 (packet switching). Including this one-time transfer, total Gross Additions for circuit switching over the 2010-2017 period was a *negative* \$1.6-billion. *There is thus no evidence that any significant additional investment was directed toward legacy services during the study period*.

<sup>49.</sup> Analysis of AT&T Response to DR 03-A, Request 1, "Attachment 1\_Data Request Number 03-A.xlsx".





Most of AT&T's recent central office plant additions have been for packet switches that are not used to provide legacy POTS services.

## **Frontier California**

Frontier has a total of 278 switching entities that also includes a broad mix of switch types.<sup>50</sup> However, as a legacy GTE operating company, Frontier's switch inventory includes many units that were manufactured by GTE's manufacturing affiliate, Automatic Electric. In total, Frontier California's switch entities have a combined capacity of 3.3-million voice dial connections. All of Frontier California's central office switches pre-date its 2016 acquisition from Verizon; the majority pre-date the 2000 merger of Bell Atlantic and GTE. Many of the switches still in service were initially acquired and installed more than three decades ago – in the mid-1980s and 1990s. As with AT&T, Frontier's switches are, for the most part, second generation stored program digital electronic units that utilize 1980s and 1990s computer technology. The most recent switch acquisitions identified by Frontier – five in all – occurred in 2007. Table 3.5 below summarizes the number of entities and total capacity of each type of switch.



Frontier's central office switches were all acquired before Frontier's 2016 purchase of Verizon, with the majority pre-dating the 2000 merger of Bell Atlantic and GTE. Many of the switches that are still in service were installed more than three decades ago.

<sup>50.</sup> Frontier Response to DR-01-F, Frontier COs and equipment.xlsx

	Table 3.5					
	FRONTIER CALIF CENTRAL OFFICE SWITCHES	ORNIA 6 AND CAPA	CITIES			
Switch type	Description	Installation dates	No. of switches	Total capacity (access lines)		
5ESS	No. 5 ESS digital host	1986-1999	33	617,268		
5ESSRSM	No. 5 ESS Remote Service Module	1991-1995	13	46,402		
GTD5 EAX	GTE (AE) No. 5 digital host switch	1982-1997	104	2,124,852		
AE RSU	GTE (AE) No. 5 Remote Service Unit	1983-1991	31	73,112		
NT DMS 10, DMS10 SSO	Northern Telecom DMS 10 (all types)	1991-1993	14	34162		
NT DMS 100 (all types)	Northern Telecom DMS 100 host switch	1985-2000	24	250,057		
NT DMS Remotes (all types)	Northern Telecom DMS 100 Remote Service Units (various types)	1983-2001	54	77,841		
NT SLOA	Northern Telecom	2007	2	39,888		
NT AAL1S		2007	3	37,006		
TOTALS			278	3,300,588		
Source: Frontier res	Source: Frontier response to DR 01-F.					

As with AT&T, the combined capacities of Frontier's central office switch inventory -3.3million legacy circuit-switched voice (POTS) telephone lines – grossly exceeds – by a factor of nearly four times – Frontier's current demand which, as of the end of 2017, was under 900,000 POTS lines. As long as these switches remain serviceable and functionally viable for their current uses, Frontier's (and its predecessors') policy of keeping these switches in active service may well be the most prudent strategy.

## **Outside Plant Distribution Area Technology**

### **OSP** Architecture in general

Local telephone service is typically furnished by means of a hierarchical distribution network with the serving wire center at its center. The principal components of an ILEC local distribution network are illustrated in Figure 3.6 below. These consist of the following elements:





Figure 3.6. Principal components of an ILEC local distribution network.

- (1) *Wire Center* A building where central office switches, feeder cables, and interoffice trunks to other wire centers terminate and interconnect to one another.
- (2) *Interoffice Trunks*. High capacity digitally multiplexed transmission cables that connect the wire center with other locations on the public switched network.
- (3) Feeder plant. These are typically high-capacity facilities connecting the wire center to the "Distribution Area." The feeder cables are cross-connected at a "Service Area Interface" ("SAI") through a Feeder/Distribution Interface or "cross-box") to distribution facilities that run along individual streets and roads so as to pass directly in front of individual customer premises. In the past, feeder cables would consist of large capacity sheaths of twisted-pair copper cables, usually in the range of 300 to 1200 pairs, sometimes less, sometimes more, depending upon the service demands of the area served. In urban centers, feeder plant is typically carried in underground conduit pipes. However, in suburban and rural areas, feeder plant is usually carried on pole lines, making them more



vulnerable to adverse weather and other environmental conditions. Where large concentrations of customers are to be served (e.g., in a large office complex or a large multi-unit residential building), feeder cable might be deployed directly to that location. As technology developed over time, these large, heavy copper cables were replaced by fiber optic cables connecting the wire center to the various remote terminals. Such fiber facilities support many multiples of the capacity typical of copper cables. They carry voice and data signals in digital form. For traditional voice (POTS) services, these digital signals have to be converted back to analog for transport over the twisted-pair copper distribution facilities to individual customers.

- (4) *Remote Terminal.* Remote Terminals are the point of intersection of the high-capacity feeder plant and relatively low-capacity distribution plant. Where feeder cables utilize fiber optic technology, so-called "optronic" equipment at the Remote Terminal converts the optical signals carried on the fiber into electronic form for transmission over the copper distribution facilities to the end user. Multiple distribution routes are typically served out of a single Remote Terminal. Where required, e.g., for relatively long distribution segments, pair-gain equipment is also housed within the Remote Terminal to provide signal amplification. Pair-gain can extend the distance range for voice signals, but cannot generally be used for DSL type data signals.
- (5) Distribution cables. These typically consist of relatively low-capacity twisted-pair copper sheaths that are run along individual streets, most commonly on telephone poles but in some cases buried underground. Where the serving area of a wire center involves large distances, such as in rural exchanges, signal amplification is sometimes required where distances are particularly long. The introduction of Internet access services in the mid-1990s brought with it an additional challenge for distribution network architecture. The data transmission rate (bits per second or "bps") of Digital Subscriber Line (DSL) drops off precipitously as the length of the copper connection between the customer and the central office increases. The use of DSL is not even feasible where the route distance of the copper segment exceeds about 18,000 feet,<sup>51</sup> which translates roughly into about three miles from the central office. The use of fiber optic feeder facilities reduces this effect, because the relevant distance for this purpose is limited to the copper segment -i.e., the portion that is between the customer and the Remote Terminal where the copper pair is cross-connected to the fiber-fed equipment. By extending fiber optic feeder runs more deeply into local neighborhoods, the ability to provide DSL across larger areas is increased. This combination of fiber optic feeder and copper distribution is known as "Fiber-to-the-Node" ("FTTN") architecture. The closer that the carrier can bring fiber to

<sup>51.</sup> Goleniewski, Lillian, *Telecommunications Essentials, Second Edition: The Complete Global Source*, Addison-Wesley, 2007, at 49-50.



its customers, the higher the data rate ("bandwidth") that it can offer its customers.<sup>52</sup> A variant of FTTN is referred to as "fiber-to-the-curb" ("FTTC"). In an FTTC architecture, fiber cable is extended much closer to the end user – generally within 1000 feet – and is then connected by twisted-pair copper (in the case of ILECs) or coaxial cable (in the case of cable TV infrastructure).

(6) *Drop wire*. The "drop wire" is the final connection between the telco distribution network and the customer's premises. It typically connects the customer's premises to a twisted pair assigned to the customer at a telephone pole in close proximity to the customer's location. In the case of fiber-to-the-premises ("FTTP") distribution architectures (sometimes referred to as "Fiber-to-the-Home" ("FTTH")), the drop is also fiber optic cable.

"Fiber-to-the-Node" ("FTTN") vs. "Fiber-to-the-Premises" ("FTTP"). DSL technology can be supported entirely over copper facilities, but at relatively slow data rates. Where fiber feeder plant is available, DSL is provided utilizing a hybrid of those fiber optic cables connected to copper distribution cables at a Remote Terminal (a "Node"). FTTP extends fiber all the way to the customer's premises. Under Verizon's *FiOS* architecture, for example, a fiber cable pair capable of serving up to 32 customers is extended into a neighborhood, where individual fiber drop facilities are then connected to individual customer locations. In general, when Verizon selected a wire center for *FiOS* deployment, it built-out virtually all of the serving area, providing near-ubiquitous *FiOS* availability to all customers served from that wire center.

The outside plant distribution infrastructures of both AT&T California and Frontier California employ a mix of distribution technologies, ranging from legacy twisted pair copper to fiber-to-the-home. However, the deployment strategies of the two companies have been dramatically different.

### **Frontier California**

In 2006, Verizon Communications, the parent company, announced plans for an ambitious investment program to deploy FTTP broadband to 18-million of its (then) 25.1-million residential wireline subscribers.<sup>53</sup> By 2010, Verizon had deployed its *FiOS*-branded FTTP distribution facilities to some 15.2-million homes. But then, in March of that year, Verizon announced that it was suspending further deployment of *FiOS* plant, committing only to complete construction in

<sup>52.</sup> Cable TV distribution confronts a similar issue. The longer the coaxial cable segment, the slower the data rate available to end user customers. Like ILECs, cable MSOs have also been extending their fiber runs deeper in individual neighborhoods and closer to customers so as to provide the highest possible bandwidth.

<sup>53.</sup> Verizon Communications Inc. 2010 Annual Report, at 2.

locations where *FiOS* deployment was already underway.<sup>54</sup> While the bulk of Verizon's *FiOS* investment was directed at its legacy Bell Atlantic markets in the northeast, certain former GTE-served areas, including portions of the former GTE California, Texas, Florida and Washington State markets, had also been upgraded with FTTP distribution facilities. As of the April 1, 2016 date when Frontier acquired Verizon California, FTTP plant deployed by Verizon was available in 55 wire centers<sup>55</sup> serving areas with a population of roughly 1.44-million – or about 38.4% – of the total population in areas served by the company. Since the acquisition, Frontier has added 59 wire centers, serving areas with another 2.32-million people to its FTTP network and, by the end of 2017, some 68.4% of the population in Frontier California exchanges were capable of being served via FTTP distribution facilities; in the non-FTTP portions of Frontier's operating territory, about 900,000 people (23.8%) live in areas where Frontier offers some form of (relatively slow data rate) broadband, and the remaining roughly 300,000, have no broadband service available at all.

The CPUC's approval of the transfer of Verizon's California ILEC to Frontier included the Commission's acceptance of a "partial settlement" between Frontier and several protesting parties under which Frontier had make certain commitments to expand the availability of broadband services within its operating footprint beyond those wire centers in which Verizon had built out FTTP plant.<sup>56</sup> And, since acquiring the ILEC, Frontier California has expanded its broadband footprint. In a tabulation provided to the Communications Division dated January 24, 2018, Frontier identified a total of 229 "Broadband Equipped Central Offices,"<sup>57</sup> seemingly indicating that 180 additional central offices beyond the initial 55 were now capable of offering broadband service. In its response to CD Data Request 02-F, Frontier provided a total of 270 detailed maps showing, for each of its wire centers, the distribution area technology at each geographic location within the wire center serving area.<sup>58</sup> Frontier also provided the total population within the areas served by each of its wire centers. Based upon ETI's examination of these maps, it appears that, in wire centers where FTTP has been deployed, FTTP is provided almost ubiquitously throughout

55. CPUC Communications Division Staff.

58. Frontier Response to DR-05F, Attachment 4.



<sup>54. &</sup>quot;Verizon to End Rollout of FiOS," *The Wall Street Journal*, March 30, 2010. http://www.wsj.com/articles/SB10001424052702303410404575151773432729614 [accessed on July 16, 2015].

<sup>56.</sup> A.15-03-005, D.15-12-005 (December 3, 2015), 2015 Cal. PUC LEXIS 762, 326 P.U.R.4th 367 (Cal. P.U.C. December 3, 2015), *slip. op.* at 57-59 (§3.2.4. *The Joint Protesters Settlement*; 71 (Conclusion 10); 77-78 (COL 5, 6, 7); and Appendix F (*Joint Motion of Frontier Communications Corporation, Frontier Communications of America, inc., the Utility Reform Net/ryork, the Office of Ratepayer Advocates and the Center for Accessible Technology for Approval of Partial Settlement*).

<sup>57.</sup> Frontier Response to DR-01F, "Frontier COs and equipment - added reconciliation to wirecenters on go 133d final.xlsx"

the wire center serving area.<sup>59</sup> Frontier has identified a total of 114 central offices as "FiOS Capable," i.e., where FTTP plant had been deployed.<sup>60</sup> From the data provided by Frontier, we have calculated the percentage of the total population in areas served by Frontier California where *FiOS*-capable FTTP facilities are in place, as summarized on Table 3.6 below:

FRONTI POPULATION AT LOCA FTTP PLANT H	Fable 3.6 ER CALIFORNIA TIONS WHERE <i>Fi</i> IAS BEEN DEPLO	OS-CAPABLE
Download Speed	Population Passed by Frontier	Pct of Total Passed by Frontier
No Broadband	295,557	7.8%
Non FTTP Broadband / DSL	894,758	23.8%
FTTP / FiOS	2,573,373	68.4%
Total	3,763,688	100.0%
Source: Frontier Responses to DR-	02F, DR-05F	

As Table 3.6 indicates, some 7.8% of the population residing in areas served by Frontier have no form of broadband service available; 23.8% have what is likely some form of DSL available, while 68.4% are being served via fiber-to-the-premises, *FiOS*-capable facilities. This is in stark contrast to the situation for AT&T, where only 1.8% of the households passed by AT&T's network are served with FTTP plant.

As of the April 2016 date when Frontier took over the company, FTTP plant deployed by Verizon was available to roughly 1.44-million – or about 38.4% – of the population in areas Verizon served. Since the acquisition, Frontier has added 59 wire centers serving areas with another 2.32-million people to its FTTP network and, by the end of 2017, FTTP was available to slightly more than two-thirds of all people living in Frontier-served areas.



<sup>59.</sup> Frontier Response to DR-02-F, Request no. 1.

<sup>60.</sup> Frontier Response to DR-05F, Request 5 dated June 22, 2018. Frontier was asked to "Provide a list (spreadsheet) of all Central Offices/Wire Centers in the former Verizon territory (U-1002-C) that are capable of providing *FiOS* service to customers (FiOS enabled COs) ..." The original response identified 109 *FiOS*-capable central offices. In subsequent discussions with Frontier, it was determined that five (5) central offices previously identified by Verizon as *FiOS*-capable as of the date of the transfer (April 1, 2015) had been omitted from Frontier's response to DR-05F, bringing the total of Frontier California *FiOS*-capable central offices to 114.

Where some type of "broadband" service is available, there is considerable variation in its capability and functionality. Table 3.7 identifies, for each Frontier California wire center, the type of broadband service (or no broadband service) available to customers served. We distinguish between "FTTP" and "non-FTTP" broadband. "FTTP" (Fiber-to-the-Premises) provides very high data rates (download and upload speeds) potentially reaching and exceeding 1 Gbps. Frontier's FTTP service was originally deployed by Verizon and marketed under Verizon's *FiOS* brand, which Frontier has retained under the 2016 acquisition. "Non-FTTP" broadband is furnished primarily via Digital Subscriber Line (DSL) service over copper or by a hybrid fiber/copper architecture ("Fiber-to-the-Node" ("FTTN")). Depending upon the specific technology available, data rates are considerably slower than with FTTP/*FiOS*.



	Table 3.7 (page 1 of 6)					
	EDO					
	TYPES OF		SERVICES			
	ATEA	CH CENTRAL	OFFICE			
	, <u>-</u> ,.		No	Non-FTTP		
CLLI	Wire Center	Population	Broadband	Broadband	FTTP / FiOS	
ADLNCAXF	ADELANTO	10,725			Х	
ALPGCAXF	ALPAUGH	208	Х			
ALPNCAXF	ALDERPOINT	113			Х	
ANZACAXF	ANZA	2,935			Х	
APVYCAXF	APPLE VALLEY	26,192		Х		
ARHDCAXF	ARROWHEAD	9,196			Х	
ARTSCAXF	ARTESIA	27,827			Х	
AZUSCAXF	AZUSA	18,274			Х	
BBCYCAXF	BIG BEAR CITY	6,152			Х	
BBLKCAXF	BIG BEAR LAKE	11,670			Х	
BDGRCAXF	BADGER	206			Х	
BELRCAXF	BEL AIR	16,626		Х		
BGPICAXF	BIG PINE	465			Х	
BLFLCAXF	BELLFLOWER	37,266			Х	
BLGRCAXF	FLORENCE	18,873			Х	
BLPKCAXF	BALDWIN PARK	38,085			Х	
BNNGCAXF	BANNING	10,795			Х	
BNTNCAXF	BENTON	186			Х	
BORNCAXF	BORON	1,472			Х	
BRDNCAXF	WASHINGTON STREET	29,840			Х	
BRMSCAXF	BERRENDA MESA	79			Х	
BRPTCAXF	BRIDGEPORT	533	Х			
BRSWCAXH	BARSTOW	7,843			Х	
BRSWCAXJ	SOUTH BARSTOW	5,706		Х		
BSHPCAXG	BISHOP	7,937			Х	
BTNWCAXF	BUTTONWILLOW	789			Х	
BUMTCAXF	BEAUMONT	24,427			Х	
CCHLCAXF	COACHELLA	11,863		Х		
CCMNCAXF	CUCAMONGA	58,692			Х	
CFCYCAXF	CALIFORNIA CITY	5,736			Х	
CHLKCAXF	CHINA LAKE	3,719			Х	
CHNOCAXF	CHINO	40,629		Х		
CHSPCAXF	CALIF HOT SPRINGS	167			Х	
CLCYCAXG	MAR VISTA	34,681			Х	
CLEMCAXF	CLEMENTS	273		Х		
CLFXCAXF	COLFAX	2,749			Х	
CLMSCAXF	CALIMESA	9,646			х	
CLMTCAXF	CLAREMONT	32,564			х	
CMRLCAXF	CAMARILLO	36,879			Х	
CNCKCAXF	CANTUA CREEK	235		Х		
COVNCAXF	COVINA	42,731		Х		
CRCRCAXF	CORCORAN	4,839			х	
CRLKCAXF	CROWLEY LAKE	7,868		Х		
CRLNCAXF	CRESTLINE	10,590		Х		



Vire CenterPopulationNon-FTTPCRPRCAXFCARPINTERIA8,805XCUYMCAXFCUYAMA392XCVELCAXFCOVELO826XCZDRCAXGCAADERO635XDMSPCAXFDESERT HOT SPRINGS23,615XDMSRCAXFDIAMOND BAR16,627XDMSCAXFDESERT CENTER308XDSCCAXGDESERT CENTER308XDSCAXFDESERT THEIGHTS1,033XDSHGCAXFDESERT HEIGHTS1,033XDSHCAXFDOS PALOS3,796XDSNCAXFDESERT SHORES1,106XDWNYCAXFDOWNEY30,672XDWNYCAXFDOWNEY30,672XDWNYCAXFEL MIRAGE337XELRICAXFEL MIRAGE337XELNGCAXFELSINORE MAIN24,166XELNGCAXFELSINORE GRAND13,618XELWCAXFELLIWODD14,698XELWCAXFFARMINGTON586XFRTNCAXFFARMINGTON586XGULPCAXGGUADALUPE4,096XGULPCAXFGLENOVILLE311XGULPCAXFGLENOVILLE312,322XGULPCAXFGLENOVILLE311XGULPCAXFGLENOVILLE311XGULPCAXFGLENOVILLE31,322XGULPCAXFGLENOVILLE311XGULPCAXFGLENOVILLE31,323		Table 3.7 (page 2 of 6)					
CLLI         Wire Center         Population         Broadband         Broadband         FTTP / FOS           CUWMCAXF         CARPINTERIA         8,805         X           CUWMCAXF         CUYAMA         392         X           CVELCAXF         CUVANA         392         X           CVELCAXF         CUVELO         826         X           CVELCAXF         COVELO         826         X           DHSPCAXF         DESCRT HOT SPRINGS         23,615         X           DMBRCAXF         DESERT HOT SPRINGS         23,615         X           DMBRCAXF         DESERT HOT SPRINGS         23,615         X         X           DSGCAXF         DESERT HOLLS         9,428         X         X           DSGCAXF         DESERT HOLLS         9,428         X         X           DSMCAXF         DESERT SHORES         1,106         X         X           DWNYCAXG         DOS PALOS         3,796         X         X           EDMTCAXF         EDSERT SHORE MAIN         24,88         X         X           ELMICAXF         ELSINORE MAIN         24,156         X         X           ELMICAXF         ELSINORE MAIN         24,156         X				Νο	Non-FTTP		
CRPRCAXF CARPINTERIA 8,805 X CVELCAXF CUYAWA 392 X CVELCAXF CUYAWA 392 X CVELCAXF COVELO 826 X CZDRCAXG CAZADERO 635 X DIMBRCAXF DESERT HOT SPRINGS 23,615 X DIMBRCAXF DESERT HOT SPRINGS 23,615 X DIMBRCAXF DESERT FOR 308 X DSGCTAXG DESERT CENTER 308 X DSGCTAXG DESERT RHOLLS 9,428 X DSGCTAXF DESERT HEIGHTS 1,038 X DSGLCAXF DESERT HEIGHTS 1,038 X DSGLCAXF DESERT HEIGHTS 1,038 X DSGLCAXF DESERT HEIGHTS 1,038 X DSGLCAXF DESERT HEIGHTS 3,796 X DSMNCAXF DESERT SHORES 1,106 X DWNYCAXG IMPERIAL 2,982 X EDMTCAXF DOWNEY 30,672 X DWNYCAXG IMPERIAL 2,982 X ELMGCAXF EL MIRAGE 337 X ELMGCAXF EL MIRAGE 337 X ELMGCAXF EL MIRAGE 337 X ELRICAXF EL MIRAGE 337 X ELRICAXF EL MIRAGE 337 X ELRICAXF ELSINORE MAIN 24,156 X ELSNCAXG ELSINORE GRAND 13,618 X ELWOCAXF ELWINOD 14,698 X ETWNCAXF FELWINOD 14,698 X ETWNCAXF GUENN 2,678 X FRUCAXF FARMINGTON 586 X FRUCAXF FARMINGTON 586 X FRUCAXF FARMERSVILLE 1,123 X FRUCAXF FARMERSVILLE 1,123 X FRUCAXF GOLER 4,599 X GUPCAXG GLANDURA 22,086 X GUYCAXF GUENVILLE 311 X GUTCAXF GUENVILLE 311 X GULCAXF GUENVILLE 311 X GULCAXF GUENVILLE 311 X GULCAXF GUENVILLE 1,135 X GUNCAXF GUENVILLE 1,135 X GUNCAXF GUENVILLE 311 X GULCAXF GUENVILLE 311 X GULCAXF GUENVILLE 311 X HMILCAXF GUENVILLE 1,153 X,2 GUYCAXF GUENVILLE 1,153 X GUNCAXF GUENVILLE 311 X HMILCAXF HEMET 48,442 X HMILCAXF HOMELAND 43,362 X HMILCAXF HOMELAND 42,362 X HMILCAXF HOMELAND 40,699 X HMILCAXF HOMELAND 40,699 X H	CLLI	Wire Center	Population	Broadband	Broadband	FTTP / FiOS	
CUYMCAXF CUYAMA 392 X CVELCAXF COVELO 826 X CZDRCAXG CAZADERO 635 X DHSPCAXF DESERT HOT SPRINGS 23,615 X DMRCAXF DESERT HOT SPRINGS 23,615 X DNLPCAXF DUNLAP 1,294 X DNLPCAXF DUNLAP 1,294 X DSCTCAXG DESERT CENTER 308 X DSGCAXF DESERT HEIGHTS 1,038 X DSNCCAXF DESERT KNOLLS 9,428 X DSNCCAXF DESERT KNOLLS 9,428 X DSNCAXF DESERT KNOLLS 9,428 X DSNCAXF DESERT SHORES 1,106 X DWNYCAXF DOWNEY 30,672 X DWNYCAXF DOWNEY 30,672 X DWNYCAXF DOWNEY 30,672 X LINGCAXF ELGEMONT 20,288 X ELMGCAXF ELGEMONT 20,288 X ELMGCAXF ELGEMONT 20,288 X ELMGCAXF ELGINORE GRAND 13,618 X ELNGCAXF ELGINORE GRAND 13,618 X ELNGCAXF ELSINORE GRAND 13,618 X ELWOCAXF ELUWOOD 14,698 X ETWNCAXF FOULS 196 X FRVLCAXF FEILEWS 196 X FRVLCAXF FEILWNDA 18,749 X EXTRCAXF EXTER 5,678 X FWURCAXF FEILWOS 196 X FRVLCAXF FARMINGTON 586 X FRVLCAXF FARMINGTON 586 X FRVLCAXF FARMINGTON 586 X FRVLCAXF GRANT GROVE 215 X GUPCAXG GRANT GROVE 215 X GUNCAXF GLENDORA 22,086 X GUPCAXF GLENDORA 22,086 X GUPCAXF GLENDORA 22,086 X GUPCAXF GLENDORA 22,086 X GUPCAXF GRANT GROVE 215 X GUNCAXF GLENDORA 22,086 X GUPCAXF HOMESTEAD VALLEY 2,403 X HNBHCAXF HOMESTEAD VALLEY X HNBHCAXF HOMESTEAD VALLEY X HNBHCAXF HOMESTEAD VALLEY X HNBHCAXF HOMESTEAD VALLEY	CRPRCAXF	CARPINTERIA	8,805			Х	
CVELCAXF COVELO 826 X CVELCAXF COVELO 826 X DHSPCAXF DESERT HOT SPRINGS 23,615 X DMBRCAXF DESERT HOT SPRINGS 23,615 X DMBRCAXF DESERT HOT SPRINGS 23,615 X DNLPCAXF DUNLAP 1,294 X DSCTCAXG DESERT CENTER 308 X DSHCCAXF DESERT HEIGHTS 1,038 X DSNCCAXF DESERT HKOLLS 9,428 X DSNCCAXF DESERT HKOLLS 9,428 X DSNCCAXF DESERT SHORES 1,106 X DWNYCAXG IMPERIAL 2,982 X EUMYCAXG IMPERIAL 2,982 X ELMGCAXF EL MRAGE 337 X ELSNCAXG ELSINORE MAIN 24,156 X ELSNCAXG ELSINORE GRAND 13,618 X ELWDCAXF ELWWADA 18,749 X ETWNCAXF FELWWADA 18,749 X ETWACAXF FELWWADA 18,749 X ETWACAXF FELWWADA 18,749 X ETWACAXF FAMERSVILLE 1,123 X FRINCAXF FARMERSVILLE 1,123 X FRINCAXF FORT IRWIN 2,822 X GUJCAXF GRANT 3,86 X FRUCAXF GRANT 3,86 X FRUCAXF GRANT 2,862 X GUJCAXF GRANT 2,863 X GUJCAXF GRANT 2,864 X FRUCAXF FORT IRWIN 2,822 X GUJCAXF GRANT 2,866 X GUJCAXF GRANT 3,86 X GUJCAXF GRANT 2,2086 X GUJCAXF GRANT GROVE 215 X GUJCAXF GRANT GROVE 215 X GUJCAXF GLENNVILLE 311 X GULCAXF GLENNVILLE 311 X GULCAXF GLENNVILLE 311 X GUJCAXF GLENNVILLE 311 X HNBHCAX WARNER 18,830 X HNBHCAX HOMESTEAD VALLEY X HNBHCAX HOMESTEAD VALLEY X HNBHCAX HOMESTEAD VALLEY X HNBHCAX HOPA 252 X HNBHCAX HOPA 252 X HNBHCAXF HOMESTEAD VALLEY X HNBHCAXF	CUYMCAXF	CUYAMA	392			Х	
CZDRCAXG CAZADERO 635 X DHSPCAXF DESERT HOT SPRINGS 23,615 X DMBRCAXF DIAMOND BAR 16,627 X DNLPCAXF DIAMOND BAR 16,627 X DNLPCAXF DIAMOND BAR 16,627 X DSTCAXG DESERT CENTER 308 X DSHGCAXF DESERT HEIGHTS 1,038 X DSHGCAXF DESERT KNOLLS 9,428 X DSHCAXF DOS PALOS 3,796 X DSSHCAXF DESERT SHORES 1,106 X DWNYCAXF DOYNEY 30,672 X DWNYCAXF DOYNEY 30,672 X DWNYCAXF EDGEMONT 20,288 X ELMICAXF ELGENONT 20,288 X ELMICAXF ELGENONT 20,288 X ELMICAXF EL RIO 29,000 X ELSNCAXF EL RIO 29,000 X ELSNCAXF EL SINORE GRAND 13,618 X ETWNCAXF ELWOOD 14,698 X ETWNCAXF ETWANDA 18,749 X ETRCAXF ELSINORE GRAND 13,618 X ETTRCAXF EXETER 5,678 X FRVLCAXF FARMINGTON 586 X FRVLCAXF FARMINGTON 586 X FRVLCAXF FARMINGTON 586 X GULPCAXF FORT IRWIN 2,452 X GULPCAXF GUADALUPE 4,096 X GULPCAXF GLENORE 4,599 X GLLPCAXF GRANDA 12,151 X GULPCAXF GLENORE X GULPCAXF GLENORE 4,599 X GLLPCAXF GRANDA 12,151 X GULPCAXF GLENORE 215 X GULPCAXF GRANDA 12,311 X GULPCAXF GLENORE 215 X GULPCAXF GLENORA 22,086 X GLRYCAXF GLENORA 22,086 X GLRYCAXF GLENORA 22,086 X GLRYCAXF GLENORA 22,086 X GLRYCAXF GLENORA 22,086 X GLNCAXF GLENORA 22,086 X GNUCAXF GLENORA 20,000 X HNBHCAXC GLENORA 20,000 X HNBHC	CVELCAXF	COVELO	826			Х	
DHSPCAXF DESERT HOT SPRINGS 23,615 X DMBRCAXF DIAMOND BAR 16,627 X DNLPCAXF DUNLAP 1,294 X DSTCAXG DESERT CENTER 308 X DSHCCAXF DESERT HEIGHTS 1,038 X DSHCCAXF DESERT HEIGHTS 1,038 X DSHCCAXF DESERT SHORES 1,106 X DSHCCAXF DESERT SHORES 1,106 X DWNYCAXG IMPERIAL 2,982 X ELMCCAXF EDGEMONT 20,288 X ELMCCAXF ELGEMONT 20,288 X ELMCCAXF EL MIRAGE 337 X ELRICAXF ELSINORE MAIN 24,156 X ELWOCAXF ELSINORE GRAND 13,618 X ETWNCAXF ETIWANDA 18,749 X ETWNCAXF FULWOND 14,698 X FTNCAXF FER 5,678 X FTNCAXF FARMINGTON 586 X FRTNCAXF FENDYS 196 X FRTNCAXF FOWLER 4,599 X GUYCCAXF FARMERSVILLE 1,123 X FRTNCAXF FOWLER 4,599 X GUYCCAXF GULADUPE 4,096 X GUYCCAXF GLENORA 22,086 X GUNCAXF GULADUPE 4,096 X GUYCCAXF GLENORA 22,086 X GUNCAXF GULADUPE 4,096 X GUYCCAXF GULADUPE 4,096 X GUYCCAXF GULADUPE 4,096 X GUYCCAXF GULADUPE 4,096 X GUYCCAXF GULADUPE 4,096 X GUNCAXF GULADUPE 4,096 X HNBHCAXH BUSHARD 32,322 X HNBHCAXH BUSHARD 32,322 X HNBHCAXH BUSHARD 32,322 X HNBHCAXH BUSHARD 32,322	CZDRCAXG	CAZADERO	635			Х	
DMBRCAXFDIAMOND BAR16,627XDNLPCAXFDUNLAP1.294XDSCTCAXGDESERT CENTER308XDSKOCAXFDESERT HEIGHTS1.038XDSKNCAXFDESERT KNOLLS9.428XDSKNCAXFDESERT SHORES1.106XDWNYCAXFDOWNEY30,672XDWNYCAXFDOWNEY30,672XDWNYCAXFDOWNEY30,672XDWNYCAXFEDGEMONT20,288XEDMTCAXFELGERNT20,288XELMCCAXFEL RICA2,9000XELSNCAXFELSINORE MAIN24,156XELNCAXFELSINORE GRAND13,618XETWNCAXFELWOOD14,698XETWNCAXFETIWANDA18,749XEXTRCAXFEXETER5,678XFRINCAXFFARMINGTON586XFRINCAXFFARMERSVILLE1,123XFRINCAXFFORT IRWIN2,822XGUPCAXGGUADALUPE4,096XGUNCAXFGLENDORA22,086XGLNDCAXFGLENDORA22,086XGUPCAXGGUROY22,696XGRVCAXFGRANDA HILLS33,232XGRVLCAXFGRANDA HILLS33,232XGRUCAXFGLENDORA22,086XGRUCAXFGRANDA HILLS33,232XGRUCAXFGRANDA HILLS33,232XHNBHCAXHMANDE4,113<	DHSPCAXF	DESERT HOT SPRINGS	23,615		Х		
DNLPCAXF DUNLAP 1,294 X DSCTCAXG DESERT CENTER 308 X DSKCCAXF DESERT HEIGHTS 1,038 X DSKNCAXF DESERT KHOLLS 9,428 X DSPLCAXF DOS PALOS 3,796 X DSSHCAXF DESERT SHORES 1,106 X DWNYCAXF DOWNEY 30,672 X DWNYCAXF DOWNEY 30,672 X DWNYCAXF EDGEMONT 20,288 X ELMCCAXF ELGEMONT 20,288 X ELMCCAXF ELGINORE MAIN 24,156 X ELSNCAXF ELSINORE MAIN 24,156 X ELSNCAXF ELSINORE GRAND 13,618 X ELWDCAXF ELSINORE GRAND 13,618 X ELWCCAXF ETIWANDA 18,749 X ETTRCAXF EXETER 5,678 X FWVLCAXF FARMINGTON 586 X FRVLCAXF FARMINGTON 586 X FRVLCAXF FARMERSVILLE 1,123 X FRVLCAXF FARMERSVILLE 1,123 X FRVLCAXF FORT IRVIN 2,822 X GUPCAXG GUADALUPE 4,096 X GUPCAXF GUADALUPE 4,096 X GUPCAXF GUADALUPE 4,096 X GLVCCAXF GUADA 4,000 4,000 X HNBHCAXH BUSHARD 32,362 X HNBHCAXH HOMELAND 16,345 X HNBHCAXH HOMELAND 4,000 4,009 X HNBHCAXF HONEAN 4,000 4,00	DMBRCAXF	DIAMOND BAR	16,627			Х	
DSCTCAXG DESERT CENTER 308 X DSHGCAXF DESERT HEIGHTS 1,038 X DSHCAXF DESERT KNOLLS 9,428 X DSPLCAXF DOS PALOS 3,796 X DSSHCAXF DESERT SHORES 1,106 X DWNYCAXG IMPERIAL 2,982 X DWNYCAXG IMPERIAL 2,982 X EDWTCAXF EDGEMONT 20,288 X ELMCCAXF EL MRAGE 337 X ELRICAXF EL RIO 29,000 X ELSNCAXF EL MRAGE 337 X ELRICAXF EL SINORE GRAND 13,618 X ELWOCAXF ELLWOOD 14,698 X ETWNCAXF ETWANDA 18,749 X ETWCAXF ETWANDA 18,749 X ETRICAXF ELSINORE GRAND 13,618 X ETWCAXF FELLWOOD 14,698 X FRINCAXF FELLWOOD 14,698 X FRINCAXF FELLWOOD 14,698 X FRINCAXF FELLWOND 14,698 X FRINCAXF FELLWO 196 X FRINCAXF FARMINGTON 586 X FRINCAXF FARMINGTON 586 X FRVLCAXF FARMINGTON 586 X FRVLCAXF FORT IRWIN 2,822 X FWLRCAXF FORT IRWIN 2,822 X FWLRCAXF FORT IRWIN 2,822 X FWLRCAXF FORT IRWIN 2,822 X FWLRCAXF GUADALUPE 4,096 X GDLPCAXG GUADALUPE 4,096 X GLNDCAXF GLENOVE 215 X GLNDCAXF GLENOVILLE 311 X GCNCCAXF GLENOVILLE 311 X GCNCCAXF GLENOVILLE 311 X GRHLCAXF GLENOVILLE 311 X GRHLCAXF GLENOVILLE 311 X GRHLCAXF GLENOVILLE 311 X GRNUCAXF HOMELAND 16,345 X HNBHCAXAF HOMELAND 32,362 X HNBHCAXAF HOMELAND 32,362 X HNBHCAXAF HOMELAND 32,362 X HNBHCAXF HOMELAND 32,362 X HNBHCAXF HOMER 18,830 X HNBHCAXF HOMER 18,830 X HNBHCAXF HOMER 18,830 X HNBHCAXF HOMELAND 32,362 X HNBHCAXF HOMELAND 32,362 X HNBHCAXF HOMELAND 32,362 X HNBHCAXF HOMER 18,830 X HNBHCAXF HOMER 18,830 X HNBHCAXF HOMER 18,830 X HNBHCAXF HOMELAND 32,362 X HNBHCAXF HOMELAND	DNLPCAXF	DUNLAP	1,294			Х	
DSHGCAXF DESERT HEIGHTS 1,038 X DSKNCAXF DESERT KNOLLS 9,428 X DSSNCAXF DOS PALOS 3,796 X DSSNCAXF DOWNEY 30,672 X DWNYCAXF DOWNEY 30,672 X DWNYCAXF EDGEMONT 20,288 X EDMTCAXF EDGEMONT 20,288 X ELMCCAXF EL MIRAGE 337 X ELRICAXF EL RIO 29,000 X ELSNCAXF ELSINORE MAIN 24,156 X ELSNCAXF ELSINORE GRAND 13,618 X ELWDCAXF ELSINORE GRAND 13,618 X ELWNCAXF ETIWANDA 18,749 X EXTRCAXF EXETER 5,678 X FTWNCAXF FELLWOS 196 X FTNCAXF FARMINGTON 586 X FTNCAXF FARMERSVILLE 1,123 X FTIRCAXF FORT IRWIN 2,822 X FTIRCAXF FORT IRWIN 2,822 X FTIRCAXF FORT IRWIN 2,822 X GULPCAXF GLENNOLLE 4,599 X GULPCAXF GLENNOLLE 4,599 X GULPCAXF GLENNOLLE 311 X GULPCAXF GLENNOLLE 311 X GULPCAXF GLENNOLLE 311 X GULVCAXF GLENNOLLE 1,758 X GLNCCAXF GLENNOLLE 1,758 X GLNCCAXF GLENNOLLE 311 X GULVCAXF GLENNOLLE 1,758 X HMTCAXF HEMET 48,442 X HMTCAXF HEMET 48,442 X HMTCAXF GOLETA 21,315 X GULVCAXF GLENNULLE 1,758 X GULVCAXF GLENNULLE 1,758 X HMTCAXF HEMET 48,442 X HMTCAXF HEMET 48,442 X HMTCAXF HEMET 48,442 X HMTCAXF GLENNULLE 1,758 X GULVCAXF GLENNOLLE 311 X GULVCAXF GLENNOLLE 311 X GULVCAXF GLENNOLLE 311 X HMTCAXF HEMET 48,442 X HMTCAXF HOMESTEAD VALLEY 2,403 X HMTCAXF HOMESTEAD VALLEY X HM	DSCTCAXG	DESERT CENTER	308			Х	
DSKNCAXF DESERT KNOLLS 9,428 X DSPLCAXF DOS PALOS 3,796 X DSSNCAXF DESERT SHORES 1,106 X DWNYCAXF DOWNEY 30,672 X DWNYCAXF DOWNEY 30,672 X ELMCCAXF EDGEMONT 20,288 X ELMGCAXF EL MIRAGE 337 X ELMGCAXF EL RIO 29,000 X ELSNCAXF EL RIO 29,000 X ELSNCAXF EL RIO 13,618 X ELWCCAXF ELSINORE GRAND 13,618 X ELWCCAXF ELLWOOD 14,698 X ETWNCAXF ELLWOOD 14,698 X ETWNCAXF EXETER 5,678 X FUWSCAXF FELLOWS 196 X FTWCCAXF FELLOWS 196 X FRINCAXF FARMINGTON 586 X FRINCAXF FARMINGTON 586 X FRINCAXF FORT IRWIN 2,822 X FWLCAXF FORT IRWIN 2,822 X FWLCAXF FORT IRWIN 2,822 X GULPCAXG GLADAUPE 4,096 X GULPCAXF GLENNORA 22,086 X GLAPCAXF GLENNOLLE 3,11 X GOLTCAXF GABART GROVE 2,15 X GLNCCAXF GLENNULLE 3,11 X GOLTCAXF GABERVILLE 1,758 X GRHLCAXF GLENNULLE 3,11 X GOLTCAXF GLENNULLE 3,11 X HNDHCAXF HEMET 48,442 X HMUYCCAXF HOMELAND 16,345 X HMVYCAXF HOMELAND 16,345 X HMVYCAXF HOMELAND 16,345 X HMVYCAXF HOMELAND 16,345 X HNDHCAXF HEMET 48,442 X HNBHCAXF HEMET 48,442 X HNBHCAXF HEMET 48,442 X HNBHCAXF HOMELAND 32,362 X HNBHCAXF HOMESTEAD VALLEY 2,403 X HNBHCAXF HOMESTEAD VALLEY 3,403 X HNBHCAXF HOMESTEAD VALLEY 3,402 X HNBHCAXF HOMESTEAD VALLEY 3,403 X HNBHCAXF HO	DSHGCAXF	DESERT HEIGHTS	1,038			Х	
DSPLCAXFDOS PALOS3,796XDSSHCAXFDESERT SHORES1,106XDWNYCAXGIMPERIAL2,982XDWNYCAXGIMPERIAL2,982XEDMTCAXFEDGEMONT20,288XELMGCAXFEL MIRAGE337XELRCAXFELSINORE MAIN24,156XELSOCAXFELSINORE GRAND13,618XELWCAXFELIVOOD14,698XETWNCAXFETIWANDA18,749XEXTRCAXFEXETER5,678XFLWSCAXFFELLOWS196XFRINCAXFFARMERSVILLE1,123XFTINCAXFFORT IRWIN2,622XFWLRCAXFFORT IRWIN2,622XGUPCAXGGUADALUPE4,096XGUPCAXGGLADALUPE4,096XGUNCAXFGRANT GROVE215XGLNCAXFGLENDORA22,086XGUNCAXFGLENNVILLE311XGOLTCAXFGOLETA21,315XGRHLCAXFGARBERVILLE1,758XHEMTCAXFHEMET48,442XHNBHCAXFHOMELAND16,345XHNBHCAXFHOMELAND32,662XHNBHCAXFHOMELAND42,242XHNBHCAXFHONDA22,696XHNBHCAXFHONDA40,699XHNBHCAXFHONPA22,262XHNBHCAXFHONPA2,262XHNBHCA	DSKNCAXF	DESERT KNOLLS	9,428			Х	
DSSHCAXF DESERT SHORES 1,106 X DWNYCAXG DOWNEY 30,672 X EDMTCAXF EDGEMONT 2,982 X EDMTCAXF EDGEMONT 20,288 X ELMICAXF EL MIRAGE 337 X ELRICAXF EL RIO 29,000 X ELSNCAXF EL SINORE MAIN 24,156 X ELSNCAXG ELSINORE GRAND 13,618 X ELWCCAXF ELLWOOD 14,698 X ETWNCAXF ETTER 5,678 X FTWNCAXF EXETER 5,678 X FLWSCAXF FELLWOS 196 X FRVLCAXF FELLWOS 196 X FRVLCAXF FARMINGTON 586 X FRVLCAXF FARMINGTON 586 X FRVLCAXF FOR IRWIN 2,822 X FWLRCAXF FOWLER 4,599 X GDLPCAXG GUADALUPE 4,096 X GGVGCAXF GRANT GROVE 215 X GLNDCAXF GLENDORA 22,086 X GLNDCAXF GRANT GROVE 215 X GLNDCAXF GRANT GROVE 215 X GLNDCAXF GRANT GROVE 215 X GLNDCAXF GRANTA 21,315 X GLNDCAXF GRANTA 21,315 X GLNDCAXF GRANTA CROVE 215 X GLNDCAXF GRANTA 21,315 X GLNDCAXF GRANTA 21,315 X GLNDCAXF GRANTA 21,315 X GNUCCAXF GRANADA HILLS 33,232 X GRVLCAXF GRANADA HILLS 33,232 X GRVLCAXF GRANADA HILLS 33,232 X GRVLCAXF GRANADA HILLS 33,232 X GRVLCAXF HOME ADD 16,345 X HMMLDCAXF HOME ADD 16,345 X HNDHCAXF HOME ADD 32,362 X HNBHCAXF HOME ADD 32,362 X HNBHCAXA REDOND 40,699 X HNBHCAXF HOPA 252 X HNBHCAXA REDOND 40,699 X HNBHCAXF HESPERIA 47,103 X HYFKCAXF HESPERIA 47,103 X HYFKCAXF HESPERIA 47,103 X	DSPLCAXF	DOS PALOS	3,796			Х	
DWNYCAXF DOWNEY 30,672 X DWNYCAXF DOWNEY 2,982 X DWNYCAXG IMPERIAL 2,982 X ELMCAXF ELGEMONT 20,288 X ELMCCAXF EL MIRAGE 337 X ELRCAXF EL RIO 29,000 X ELSINCAXF EL RIO 29,000 X ELSINCAXF ELSINORE MAIN 24,156 X ELSNCAXG ELSINORE GRAND 13,618 X ELWCCAXF ELLWOOD 14,698 X ETWNCAXF ETIWANDA 18,749 X EXTRCAXF EXETER 5,678 X FRINCAXF FELLOWS 196 X FRINCAXF FELLOWS 196 X FRINCAXF FARMINGTON 586 X FRINCAXF FARMINGTON 586 X FRINCAXF FORT IRWIN 2,822 X FRINCAXF FORT IRWIN 2,822 X GUADALUPE 4,096 X GLPCAXG GUADALUPE 4,096 X GLPCAXG GUADALUPE 4,096 X GLNCCAXF GLENNVILLE 311 X GOLTCAXF GRANT GROVE 215 X GLNCCAXF GLENNVILLE 311 X GOLTCAXF GOLETA 21,315 X GULNCCAXF GOLETA 21,315 X GULNCCAXF GRANDA HILS 33,232 X GRVLCAXF GRANDA HILS 33,232 X GRVLCAXF HOMESTEAD VALLEY 2,403 X HNBHCAXF HOMESTEAD VALLEY 2,403 X HNBHCAXF SLATER 29,143 X HNBHCAXF MC GARBERVILLE 1,758 X HNBHCAXF MC GARBERVILLE 1,758 X HNBHCAXF MC GARDA HILLS 33,262 X HNBHCAXF MC HAMPO 32,662 X HNBHCAXF HCMETA VALLEY 2,403 X HNBHCAXF HCMETA 18,830 X HNBHCAXF HCMETA 18,830 X HNBHCAXF HCMETA 18,830 X HNBHCAXF HCMETA 14,844 HNBHCAXF HCMETA 14,844 HNBHCAXF HCMET	DSSHCAXF	DESERT SHORES	1,106	Х			
DWNYCAXGIMPERIAL2,982XEDMTCAXFEDGEMONT20,288XELMGCAXFEL MIRAGE337XELRCAXFEL RIO29,000XELSNCAXFELSINORE MAIN24,156XELSNCAXFELSINORE GRAND13,618XELWDCAXFELLWOOD14,698XETWNCAXFETWANDA18,749XEXTRCAXFEXETER5,678XFRINCAXFFELLOWS196XFRINCAXFFARMINGTON586XFRINCAXFFORT IRWIN2,822XFURCAXFFORT IRWIN2,822XGDLPCAXFGUADALUPE4,096XGOLCAXFGLANDRA22,086XGLNCCAXFGLENDORA22,086XGLVLCAXFGRANT GROVE215XGLVLCAXFGRANADA HILLS33,232XGRHLCAXFGRANADA HILLS33,232XGRHLCAXFGRANADA HILLS33,232XGRHLCAXFGRANADA HILLS33,232XGRHLCAXFHOMELAND16,345XHNBHCAXFHOMESTEAD VALLEY2,403XHNBHCAXFHOMESTEAD VALLEY2,403XHNBHCAXFHOMELAND18,340XHNBHCAXFHOMELAND18,340XHNBHCAXFHOMELAND2,262XHNBHCAXFHOMELAND16,345XHNBHCAXFHOMELAND2,262XHNBHCAXFHOMELAND <t< td=""><td>DWNYCAXF</td><td>DOWNEY</td><td>30,672</td><td></td><td>Х</td><td></td></t<>	DWNYCAXF	DOWNEY	30,672		Х		
EDMTCAXF EDGEMONT 20,288 X ELMEGAXF EL MIRAGE 337 X ELRICAXF EL RIO 29,000 X ELRICAXF EL RIO 29,000 X ELSINCAXF ELSINORE MAIN 24,156 X ELSINCAXG ELSINORE GRAND 13,618 X ELWOCAXF ELLWOOD 14,698 X ETWICAXF ETEWANDA 18,749 X ETWICAXF EXETER 5,678 X FLWSCAXF FELLOWS 196 X FRINCAXF FARMINGTON 586 X FRINCAXF FARMINGTON 586 X FRINCAXF FARMINGTON 586 X FRINCAXF FORT IRWIN 2,822 X FWLRCAXF FORT IRWIN 2,822 X FWLRCAXF FOWLER 4,599 X GDLPCAXG GUADALUPE 4,096 X GLNDCAXF GLENDORA 22,086 X GLNDCAXF GLENDON 40,099 X HNBHCAXF HOMESTEAD VALLEY 2,403 X HNBHCAXF HOMESTEAD VALLEY 2,403 X HNBHCAXF SLATER 29,143 X HNBHCAXF SLATER 18,830 X HNBHCAXF SLATER 18,830 X HNBHCAXF HOMESTEAD VALLEY 2X HNBHCAXF HOMESTEAD VALLEY 2X HNBHCAXF HOMESTEAD VALLEY 14,442 X HNBHCAXF HOMESTEAD VALLEY 14,443 X HNBHCAXF SLATER 18,830 X	DWNYCAXG	IMPERIAL	2,982			Х	
ELMGCAXFEL MIRAGE337XELRICAXFEL RIO29,000XELSNCAXFEL SINORE MAIN24,156XELSNCAXGELSINORE GRAND13,618XELWDCAXFELLWOOD14,698XETWNCAXFETIWANDA18,749XEXTRCAXFEXTRCAXFFEILWS196FWNCAXFFARMINGTON586XFRINCAXFFARMERSVILLE1,123XFTIRCAXFFORT IRWIN2,822XGOLPCAXGGUADALUPE4,096XGUPCAXFGRANT GROVE215XGUNCAXFGLENDORA22,086XGUVLCAXFGUETA21,315XGRVLCAXFGOLETA21,315XGRVLCAXFGRANADA HILLS33,232XGRVLCAXFGRANADA HILLS33,232XGRVLCAXFHOMELAND16,345XHNBHCAXFHOMELAND16,345XHNBHCAXFHOMELAND16,345XHNBHCAXFHOMESTEAD VALLEY2,403XHNBHCAXFHOMELAND16,345XHNBHCAXFHOMELARD32,362XHNBHCAXFBUSHARD32,362XHNBHCAXLWARNER18,830XHNBHCAXLWARNER18,830XHNBHCAXAREDONDO40,69XHNBHCAXAREDONDO40,69XHNBHCAXAREDONDO40,69XHNBHCAXAREDONDO40,69X	EDMTCAXF	EDGEMONT	20,288			Х	
ELRICAXFEL RIO29,000XELSNCAXFELSINORE MAIN24,156XELSNCAXGELSINORE GRAND13,618XELWOCAXFELLWOOD14,698XETWNCAXFETIWANDA18,749XEXTRCAXFEXETER5,678XFRINCCAXFFELLOWS196XFRINCAXFFARMINGTON586XFRINCAXFFORT IRWIN2,822XFWLRCAXFFORT IRWIN2,822XGDLPCAXGGUADALUPE4,096XGLNCAXFGRANT GROVE215XGLNCAXFGLENDORA22,696XGLYCAXFGLENDORA21,315XGURCAXFGLENDORA21,315XGRHLCAXFGOLETA21,315XGRHLCAXFGRANDA HILLS33,232XGRHLCAXFGRABERVILLE1,58XHMDCAXFHOMESTEAD VALLEY2,403XHNBHCAXFHOMESTEAD VALLEY2,403XHNBHCAXFHOMESTEAD VALLEY2,403XHNBHCAXFHOMESTEAD VALLEY2,403XHNBHCAXFBUSHARD32,362XHNBHCAXFHONTINGTON BEACH24,242XHNBHCAXFHOOPA252XHNBHCAXFHOOPA252XHNBHCAXFHOOPA252XHNBHCAXFHOPA252XHNBHCAXFHOPA252XHNBHCAXFHOOPA252X	ELMGCAXF	EL MIRAGE	337			Х	
ELSNCAXFELSINORE MAIN24,156XELSNCAXGELSINORE GRAND13,618XELWDCAXFELIWOOD14,698XETWNCAXFELIWANDA18,749XEXTRCAXFEXETER5,678XFRINCAXFFELLOWS196XFRINCAXFFARMINGTON586XFRVLCAXFFARMERSVILLE1,123XFRICAXFFORT IRWIN2,822XFWLRCAXFFOWLER4,599XGDLPCAXGGUADALUPE4,096XGLNDCAXFGRANT GROVE215XGLNCCAXFGLENDORA22,086XGLNCCAXFGLENDORA22,086XGUVLCAXFGLENNVILLE311XGOLTCAXFGOLTA11,315XGRVLCAXFGRABERVILLE1,758XHMLDCAXFHOMESTEAD VALLEY2,403XHNBHCAXFHOMESTEAD VALLEY2,403 </td <td>ELRICAXF</td> <td>EL RIO</td> <td>29,000</td> <td></td> <td></td> <td>Х</td>	ELRICAXF	EL RIO	29,000			Х	
ELSNCAXGELSINORE GRAND13,618XELWDCAXFELLWOOD14,698XETWNCAXFETIWANDA18,749XEXTRCAXFEXETER5,678XFLWSCAXFFELLOWS196XFRTNCAXFFARMINGTON586XFRTNCAXFFARMERSVILLE1,123XFTIRCAXFFORT IRWIN2,822XGDLPCAXGGUADALUPE4,096XGVGCAXFGLADALUPE4,096XGVGCAXFGLENDORA22,086XGLVCAXFGLENNVILLE311XGOLTCAXFGLENNVILLE311XGOLTCAXFGOLTA21,315XGRHLCAXFGARBERVILLE1,758XHEMTCAXFHEMET48,442XHMVYCAXFHOMESTEAD VALLEY2,403XHNBHCAXFSLATER29,143XHNBHCAXFBUSHARD32,362XHNBHCAXLWARNER18,830XHNBHCAXLWARNER18,830XHNBHCAXAREDONDO40,699XHNBHCAXAREDONDO40,699XHNBHCAXAREDONDO40,699XHNBHCAXAHESPERIA47,103XHYPRCAXFHAYFORK909X	ELSNCAXF	ELSINORE MAIN	24,156			Х	
ELWDCAXFELLWOOD14,698XETWNCAXFETIWANDA18,749XEXTRCAXFEXETER5,678XFLWSCAXFFELLOWS196XFRTNCAXFFARMINGTON586XFRTNCAXFFARMIRGTON586XFVLCAXFFARMERSVILLE1,123XFTIRCAXFFORT IRWIN2,822XGDLPCAXGGUADALUPE4,096XGGVGCAXFGRANT GROVE215XGLNDCAXFGLENDORA22,086XGLVLCAXFGLENDORA21,315XGRVLCAXFGOLETA21,315XGRHLCAXFGRANADA HILLS33,232XGRVLCAXFGRABERVILLE1,758XGRVLCAXFGRABERVILLE1,6345XHMDCAXFHOMELAND16,345XHNBHCAXFHOMESTEAD VALLEY2,403XHNBHCAXFSLATER29,143XHNBHCAXFSLATER1,422XHNBHCAXFSLATER1,422XHNBHCAXFSLATER1,422XHNBHCAXFSLATER1,422XHNBHCAXFSLATER1,422XHNBHCAXLWARNER18,830XHNBHCAXLWARNER18,830XHNBHCAXLWARNER14,242XHNBHCAXLWARNER14,242XHNBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFORK <td>ELSNCAXG</td> <td>ELSINORE GRAND</td> <td>13,618</td> <td>Х</td> <td></td> <td></td>	ELSNCAXG	ELSINORE GRAND	13,618	Х			
ETWNCAXFETIWANDA18,749XEXTRCAXFEXETER5,678XFLWSCAXFFELLOWS196XFRTNCAXFFARMINGTON586XFRVLCAXFFARMERSVILLE1,123XFURCAXFFORT IRWIN2,822XGUPCAXGGUADALUPE4,096XGGVGCAXFGRANT GROVE215XGLNDCAXFGLENDORA22,086XGLVCAXFGLENNVILLE311XGOLTCAXFGOLETA21,315XGRHLCAXFGOLETA21,315XGRVLCAXFGARBERVILLE1,758XGRVLCAXFGARBERVILLE1,758XHMLDCAXFHOMELAND16,345XHMNBHCAXFSLATER29,143XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXLWARNER18,830XHNBHCAXLWARNER18,830XHNBHCAXAREDONDO40,699XHNBHCAXAREDONDO40,699XHNBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X	ELWDCAXF	ELLWOOD	14,698		Х		
EXTRCAXFEXETER5,678XFLWSCAXFFELLOWS196XFRTNCAXFFARMINGTON586XFRVLCAXFFARMERSVILLE1,123XFTIRCAXFFORT IRWIN2,822XGDLPCAXGGUADALUPE4,096XGGVGCAXFGRANT GROVE215XGLNDCAXFGLENDORA22,086XGLVCAXFGLENNVILLE311XGOLTCAXFGLENNVILLE311XGRHLCAXFGRANADA HILLS33,232XGRVLCAXFGARBERVILLE1,758XGRVLCAXFHOMELAND16,345XHMDCAXFHOMESTEAD VALLEY2,403XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXLWARNER18,830XHNBHCAXLWARNER18,830XHNBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X	ETWNCAXF	ETIWANDA	18,749			Х	
FLWSCAXFFELLOWS196XFRTNCAXFFARMINGTON586XFRVLCAXFFARMERSVILLE1,123XFTIRCAXFFORT IRWIN2,822XGULPCAXGGUADALUPE4,096XGOLPCAXGGUADALUPE4,096XGOVGCAXFGRANT GROVE215XGLNDCAXFGLENDORA22,086XGLVLCAXFGLENNVILLE311XGOLTCAXFGOLETA21,315XGRHLCAXFGOLETA21,315XGRVLCAXFGABERVILLE1,758XGRVLCAXFGARBERVILLE1,758XHMUDCAXFHOMELAND16,345XHMNYCAXFHOMESTEAD VALLEY2,403XHNBHCAXLWARNER18,830XHNBHCAXLWARNER18,830XHNBHCAXLWARNER18,830XHNBHCAXLWARNER18,830XHNBHCAXAREDONDO40,699XHNBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYPRCAXFHAYFORK909X	EXTRCAXF	EXETER	5,678			Х	
FRTNCAXFFARMINGTON586XFRVLCAXFFARMERSVILLE1,123XFTIRCAXFFORT IRWIN2,822XFWLRCAXFFOWLER4,599XGDLPCAXGGUADALUPE4,096XGGVGCAXFGRANT GROVE215XGLNDCAXFGLENDORA22,086XGLVLCAXFGLENNVILLE311XGOLTCAXFGOLETA21,315XGRHLCAXFGRANADA HILLS33,232XGRVLCAXFGARBERVILLE1,758XGRVLCAXFGARBERVILLE1,758XHEMTCAXFHOMELAND16,345XHNBHCAXFHOMESTEAD VALLEY2,403XHNBHCAXFSLATER29,143XHNBHCAXLWARNER18,830XHNBHCAXLWARNER18,830XHNBHCAXLWARNER18,830XHNBHCAXAREDONDO40,699XHNBHCAXAREDONDO40,699XHNBHCAXAREDONDO40,699XHNBHCAXAREDONDO40,699XHNBHCAXAREDONDO40,699XHNBHCAXAREDONDO40,699XHNBHCAXAREDONDO40,699XHYPKCAXFHAYFORK909X	FLWSCAXF	FELLOWS	196			Х	
FRVLCAXFFARMERSVILLE1,123XFTIRCAXFFORT IRWIN2,822XFWLRCAXFFOWLER4,599XGDLPCAXGGUADALUPE4,096XGCVGCAXFGRANT GROVE215XGLNDCAXFGLENDORA22,086XGLVLCAXFGLENNVILLE311XGOLTCAXFGOLTCAXFGOLTCAXFXGRHLCAXFGRANADA HILLS33,232XGRVLCAXFGARBERVILLE1,758XGRVLCAXFGARBERVILLE1,758XHEMTCAXFHOMELAND16,345XHNBHCAXFSLATER29,143XHNBHCAXFBUSHARD32,362XHNBHCAXLWARNER18,830XHNBHCAXLWARNER18,830XHNDLCAXFSILVER LAKES1,422XHOPACAXFHOPA252XHNBHCAXAREDONDO40,699XHNBHCAXAREDONDO40,699XHYPKCAXFHESPERIA47,103XHYPKCAXFHAYFORK909X	FRTNCAXF	FARMINGTON	586			Х	
FTIRCAXFFORT IRWIN2,822XFWLRCAXFFOWLER4,599XGDLPCAXGGUADALUPE4,096XGGVGCAXFGRANT GROVE215XGLNDCAXFGLENDORA22,086XGLVLCAXFGLENNVILLE311XGOLTCAXFGOLTCAXFGLENNVILLE311XGOLTCAXFGOLTCAXFGOLTCAXFGARBERVILLE1,758XGRVLCAXFGRANADA HILLS33,232XXGRVLCAXFGARBERVILLE1,758XXHEMTCAXFHEMET48,442XXHMLDCAXFHOMESTEAD VALLEY2,403XXHNBHCAXFSLATER29,143XXHNBHCAXFBUSHARD32,362XXHNBHCAXFSILVER LAKES1,422XXHNBHCAXFSILVER LAKES1,422XXHNBHCAXFHOPA252XXHNBHCAXFHESPERIA47,103XXHYFKCAXFHESPERIA47,103XX	FRVLCAXF	FARMERSVILLE	1.123	Х			
FWLRCAXFFOWLER4,599XGDLPCAXGGUADALUPE4,096XGGVGCAXFGRANT GROVE215XGLNDCAXFGLENDORA22,086XGLRYCAXFGILROY22,696XGUVLCAXFGLENNVILLE311XGOLTCAXFGOLETA21,315XGRHLCAXFGRANADA HILLS33,232XGRVLCAXFGARBERVILLE1,758XGRVLCAXFGARBERVILLE1,758XHEMTCAXFHEMET48,442XHMLDCAXFHOMELAND16,345XHNBHCAXFSLATER29,143XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXLWARNER18,830XHNBHCAXFSILVER LAKES1,422XHNBHCAXFSILVER LAKES1,422XHNBHCAXAREDONDO40,699XHNBHCAXAREDONDO40,699XHYFKCAXFHAYFORK909X	FTIRCAXF	FORT IRWIN	2.822			Х	
GDLPCAXGGUADALUPE4,096XGGVGCAXFGRANT GROVE215XGLNDCAXFGLENDORA22,086XGLYCAXFGILROY22,696XGLVLCAXFGLENNVILLE311XGOLTCAXFGOLETA21,315XGRHLCAXFGRANADA HILLS33,232XGRVLCAXFGARBERVILLE1,758XGRVLCAXFGARBERVILLE1,758XHEMTCAXFHEMET48,442XHMLDCAXFHOMELAND16,345XHNBHCAXFSLATER29,143XHNBHCAXFSLATER29,143XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXLWARNER18,830XHNBHCAXFSILVER LAKES1,422XHOPACAXFHOOPA252XHRBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X	FWLRCAXF	FOWLER	4,599			х	
GGVGCAXFGRANT GROVE215XGLNDCAXFGLENDORA22,086XGLYCAXFGILROY22,696XGLVLCAXFGLENNVILLE311XGOLTCAXFGOLETA21,315XGRHLCAXFGRANADA HILLS33,232XGRVLCAXFGARBERVILLE1,758XHEMTCAXFHEMET48,442XHMLDCAXFHOMELAND16,345XHNBHCAXFHOMESTEAD VALLEY2,403XHNBHCAXFSLATER29,143XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXLWARNER18,830XHNBHCAXFSILVER LAKES1,422XHNBHCAXFHOPA252XHNBHCAXAREDONDO40,699XHRBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X	GDLPCAXG	GUADALUPE	4.096			X	
GLNDCAXFGLENDORA22,086XGLYCAXFGILROY22,696XGLVLCAXFGLENNVILLE311XGOLTCAXFGOLETA21,315XGRHLCAXFGRANADA HILLS33,232XGRVLCAXFGARBERVILLE1,758XHEMTCAXFHEMET48,442XHMLCAXFHOMELAND16,345XHMVYCAXFHOMESTEAD VALLEY2,403XHNBHCAXFSLATER29,143XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXFSILVER LAKES1,422XHNDLCAXFHOPA252XHNBHCAXAFHOPA40,699XHRBHCAXAREDONDO40,699XHYFKCAXFHAYFORK909X	GGVGCAXF	GRANT GROVE	215			Х	
GLRYCAXFGILROY22,696XGLVLCAXFGLENNVILLE311XGOLTCAXFGOLETA21,315XGRHLCAXFGRANADA HILLS33,232XGRVLCAXFGARBERVILLE1,758XHEMTCAXFHEMET48,442XHMLDCAXFHOMELAND16,345XHNWYCAXFHOMESTEAD VALLEY2,403XHNBHCAXFSLATER29,143XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXFSILVER LAKES1,422XHNBHCAXFSILVER LAKES1,422XHNBHCAXFHOPA252XHNBHCAXFHEONDO40,699XHNBHCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X	GLNDCAXF	GLENDORA	22.086			х	
GLVLCAXFGLENNVILLE311XGOLTCAXFGOLETA21,315XGRHLCAXFGRANADA HILLS33,232XGRVLCAXFGARBERVILLE1,758XHEMTCAXFHEMET48,442XHMLDCAXFHOMELAND16,345XHNBHCAXFSLATER29,143XHNBHCAXFSLATER29,143XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXFSILVER LAKES1,422XHNBHCAXFSILVER LAKES1,422XHNBHCAXFHOPA252XHNBHCAXFHOPA40,699XHNBHCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X	GLRYCAXE	GILROY	22,696			X	
GOLTCAXFGOLETA21,315XGRHLCAXFGRANADA HILLS33,232XGRVLCAXFGARBERVILLE1,758XHEMTCAXFHEMET48,442XHMLDCAXFHOMELAND16,345XHMVYCAXFHOMESTEAD VALLEY2,403XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXLWARNER18,830XHNBHCAXFSILVER LAKES1,422XHOPACAXFHOOPA252XHRBHCAXAREDONDO40,699XHSPRCAXFHAYFORK909X	GLVLCAXE	GLENNVILLE	311		х		
GRHLCAXFGRANADA HILLS33,232XGRVLCAXFGARBERVILLE1,758XHEMTCAXFHEMET48,442XHMLDCAXFHOMELAND16,345XHMVYCAXFHOMESTEAD VALLEY2,403XHNBHCAXFSLATER29,143XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXHBUSHARD32,362XHNBHCAXLWARNER18,830XHNDLCAXFSILVER LAKES1,422XHOPACAXFHOOPA252XHRBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X	GOLTCAXE	GOLETA	21.315			х	
GRVLCAXFGARBERVILLE1,758XHEMTCAXFHEMET48,442XHMLDCAXFHOMELAND16,345XHMVYCAXFHOMESTEAD VALLEY2,403XHNBHCAXFSLATER29,143XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXHBUSHARD32,362XHNBHCAXLWARNER18,830XHNDLCAXFSILVER LAKES1,422XHOPACAXFHOOPA252XHRBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X	GRHI CAXE	GRANADA HILLS	33 232		x	X	
HEMTCAXFHEMET48,442XHMLDCAXFHOMELAND16,345XHMVYCAXFHOMESTEAD VALLEY2,403XHNBHCAXFSLATER29,143XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXHBUSHARD32,362XHNBHCAXLWARNER18,830XHNDLCAXFSILVER LAKES1,422XHOPACAXFHOOPA252XHRBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X	GRVI CAXE	GARBERVILLE	1 758		X	x	
HEIMETHO,HEHO,HEHMLDCAXFHOMELAND16,345XHMVYCAXFHOMESTEAD VALLEY2,403XHNBHCAXFSLATER29,143XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXHBUSHARD32,362XHNBHCAXLWARNER18,830XHNDLCAXFSILVER LAKES1,422XHOPACAXFHOOPA252XHRBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X	HEMTCAXE	HEMET	48 442			×	
HMEDORALHOMEDRARD10,040XHMVYCAXFHOMESTEAD VALLEY2,403XHNBHCAXFSLATER29,143XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXHBUSHARD32,362XHNBHCAXLWARNER18,830XHNDLCAXFSILVER LAKES1,422XHOPACAXFHOOPA252XHRBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X			16 345	x		Λ	
HIMM TOAXIHOMEOTEAD VALLET2,403XHNBHCAXFSLATER29,143XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXHBUSHARD32,362XHNBHCAXLWARNER18,830XHNDLCAXFSILVER LAKES1,422XHOPACAXFHOOPA252XHRBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X		HOMESTEAD VALLEY	2 403	Х	x		
HNBHOAXIBUCHTER20,143XHNBHCAXGHUNTINGTON BEACH24,242XHNBHCAXHBUSHARD32,362XHNBHCAXLWARNER18,830XHNDLCAXFSILVER LAKES1,422XHOPACAXFHOOPA252XHRBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X	HNBHCAXE	SI ATER	2,403		Λ	x	
HNBHCAXGHONTINGTON BEACH24,242XHNBHCAXHBUSHARD32,362XHNBHCAXLWARNER18,830XHNDLCAXFSILVER LAKES1,422XHOPACAXFHOOPA252XHRBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X			20,140			X	
INDRICAXITBOSTIARD32,302XHNBHCAXLWARNER18,830XHNDLCAXFSILVER LAKES1,422XHOPACAXFHOOPA252XHRBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X			24,242		×	^	
HNDLCAXEWARNER10,030XHNDLCAXFSILVER LAKES1,422XHOPACAXFHOOPA252XHRBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X			18 830		×		
HINDLOAXISILVER LARES1,422AHOPACAXFHOOPA252XHRBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X			1 10,000				
HOFACAAFHOOFA252AHRBHCAXAREDONDO40,699XHSPRCAXFHESPERIA47,103XHYFKCAXFHAYFORK909X			1,422		~		
HSPRCAXF HESPERIA 47,103 X HYFKCAXF HAYFORK 909 X			202		× ×		
HYFKCAXF HESPERIA 47,103 X HYFKCAXF HAYFORK 909 X			40,699	X	Ā		
	HSPRCAXE		47,103	X		X	
			909		X	X	



CONFIDENTIAL AND PROPRIETARY PER P.U. CODE § 583, GENERAL ORDER 66-D, & D.16-08-024

		Table 3.7 (page 3 d	of 6)		
			No	Non-FTTP	
CLLI	Wire Center	Population	Broadband	Broadband	FTTP / FiOS
INDICAXG	INDIO	31,667		Х	
INDPCAXF	INDEPENDENCE	308			Х
INYKCAXF	INYOKERN	2,050		Х	
JNLKCAXF	JUNE LAKE	454		Х	
JSTRCAXF	JOSHUA TREE	4.951		X	
KNI DCAXE	KNIGHTS I ANDING	316			х
KNWDCAXE	KENWOOD	879		х	~
KRVI CAXE	KERNVILLE	2 004	x		
		2,001	X	×	
		32 596		Λ	x
		37,030		Y	Λ
		1/ 612		X	
		22 501		~ ~	
		22,301			
		2,100		~	
		17,750		X	X
LGGTCAXF	LEGGEII	231			Х
LKHGCAXF	LAKE HUGHES	1,659		X	
LKISCAXF	LAKE ISABELLA	3,356		Х	
LMCVCAXF	LEMON COVE	191			Х
LMLNCAXF	LOMA LINDA	14,821		Х	
LMPCCAXF	LOMPOC	18,805		Х	
LMPCCAXG	MESA	4,128	Х		
LNBHCAXF	LONG BEACH MAIN	41,854			Х
LNBHCAXG	UPTOWN	30,129		Х	
LNBHCAXH	MARKET	29,793	Х		
LNBHCAXL	MARTIN L KING	18,053	Х		
LNBHCAXM	CLARK	21,344			Х
LNBHCAXS	STADIUM	27,902	Х		
LNBHCAXT	TERMINO	37,405		Х	
LNCSCAXF	ANTELOPE	7,161		Х	
LNCSCAXG	LANCASTER	42,848		Х	
LNDNCAXF	LINDEN	1,273		Х	
LNDSCAXF	LINDSAY	5,523		Х	
LNPNCAXF	LONE PINE	584		Х	
LNWDCAXF	LENWOOD	2.748		Х	
L SAL CAXE	LOS ALAMOS	22		х	
LSGTCAXA	BLOSSOM HILL	8.980		X	
LSGTCAXE	MONTEBELLO	11 291		X	
LSGTCAXG	MOUNTAIN	3 508		X	
		608		X	
		23 484		X	
		۲۵,404 ۲ /71		X	
		J,47   71		A Y	
		1 1	×	^	
		10,103	^		v
		900			A V
		5,728		X	X
		5,207 0,570		Ā	v
MCFACAXF	MCFARLAND	3,576			Х



	Table	e 3.7 (page 4 d	of 6)		
		-	No	Non-FTTP	
CLLI	Wire Center	Population	Broadband	Broadband	FTTP / FIOS
MCKICAXF	MCKITTRICK	79			X
MDRVCAXF		356		X	Х
MECCCAXE	MECCA	2,117		Х	
MENICAXE	MENIONE	9,366	X		
MMLKCAXF	MAMMOTHLAKES	135	X		
MNBHCAXF	MANHATTAN	11,734	X		
MNRVCAXG	MONROVIA	30,834	X		
MNICCAXG	MANIECA	30,620	Х		
MNTTCAXF	MONTECITO	8,559		Х	
MRCPCAXF	MARICOPA	446		Х	
MRHLCAXF	MORGAN HILL	19,639		Х	
MRMNCAXF	MIRAMONTE	259		Х	
MRVYCAXF	MORONGO VALLEY	1,624		Х	
MSCYCAXF	MUSCOY	16,457	Х		
MUGUCAXF	MUGU	14,238	Х		
MURTCAXF	MURRIETA	45,384			Х
NEDWCAXF	NORTH EDWARDS	684			Х
NOVTCAXF	NOVATO	20,223	Х		
NRWLCAXF	NORWALK	29,864			Х
NRWLCAXG	ALONDRA	16,526		Х	
NSHRCAXF	NORTH SHORE	758		Х	
NWBRCAXF	NEWBERRY	1,069		Х	
NWPKCAXF	NEWBURY PARK	18,253			Х
OASSCAXF	OASIS	2,391		Х	
OLNCCAXF	OLANCHA	63		Х	
ONTRCAXF	ONTARIO MAIN	38,545			Х
ONTRCAXG	ONTARIO SOUTH	16,449		Х	
ONTRCAXM	ONTARIO AIRPORT	2,180		Х	
ORCTCAXG	BRADLEY	17,592		Х	
ORLNCAXF	ORLEANS	125			Х
ORMACAXF	ORO LOMA	211		Х	
OXNRCAXF	OXNARD	27,038	Х		
OXNRCAXG	MANTILLA	16,918			Х
PACMCAXF	PACOIMA	27,210			Х
PCPLCAXF	PACIFIC PALISADES	13,438			Х
PCRVCAXF	RIO HONDO	14,200		Х	
PDRYCAXF	DEL REY	46,233			Х
PERSCAXF	PERRIS	33,166			Х
PHLNCAXF	PHELAN	10,257			Х
PIRCCAXF	PIERCY	45	Х		
PLDSCAXF	PALM DESERT	46,087			Х
PLSPCAXG	PALM SPRINGS EAST	47,458		Х	
PNCKCAXF	PINECREEK	614		Х	
PNYNCAXF	PINYON	622			Х
POMNCAXF	POMONA	36,470			Х
PRFDCAXF	PARKFIELD	131		Х	
	SIERRA MADRE				
PSDNCAXF	HASTINGS	2,590			Х



	Tat	ole 3.7 (page 5 d	of 6)		
			No	Non-FTTP	
CLLI	Wire Center	Population	Broadband	Broadband	FTTP / FiOS
QUVYCAXF	QUAIL VALLEY	10,160		Х	
QZHLCAXF	QUARTZ HILL	22,388			Х
RBNSCAXG	ROBBINS	66			Х
RDBHCAXF	EL NIDO	26,369			Х
RDGCCAXG	RIDGECREST	11,362			Х
RDLDCAXF	REDLANDS	32,943			Х
RDLYCAXF	REEDLEY	10,182			Х
RIPNCAXF	RIPON	7.730			Х
RLHLCAXF	ROLLING HILLS	20.390	х		
RNBGCAXE	RANDSBURG	101			х
RNCACAXE	RANCHO CALIFORNIA	33,946	х		
RNMGCAXE	RANCHO MIRAGE	38,552			х
RNSPCAXE	RUNNING SPRINGS	4 003			X
SERNCAXG	SEA RANCH	1,000			X
SI BHCAXE		39,806			×
SI CYCAXE	SALTON CITY	1 707			X
		3 711			X
		12 044	Y		~
SMUVCAVE		12,044	Λ	V	
		20 100			
		30,100	v	^	
		21,001	X	v	
SNBRCAXH		29,375	V	~	
SNBRCAXK		34,814	X	X	
SNBRCAXL	WATERMAN	2,209		X	
SNBRCAXN	Norton	113		X	
SNCYCAXF	SUN CITY	35,544		Х	
SNDMCAXF	SAN DIMAS	17,912	X		
SNFNCAXG	SAN FERNANDO	15,921	X		
SNGRCAXF	SANGER	9,951	Х		
SNJCCAXG	SAN JACINTO	18,680		Х	
SNJQCAXF	SAN JOAQUIN	812		Х	
SNLDCAXF	SUNLAND/TUJUNGA	21,076	Х		
SNMGCAXF	SAN MIGUEL	1,318	Х		
SNMNCAXG	SANTA MONICA	30,981	Х		
SNMNCAXJ	SUNSET	30,720	Х		
SNNGCAXG	SNELLING	300	Х		
SNPLCAXF	SANTA PAULA	12,047	Х		
SNTMCAXF	SANTA MARIA	31,422	Х		
SNYMCAXF	SUNNYMEAD	48,402	Х		
SPLVCAXF	SEPULVEDA	40,630	Х		
SRMDCAXF	SIERRA MADRE	8,109	Х		
STMRCAXF	STRATHMORE	1,524	Х		
SURFCAXF	SURF	2,270	Х		
SVYFCAXF	SQUAW VALLEY	660	х		
SYLMCAXF	SYLMAR	22,045		Х	
TAFTCAXF	TAFT	6,868		Х	
THOKCAXF	THOUSAND OAKS 2	29,061	Х		
THOKCAXH	CONEJO	12,806	Х		



	Table 3.7 (page 6 of 6)					
			No	Non-FTTP		
CLLI	Wire Center	Population	Broadband	Broadband	FTTP / FiOS	
THPLCAXF	THOUSAND PALMS	4,723	Х			
THRMCAXF	THERMAL	1,348	Х			
TMCLCAXG	TEMECULA	1,448		Х		
TMCLCAXH	REDHAWK	14,540	Х			
TMCVCAXH	TIMBER COVE	305	Х			
TPNGCAXF	TOPANGA	3,056	Х			
TRNCCAXF	DEL AMO	16,180		Х		
TRNCCAXG	PALOS VERDES	21,011		Х		
TRNQCAXF	TRANQUILITY	322		Х		
TRONCAXF	TRONA	1,448		Х		
TVVYCAXF	TIVY VALLEY	1,495		Х		
TWPLCAXF	TWENTYNINE PALMS	8,692	Х			
TWPLCAXG	MARINE PALMS	1,504		Х		
UPLDCAXF	UPLAND	40,853		Х		
VLVSCAXF	VALLE VISTA	8,652		Х		
VTVLCAXA	VICTORVILLE	50,221		Х		
WEMRCAXF	WEIMAR	1,247		Х		
WHTNCAXF	WHITEHORN	767		Х		
WHTRCAXF	WHITTIER SOUTH	28,951	Х			
WHTRCAXG	WHITWOOD	16,834		Х		
WHTRCAXH	VALLEY VIEW	20,859	Х			
WHTRCAXJ	PICO	21,309		Х		
WLANCAXF	WEST LOS ANGELES	30,523	Х			
WLANCAXG	WESTWOOD	19,101	Х			
WLANCAXH	BUNDY WLA	28,845	Х			
WLANCAXJ	UNIVERSITY	9,224	Х			
WLDNCAXF	WELDON	1,434		Х		
WLNTCAXF	WALNUT	21,539	Х			
WMNSCAXF	WESTMINSTER	59,132	Х			
WRWDCAXF	WRIGHTWOOD	2,893		Х		
WVVLCAXG	WEAVERVILLE	2,031		Х		
WWCKCAXF	WILLOW CREEK	888		Х		
YCVYCAXG	YUCCA VALLEY	12,566		Х		
YERMCAXF	YERMO	929	Х			
YUCPCAXF	YUCAIPA	17,317	Х			
Source: Frontier	Responses to DR-02F, D	R-05F				

For most of the 114 Frontier wire centers that have been substantially upgraded to FTTP, the FTTP deployment generally covers all, or nearly all, of the area served by each wire center. Figure 3.7 provides an example of this approach for the Long Beach exchange, which consists of seven (7) wire centers. Only one of these – LNBHCAXF (Long Beach Main) was included among the 55 Verizon wire centers identified as having been equipped to provide *FiOS*. Therefore, it would appear that the other six Long Beach wire centers have been upgraded in the 2-1/2 years following the Frontier takeover of the company.





Figure 3.7. Frontier Distribution Area Technology – Long Beach wire centers



## **AT&T** California

Unlike Verizon, AT&T has never committed to a massive FTTP deployment, although some FTTP plant has been constructed in limited portions of a small number of AT&T California wire centers. "Broadband Availability" data compiled by the CPUC's Communications Division indicates the extent to which each category of broadband technology is available to households served by AT&T, as summarized in Table 3.8 below:

	<b>T</b> 1 1 0 0					
HOUSEHOLDS	AT WHICH SOME FORM OF "E IS CURRENTLY AVAILAE	BROADBAND" BLE	SERVICE			
Technology category	Maximum Download data rate	HHs Passed by AT&T	Pct of HHs Passed by AT&T			
10-Asymmetric xDSL	8 mbps, slower at longer distances from CO	8,772,860	49.3%			
11-ADSL2, ADSL2+	Less than 20 mbps at 600 meters from CO or RT with FTTN, much slower at longer distances	2,199,568	12.4%			
12-VDSL Mbps	>50 mbps at less than 300 meters from CO or RT with FTTN, much slower at longer distances	6,498,204	36.5%			
50-Optical Carrier/Fiber to the end user	> 1 gbps	315,295	1.8%			
Total homes passed by AT&T		17,785,928	100%			
Source: California PUC B	roadpand Availability Database, as of De-	cemper 31, 2016.				

Note that out of nearly 17.8-million homes passed within AT&T California's operating areas, only about 315,000, or 1.8%, are currently served with fiber-to-the-premises technology. U-verse branded services (digital voice, Internet access, and IPTV) are available in wire centers that have been upgraded to support download datarates in Technology Categories 11 (ADSL2, ADSL2+), 12 (VDSL Mbps) and 50 (Optical Carrier). Due to the relatively short distance limits associated with categories 11 and 12, these services generally require deployment of FTTN so as to keep the lengths of the copper distribution segment relatively short. Figure 3.8 illustrates how distance between the CO or Node and the end user affects the download speeds that ADSL2, ADLS2+ and VDSL are capable of supporting:





**Figure 3.8.** Relationship between the maximum download data rate and the length of the copper distribution segment of a subscriber line between the Central Office or Node and the end user.

The distribution of broadband technology and service availability is highly variable across the state, with Asymmetric DSL having the greatest availability (49%) and FTTP having the least availability (1.8%). Table 3.9 summarizes the availability of broadband to households within each California county in which AT&T provides service. Notably, the county with the highest FTTP penetration – Santa Clara – is still at only 7.6%, while its neighbor in Silicon Valley – San Mateo – shows FTTP penetration at 0.0%.



	Table 3.9				
	A T 0 -				
				TEGORY	
A		BAND BT TEC	Percent of Hous	eholds Served	
	Households	Cat. 10	Cat. 11	Ca. 12	Cat. 50
County	Passed by AT&T	Asym DSL	ADSL2/2+	VDSL	FTTP
ALAMEDA	1,085,222	49.4%	3.3%	46.0%	1.3%
ALPINE	137	50.0%	50.0%	0.0%	0.0%
AMADOR	13,153	49.1%	50.9%	0.0%	0.0%
BUTTE	125,569	49.5%	50.5%	0.0%	0.0%
CALAVERAS	16,186	49.3%	50.7%	0.0%	0.0%
COLUSA	1	100.0%	0.0%	0.0%	0.0%
CONTRACOSTA	757,035	50.0%	7.9%	40.8%	1.3%
EL DORADO	92,288	48.8%	27.2%	23.1%	0.8%
FRESNO	477,523	49.3%	9.5%	38.0%	3.1%
GLENN	15,232	50.0%	49.4%	0.6%	0.0%
HUMBOLDI	72,595	49.3%	50.7%	0.0%	0.0%
	80,199	51.7%	48.3%	0.0%	0.0%
KERN	398,648	48.4%	13.7%	34.8%	3.1%
KINGS	64,462	50.8%	21.2%	28.0%	0.0%
	36,596	50.0%	49.2%	0.1%	0.0%
LOS ANGELES	4,084,608	49.7%	16.2%	32.8%	1.3%
	53,214 167,940	49.0%	10.4%	39.7%	0.9%
	1 101	50.1% 20.1%	14.3%	35.0%	0.0%
MARIPOSA	1,121	38.1% 50.2%	00.5%	1.5%	0.0%
MERCED	30,045	50.5% 40.1%	49.7%	0.0%	0.0%
MONTEDEY	222 770	49.1/0	17.0/0	30.9%	2.2 /0
	222,170	40.0 %	0.5%	30.4 // 10 5%	0.9%
	50 588	49.3%	9.5%	40.5%	0.8%
	1 503 580	50.278	49.1%	37.0%	1.5%
	1,505,509	J0.1%	20.0%	27.9%	1.3%
	120,000	40.4 <i>%</i>	20.3%	0.0%	0.0%
RIVERSIDE	378 636	47.6%	1.0%	48.6%	2.8%
SACRAMENTO	752.060	48.9%	5.3%	40.0%	3.1%
SANBENITO	27 855	46.8%	8.3%	44.9%	0.0%
SAN BERNARDINO	235,320	40.0%	2.3%	48.8%	1.5%
SAN DIEGO	2 078 288	49.3%	3.8%	45.5%	1.0%
SAN FRANCISCO	727 547	50.0%	27.5%	21.5%	0.9%
SAN JOAQUIN	331,625	48.4%	6.3%	42.4%	2.9%
SAN LUIS OBISPO	161.985	51.8%	48.1%	0.2%	0.0%
SAN MATEO	494.355	49.5%	7.4%	43.1%	0.0%
SANTA CLARA	1.046.283	47.8%	4.3%	40.2%	7.6%
SANTA CRUZ	167.406	49.8%	31.6%	18.6%	0.0%
SHASTA	82.947	48.2%	51.8%	0.0%	0.0%
SIERRA	387	42.2%	57.8%	0.0%	0.0%
SISKIYOU	19,343	50.1%	49.9%	0.0%	0.0%
SOLANO	256,122	47.5%	4.8%	46.7%	1.0%
SONOMA	339,147	48.6%	8.9%	42.2%	0.3%
STANISLAUS	289,206	49.2%	7.6%	41.5%	1.7%
SUTTER	56,833	49.6%	9.2%	40.3%	1.0%
TEHAMA	29,418	50.4%	49.6%	0.0%	0.0%
TULARE	200,739	49.9%	19.8%	28.1%	2.2%
TUOLUMNE	20,257	50.0%	49.5%	0.5%	0.0%
VENTURA	230,055	49.0%	18.0%	32.7%	0.3%
YOLO	133,185	48.8%	6.7%	42.1%	2.4%
YUBA	38,403	48.3%	9.9%	40.7%	1.1%
Statewide	17,785,928	49.3%	12.4%	36.5%	1.8%



Figure 3.9 contains a series of maps showing the deployment of FTTP and other broadband technologies in selected AT&T California wire centers. Figure 3.9a below provides the legend common to all of these maps. Figures 3.9b and 3.9c illustrate the spotty deployment of FTTP in two Silicon Valley wire centers, Mountain View and San Carlos. A number of distribution areas (pink coloring) in the Mountain View wire center (where Google's headquarters is located), have been upgraded to FTTP. Most other parts of the Mountain View wire center serving area employ FTTN technology (yellow) involving fiber optic feeder cables deployed to Remote Terminals in various distribution areas, then connected to individual customer premises by traditional twisted pair copper, or copper feeder and distribution technology (green and blue).

AT&T has never committed to deploying FTTP on a large scale, although the company has constructed FTTP at a small number of customer locations in the state. Overall, only 1.8% of homes passed by AT&T California have been upgraded with FTTP.



Figure 3.9a. AT&T distribution area technology map legend





Figure 3.9b. AT&T Distribution Area Technology – Mountain View





Figure 3.9c.. AT&T Distribution Area Technology – San Carlos

AT&T's FTTP deployment is spotty at best. In some areas, e.g., San Diego and Bakersfield, there is a fair amount of FTTP in place (see Figures 3.9d and 3.9e). There is FTTP available in portions of the Los Angeles area (see Figure 3.9f) but still larger areas remain served by copper distribution and in many cases copper feeder as well. FTTP deployment in Oakland and the East Bay (Figure 3.9g) and in San Francisco (Figure 3.9h) has been minimal, even in central business areas.





Figure 3.9d. AT&T Distribution Area Technology - San Diego



Figure 3.9e. AT&T Distribution Area Technology - Bakersfield





Figure 3.9f. AT&T Distribution Area Technology – Los Angeles area



Figure 3.9g. AT&T Distribution Area Technology – Oakland / East Bay





Figure 3.9h. AT&T Distribution Area Technology - San Francisco

### **Summary and Conclusions**

While this Study's primary focus is infrastructure and service quality associated with legacy basic analog voice residential telephone service ("POTS"), broadband facilities, where present, are used to provide POTS services. As we discuss in Chapters 4A and 4F below, ETI has determined that wire centers that have been upgraded with fiber optic facilities – either FTTN (as is primarily the case with AT&T) or FTTP (as Verizon/Frontier has done) – offering the capability to provide some type of high-speed broadband service, are achieving better POTS service quality performance scores in virtually every category – lower numbers of Trouble Reports, higher percentages of out-of-service conditions that are being resolved within 24 hours – a key performance standard identified in General Order 133-C/D – and where out-of-service situations arise, their average durations are in all cases decidedly shorter.



Table 3.10 below summarizes the availability of fiber optic facilities capable of supporting high-speed broadband services and other types of lower-speed DSL broadband services to existing POTS customers as of the end of the study period in December 2017.

Table 3.10				
FIBER-EQUIPPED AND LOW-SPEED DSL AVAILABILITY ILEC CENTRAL OFFICES AND LINES IN SERVICE AS OF DECEMBER 2017				
	AT&T	Frontier	Both	
Total Central Offices	612	263	875	
Central Offices with fiber broadband (FTTN or FTTP)	308	114	422	
Central Offices with DSL	249	7	256	
Central Offices with no fiber broadband or DSL	55	151	619	
Total Lines in Service	2,245,171	824,079	3,069,250	
Lines in Central Offices with fiber broadband	1,851,355	537,895	2,389,250	
Lines in Central Offices with DSL	368,342	5,251	373,593	
Lines in Central Offices with no fiber broadband or DSL	25,474	280,933	2,695,657	
Pct of Central Offices with fiber broadband	50.33%	43.35%	48.23%	
Pct of Central Offices with DSL	40.69%	2.66%	29.26%	
Pct of Central Offices with no fiber broadband or DSL	8.99%	57.41%	70.74%	
Pct of Lines in Central Offices with fiber broadband	82.46%	65.27%	77.84%	
Pct of Lines in Central Offices with DSL	16.41%	0.64%	12.17%	
Pct of Lines in Central Offices with no fiber broadband or DSL	1.13%	34.09%	87.83%	
Sources: AT&T CA Response to Data Request GR1_1.1_ATT_Fiber; CD Staff availability; Frontier CA Responses to DR-02F, DR-05F Attachment 4. Note: M to-the-Node ("FTTN"); all Frontier fiber-equipped central offices are Fiber-to-the	compilation of ATa lost AT&T fiber-eq -Premises ("FTTP	&T COs with Bro- juipped central of ").	adband (DSL) ffices are Fiber-	

As shown, some 98.9% of AT&T California POTS customers as of December 2017 had access to some form of broadband service, either fiber-to-the-node (FTTN) broadband or DSK; for Frontier, the percentage of POTS lines with access to some form of broadband, either fiber-to-the-premises (FTTP) or DSL, was lower, at 83.8%. Note that the quantities and percentages shown in Table 3.10 refer to *POTS lines in service* as of the end of 2017, and do not include customers who had already migrated to other non-POTS ILEC offerings that included both voice and broadband (Internet access and/or IPTV). A higher proportion of AT&T California customers (82.5% vs. 61.4% for Frontier)) had access to services furnished via fiber optic facilities, although the vast majority of these (for AT&T) were FTTN, vs. FTTP for Frontier. Only 1.13% of AT&T California customers had no broadband access at all, whereas 16.2% of Frontier customers were not being afforded access to any type of ILEC-provided broadband, even at very low speeds.

As noted, fiber upgrades also provide ancillary benefits to basic POTS customers. However, because broadband services are not regulated, carriers are under no legal obligation to pursue



such upgrades. Thus, from the carrier's perspective, the decision to invest is driven mainly by competitive and financial considerations that have little direct bearing upon improving service to legacy POTS customers.

Broadband upgrades provide service quality benefits to basic POTS customers, but a carrier's decision to invest in broadband is driven mainly by factors that have little direct bearing upon improving service to legacy POTS customers. California ILECs are under no legal obligation to invest in broadband, but fines imposed pursuant to GO 133-D, if scaled correctly with respect to the extent of the shortcoming, have the potential to provide the necessary incentives to encourage such investments.

In August 2016, the CPUC issued a revised GO 133-D that imposes financial penalties upon ILECs that persistently fail to meet minimal POTS service quality standards. GO-133-D §§9.3, 9.4 and 9.5 provide for escalating daily fines where a carrier's failure to meet the required service standards persists for an extended period of time.<sup>61</sup> As of November 8, 2018, the first fines that have thus far been imposed upon AT&T California have totaled \$2.2-million, and for Frontier, cumulative fines have summed to \$759,833.<sup>62</sup> However, §9.7 offers offending carriers an "Alternative Proposal for Mandatory Corrective Action" whereby carriers can avoid the fine by submitting "a request to suspend the fine." Under this provision,

... carriers may propose, in their annual fine filing, to invest no less than twice the amount of their annual fine in a project (s) which improves service quality in a measurable way within 2 years. The proposal must demonstrate that 1) twice the amount of the fine is being spent, 2) the project (s) is an incremental expenditure with supporting financials (e.g. expenditure is in excess of the existing construction budget and/or staffing base), 3) the project (s) is designed to address a service quality deficiency and, 4) upon the project (s) completion, the carrier shall demonstrate the results for the purpose proposed.<sup>63</sup>

Carriers can avoid fines either by meeting the GO-133-D §3 performance standards or by investing in network upgrades that will result in improved service quality overall. These investments must, however, be directed specifically at services that fall within the scope of GO 133-D, i.e., legacy circuit-switched voice lines. Both companies have sought approval for an alternative proposal for mandatory corrective action under § 9.7. It will thus be some time before the results of the alternative to fines as offered under §9.7 can be determined and fully evaluated.

63. GO 133-D, §9.7.



<sup>61.</sup> D.16-08-021 (R.11-12-001), Adopted Aug. 18, 2016; Effective Aug. 18, 2016; Except Section 9 on fines, which is effective Jan. 1, 2017.

<sup>62.</sup> Resolution T-17625 (re AT&T), issued November 8, 2018; Resolution T-17631 (re Frontier), issued November 8, 2018.

# **4** ILEC RESPONSES TO SERVICE OUTAGES

### Key findings addressed in this Chapter

- ETI's analysis of the condition of AT&T and Frontier's networks in California is, among other things, based upon the approximately eight million Customer Trouble Report records submitted by the two companies over the 2010-2017 Study Period.
- The source of most service outages is being attributed by the ILECs to weather-driven and other failures in outside plant rather than to their central office switches or associated equipment.
- Telephone service outages appear to be highly dependent upon weather conditions, specifically, the amount of precipitation in the area served.
- The strong relationship between rainfall and the rate of service outages provides a strong indication that the AT&T distribution network is not as robust as it needs to be, and lacks the resiliency to withstand significant weather events.
- FCC data indicate that, for California, the demand for all wireline voice services provided by all carriers combined decreased by 30.1%, from 20.9 million in 2008 to 14.6 million in 2016. During the same period, the number of wireless subscriptions in California increased by 32.7%, from 32.2 million to 42.7 million. Overall, there are 3.4 million more wireless subscriptions than the total population in California, which was 39.3 million people at the end of 2016.
- The decline in customer demand for legacy POTS over the 2010-2017 period has been greatest in the larger, more metropolitan wire center areas. These same metropolitan area wire centers also exhibit the highest levels of service quality and greatest availability of alternative wireless and broadband services.
- Over the full period, there has been a net increase of approximately 15.5% in the trend of OOS incidents per 100 POTS lines in service over the full study period.



# ILEC RESPONSES TO SERVICE OUTAGES

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#### Introduction: Organization of this Chapter

Chapter 4 is organized into three sections. The first, Chapter 4, provides a general overview of the Commission's Trouble Report and Out-of-Service reporting requirements, the types of data that has been submitted by AT&T California and by Verizon/Frontier California in response thereto, and a general description of the types of analyses that ETI has undertaken with respect to these submissions.

The second section, Chapter 4A, provides our detailed analysis of AT&T Trouble Report and Out-of-Service performance over the 2010-2017 study period. The third section, Chapter 4F, provides out analysis of the Verizon California (pre-sale) and Frontier California (postacquisition) service quality reporting and performance.

#### Data collection and reporting pursuant to General Order 133-C and subsequent 133-D

General Order ("GO") 133-C was adopted by Decision (D.) 09-07-019 effective as of July 9, 2009, in Rulemaking (R.) 02-12-004, to become effective for purposes of service quality reporting as of January 1, 2010.<sup>64</sup> GO 133-C, in relevant part, requires that all "facilities-based URF [Uniform Regulatory Framework<sup>65</sup>] Carriers with 5,000 or more customers" report various service quality performance metrics on a monthly basis and submitted quarterly to the Commission. Both Pacific Bell (d/b/a AT&T California, hereinafter "AT&T") and Frontier California (formerly Verizon California, hereinafter "Frontier"), are "facilities-based URF Carriers with 5,000 or more customers" and are thus subject to this requirement. Under the provisions of GO-133-C §§ 3.3(c) and 3.4(c), both AT&T and Frontier (Verizon) have been obligated to provide reports as well as the underlying ("raw") trouble ticket data on all customer Trouble Reports and Out-of-Service records occurring on and after January 1, 2010.<sup>66</sup> In August 2016, the CPUC, by D.16-08-021 in R.11-12-001, adopted GO 133-D as a revision to the prior version of the same General Order.<sup>67</sup>

66. G.O. 133-C, §§ 2, 3.

67. Order Instituting Rulemaking to Evaluate Telecommunications Corporations Service Quality Performance and Consider Modification to Service Quality Rules, R. 11-12-001, Decision Adopting General Order 133-D, D.16-08-021 August 18, 2016.



<sup>64.</sup> Order Instituting Rulemaking into the Service Quality Standards for All Telecommunications Carriers and Revisions to General Order 133-B, R. 02-12-004, D. 09-07-019 issued and effective as of July 9, 2009.

<sup>65.</sup> Order Instituting Rulemaking on the Commission's Own Motion to Assess and Revise the Regulation of Telecommunications Utilities, R.05-04-005, *Opinion*, D.06-08-030, August 24, 2006.

GO 133-C §3.3. Customer Trouble Reports – Applies to ... facilities-based URF Carriers with 5,000 or more customers ... Trouble reports apply to residential and small business customers (those that purchase five or fewer lines).

- a. Description. Service affecting, and out of service trouble reports, from customers and users of telephone service relating to dissatisfaction with telephone company services. Reports received will be counted and related to the total working lines within the reporting unit in terms of reports per 100 lines.
- b. Measurement. Customer trouble reports received by the utility will be counted monthly and related to the total working lines within a reporting unit.
- c. Minimum Standard Reporting Level. Report number of trouble reports per 100 working lines (excluding terminal equipment reports). ... Six trouble reports per 100 working lines for reporting units with 3,000 or more working lines, eight reports per 100 working lines for reporting units with 1,001-2,999 working lines, and 10 reports per 100 working lines for reporting units with 1,000 or fewer working lines.
- d. Reporting Unit. Exchange or wire center, whichever is smaller. A wire center with fewer than 100 lines should be combined with other central offices within the same location. A remote switching unit with fewer than 100 lines should also be added to its host switch. URF CLECs that do not have exchanges or wire centers shall report at the smallest reporting unit. All reporting carriers shall submit the raw data included in the report.
- e. Reporting Frequency. Compiled monthly, reported quarterly.

GO 133-C §3.4. Out of Service Repair Intervals – Applies to ... facilities-based URF Carriers with 5,000 or more customers ....

- a. Description. A measure of the average interval, in hours and minutes from the time of the reporting carrier's receipt of the out of service trouble report to the time service is restored for residential and small business customers.
- b. Measurement. Commitment is measured by taking the total number of the repair tickets restored within less than 24 hours divided by the total outage report tickets. In addition, the system average outage duration is measured by summing each repair interval, expressed in clock hours and minutes, between the time the customer called to report loss of service and when the customer regains dial tone, divided by the total outage report tickets. These measurements include only residential and small business customer tickets. The measurements exclude Sundays and federal holidays and tickets when maintenance is delayed due to circumstances beyond the carrier's control. Typical reasons for delay include, but are not limited to: outage caused by cable theft, thirdparty cable cut, lack of premise access when a problem is isolated to that location, absence of customer support to test facilities, or customer's requested appointment. Changed appointments shall be reported separately by identifying the number of such appointments and the time, in hours and minutes, associated with these appointments. When reporting includes a delay for one or more months, the carrier shall provide supporting information as to why the month should be excluded and work papers that show the date(s) of the catastrophic event and/or widespread outage and how the adjusted figure was calculated. A catastrophic event, an event where there is a declaration of a state of emergency by a federal or state authority, and a widespread service outage (an outage affecting at least 3% of the carrier's customers in the state) are circumstances beyond the carrier's control.



- c. Minimum Standard Reporting Level. 90% of all out of service trouble reports within 24 hours is the set minimum standard. Both the percentage of outages meeting the 24-hour standard and the actual system-wide average outage duration should be reported.
- d. Reporting Unit. Reporting is at the state-wide level. However, carriers shall submit with the report the underlying data at the exchange or wire center level, whichever is smaller, that supports the information being reported. A wire center with fewer than 100 lines should be combined with other central offices within the same location. A remote switching unit with fewer than 100 lines should also be added to its host switch. URF CLECs that do not have exchanges or wire centers shall report at the smallest reporting unit. All reporting carriers shall submit the raw data included in the report.

e. Reporting Frequency. Compiled monthly and reported quarterly for those reporting units.

As it pertains to the subject matter of this Network Study, GO 133-D §3.4(b), Measurement, is revised to include an expanded enumeration of causes resulting in Out-of-Service conditions that are beyond management's control. A new §9 has been added setting forth fines to be imposed upon carriers under certain protracted or excessive Out-of-Service conditions other than those caused by factors beyond management's control. GO-133-D became effective as of August 18, 2016, except for §9 (fines), which became effective as of January 1, 2017. Since at least 6 years and 7 months out of the total of 8 years under examination were subject to GO-133-C, the analysis provided here is based upon the reporting requirements of that earlier version of the General Order. The nearly eight million individual Trouble Report data records submitted by AT&T and Verizon/Frontier over the period provided a solid basis for ETI's comprehensive assessment of the condition of the ILECs' California networks and their performance in maintaining service quality and in responding to service problems.



ETI's analysis of the condition of AT&T and Frontier's networks in California is, among other things, based upon the approximately eight million Customer Trouble Report records submitted by the two companies over the 2010-2017 Study Period.

## Trouble Reports, in general

A Trouble Report (also referred to as a Trouble Ticket) is generally created when a customer contacts the telephone company to report a service problem. Service problems arise from any number of conditions, many of which fall outside of the responsibility of the ILEC or can be easily resolved by means of a help desk or technical support function. For example, a customer might be encountering difficulty using a custom calling feature such as three-way calling, voice mail, or caller id (where the calling number is displayed on a device owned by the customer and connected to the ILEC network). Although a Trouble Ticket may be created in such situations, they are typically resolved quickly by providing assistance to the customer as to how the feature operates and how to use it.



In other cases, the customer might be experiencing a service problem that is the result of faulty inside wiring or customer premises equipment (CPE), such as a problem with a handset owned by the customer. Here, the telephone company is often able to test the customer's access line remotely and can frequently determine whether the problem is on the customer or the utility side of the demarcation, typically the Standard Network Interface ("SNI") that is installed on the customer's premises that isolates the drop wire from the customer premises inside wiring.

If the problem is identified as occurring on the customer's side of the demarcation and the customer has purchased an inside wire or CPE maintenance plan from the utility, a service appointment may be made and a technician sent to the customer's premises to make the repair. If the customer has not purchased an inside wire or CPE maintenance plan but asks for an on-site repair visit, the customer will be advised that charges will apply if the technician determines that the fault is on the customer's side of the demarcation.

GO 133-C/D established minimum standards and reporting levels for service on the network side of the demarcation. Not all network problems reported by a customer constitute out-of-service conditions. For example, the customer may report noise on the line, but is still able to originate and receive calls. For those that do involve an out-of-service condition, the Trouble Report record includes an "out-of-service indicator" as well as the date/time when the outage is reported and the date/time when it is ultimately cleared. From these date/time stamps, we are able to create a range of metrics regarding the duration of the out-of-service condition. ETI has developed a series of such metrics, as are summarized in Table 4.1 below:

Table 4.1						
QUANTITIES OF TROUBLE REPORTS AND ACTUAL OUT-OF-SERVICE CONDITIONS JANUARY 2010 THROUGH DECEMBER 2017						
Condition	AT&T	Verizon/Frontier				
Trouble Reports – all types	6,219,742	1,736,815				
Out-of-Service – all types	5,001,270	1,201,469				
Out-of-Service – less than one (1) hour	328,357	137,921				
Out-of-Service – more than one (1) hour	4,672,913	1,063,548				
Out-of-Service – more than 6 hours	3,814,579	835,938				
Out-of-Service – more than 12 hours	3,541,959	762,873				
Out-of-Service – more than 24 hours	2,480,593	505,176				
Out-of-Service – more than 1 week	272,465	62,708				
NOTES: (1) AT&T did not provide records of non-OOS Trouble Reports in 20 (2) Some post-acquisition Frontier data may not include non-OOS Trouble Re	10 ports					

Table 4.1 provides counts for all types of Trouble Reports and Out-of-Service conditions. However, GO-133-C/D allow adjustments and exclusions where the OOS condition, or some portion of it, is considered to be beyond management's control.



One such situation arises where the outage commences, ends, or includes a Sunday or a legal holiday. For example, if an outage is reported at 10am on a Friday and is cleared at 3pm the following Monday, the total duration of the outage (77 hours) is adjusted to exclude the 24 Sunday hours, putting the "official" outage duration for this example at 53 hours (i.e., 77–24). From the customer's perspective, however, the duration was 77 hours, not 53. ETI has analyzed and organized the OOS metrics using both the "actual" and "CPUC" durations. Table 4.2 provides OOS counts based upon the adjusted "CPUC" durations. Notably, even after removing these "excluded" Sunday/Holiday hours, both ILECs still fell far short of meeting the GO 133-C/D requirement that 90% of outages be cleared within 24 hours.

Table 4.2 QUANTITIES OF TROUBLE REPORTS AND OUT-OF-SERVICE CONDITIONS ADJUSTED TO EXCLUDE SUNDAYS AND HOLIDAYS PER GO 133-C/D JANUARY 2010 THROUGH DECEMBER 2017						
Condition	AT&T	Verizon	Frontier			
Trouble Reports – all types	6,219,742	1,575,920	124,185			
Out-of-Service–all types	5,001,270	1,083,067	91,626			
Excluded due to cause beyond management's control	830,780	161,938	3,247			
Out-of-service conditions within management's control	4,170,490	921,130	88,379			
Out-of-Service-less than one (1) hour	31,805	136,943	706			
Out-of-Service-more than one (1) hour	3,852,439	946,124	90,920			
Out-of-Service-more than six (6) hours	3,101,288	734,828	78,349			
Out-of-Service-more than twelve (12) hours	2,873,377	669,946	71,936			
Out-of-Service-more than twenty-four (24) hours	1,954,453	441,439	49,155			
Out-of-Service-more than one (1) week	194,104	42,307	3,480			
NOTES: (1) AT&T did not provide records of non-OOS Trouble Reports in 2010 (2) Some post-acquisition Frontier data may not include non-OOS Trouble Reports						

In addition to the Sunday/Holiday adjustments, certain out-of-service conditions "when maintenance is delayed due to circumstances beyond the carrier's control," such as "outage caused by cable theft, third-party cable cut, lack of premise access when a problem is isolated to that location, absence of customer support to test facilities, or customer's requested appointment" have also been treated as "excluded" even though, from the customer's perspective, the service is nevertheless not functioning.<sup>68</sup> ETI does not believe that it is appropriate to entirely exclude all instances where the customer has requested an appointment date/time at the customer's convenience. Instead, the delay in the ultimate restoration of service attributable to the additional time needed to satisfy the customer's request for an appointment should be

<sup>68.</sup> GO 133-C/D, at §3.4.


adjusted out of the total out-of-service duration; ETI has been advised that such an adjustment is already reflected in the "CPUC Duration" calculation provided on the raw Trouble Report data.

Each Trouble Report record also includes a "Cause Code." Notably, the "cause" of nearly one-third (1.37-million) of all AT&T out-of-service conditions was coded as "Unknown – Trouble condition cannot be determined" Another 16.8% of AT&T out-of-service conditions were attributed to "Heavy Rain," "Weather," "Moisture," or "Wet Plant." More than 40% are attributed to problems with "ILEC Plant or Equipment," although there is no detail as to exactly what type(s) of ILEC Plant and Equipment are at fault. The AT&T Cause Codes that arise most frequently are summarized in Table 4.3. In determining whether an individual record should be "excluded," ETI has relied upon the "Excluded" flag rather than the Cause Code.

Table 4.3										
MOST COMMON AT&T CAUSE CODES AND THE NUMBER OF OCCURRENCES 2010-2017										
Cause code and description	Occurrence									
300 ILEC Plant or Equipment	2,089,225									
600 Unknown – Trouble condition cannot be determined	1,367,019									
421 Heavy rain	474,887									
310 Overload – excessive demand	303,759									
400 Weather	128,518									
319 Wet plant not storm-related	124,815									
100 Caused or overlooked by AT&T Employee	113,706									
420 Moisture	112,706									
322 Out of Adjustment	109,881									
541 Out of Adjustment	95,929									
304 Plant Conditioning	95,253									
204 Customer request to move or remove equipment	77,694									
120 Outage caused by ILEC employee during outside plant construction	65,759									
550 Damage to plant caused by animals or insects	56,697									
313 (Cause code not defined)	55,112									
NOTE: AT&T did not provide records of non-OOS Trouble Reports in 2010	-									

It appears that all of these most common Cause Codes refer to failure in outside plant, not to central office switch or associated equipment. In Chapter 3 above, we noted that both carriers' central office switch inventories are quite old, some in the 20-30 year old range. Despite their age and reliance upon generations-old computer technology, these ancient switches do not appear to be the source of many, if any, recorded service outages.



Following the exclusions of trouble conditions deemed beyond the utility's control, the AT&T dataset consisted of 4,170,490 remaining out-of-service records, 921,130 for Verizon, and 88,379 for Frontier.



The source of most service outages is being attributed by the ILECs to weather-driven and other failures in outside plant rather than to their central office switches or associated equipment.

### The "raw" Trouble Report data

As noted, GO 133-C/D requires the URF ILECs to provide the underlying ("raw") Trouble Report data for every service-related contact initiated by a customer. This "raw data" is used by the ILEC to prepare the quarterly Trouble and Out-of-Service reports that are required by GO 133-C/D. Over the period January 2010 through and including December 31, 2017, AT&T provided the Commission with approximately 6.1-million individual Trouble Report records, roughly 5.0-million of which were associated with Out-of Service ("OOS") conditions of varying lengths. Prior to the transfer of Verizon California to Frontier on April 1, 2016, Verizon California had provided approximately 1.6-million individual out-of-service data records to the CPUC covering the period from January 2010 through December 2015. After the transfer, Frontier California provided the Commission with the last three months (January - March 2016) of Verizon out-of-service records (approximately 0.2-million). Subsequently, Frontier provided an additional 1.5-million out-of-service records covering the period April 2016 through December 2017. Variations in content and format over the 96 months included in these datasets required that the individual trouble report data be refined and made comparable over the full time frame. While the specific formats and content of the individual Trouble Report and Out-of-Service data records differed, all provided some form of the following elements, shown in Table 4.4 below.



	Table 4.4										
PRINCIPAL TROU	JBLE REPORT DATA ELEMENTS										
Element	Description										
Trouble Ticket	Serial number assigned to Trouble Ticket										
Billing Telephone Number											
Circuit ID	Usually the billing telephone number except for multiline customers										
Wire Center	6-digit AT&T wire center code or industry standard Common Language Location Identification (CLLI) code										
Class of Serv Name	Residential or Business customer										
Receive Date Time	Date/Time trouble report was received by the ILEC										
Receive Day of Week Number	Day of week that report was received										
Restored Date'/Time	Date/Time when service was restored										
Closed Date/Time	Date/Time when trouble ticket was closed										
Cause Code											
Disposition Code											
Out of Service Indicator	"1" if service was interrupted; "0" if other type of trouble condition										
CPUC Receipt to Clear Duration	Date/time of restoration as adjusted for Sundays/holidays										
Request Flag	Indication that customer has requested a specific appointment time for on-site visit; used to adjust actual duration for any customer-initiated delay										
Excluded for cause code	Excluded ticket / not within carrier's control										
Hours to Clear	Computed actual duration										
Adjusted Hours to Clear	Computer duration adjusted for Sundays/Holidays, customer appointment request, or other source of delay in restoration										

### The California ILEC Market Environment

Both AT&T and Frontier provide basic local telephone service across extensive geographic footprints throughout California. AT&T operates 615 wire centers, and provides service in 51 of the State's 58 counties. Frontier operates some 270 wire centers, and provides service in 26 counties. Both companies have experienced a massive erosion of the legacy circuit-switched local "Plain Old Telephone Service" ("POTS") customer base over the eight year period covered by this Study. This erosion has been driven by a number of factors, including actions of the two companies and their affiliates:

• In the residential market, demand for POTS has eroded due to the growth of competitive wireline offerings – primarily from cable TV multi-system operators ("MSOs") who provide bundles of basic wireline voice telephone service, broadband Internet access, and a variety of video programming packages.



- The two ILECs have introduced and heavily promoted similar service bundles of their own under the brand names of *U-verse* (AT&T) and *FiOS* (Verizon, now Frontier). In 2015, AT&T acquired the satellite television provider DirecTV,<sup>69</sup> and since that acquisition has introduced telephone/broadband/video service bundles that utilize both its legacy ILEC network assets as well as satellite-based video distribution and content. In June 2018, AT&T completed its merger with content-provider Time Warner, Inc. (not to be confused with Time Warner Cable, a separate company that was acquired in 2016 by Charter Communications, Inc.<sup>70</sup>), further enhancing AT&T's ability to offer expansive bundles of voice, broadband, video distribution and video content.<sup>71</sup> To the extent that promotion of these new service bundles by the ILECs has been successful, its effect has been to further cannibalize the companies' legacy POTS customer base.<sup>72</sup>
- Large numbers of households have "cut the cord" entirely, replacing their wireline local telephone service (in any form) with wireless. Prior to the 2016 sale of Verizon's California ILEC operations to Frontier, wireless affiliates of both AT&T California and Verizon California together controlled roughly 70.5% of the US wireless market.<sup>73</sup> Thus, while these companies' ILEC affiliates suffered massive "cord-cutter" losses, much of that demand was replaced by offsetting increases in these same companies' sales of wireless services.
- Of somewhat less impact, certain "over-the-top" Internet-based Voice over IP ("VoIP") services from providers such as Vonage, MagicJack, Skype and Ooma have developed, and have captured a relatively small (when compared with cable or wireless) but not insignificant share of the residential voice market.
- Viewed across the entire business market, the erosion of demand for legacy wireline voice telephone services has been even more dramatic most large businesses and multiple location enterprise customers have largely replaced their circuit-switched voice (PBX and Centrex)

71. See Joe Flint, Drew Fitzgerald, "Fresh Off Time Warner Deal, AT&T Plans Aggressive Content Strategy," *Wall Street Journal*, June 15, 2018, https://www.wsj.com/articles/fresh-off-time-warner-deal-at-t-plans-aggressive-content-strategy-1529078051

72. In 2012, the California legislature adopted a new §710 of the California Public Utility Code whose effect was to remove most aspects of any VoIP service from the CPUC's jurisdiction. Stats. 2012, Ch 733, Sec 3. (SB 1161) Effective January 1, 2013. Repealed as of January 1, 2020, by its own provisions. §710 created an additional incentive for ILECs to migrate customers away from regulated POTS services and over to VoIP, so as to further narrow the scope of the Commission's regulatory jurisdiction over their operations. GO 133-C/D is not applicable to VoIP.

73. Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services. FCC Docket No.16-137, September 23, 2016, Market Shares for Mobile Wireless Service Providers Based on Service Revenues, 2012–2015, at 15. State-level wireless market share data is not available.



<sup>69. &</sup>quot;AT&T Completes Acquisition of DIRECTV," AT&T Press Release, July 24, 2015.

<sup>70. &</sup>quot;AT&T Completes Acquisition of Time Warner Inc.," AT&T Press Release, June 14, 2018.

services with VoIP services typically furnished by entities other than ILECs. However, for small (up to five voice lines) businesses, the drop-off in demand, while less than that for POTS in the residential segment, has still been quite substantial.



FCC data indicate that, for California, the demand for all wireline voice services provided by all carriers combined decreased by 30.1%, from 20.9 million in 2008 to 14.6 million in 2016. During the same period, the number of wireless subscriptions in California increased by 32.7%, from 32.2 million to 42.7 million. Overall, there are 3.4 million more wireless subscriptions than the total population in California, which was 39.3 million people at the end of 2016.

Figures 4.1 through 4.4 illustrate these demand shifts and erosions for California statewide over the period 2008-2016, based upon data published semiannually by the FCC. Because this data covers the entirety of California, it covers all California service providers, including AT&T and Verizon/Frontier.

Figure 4.1 shows the change in total ILEC circuit-switched (POTS) voice lines together with the growth of interconnected VoIP subscriptions (ILEC and non-ILEC) over the period. Although the 66.6% drop in POTS lines has been slightly offset by the increase in ILEC-provided VoIP services, overall ILEC lines decreased by 56.5% over the period.

Figures 4.2 and 4.3 show ILEC legacy service losses to non-ILEC competitor-provided services, separately for residential (4.2) and business (4.3) customers. In the residential segment, ILEC POTS lines decreased by 62.6%; whereas business POTS lines dropped by only 43.2%.

Figure 4.4 illustrates how the demand for voice services has shifted away from wireline (circuit-switched and VoIP) to wireless. Wireless lines in California increased by 10.5-million, up 32.7%, from 32.2-million in 2008 to 42.7-million in 2016. The State's total population at the end of 2016 was 39.3-million – i.e., 3.4-million more wireless phones than people (including infants and newborns). Over the same time period, total *wireline* voice service demand saw a 6.3-million decrease, down 30.1%, from 20.9-million in 2008 to 14.6-million in 2016.<sup>74</sup>

<sup>74.</sup> The average number of working lines reportable under GO 133-C/D (which includes all ILEC and CLEC voice access lines) decreased from 11.48-million in 2010 to 6.15-million in 2017. CPUC staff compilation of carrier-reported data.





**Figure 4.1.** California ILECs saw a precipitous drop in demand for circuit-switched legacy voice access lines over the 2010-2017 period, only a portion of which were replaced by ILEC-provided VoIP services.



**Figure 4.2.** A substantial share of California ILEC residential line losses was the result of customer migrations to cable MSOs and other ILEC competitors.





**Figure 4.3.** ILEC business customers also migrated to competing service providers that offer SIP trunking, virtual PBX, and other VoIP services.



**Figure 4.4.** Perhaps the largest source of the shift in demand away from ILEC and other wireline voice services in California has been the mushrooming growth in demand for wireless.





**Figure 4.5.** While the absolute number of AT&T California out-of-service incidents has decreased over the 2010-2017 study period, that drop has been less than in proportion to the drop in demand for legacy wireline services.

GO 133-C/D established a standard metric for assessing the service quality for local exchange service providers – Trouble Reports and Out-of-Service incidents per 100 POTS lines in service.<sup>75</sup> It is reasonable to expect that the number of reported maintenance and out-of-service issues will bear some fairly linear relationship with the number of POTS lines being provided. With the large decrease in the number of POTS lines in service over the study period, one would expect a corresponding decrease in the number of Trouble Reports and the number of out-of-service conditions, in proportion to the fall-off in access line demand.

As shown in more detail in Chapters 4A and 4F, the decrease in each of the ILEC's POTS lines in service and the fitted trend of total OOS incidents have been similar. Because there is considerable variation in the actual number of trouble reports received in any given month or quarter, Figure 4.5 provides a long-term trend line based upon the actual trouble report counts over time and compares this with a corresponding long term trend in POTS demand over the same period.

Notably, and for AT&T and Verizon/ Frontier, the rate of decrease in the total number of trouble reports over the full study period is of a similar magnitude to the rate of drop-off in

<sup>75.</sup> GO 133-C/D, §3.3, §3.4



access line demand. As discussed further in Chapters 4A and 4F for AT&T and Verizon/ Frontier, respectively, the drop-off in POTS demand has been greatest in the larger, metropolitan wire centers than in those serving the smaller rural areas. Ironically, it is also these larger metropolitan wire centers that have experienced the best levels of service quality overall.

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The decline in customer demand for legacy POTS over the 2010-2017 period has been greatest in the larger, more metropolitan wire center areas. These same metropolitan area wire centers also exhibit the highest levels of service quality and greatest availability of alternative wireless and broadband services.

### Identifying long-term trends from actual month-to-month experience

As noted, there is considerable month-to-month variation across all of AT&T's 615 California wire centers, and for AT&T California overall, in the number of trouble reports received and out-of-service situations reported. Figure 4.6 provides the number of AT&T out-of-service conditions per hundred POTS lines in service ("TRPH") on a quarterly basis from the first quarter of 2010 through the fourth quarter of 2017; there is considerable variation in this metric from period to period. For this reason, inspection of individual quarterly data over an extended period of time is not a useful means for identifying the long-term trend in this or other service quality metrics.

For example, in this instance, the number of OOS per 100 POTS lines in service in the first quarter of 2010 is actually greater than the corresponding metric for the last quarter of 2017. A simple comparison of the first and last quarters of the series without considering any of the intervening values would lead to the erroneous conclusion that the incidence of OOS had actually improved over the full study period. It is possible, however, to extract a long-term trend from data that exhibits considerable variation from period to period, as is the case here. This is accomplished by using statistical techniques, known as linear regression analysis that permit the calculation of a long-term trend by mathematically "fitting a line or curve" to the individual data points in the series, in effect, smoothing out the period. Figure 4.6 includes such a calculated trend line. The slope of the line is slightly negative – i.e., its direction is from lower-left toward upper-right – indicating that the number of out-of-service conditions per 100 POTS lines is *increasing* over time. Similar trend lines have been plotted on all of the time-series charts included in this report.





**Figure 4.6.** In order to examine how service quality metrics evolve over time, we use statistical techniques to calculate long-term trends from the pattern of month-to-month variations in the data.

A simple comparison of the beginning and ending values of the trend line (as distinct from the values of the data for the first and last quarters) provides an indication of the extent of the change over the study period. For the AT&T companywide OOS per 100 POTS lines in service shown on Figure 4.6, the trend line value for the first quarter of 2010 is 1.03 whereas the corresponding trend line value for the last quarter of 2017 is 1.19, indicating a net *increase* of approximately 15.5% in the number of OOS incidents per 100 POTS lines in service taken over the full study period.



Over the full period, there has been a net increase of approximately 15.5% in the trend of OOS incidents per 100 POTS lines in service over the full study period.



### Physical and Environmental Factors Affecting ILEC Service Quality

Over the full study period, there is a seemingly erratic pattern of out-of-service incidents. Rather than exhibiting minimal variation over time, instances of Trouble Reports resulting in a customer's loss of telephone service appear to be highly variable from one period to the next. Moreover, similar month-to-month and quarter-to-quarter variation appears to exist among multiple wire centers, suggesting that some exogenous or outside condition or event is having a similar effect upon the ILECs' networks across a fairly broad geographic area. One such exogenous source might well be weather or other environmental factors. In an attempt to explain the source of this variation, ETI compared the incidence of out-of-service with weather conditions extant at the time, specifically, with the amount of precipitation that occurred in the area being served by a given wire center.

Figures 4.7 and 4.8 compare the pattern of AT&T and Verizon/Frontier out-of-service conditions, respectively, in the greater Los Angeles area with the number of inches of precipitation experienced in the Los Angeles area on a monthly basis. We calculated the "coefficient of determination" ( $R^2$ ) between these two series.  $R^2$  represents the percentage of variation in the "dependent" variable (number of out-of-service incidents in this case) that can be explained by variation in the independent or "explanatory" variable, precipitation in this instance. For AT&T, the  $R^2$  was 0.4221, indicating that roughly 42.21%, of the variation in the incidence of an out-of-service condition is attributable to the amount of rainfall occurring in any given period. The *t*-statistic associated with the Precipitation coefficient was 8.29, placing the computed relationship between precipitation and out-of-service incidents well in excess of the 99% confidence level. For Verizon/Frontier, the  $R^2$  was almost the same, at 0.3976, and the *t*statistic associated with the Precipitation coefficient was 7.75, also placing the computed relationship between precipitation and out-of-service incidents well in excess of the 99% confidence level. There are, to be sure, other weather and environmental factors as well, such as wind, earthquakes, fires, floods, mudslides, etc., that may have a bearing upon the incidence of an outof-service situation. Weather conditions may help to explain the variations in OOS situations, but they do not explain the long-term upward trends both in numbers and average duration that the data appear to suggest.

In certain cases, out-of-service incidents attributable to adverse weather conditions may be deemed beyond ILEC management's control, resulting in such events being "excluded" for purposes of GO 133-C/D service quality measurements and tracking. But while the precise dates and extent of such conditions cannot be known in advance, *the fact that these events will arise at some point over time is well known and highly predictable, and certainly should be a major consideration in the engineering and construction of telecommunications distribution networks*.





**Figure 4.7.** The incidence of AT&T service outages is highly correlated with weather conditions – particularly with precipitation.



**Figure 4.8.** The incidence of service outages is highly correlated with weather – Los Angeles area precipitation and Verizon/Frontier LA-area out-of-service incidents (2010-2017).



The strong relationship between rainfall and the rate of service outages as shown on Figures 4.7 and 4.8 is a strong indication that both ILECs' distribution networks in the greater Los Angeles area are not as robust as they need to be to account for local weather conditions over time. Weather or any other environmental factors that "caused" a particular out-of-service incident may (arguably) make that event "beyond management's *immediate* control," but the design and construction of the distribution network must account for these types of weather conditions. And that is certainly well within the scope of "management's control" and responsibilities.

> Telephone service outages appear to be highly dependent upon weather conditions, specifically, the amount of precipitation in the area served.



The strong relationship between rainfall and the rate of service outages provides a strong indication that the AT&T distribution network is not as robust as it needs to be, and lacks the resiliency to withstand significant weather events.

### Analysis of Principal Service Quality metrics: Service Quality at the individual wire center level

GO 133-C/D directs URF ILECs to report, at the wire center level and on a monthly basis, the total number of Trouble Reports received during the month, the total number of working residential and small (up to five lines) business POTS lines being served by each wire center during the month, and a calculation of Trouble Reports per Hundred (100) POTS Lines in service ("RPHL") for the month.<sup>76</sup> Reports are to be submitted on a quarterly basis within 45 days following the end of the quarter.<sup>77</sup> The ILECs are required to report out-of-service conditions only at the statewide level, not on an individual wire center basis.<sup>78</sup> However, carriers are nevertheless required to submit the underlying ("raw") Trouble Report data, i.e., the individual out-of-service records.<sup>79</sup> Using this individual Trouble Report data, ETI has been able both to reconstruct the RPHL results for each wire center/month, but also to develop out-of-service per 100 POTS lines in service on a monthly, per wire center basis.

77. Id., §6.2.

78. Id., §3.4(d).

79. Id.



<sup>76.</sup> GO-133-C, §3.3(d).

Appendices 4A-1, 4V-1, and 4F-1 contain the actual out-of-service statistics for each of the AT&T, Verizon, and Frontier wire centers on a quarterly basis for the entire 96-month period, from January 2010 through and including December 2017. A sample of one such wire center report, for the AT&T Calistoga wire center, is shown in Table 4.5 below. Although monthly data for each wire center is available in the raw Trouble Report datasets, ETI has prepared these reports on a quarterly basis in order to smooth out month-to-month variations as well as to provide a more convenient tabulation.

Details of ETI's analysis of AT&T and Verizon/Frontier Trouble Report and Out-of-Service data is provided for each company in Subchapters 4A and 4F following.



### AT&T

# Trouble Report and Out-of-Service Data 2010, Q1 - 2017, Q4

Wire Center Name - CALISTOGA Wire Center Number - CALISTOGA CLLI Code - CLSTCA11



				Pct	Pct Cleared	Days to	Days to 90%	Average Duration	Average Duration				Average	Median							Average Duration	Median Duration				00S >	00S >		Duration OOS>2
	Access			Cleared	w/in 24	90%	OOS	OOS>1	OOS>2		000-	000550	Duration	Duration	000	000 5	000 5	00S >	00S >	000 5	OOS	OOS	00S <=	00S >	OOS >	12	24	00S >	4 hours
	(Avg. for		005	W/IN 24 Hours	(Adjuste	Cleared	(Adjuste	(mins)	4 Hours (mins)	TRs per	005s	4 per	(mins)	(mins)	1 Hour	1 Hour	6 Hours	Hours	24 Hours	1 Week	(mins) (Adjuste	(Mins) (Adjuste	(Adjuste	Adjuste	6 Hours (Adjuste	(Adjuste	(Adjuste	Adjuste	(mins) (Adjuste
Quarter	Quarter)	TR Total	Total	(Actual)	() tajaoto d)	(Actual)	() tajaoto d)	(Actual)	(Actual)	100 ALs	ALs	100 ALs	(Actual)	(Actual)	d)	() tajaoto d)	d)	d)	d)	d)	d)	d)	d)						
2010q1	3,672	224	224	23.66	24.55	7	6	4644	5641	2.03	2.03	1.55	4479	3282	8	216	204	197	171	28	3904	3044	8	216	204	195	169	23	4945
2010q2	3,601	140	140	22.86	22.86	7	6	4833	5623	1.30	1.30	1.00	4454	3503	11	129	120	119	108	19	3831	2933	11	129	120	119	108	13	4816
2010q3	3,527	111	111	39.64	46.85	5	4	3674	5172	1.05	1.05	0.63	3378	1679	9	102	90	85	67	8	2928	1638	9	102	90	83	59	6	4904
2010q4	3,447	189	189	32.28	34.39	9	7	4951	6640	1.83	1.83	1.24	4768	2642	7	182	170	163	128	33	4174	2062	7	182	169	157	124	27	5946
2011q1	3,369	268	206	33.01	62.62	5	3	3361	4479	2.65	2.04	1.37	3247	2223	7	199	181	173	138	18	2234	1538	6	126	116	108	77	2	3263
2011q2	3,294	188	147	39.46	59.86	3	2	2585	3521	1.90	1.49	0.90	2392	1587	11	136	125	113	89	6	1758	1449	11	103	93	82	59	1	2788
2011q3	3,208	127	96	67.71	83.33	2	1	1482	2897	1.32	1.00	0.32	1420	1184	4	92	69	64	31	0	1061	952	5	76	54	48	16	0	2624
2011q4	3,152	141	103	45.63	72.82	5	3	3057	4836	1.49	1.09	0.59	2939	1573	4	99	84	76	56	5	1803	1232	4	70	55	48	28	1	3679
2012q1	3,075	144	115	49.57	65.22	3	2	1925	2952	1.56	1.25	0.63	1808	1454	7	108	88	82	58	1	1402	1280	8	90	72	65	40	0	2540
2012q2	2,972	157	125	55.20	68.00	3	3	2500	4500	1.76	1.40	0.63	2441	1362	3	122	108	93	56	4	2291	1383	3	85	74	68	40	2	4071
2012q3	2,896	112	90	55.56	70.00	4	3	2765	4855	1.29	1.04	0.46	2612	1373	5	85	76	70	40	2	2114	1307	5	74	66	58	27	1	4629
2012q4	2,825	201	155	35.48	55.48	6	5	3784	5275	2.37	1.83	1.18	3662	2572	5	150	135	129	100	14	2793	1640	5	114	102	92	69	5	4315
2013q1	2,728	179	123	53.66	60.98	4	3	2414	4033	2.19	1.50	0.70	2258	1376	8	115	102	89	57	2	1840	1325	8	101	87	74	48	1	3343
2013q2	2,626	152	111	49.55	63.06	3	2	1989	2851	1.93	1.41	0.71	1829	1459	9	102	92	88	56	0	1501	1399	10	81	73	69	41	0	2397
2013q3	2,544	153	114	34.21	47.37	4	3	2868	3856	2.00	1.49	0.98	2742	2599	5	109	97	89	75	2	2068	1759	5	94	84	74	60	0	3021
2013q4	2,467	121	92	47.83	60.87	4	3	2476	3577	1.63	1.24	0.65	2234	1454	9	83	77	72	48	2	1797	1387	9	66	61	56	36	2	2947
2014q1	2,377	166	130	20.00	37.69	7	6	5215	6023	2.33	1.82	1.46	4935	4089	7	123	120	114	104	25	3809	2827	7	101	98	93	81	8	4867
2014q2	2,264	99	98	47.96	70.41	6	4	3389	5482	1.46	1.44	0.75	3113	1471	8	90	70	67	51	9	2485	1325	8	54	45	41	29	4	4697
2014q3	2,164	88	59	37.29	61.02	5	4	3128	4166	1.36	0.91	0.57	2810	1799	6	53	46	44	37	2	2333	1623	6	33	30	29	23	1	3593
2014q4	2,048	174	141	23.40	55.32	9	7	6682	8166	2.83	2.29	1.76	6398	4417	6	135	124	120	108	48	4682	2957	6	85	75	72	63	20	6513
2015q1	1,965	204	167	20.96	50.30	14	10	9079	10789	3.46	2.83	2.24	8644	5996	8	159	146	144	132	63	6518	3144	8	109	96	94	83	25	8976
2015q2	1,885	90	61	31.15	50.82	4	3	4437	5958	1.59	1.08	0.74	4365	2536	1	60	56	54	42	4	3056	1741	1	51	47	44	30	1	4682
2015q3	1,829	72	54	35.19	48.15	5	4	3053	4139	1.31	0.98	0.64	2941	1751	2	52	47	45	35	3	2361	1532	2	48	42	40	28	2	3665
2015q4	1,780	129	92	28.26	45.65	6	5	4385	5559	2.42	1.72	1.24	4147	2714	5	87	79	74	66	15	3567	2679	5	66	58	56	50	7	4863
2016q1	1,716	205	165	24.24	47.88	8	7	5582	6850	3.98	3.20	2.43	5379	4378	6	159	150	145	125	40	4363	3322	6	114	105	101	86	22	5824
2016q2	1,628	85	68	48.53	63.24	3	2	3973	6684	1.74	1.39	0.72	3740	1486	4	64	52	47	35	3	3695	1455	4	46	36	33	25	2	6839
2016q3	1,574	100	86	39.53	81.40	3	4	2386	3480	2.12	1.82	1.10	2303	2286	3	83	68	59	52	1	1909	1367	3	31	23	22	16	0	3428
2016q4	1,509	133	101	12.87	40.59	6	5	4996	5490	2.94	2.23	1.94	4848	4490	3	98	93	92	88	12	4186	4414	2	70	65	64	60	4	4918
2017q1	1,459	236	191	16.75	79.06	13	12	9054	10511	5.39	4.36	3.63	8817	8953	5	186	171	164	159	106	8215	7222	0	47	40	40	40	21	9613
2017q2	1,414	92	69	34.78	63.77	5	4	3364	4568	2.17	1.63	1.06	3169	2789	4	65	53	53	45	2	2518	1628	4	43	35	35	25	0	4177
2017q3	1,359	67	48	41.67	66.67	5	3	2797	4168	1.64	1.18	0.69	2681	1732	2	46	37	35	28	3	2115	1422	2	30	22	21	16	1	3671
2017q4	1,276	165	149	19.46	63.76	45	39	19842	23352	4.31	3.89	3.13	18910	5913	7	142	133	129	120	66	15620	3693	7	69	63	59	54	26	21818





Figures

CONFIDENTIAL AND PROPRIETARY PER P.U. CODE § 583, GENERAL ORDER 66-D, & D.16-08-024











## **4A** SERVICE QUALITY ANALYSIS: AT&T CALIFORNIA

#### Principal observations and takeaways

- The greatest demand drop-offs for legacy POTS services generally occurred in the largest wire centers.
- Over the 2010-2017 study period, ATT's average OOS duration over 24 hours per 100 access lines has increased by roughly 12%.
- Some individual wire centers have experienced significant increases in the incidence of out-of-service conditions that had remained uncleared after 24 hours, while in other wire centers there have been improvements.
- The trend in average duration of all out-of-service conditions, excluding those cleared within one hour, for AT&T has been steadily increasing over the study period.
- 49.6% of the roughly 5-million out-of-service conditions (46.4% on an "adjusted" basis) remained uncleared after 24 hours. To satisfy the GO 133-C §3.4(c) requirement, these percentages would need to drop to less than 10%.
- On an adjusted basis, the number of days required for AT&T to clear 90% of all out-of-service conditions ranged from a low of 1.9 (in the first quarter of 2012) to a high of 8.8 (in the first quarter of 2011). In 2017, the adjusted number of days to achieve 90% OOS cleared falls in the 5.8 to 6.7 range.
- AT&T appears to have adopted a "harvesting strategy" for legacy POTS services. AT&T has ceased active marketing of POTS and has degraded POTS service quality and its responses to trouble reports, relying instead upon successive price increases and customer inertia to maintain its revenue stream, albeit decreasing, for an extended period of time.
- Wire centers upgraded with fiber to support broadband services achieve better service quality performance scores in every category – lower numbers of Trouble Reports per Hundred Access Lines ("TRPH"), higher percentages of out-of-service conditions that are being resolved within 24 hours, and where out-of-service situations arise, their average durations are in all cases decidedly shorter.



- Broadband upgrades, for high-speed Internet, VoIP, and IPTV video services confer a direct benefit to legacy POTS customers as they are migrated to the new distribution architecture. But however these new plant upgrades and acquisitions are being utilized, there is a reasonable expectation that some overall improvement in POTS service quality should result.
- There appears to be a strong relationship between the number of POTS lines in a wire center and the quality of service provided. The number and the rate of increase in OOS per 100 POTS lines have been lowest in the very largest (over 20,000 lines) wire centers.
- The largest increases in service outages occurred in wire centers with the lowest POTS drop-off rates; the incidence of service outages increased more slowly or remained almost constant in wire centers with successively larger drop-off rates.
- There is little effective competition for POTS services. If the market were sufficiently competitive, the greatest loss of demand would occur in wire centers exhibiting the poorest service quality, with only minimal losses where service quality is being maintained or improved. Instead, the greatest drop-off in demand occurred in wire centers with the best service quality records.
- Except in areas with the highest population density, AT&T's response to out-of-service conditions has generally deteriorated over the study period.
- Of the five AT&T maintenance (TFS) districts, LA/Bakersfield and San Gabriel have shown significant improvements in most OOS metrics. The poorest performing districts are the Bay/Central Valley and Northern California. Northern California, for example, has seen a 34% increase in the rate of OOS per 100 POTS lines in service over the study period. By contrast, the San Gabriel district saw a 16% improvement.
- Since the bulk of AT&T's investments in its ILEC network have been aimed at upgrades that support broadband services, the TFS Districts with the smallest percentage of such upgrades have experienced substantial degradations in service quality over the period. This result underscores the pressing need for infrastructure investment irrespective of AT&T's pursuit of the broadband market.



### SERVICE QUALITY ANALYSIS: AT&T CALIFORNIA

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### Demand conditions affecting AT&T POTS services

In the first part of this Chapter 4, we reviewed the statewide ILEC demand over the 2008-2016 period based upon published and publicly available FCC data. This FCC industry-wide data provides a useful overview of the voice services market environment. The GO 133-C/D data routinely submitted by AT&T California to the CPUC indicates that AT&T's POTS demand drop-off rate is similar to the industry-wide results being reported by the FCC. In this Chapter, we examine how the erosion of demand for AT&T legacy POTS services has affected its service quality performance over the study period. From January 2010 through December 2017 - the period covered by this study - total AT&T California POTS access lines in service experienced a 72.1% decrease, dropping from 8,035,134 to 2,245,171. The calculated long-term trend in total out-of-service incidents dropped from 246,858 in the first quarter of 2010 to 65,722 in the fourth quarter of 2017, a similar decrease of 73.4%. Figure 4A.1 plots AT&T California access lines in service and out-of-service incidents over the full 2010-17 period. The drop-off in demand within individual wire centers was highly variable. Every AT&T California wire center saw an erosion in POTS demand. The largest drop was 85.3% in the Palmdale East wire center, which had 7,436 lines in service as of January 2010 but only 1,091 by the end of 2017. As shown in Table 4A.1, the greatest demand drop-offs generally occurred in the largest wire centers.

Table 4A.1													
AT&T CALIFORNIA DROP-OFF IN POTS DEMAND AT WIRE CENTERS OF VARYING SIZES JANUARY 2010 – DECEMBER 2017													
Total lines Total lines Wire Center Size No. of Wire Centers Jan 2010 Dec 2017 % chang													
Small (<1000 lines)	90	43,326	19,710	-54.50%									
Medium (1000-3000)	109	202,041	70,494	-65.10%									
Large (>3000)	413	7,789,767	2,154,967	-72.34%									
TOTAL	612	8,035,134	2,245,171	-72.06%									
NOTE. Size categorization p 2010.	per GO 133-C/D size ranges are	based on POTS line	s in service as of J	anuary 1,									

Figure 4A.1 below compares the decrease in AT&T's POTS lines in service with the fitted trend of total OOS incidents. As shown, the relative decreases have in aggregate been similar, although there has been a small increase in the relative incidence of OOS conditions.



The greatest demand drop-offs for legacy POTS services generally occurred in the largest wire centers.





Figure 4A.1. The decrease in the number of AT&T California out-ofservice incidents has roughly corresponded with the drop-off in access lines in service over the 2010-2017 period.



From January 2010 through December 2017, total AT&T California POTS access lines in service experienced a 72.1% decrease, dropping from 8,035,134 to 2,245,171, while out-of-service incidents decreased by roughly the same proportionate amount.



Every AT&T California wire center saw an erosion in POTS demand.



The relative decrease in AT&T POTS lines in service has exceeded the relative downward trend of total OOS incidents.





### Trouble Reports and POTS Lines in Service - a more granular perspective

Viewed at the individual wire center level, the ratio of out-of-service conditions to total POTS lines has varied both from month-to-month and as a long-term trend over time. Focusing specifically upon out-of-service conditions not cleared after 24 hours, some wire centers have experienced significant increases in the incidence of this condition, while others have seen improvements. The following tables summarize the most recent two years' (2016-17) experience with respect to four service quality metrics. Each table provides the 20 wire centers with the worst and the 10 wire centers with the best performance with respect to each of these four metrics. Table 4A.2 presents the percentages of out-of-service conditions not cleared within 24 hours (expressed on a per 100 POTS lines per month basis). Table 4A.3 provides the average out-of-service durations. Table 4A.4 provides the percentages of out-of-service incidents cleared within 24 hours. Table 4A.5 provides the number of days to clear 90% of out-of-service conditions. Finally, Table 4A.6 provides these data elements for all AT&T wire centers.



	Table 4A.2																		
	AT&T CALIFORNIA OUT-OF-SERVICE OVER 24 HOURS' DURATION PER 100 POTS LINES IN SERVICE 20 POOREST PERFORMING AND 10 BEST PERFORMING WIRE CENTERS 2016-2017																		
	Winconstant	<u></u>	Access Lines (avg for	Access Lines (avg for	OOS per 100 ALs	OOS>24 per 100 ALs per	Pct Cleared w/in 24 hours	Pct Cleared w/in 24 hours	# days to clear 90% OOS	# days to clear 90%	Average OOS Duration	Average CPUC OOS Duration	00S	005 > 1	00S > 24	00S > 1	CPUC OOS > 1	CPUC 00S > 24	CPUC OOS > 1
whe center Name	WireCenter	ULLI	Quarter)	Quarter)	permontin	month	(unauj)	(auj)	(unauj)	UUS (auj)	(mins)	(mins)	TOLAI	nour	Hours	week	noui	nours	Week
20 POOREST PER	FORMING WI		S																
BRIDGEVILLE SHOSHONE WALKER BASIN BANGOR CAMPTONVILLE NORTH SAN JUAN PLEASANT GROVE NICOLAUS HERALD THREE RIVERS GEORGETOWN ANNAPOLIS OROVILLE EAST TAMARACK SAN GERONIMO LAGRANGE/D PEDRO BIG SUR CHALLENGE MOKELUMNE HILL DOTTED VALLESY	707281 760796 661401 530430 530436 530480 916491 530477 209176 559228 530457 707322 530485 530511 415069 209185 831101 530437 209202	BGVLCA11 SHSHCA11 WLBSCA11 DNGRCA11 CMPVCA11 NSJNCA11 PLGVCA12 HCLSCA12 HCLSCA11 THRCA11 GRTWCA11 GRTWCA11 ORVLCA12 SNGNCA11 LGRNCA12 BGSRCA11 CHLNCA11 MKHLCA12	197 158 523 394 269 579 213 129 364 753 1,644 79 1,901 174 581 1,058 428 1,245 233	395 316 1,046 7899 538 1,158 427 258 728 1,505 3,288 1,505 3,288 1,505 3,288 1,509 3,802 3,802 3,477 1,163 2,116 855 2,490 465	5.70 4.85 4.68 4.35 4.20 4.76 4.71 4.68 4.54 4.29 3.36 4.50 3.75 3.71 3.66 3.35 3.62 3.85 3.82	4.48 4.06 3.49 3.36 3.34 3.32 3.30 3.26 3.24 3.21 3.19 3.15 3.05 2.91 2.84 2.80 2.73 2.72 2.58	21.5% 16.3% 25.5% 28.2% 23.1% 20.9% 30.7% 30.8% 29.4% 25.6% 6.3% 32.2% 22.4% 23.5% 23.5% 33.0% 40.3%	23.8% 19.7% 39.2% 29.2% 24.4% 34.6% 37.4% 46.7% 33.8% 46.5% 24.9% 32.6% 31.1% 38.4% 45.5%	5.8 9.5 7.7 10.6 12.1 11.2 7.8 7.7 8.9 5.6 10.8 16.7 10.8 13.7 10.6 8.4 4 11.2 9.7 8.8 8 4	4.9 6.5 5.0 7.0 9.4 6.1 5.6 3.6 4.6 4.6 4.6 4.6 4.1 7.8 6.5 5.8 5.5 9 4.8	$\begin{array}{c} 2.6\\ 4.5\\ 3.5\\ 4.1\\ 4.9\\ 4.6\\ 3.5\\ 3.3\\ 3.1\\ 3.1\\ 4.5\\ 6.5\\ 3.9\\ 6.3\\ 4.5\\ 3.7\\ 5.1\\ 3.9\\ 3.5\\ 2.5\end{array}$	2.3 3.3 2.5 2.7 3.2 3.5 2.7 2.4 1.5 2.4 3.2 5.6 2.4 4.5 3.2 2.8 4.1 2.5 2.4	270 184 588 443 281 583 244 146 409 820 1692 64 2054 156 518 929 344 1082 215	267 181 578 4355 278 565 241 142 396 801 1662 61 1995 142 507 903 341 1052 209	212 154 438 318 216 461 169 101 283 579 1259 60 1392 121 396 711 280 812 44	28 50 88 105 77 179 58 31 61 434 434 434 27 433 61 165 182 83 236 39	164 126 310 234 138 298 154 100 197 360 810 39 1046 92 297 569 226 448 124	127 103 221 140 97 236 100 65 117 241 555 37 590 78 209 412 175 283 72	10 16 23 24 20 12 4 29 133 13 116 29 56 62 28 41 9 9
			020	1,200	0.10	2.01	10.170	20.070	11.2	11.2	0.0	1.0			000	107	000	201	00
IU BESI PERFUR		ENTERS																	
SUISUN CITY EDWARDS TUSTIN 70 BURBANK PALM AVE GYPSUM CANYON SPECTRUM-IRVINE BISHOP RANCH BEALE CAPELART DE	707324 661369 714805 818606 714809 949810 925082	SUISCA11 EDWRCA01 TUSTCA70 BRBNCA11 YRLNCA12 IRVNCA12 BSRNCA70 BEALCA11	486 866 930 830 2,090 1,921	973 172 1,732 1,860 1,659 4,179 3,841	0.45 0.19 0.49 0.47 0.41 0.42 0.34	0.20 0.19 0.19 0.19 0.18 0.17 0.14	56.6% 0.0% 60.8% 60.4% 57.3% 61.0% 58.3%	62.1% 0.0% 62.5% 64.5% 65.3% 59.7% 64.3%	5.9 3.0 4.6 4.1 3.7 3.9 3.7	3.3 2.0 3.2 3.0 2.9 3.2 3.0	2.4 2.0 1.6 1.4 1.7 1.5 1.6	1.9 1.6 1.4 1.2 1.3 1.4 1.3	53 4 102 106 82 213 156	48 4 93 103 76 196 147	23 4 40 42 35 83 65	5 0 5 5 9 6	41 2 73 78 54 177 114	17 2 28 29 18 75 43	2 0 2 2 1 4 3
NORTH STAR	530516 925083	TRUCCA12 PLTNCA13	95 817 2.068	1,634 4,136	0.17 0.22 0.27	0.13 0.12 0.09	25.0% 46.5% 67.2%	37.5% 45.7% 72.8%	∠.9 8.5 2.5	∠.3 4.8 1.9	2.2 4.9 1.3	1.9 2.1 0.8	4 43 134	4 38 117	3 23 44	0 5 2	3 32 87	2 19 27	0 3 0



							Та	able 4A.	.3										
	AT&T CALIFORNIA AVERAGE OUT-OF-SERVICE DURATION 20 POOREST PERFORMING AND 10 BEST PERFORMING WIRE CENTERS 2016-2017																		
Wire Center Name	WireCenter	CLLI	Access Lines (avg for Quarter)	Access Lines (avg for Quarter)	OOS per 100 ALs per month	OOS>24 per 100 ALs per month	Pct Cleared w/in 24 hours (unadj)	Pct Cleared w/in 24 hours (adj)	# days to clear 90% OOS (unadj)	# days to clear 90% OOS (adj)	Average OOS Duration (mins)	Average CPUC OOS Duration (mins)	OOS Total	OOS > 1 hour	OOS > 24 Hours	OOS > 1 week	CPUC OOS > 1 hour	CPUC OOS > 24 hours	CPUC OOS > 1 Week
20 POOREST PERF	ORMING WIR		5																
BAKER WAWONA FURNACE CREEK ANNAPOLIS EL PORTAL TAMARACK POTTER VALLEY BOONVILLE HOMEWOOD LAKE BERRYESSA BEAR VALLEY KYBURZ POINT ARENA SODA SPRINGS TRUCKEE GUALALA ALTA/DUTCH FLATS CALISTOGA CAPELLA/IVANHOE FORESTVILLE	760705 209238 760738 707322 209241 530511 707316 707280 530463 707301 209155 530465 707315 530508 530515 707295 530547 707295 530447 707282 707327 707291	BAKRCA11 WANACA11 FRCKCA11 FRCKCA11 YSMTCA12 STAHCA12 PTVYCA11 BNVLCA11 HMWDCA1 LKBRCA11 BVLYCA11 BVLYCA11 KYBRCA11 PNARCA11 GULLCA11 DTFLCA11 CLSTCA11 IVNHCA11 FSVLCA11	158 297 155 79 331 174 628 832 1,439 233 544 85 702 678 4,751 1,234 667 1,492 1,370 930	$\begin{array}{c} 315\\ 595\\ 310\\ 159\\ 662\\ 347\\ 1,256\\ 1,664\\ 2,878\\ 466\\ 1,089\\ 170\\ 1,403\\ 1,356\\ 9,503\\ 2,468\\ 1,333\\ 2,984\\ 2,740\\ 1,860\\ \end{array}$	3 2 1 3 2 4 3 3 1 3 2 2 2 2 1 2 2 1 2 3 3 3	2 2 1 3 2 3 3 2 1 2 1 2 1 2 2 1 1 2 3 2 2 2 2	11.9% 9.8% 5.3% 6.3% 22.4% 19.7% 20.3% 26.6% 19.1% 20.5% 18.4% 16.8% 29.1% 33.0% 16.9% 16.0% 25.7% 34.4% 27.5%	13.5% 9.5% 8.7% 8.8% 12.0% 24.9% 23.5% 26.6% 35.3% 27.7% 20.5% 18.6% 37.2% 40.2% 21.5% 19.6% 32.7% 41.8% 37.0%	14.4 10.6 15.6 16.7 13.1 13.7 14.2 14.5 12.8 13.8 14.6 10.2 12.7 11.3 11.2 12.9 12.1	$\begin{array}{c} 11.1\\ 9.4\\ 12.4\\ 9.6\\ 10.7\\ 11.2\\ 11.3\\ 9.4\\ 10.6\\ 8.8\\ 7.2\\ 10.8\\ 9.1\\ 9.3\\ 10.4\\ 9.8\\ 11.3\\ 8.8\\ 9.4\\ \end{array}$	$\begin{array}{c} 9.1\\ 8.4\\ 8.0\\ 6.5\\ 6.5\\ 6.3\\ 6.0\\ 5.9\\ 5.8\\ 5.6\\ 5.6\\ 5.6\\ 5.5\\ 5.4\\ 5.4\\ 5.3\\ 5.2\\ 5.1\end{array}$	$\begin{array}{c} 7.4 \\ 8.5 \\ 6.5 \\ 5.6 \\ 1.1 \\ 4.5 \\ 4.3 \\ 3.9 \\ 4.0 \\ 3.3 \\ 4.4 \\ 4.8 \\ 4.2 \\ 4.2 \\ 4.2 \\ 4.4 \\ 4.0 \\ 4.4 \\ 3.3 \\ 3.6 \end{array}$	101 122 38 64 1900 156 477 533 350 157 244 49 376 330 1,014 697 480 877 874 703	99 120 38 61 1855 142 474 515 333 157 231 48 374 317 967 687 474 843 844 686	89 110 36 60 174 121 383 425 257 127 194 40 313 234 679 579 403 652 573 510	48 43 22 27 79 61 157 172 136 50 68 18 128 111 340 217 146 233 250 207	71 76 23 39 1200 92 380 381 103 103 33 264 178 535 494 235 450 585 390	63 71 21 37 110 78 294 293 128 79 83 27 214 116 331 396 193 322 355 257	29 11 13 37 29 95 101 45 16 17 8 73 41 119 115 54 76 107 79
10 BEST PERFORM	ING WIRE CE	INTERS										-							
CLOVIS VINA HYDESVILLE WEOTT PEDLEY PARLIER CALIPATRIA IMPERIAL # HOLTVILLE NILAND	559159 530517 707299 707333 951765 559208 760713 760742 760855	CLVSCA11 VINACA12 HYVLCA11 WEOTCA11 PDLYCA11 PRLRCA11 HLVLCA11 NILDCA12	11,978 91 326 68 3,545 726 335 676 113	23,957 182 652 137 7,090 1,452 671 1,352 225	2 2 3 2 1 2 1 2 2	1 1 1 0 1 0 0 0	65.2% 63.6% 62.3% 62.5% 70.7% 64.4% 69.4% 72.3% 75.5%	71.9% 66.5% 65.2% 53.0% 74.7% 68.4% 74.3% 80.5% 80.1%	2.6 3.3 2.4 2.9 2.3 2.6 2.1 2.2 1.8	1.9 3.3 1.9 3.0 1.7 2.0 1.7 1.2 1.8	1.1 1.1 1.1 1.1 1.1 1.1 1.0 1.0 0.9	0.9 0.9 1.3 0.8 0.9 0.7 0.6 0.7	4,465 44 220 32 1,072 281 98 274 49	4,305 40 211 31 1,030 269 90 260 48	1,552 16 83 12 314 100 30 76 12	47 - - 11 3 1 9	3,259 22 133 15 728 224 62 164 33	942 9 45 7 189 76 18 34 6	16 - - 3 - - - - -
NILAND GAZELLE	760855 530456	NILDCA12 GZLLCA11	113 56	225 112	2 1	0	75.5% 66.7%	80.1% 100.0%	1.8 1.6	1.8 0.1	0.9 0.8	0.0 0.7 0.1	49 9	48	12 3		33	6	



							Та	able 4A.	4										
			20	P POOR	ERCENT EST PER	out-of Formin	CALIFC CE CLE 10 BES 016-201	ORNIA ARED V T PERF 7	VITHIN 2 ORMINO	24 HOU G WIRE	RS CENTEI	RS							
Wire Center Name	WireCenter	CLU	Access Lines (avg for Quarter)	Access Lines (avg for Quarter)	OOS per 100 ALs	OOS>24 per 100 ALs per	Pct Cleared w/in 24 hours (upadi)	Pct Cleared w/in 24 hours (adi)	# days to clear 90% OOS (upadi)	# days to clear 90%	Average OOS Duration	Average CPUC OOS Duration (mine)	00S Total	00S > 1	00S > 24	00S > 1	CPUC OOS > 1	CPUC OOS > 24	CPUC OOS > 1 Week
Wire Genter Name	Wiedenter	OLLI	Quarter	Quarter)	permonti	month	(unauj)	(auj)	(unauj)	000 (auj)	(mms)	(mms)	Total	noui	Tiours	WCCK	noui	nours	Week
20 POOREST PER																			
EDWARDS FURNACE CREEK ANNAPOLIS EL PORTAL WAWONA BAKER YOSEMITE MAIN CCAMP NELSON ALTA/DUTCH FLATS SHOSHONE SIERRA CITY POINT ARENA GUALALA KYBURZ BIG SUR ELK CREEK LAKE BERRYESSA POTTER VALLEY SEQUOIA PARK ASH N MOUNTAIN PASS	661369 760738 707322 209241 209238 760705 209240 559156 530447 760796 530505 707315 707295 530465 831101 530448 707301 707316 MT1559152 760753	EDWRCA01 FRCKCA11 ANNPCA11 YSMTCA12 WANACA11 BAKRCA11 SMTCA11 OTFLCA11 SHSHCA11 SRCYCA11 GULLCA11 KYBRCA11 BGSRCA11 EKCKCA11 LKBRCA11 PTVYCA11 ASMTCA11	86 155 79 331 297 158 544 758 450 702 1,234 85 428 123 233 628 95 18	172 310 159 662 595 1,088 1,515 1,333 316 899 1,403 2,468 1,256 1,256 1,256 1,256	0.19 1.02 3.36 2.39 1.71 2.67 0.98 2.72 3.00 4.85 2.02 2.23 2.35 2.41 3.35 2.51 2.81 3.16 2.63 1.13	0.19 0.97 3.15 2.19 1.54 2.35 0.86 2.30 2.52 4.06 1.69 1.86 1.97 2.73 2.04 2.27 2.54 2.10 0.90	0.0% 5.3% 6.3% 9.8% 11.9% 12.5% 16.0% 16.3% 16.5% 16.8% 16.8% 18.4% 18.6% 18.9% 19.1% 19.7% 20.0%	0.0% 8.7% 8.8% 12.0% 9.5% 13.5% 14.7% 24.7% 23.8% 21.5% 23.1% 25.7% 23.6% 23.5% 19.5% 40.0%	3.0 15.6 16.7 13.1 10.6 14.4 7.7 8.1 12.1 9.5 9.7 12.7 12.9 10.2 11.2 7.0 13.8 14.2 6.9 5.0	2.0 12.4 9.6 9.4 11.1 6.7 4.4 9.8 6.5 6.7 10.8 10.4 7.2 8.5 6.0 10.6 11.2 9.1 2.8	$\begin{array}{c} 2.0\\ 8.0\\ 6.5\\ 6.5\\ 8.4\\ 9.1\\ 4.0\\ 3.7\\ 5.3\\ 4.5\\ 5.0\\ 5.6\\ 5.6\\ 5.6\\ 5.6\\ 5.6\\ 5.1\\ 3.6\\ 5.8\\ 6.0\\ 2.8\\ 2.9\end{array}$	$\begin{array}{c} 1.6\\ 6.5\\ 5.6\\ 5.1\\ 8.5\\ 7.4\\ 2.3\\ 4.0\\ 3.3\\ 3.7\\ 4.8\\ 4.4\\ 4.1\\ 2.9\\ 4.0\\ 4.5\\ 3.2\\ 1.9\end{array}$	4 38 64 190 122 101 128 494 480 184 218 376 697 49 344 74 157 477 600 5	4 38 61 185 120 99 125 479 474 181 211 374 687 48 341 72 157 474 600 5	4 36 60 174 110 89 112 419 403 154 182 313 579 40 280 60 127 383 48 4	0 22 27 79 43 48 24 83 146 50 64 128 217 18 83 17 50 157 6 0	2 23 39 120 76 71 115 259 235 126 127 264 494 33 226 47 103 380 300 30 30 30	2 21 37 110 71 63 99 214 193 103 102 214 396 27 175 36 79 294 22 2	0 11 13 37 11 29 18 13 54 16 22 73 115 8 8 28 3 16 95 2 0
10 BEST PERFOR	RMING WIRE C	ENTERS																	
AGOURA HUNTINGTON PARK EL CENTRO CALIPATRIA IMPERIAL PALMDALE EAST CALEXICO PEDLEY PALMDALE	818600 323617 760730 - A 760713 661412 760712 951765 661384	AGORCA11 HNPKCA01 ELCNCA01 CLPTCA11 PLDLCA11 CLXCCA12 PDLYCA11 PLDLCA01	7,172 9,833 5,445 335 1,358 2,815 3,545 6,216	14,344 19,666 10,889 671 2,717 5,630 7,090 12,433	0.91 1.47 1.19 1.22 0.74 1.12 1.26 0.78	0.29 0.47 0.37 0.23 0.34 0.34 0.37	67.7% 67.9% 68.9% 69.4% 69.6% 70.7% 70.8%	73.1% 74.4% 75.2% 74.3% 71.7% 74.8% 74.7%	2.6 2.8 2.4 2.1 3.0 2.5 2.3 2.6	2.1 1.9 1.7 2.1 1.5 1.7 1.8	1.6 1.2 1.2 1.0 1.2 1.5 1.1 1.3	1.5 0.8 0.7 0.7 1.0 1.2 0.8 1.1	1568 3475 1549 98 242 757 1072 1159	1488 3226 1485 90 227 711 1030 1058	506 1116 482 30 74 230 314 338	58 78 45 1 7 29 11 23	1177 2250 996 62 174 448 728 808	335 630 263 18 53 111 189 222	33 14 3 0 3 3 3 9
NILAND	760855	NILDCA12	113	225	1.69	0.47	72.3%	80.5% 80.1%	2.2	1.2	1.0 0.9	0.6	274 49	∠60 48	76 12	9	33	34 6	0



							Та	ble 4A.	.5										
	AT&T CALIFORNIA DAYS REQUIRED TO CLEAR 90% OF OUT-OF-SERVICE CONDITIONS 20 POOREST PERFORMING AND 10 BEST PERFORMING WIRE CENTERS 2016-2017																		
Wire Center Name	WireCenter	CLLI	Access Lines (avg for Quarter)	Access Lines (avg for Quarter)	OOS per 100 ALs per month	OOS>24 per 100 ALs per month	Pct Cleared w/in 24 hours (unadj)	Pct Cleared w/in 24 hours (adj)	# days to clear 90% OOS (unadj)	# days to clear 90% OOS (adj)	Average OOS Duration (mins)	Average CPUC OOS Duration (mins)	OOS Total	OOS > 1 hour	OOS > 24 Hours	OOS > 1 week	CPUC OOS > 1 hour	CPUC OOS > 24 hours	CPUC OOS > 1 Week
20 POOREST PER	FORMING WIR		s																
ANNAPOLIS FURNACE CREEK BEAR VALLEY BOONVILLE BAKER POTTER VALLEY LAKE BERRYESSA CAPELLA/IVANHOE TAMARACK CAMPO EL PORTAL GUALALA HOMEWOOD NIAGARA POINT ARENA DOWNEYVILLE PEARL GROVELAND NEWCASTLE AUBURN TAHOE CITY	707322 760738 209155 707280 760705 707316 707301 707327 530511 619715 209241 707295 530463 530463 530490 707315 530444 209173 916476 530428 530514	ANNPCA11 FRCKCA11 BVLYCA11 BAKRCA11 PTVYCA11 LKBRCA11 IVNHCA11 STAHCA12 CAMPCA11 YSMTCA12 GULLCA11 HMWDCA11 PLVLCA12 PNARCA11 DWNVCA11 GVLDCA11 NWCSCA11 AUBNCA01 THCYCA01	79 155 544 832 233 1,370 1,74 631 331 1,234 1,439 2,918 702 2,70 2,424 1,272 7,820 3,412	159 310 1,089 315 1,256 466 2,740 1,261 662 2,468 2,878 5,836 1,403 5,836 1,403 5,836 1,403 5,836 1,403 5,845 15,640 6,823	3.36 1.02 1.87 2.67 3.16 2.81 2.66 3.75 2.65 2.39 2.35 1.01 2.68 2.23 1.82 2.23 1.82 2.28 2.28 2.88 2.28 1.52 0.81	3.15 0.97 1.48 2.13 2.54 2.27 1.74 2.91 1.41 2.19 1.96 0.74 1.97 1.86 1.39 1.64 2.07 1.04 0.54	6.3% 5.3% 20.5% 20.3% 11.9% 19.7% 19.1% 34.4% 22.4% 46.9% 26.4% 16.8% 23.7% 27.9% 28.1% 31.5%	8.8% 8.7% 27.7% 26.6% 13.5% 23.5% 23.6% 41.8% 24.9% 12.0% 21.5% 35.3% 33.4% 35.3% 33.4% 38.3% 38.7%	16.7 15.6 14.5 14.4 13.8 13.7 13.7 13.7 13.3 13.1 12.9 12.8 12.7 12.5 12.4 12.3 12.3 12.3 12.2	$\begin{array}{c} 12.4\\ 12.4\\ 8.8\\ 11.3\\ 11.1\\ 11.2\\ 10.6\\ 8.8\\ 10.7\\ 3.4\\ 9.6\\ 10.4\\ 9.4\\ 10.1\\ 10.8\\ 6.9\\ 9.3\\ 8.4\\ 7.6\\ 9.9\end{array}$	6.5             8.0             5.8             6.0             9.1             6.0             5.8             5.2             6.3             4.1             6.5             5.4             5.6             5.0             5.0	5.6 6.5 3.3 7.4 4.5 4.0 3.3 4.5 1.4 5.1 4.4 3.9 3.6 4.8 3.0 3.1 3.1 3.1 3.9	64 38 244 533 101 477 157 874 156 401 190 697 350 1877 376 118 1327 879 28533 664	61 38 231 515 99 474 157 844 142 370 185 687 333 1822 374 111 1271 857 2744 620	60 36 194 425 89 383 127 573 121 213 174 579 257 1381 313 90 957 632 1955 441	27 22 68 172 48 157 50 250 61 53 79 217 136 581 128 33 400 235 753 201	39 23 103 381 71 380 103 585 92 238 120 494 189 1083 264 60 720 566 1795 367	37 21 83 293 63 294 79 355 78 110 110 396 128 760 214 48 477 386 1173 241	13 11 17 101 29 95 16 107 29 6 37 115 45 223 73 73 73 73 73 73 130 95 291 286
10 BEST PERFORI	MING WIRE CE	ENTERS																	
HACIENDA HYDESVILLE EL CENTRO FIREBAUGH P ST LOLETA PEDLEY HOLTVILLE CALIPATRIA IMPERIAL NILAND GAZELLE	925083 707299 760730 559166 707303 951765 760742 A 760713 760855 530456	PLTNCA13 HYVLCA11 ELCNCA01 FRBHCA11 LOLTCA11 PDLYCA11 HLVLCA11 CLPTCA11 NILDCA12 GZLLCA11	2,068 326 5,445 778 162 3,545 676 335 113 56	4,136 652 10,889 1,557 324 7,090 1,352 671 225 112	0.27 2.81 1.19 1.57 1.90 1.26 1.69 1.22 1.81 0.67	0.09 1.06 0.37 0.55 0.98 0.37 0.47 0.37 0.44 0.22	67.2% 62.3% 68.9% 65.3% 48.6% 70.7% 72.3% 69.4% 75.5% 66.7%	72.8% 65.2% 75.2% 69.3% 64.1% 74.7% 80.5% 74.3% 80.1% 100.0%	2.5 2.4 2.4 2.3 2.3 2.3 2.2 2.1 1.8 1.6	1.9 1.9 1.7 1.9 1.9 1.7 1.2 1.7 1.8 0.1	1.3 1.1 1.2 1.1 1.2 1.1 1.0 1.0 0.9 0.8	0.8 0.9 0.7 1.0 0.9 0.8 0.6 0.7 0.7	134 220 1549 294 74 1072 274 98 49 9	117 211 1485 281 69 1030 260 90 48 8	44 83 482 102 38 314 76 30 12 3	2 0 45 4 0 11 9 1 0 0	87 133 996 206 43 728 164 62 33 2	27 45 263 64 17 189 34 18 6 0	0 0 3 3 0 3 0 0 0 0 0



							Tab	ole 4A.6											
				TROUE	BLE REP	ORT AN	D OUT-	OF-SER	VICE D	ATA FO	OR 2016-2	2017							
							Pct	Pct	# days	# days		Average							
			Access	Access	OOS per	00S>24	Cleared	Cleared	to clear	to clear	Average	CPUC			0000		CDUC	CDUC	CRUC
			for	for	Der	ALs per	w/in 24 hours	w/in 24 hours	90% OOS	90% OOS	Duration	Duration	oos	00S > 1	24	00S > 1	00S > 1	005 >	00S > 1
Wire Center Name	WireCenter	CLLI	Quarter)	Quarter)	month	month	(unadj)	(adj)	(unadj)	(adj)	(mins)	(mins)	Total	hour	Hours	week	hour	24 hours	Week
ACTON	661410	ACTNCA11	986	1,973	1.06	0.39	63	68	3	3	3 2855	2615	252	235	93	11	184	61	7
ADAMS	323635	LSANCA14	5,906	11,811	1.63	0.71	57	65	4	3	3 2381	1583	2309	2139	1001	112	1297	497	22
AGOURA	818600	AGORCA11	7,172	14,344	0.91	0.29	68	73	3	2	2 2324	2119	1568	1488	506	58	1177	335	33
AGUA DULCE	661351	AGDLCA11	607	1,214	2.17	0.99	54	63	4	3	3 2533	2106	316	306	144	15	192	74	7
AIRPORT	310628	LSANCA07	9,828	19,657	0.71	0.35	51	59	5	3	3 2771	1903	1676	1544	827	105	955	427	26
ALAMEDA	510002	ALMDCA11	8,467	16,935	0.82	0.47	43	47	6	5	5 3287	2719	1673	1557	947	176	1232	697	63
ALBANY	510001	ALBYCA11	8,769	17,538	1.26	0.69	45	51	7	5	5 3780	3124	2644	2450	1460	386	1871	994	210
ALHAMBRA	626601	ALHBCA01	12,428	24,856	0.98	0.58	41	48	6	5	5 3754	2734	2911	2766	1716	333	1921	1025	111
ALLEGHANEY	530425	ALGHCA11	51	102	3.28	2.21	33	24	9	9	5406	4508	40	38	27	11	17	14	3
ALMADEN	408134	SNJSCA18	3,929	7,857	1.60	1.03	36	40	5	4	3541	2710	1512	1458	972	120	970	606	31
ALPINE	619700	ALPICA12	2,056	4,112	2.19	1.20	45	52	5	4	2836	2296	1079	1043	590	67	667	331	26
ALTA/DUTCH FLATS	530447	DTFLCA11	667	1,333	3.00	2.52	16	20	12	10	7655	5752	480	474	403	146	235	193	54
ANAHEIM COLUMBUS	DF714811	ANHMCA17	1,151	2,302	0.62	0.25	59	65	4	3	3 2300	1919	170	153	70	6	100	40	4
ANDERSON	530427	ARSNCA11	2,478	4,956	2.26	1.12	50	58	5	4	2592	2174	1342	1299	665	72	954	431	28
ANGELES	323641	LSANCA34	13,829	27,658	1.29	0.72	44	50	5	4	l 3189	2374	4278	4032	2377	314	2959	1552	98
ANGELS CAMP	209150	ANCMCA01	1,145	2,291	3.16	2.18	31	37	9	6	5 5155	3519	869	845	600	172	510	332	48
ANGWIN	707275	ANGWCA11	743	1,487	2.29	1.68	27	31	10	8	3 5964	4110	409	392	300	96	237	172	28
ANNAPOLIS	707322	ANNPCA11	79	159	3.36	3.15	6	9	17	12	9313	8013	64	61	60	27	39	37	13
ANTIOCH	925003	ANTCCA11	6,939	13,879	0.98	0.37	62	65	3	3	3 1899	1599	1631	1528	614	58	1192	451	31
APTOS	831100	APTSCA12	3,828	7,655	1.32	0.66	50	54	6	4	l 3108	2411	1215	1167	605	109	765	373	29
ARCADIA	626602	ARCDCA11	6,991	13,983	0.98	0.54	44	50	5	4	3263	2548	1637	1523	911	142	1131	600	46
ARCATA	707276	ARCTCA11	2,404	4,808	1.05	0.49	53	62	3	2	2 2151	1751	605	557	284	8	397	164	4
ARLINGTON	951704	ARTNCA11	8,796	17,592	0.99	0.44	56	59	4	3	3 2294	2004	2098	1994	927	105	1608	685	54
ARNOLD	209151	ARNLCA11	2,766	5,533	2.53	1.78	29	35	10	7	5708	4174	1679	1633	1184	388	954	634	132
AROMAS	831144	ARMSCA11	585	1,171	1.78	0.74	58	67	3	3	3 1923	1551	250	240	104	5	167	61	2
ARROYO GRANDE	805352	ARGRCA12	5,486	10,972	1.57	0.73	54	64	6	3	3041	1842	2072	1985	962	217	1156	412	33
ARVIN	661353	ARVNCA11	1,140	2,280	1.81	0.93	49	55	5	3	3151	2481	496	479	255	27	367	171	7
ASHLEY	209222	SKTNCA12	1,624	3,248	3.47	2.12	39	45	6	4	3465	2670	1353	1315	825	129	921	527	37
ATASCADERO	805354	ATSCCA11	3,324	6,649	0.92	0.43	54	59	4	3	3 2209	1607	737	700	342	26	445	189	4
ATWATER	209153	ATWRCA12	2,685	5,370	1.87	0.73	61	67	3	2	2 1952	1649	1203	1150	472	17	881	308	7
AUBURN	530428	AUBNCA01	7,820	15,640	1.52	1.04	31	39	12	8	6426	4511	2853	2744	1955	753	1795	1173	291
AVALON	310603	AVLNCA11	1,393	2,785	0.57	0.36	37	43	9	7	5362	4642	191	177	120	37	102	63	17
AVENAL	559154	AVNLCA12	633	1,266	2.48	1.36	45	50	4	3	3 2488	1898	377	363	206	13	255	131	3
AVILA BEACH	805355	AVBHCA11	407	815	1.09	0.47	57	71	7	3	3 3308	1765	107	101	46	11	64	20	2
AXMINSTER	323636	LSANCA15	11,119	22,238	1.92	0.80	58	68	4	3	3 2312	1466	5115	4660	2133	207	3019	1087	39
BAILEY	408142	SNJSCA22	176	352	1.09	0.62	43	55	6	6	3170	2482	46	45	26	4	26	12	2
BAKER	760705	BAKRCA11	158	315	2.67	2.35	12	13	14	11	13077	10689	101	99	89	48	71	63	29
BAKERSFIELD WEEDP	A <sup>-</sup> 661356	BKFDCA11	1,709	3,417	2.02	1.00	50	56	4	3	3 2322	1759	829	790	412	33	609	288	6
BALBOA	949706	BALBCA01	3,739	7,478	1.02	0.50	51	56	4	3	3 2282	1930	915	877	447	30	648	298	14
BALDWIN	559169	FRSNCA11	8,144	16,288	1.68	0.73	57	63	4	3	3 2225	1609	3276	3055	1419	116	2246	906	22
BANGOR	530430	BNGRCA11	394	789	4.68	3.36	28	39	11	7	5919	3920	443	435	318	105	234	140	24
BAYWOOD PARK	805362	BYPKCA11	1,379	2,758	1.24	0.54	56	65	3	2	2 1893	1449	411	389	180	9	243	91	2
BEALE CAPEHART-BEA	AL 530431	BEALCA11	95	191	0.17	0.13	25	38	3	2	3206	2730	4	4	3	0	3	2	0
BEAR VALLEY	209155	BVLYCA11	544	1,089	1.87	1.48	20	28	15	ç	8345	4790	244	231	194	68	103	83	17



						Tal	ble 4A.6	(page 2	2 of 13)										
							Pct	Pct	# days	# days		Average							
			Access	Access	OOS per	00S>24	Cleared	Cleared	to clear	to clear	Average	CPUC			000 5		CDUC	CDUC	CDUC
			Lines (avg	Lines (avg	100 ALS	per 100	w/in 24	w/in 24	90%	90%	Duration	OUS	005	005 > 1	24	005 5 1 0			
Wire Center Name	WireCenter	СШ	Quarter)	Quarter)	month	month	(unadi)	(adi)	(unadi)	(adi)	(mins)	(mins)	Total	hour	Hours	week	hour 2	24 hours	Week
BEAR VLLY SPRING	661403	BVSPCA11	666	1.333	3.49	2.28	35	45	(unital)) 7	5	4243	2863	558	541	365	84	305	185	27
BELL	323604	BELLCA11	3,958	7,916	1.51	0.56	63	70	3	2	1723	1233	1433	1327	529	26	905	295	7
BEN LOMOND	831103	BNLMCA11	781	1,562	2.12	1.30	39	46	7	4	3748	2703	397	389	243	46	200	115	11
BENICIA	707277	BNCICA11	2,708	5,417	0.91	0.50	44	51	6	4	3131	2147	590	560	328	40	431	226	8
BERKELEY	510004	BKLYCA01	11,293	22,586	0.93	0.47	49	54	6	5	3234	2598	2509	2325	1287	287	1674	826	122
BETHEL ISLAND	925008	BTISCA11	375	750	2.59	1.20	54	57	4	3	2305	1845	233	221	108	6	185	86	1
BEVERLY HILLS	310607	BVHLCA01	21,057	42,115	1.36	0.74	46	53	7	5	3559	2584	6890	6379	3722	862	3936	2016	270
BIG SUR	831101	BGSRCA11	428	855	3.35	2.73	19	23	11	8	7368	5964	344	341	280	83	226	175	28
BIGGS	530432	BGGSCA11	324	648	2.10	1.30	38	48	9	8	4755	3281	163	158	101	33	104	56	10
BISHOP RANCH	925082	BSRNCA70	1,921	3,841	0.34	0.14	58	64	4	3	2285	1801	156	147	65	6	114	43	3
BLAIRSDEN	530433	BLRSCA12	1,115	2,231	1.08	0.68	36	46	7	8	4044	3768	288	270	183	27	193	109	21
BLUE LAKE	707278	BLLKCA11	301	603	2.63	2.06	22	30	6	5	4311	3244	190	187	149	26	93	67	9
BODEGA BAY	707279	BDBACA11	480	960	1.28	0.86	33	44	9	6	5036	3411	148	140	99	29	102	64	13
BOWBAY BEACH	760856	NILDCAT1	137	274	2.49	1.12	55	60	4	1	2203	1207	82	79	37	4	44	18	101
	707280	BINVLCATI	83Z	1,004	2.07	2.13	20	21	15	11	1770	1976	533	515	425	172	301	293	101
	700707	BROPCATI	1 264	1,027	2.00	1.00	04	50	3	3	2406	10/0	013	010	219	17	192	90	0
BRADI EV	805363	BRDICAM	1,304	2,727	2.00	0.86	44	30	6	4 5	3678	2022	037	175	400	00 12	439	232	21
	760708	BRIMLCA11	2 101	1,131	1.20	0.00	67	7/	3	2	1808	1217	700	668	228	20	/37	110	2
BREA	714709	BREACA12	4 347	8 694	0.89	0.30	54	61	4	2	2254	1795	925	861	426	34	602	252	14
BRENTWOOD	925007	BRWDCA12	5 200	10 400	1 15	0.47	59	64	3	3	2140	1786	1433	1361	589	44	1081	415	21
BRIDGEVILLE	707281	BGVI CA11	197	395	5 70	4 48	21	24	6	5	3784	3353	270	267	212	28	164	127	10
BRISTOL	714789	SNANCA11	13.998	27.997	1.00	0.40	61	64	3	3	2031	1742	3373	3172	1332	151	2464	911	68
BROCKWAY	530434	BCWYCA11	1.249	2,499	0.73	0.49	33	35	11	10	6633	4890	218	208	147	59	143	95	25
BUENA PARK	714710	BNPKCA11	6,206	12,413	1.40	0.69	51	57	5	4	3135	2738	2081	1993	1024	160	1429	620	67
BURBANK	818605	BRBNCA11	13,606	27,212	0.84	0.34	59	69	3	2	1983	1329	2745	2557	1121	72	1765	599	20
BURBANK PALM AVE	818606	BRBNCA11	930	1,860	0.47	0.19	60	64	4	3	2024	1671	106	103	42	5	78	29	2
BURLINGAME	650006	BRLNCA01	10,337	20,673	0.83	0.41	50	56	4	3	2585	2022	2058	1916	1019	109	1261	598	28
BURRELL	559242	BURLCA11	109	218	4.21	2.45	42	47	3	3	2705	2272	110	108	64	4	77	41	2
BUSH	714788	SNANCA01	11,993	23,986	1.03	0.42	60	64	4	3	2155	1738	2962	2781	1196	146	2056	749	49
BUSH-PINE	415058	SNFCCA01	19,248	38,496	0.54	0.32	41	47	6	5	3551	2811	2510	2376	1477	295	1667	932	103
BUTTE CITY	530435	BTCYCA11	127	255	3.79	2.19	42	47	4	4	3328	2313	116	113	67	7	61	33	2
C STREET	619777	SNDGCA01	7,687	15,374	0.59	0.33	44	48	8	7	4494	3495	1085	1029	609	192	760	414	101
CALABASAS LAS VIRG	EI 818665	CLBSCA50	1,394	2,788	0.79	0.33	58	63	6	6	3325	3052	263	255	110	28	198	75	22
	760712	CLXCCA12	2,815	5,630	1.12	0.34	70	78	3	2	2205	1743	/5/	/11	230	29	448	111	3
	A 760713	CLPTCATT	335	6/1	1.22	0.37	69	74	2	2	1510	980	98	90	30	1	62	18	0
CALISTOGA	101282	CMBACA11	1,492	2,984	2.40	1.82	20	33	12	2	2010	1077	877 725	843 701	270	233	450	322	/0
	603304 550156		1,093	3,700	1.02	0.03	40	25	4	3	2040 5272	2240	100	101	379	29	250	214	0 12
	760714		130	261	0.38	2.30	33	25	7	4 5	3060	3340	494	479	419	2	209	214	13
	619715		631	1 261	2.65	1 4 1	47	58	13	3	5975	1071	401	370	213	53	238	110	6
CAMPTONVILLE	530436	CMPVCA11	269	538	4.35	3 34	-1/	20	10	7	7008	4569	281	278	213	77	138	97	23
CANOGA PARK	818610	CNPKCA01	18.772	37.544	1.12	0.42	62	70	.3	2	2170	1639	5035	4783	1904	206	3440	1073	23 97
CAPELLA/IVANHOF	707327	IVNHCA11	1.370	2.740	2.66	1.74	34	42	14	.9	7531	4783	874	844	573	250	585	355	107
CAPITOL	323638	LSANCA23	9,986	19,973	1.28	0.79	38	44	6	4	3712	2932	3058	2926	1905	266	1992	1162	90
CARLSBAD CAMINO VI	D,760717	CRLSCA12	5,385	10,771	0.55	0.27	52	55	6	5	3188	2793	712	668	344	79	536	257	47
CARMEL JUNIPERO	831105	CRMLCA11	5,958	11,915	1.19	0.59	50	58	5	3	3592	1922	1696	1575	846	135	1009	468	25


Het         Het         Met         Marge         Average           Units (org. Lines (org. Lines (org. Lines))         CLUI         Guild (org. Lines)         COS2							Та	ble 4A.6	6 (page3	of 13)										
Access         Access         OOS p2         Cleard         Cleard         Unit         Vinit         Vinit       <								Pct	Pct	# days	# days		Average							
Under Service         Under Se				Access	Access	OOS per	00S>24	Cleared	Cleared	to clear	to clear	Average	CPUČ							
Ware Central: Name         Ware Central: A control         Order         Outsite         Outsite <t< th=""><th></th><th></th><th></th><th>Lines (avg</th><th>Lines (avg</th><th>100 ALs</th><th>per 100</th><th>w/in 24</th><th>w/in 24</th><th>90%</th><th>90%</th><th>00S</th><th>OOS</th><th>000</th><th>000 &gt; 4</th><th>005 &gt;</th><th>000 &gt; 4</th><th>CPUC</th><th>CPUC</th><th>CPUC</th></t<>				Lines (avg	Lines (avg	100 ALs	per 100	w/in 24	w/in 24	90%	90%	00S	OOS	000	000 > 4	005 >	000 > 4	CPUC	CPUC	CPUC
CAMBEL VALLEY         83 100         CPV         43         907         42         947         671         969         133         42         024         044         150           CARNOL STREE         651157         CRTHCA11         10615         2123         0.97         0.55         40         44         7         6         4013         3366         2619         233         44         924         1468         1469         171         4468         151           CARUATINES         651157         CRTHCA11         10615         2123         277         138         1         101         133         62         67         3         21651         1433         540         553         62         54         3         2271         1477         353         272         143         9         33         0           CANTOCS         CVSCA11         1.426         2.409         3.62         65         3185         2.266         2002         1145         990         122         124         448         283         41           CHUNCA11         1.945         2.771         2.24         0.877         77         62         3         2.278         1149	Wire Center Name	WireContor	CLU	TOF Quarter)	TOF Quarter)	per month	ALS per	(upadi)	nours (adi)	(upadi)	(adi)	Juration (mine)	Juration	Total	005>1	Z4 Hours	UUS > 1	005 > 1	24 hours	Week
CARROLLSTREET         408138         CSMAROLLSTREET         408138         CSMAROLLSTREET         408138         CSMAROLLSTREET         408138         CSMAROLLSTREET         408138         CSMAROLLSTREET         408138         CSMAROLLSTREET         408138         2010         1183         1283         1184         308         309         30         533         126         1         101		831106		1 297	2 504	1.83	1 07	(unauj) 42	(auj) 47	(unauj)		3308	2591	571	560	333	42	324	184	11
CARUTLERS	CARROLL STREET	408138	SNVACA01	10 615	21 231	0.97	0.58	40	44	7	- 6	4013	3365	2459	2330	1469	372	1466	854	160
CASTACL         661408         CSTCCA11         4.10         0.419         0.85         0.33         62         67         3         2         1968         1425         963         581         251         11         410         133         42           CATUCOS         805366         CYCSCA11         7.09         1.419         1.66         0.44         49         59         4         3         2274         143         9149         63         00           CENTRAL VALUE         350586         CYNCSCA11         2.04         1.12         0.55         15         56         6         5         31185         2.205         1449         600         2.20         1248         501         68         5         31185         2.208         1418         900         2.20         1248         501         68         5         3118         2.208         2.01         1248         1190         2.21         124         4         3         2.208         1141         103         42         104         3         2.228         100         677         48         118         503         740         740         740         740         740         740         740         74	CARUTHERS	559157	CRTHCA11	505	1.009	2.97	1.57	47	51	. 3	2	2070	1698	360	349	190	7	275	136	1
CASTROVILLE         891107         CSVLCA11         1.412         2.944         1.63         0.56         66         66         3         2         1963         1683         561         205         11         410         153         46           CAVUCOS         805362         CNVCXA11         2.064         4.129         1.28         1.50         48         57         44         4         2227         1.43         9         49         48         20         2.49         4.8         2.21         4.28         2.21         4.28         2.21         4.48         2.21         4.48         2.21         4.48         2.21         4.48         2.21         4.48         2.21         4.48         2.21         4.48         2.21         4.48         2.21         4.48         2.21         4.44         2.22         4.48         2.21         4.44         4.43         2.228         4.10         4.14         4.49         4.14         4.2         4.7         4.38         3.205         1.03         4.6         5.01         4.3         2.24         4.99         4.1         4.4         4.9         0.01         4.44         4.24         4.7         4.38         3.202         1.49	CASTAIC	661408	CSTCCA11	4,710	9,419	0.85	0.33	62	67	3	2	1958	1425	963	895	369	39	553	192	9
CAVUCOS       895366       CYCSCA11       7.09       1.419       1.66       0.84       49       50       4       23       2274       1407       283       272       143       9       199       63       9         CENTRUX VJLVLY       30683       WLANCA01       7.460       1.4921       1.12       0.55       51       50       6       5       3185       2265       1082       912       2128       448       23       411         CHALLENCE       530437       CHINCA11       1.243       2.243       110       0.45       55       62       4       3       2128       118       0.60       1538       612       122       1410       0.61       1538       613       123       2265       1017       206       163       23       2263       1017       206       101       150       183       107       150       114       402       4       3       2574       2381       272       183       150       184       170       256       60       5       4       2305       2417       2381       128       1416       149       443       2128       143       144       144       144       4	CASTROVILLE	831107	CSVLCA11	1,482	2,964	1.63	0.58	65	66	3	2	1953	1683	580	551	205	11	410	153	4
CENTRAL VALLEY         530282         CMVYCA11         2.064         4.129         2.88         1.50         4.8         57         4         4         2.82         2.86         1.22         1.75         7.42         6.2         2.92         4.26         2.12         2.56         3.63         2.66         3.23         2.16         3.62         2.21         2.55         3.65         6.66         3.22         1.75         7.42         6.2         4.12         2.56         3.61         3.2         2.265         3.65         3.62         2.65         3.2         2.265         3.65         6.2         4.3         2.155         6.65         3.2         2.233         2.10         4.65         5.65         4.3         2.263         2.10         6.10         7.10         7.10         7.10         7.10         7.10         7.10         7.10         7.10         7.10         7.10	CAYUCOS	805366	CYCSCA11	709	1,419	1.66	0.84	49	59	4	3	2274	1497	283	272	143	9	149	63	0
CENTURY GITY 310663 WLANCAU 7,460 14.921 1.12 0.56 51 58 6 6 5 3165 226 2009 1645 980 220 1249 570 68 12 337 448 283 41 CHALENNE 530437 CH.NCAI 1 9.242 4.240 3.62 2.72 2.5 38 10 6 566 326 1082 1052 812 238 48 283 41 CHALENNE 530438 CHICLAN 11 9.24 2.480 3.62 2.72 2.5 38 10 0.59 51 58 4 3 2.251 2111 410 3917 200 241 2.72 122 125 116 CHONCAULA 53918 CHICLAN 11 1.376 2.757 2.24 0.677 57 6.2 3 2.223 190 676 68 288 16 561 288 16 561 18 56 12 CHALENNE 530438 CHICLAN 11 1.376 2.757 12.49 0.677 57 6.2 3 2.223 190 676 68 288 16 561 48 28 16 561 18 56 12 CHALENNE 530548 CHILAN 11 1.376 2.757 0.42 0.677 57 0.42 3.269 1.20 0.59 51 58 4.4 2 28 7 499 310 57 489 390 2.27 499 310 57 490 397 240 55 0.247 170 142 3.098 1.55 0.88 4.43 47 4 3 2.574 2.381 738 709 4.24 2.58 478 2.29 51 CLANCAU 11 1.978 2.5560 0.75 0.33 56 60 5 4 2.76 49 317 58 709 4.24 2.28 478 2.24 56 CLANCAU 1.1 1.730 2.365 0.44 1.76 4.395 2.44 2.389 2.45 2.399 2.192 1.22 18 189 1457 669 44 7 CLANCAU 1.1 1.78 2.326 2.48 1.78 2.384 1.78 2.397 4.40 338 42 0.55 0.41 1.97 0.42 4.1 4.2 4 8 5 4.43 2.924 2.269 2.192 1.228 189 1457 669 44 7 CLANCAU 5.59159 CLUSCAU 1 1.173 2.362 1.48 1.78 5.75 5 4.4 85 7 5 4 3.48 2.96 2.665 3.35 315 2.3 101 2.25 1.24 1.78 1.07 0.55 4.4 51 57 5 4 3.48 2.96 2.665 3.35 315 2.3 101 2.25 1.24 1.24 51 57 5 4 3.48 2.96 2.665 3.35 315 2.30 101 2.25 1.26 1.24 1.24 1.25 1.24 1.51 57 5 4 3.48 2.96 2.665 3.35 315 2.30 101 2.25 1.55 0.4 4 48 8 12 4.43 2.922 1.966 1.35 315 4.30 101 2.25 1.56 4.4 2.0 0.24 1.44 1.44 1.44 1.44 1.44 1.44 1.44 1	CENTRAL VALLEY	530528	CNVYCA11	2,064	4,129	2.88	1.50	48	57	4	4	2627	2065	1429	1375	742	62	929	426	21
CHALLENDE       590437       CHLNCA11       1,245       2,400       3,62       2,72       2,55       38       10       6       565       1625       1062       1052       1122       216       144       223       444       223       444       223       124       1252       127       125       126       137       126       133       2200       211       4100       317       2000       241       272       126       114       106       6       619714       137       6157       623       2       2238       1907       73       657       63       4       3297       226       103       48       18       43       30       0       0       44       47       64       3       2054       1145       106       48       18       43       30       0       44       47       46       7       458       303       55       4       3205       215       226       114       149       44       47       45       4       303       55       4       4       4       4       44       47       4       48       5       5       4       403      303       44       48	CENTURY CITY	310663	WLANCA01	7,460	14,921	1.12	0.55	51	59	6	5	3185	2266	2009	1845	980	220	1249	570	68
CHAPMAN         T14759         DNRGCA11         9,321         19,322         10,45         66         62         4         3         2168         1783         2397         2285         1086         69         1558         612         377           CHOWALLA         599158         CHWCCA11         1376         22,399         107         673         657         288         16         601         168         6         90         155         55         4         3         2044         1745         607         288         11         65         39         2         2038         1907         673         607         288         39         0           CHUALAR         0.81174         CHWCAL1         1,38         306         155         0.84         43         47         4         32         217         2217         120         134         13         477         286         137         515         141         138         309         1457         669         49         147         1367         147         147         147         147         147         147         146         146         147         148         148         468         466	CHALLENGE	530437	CHLNCA11	1,245	2,490	3.62	2.72	25	38	10	6	5659	3629	1082	1052	812	236	448	283	41
CHILO MAIN       SHA38       CHILCAU1       14,199       22,399       1,20       0.93       51       58       4       3       2620       211       4100       5917       2000       241       2722       1220       119         CHUMALIAR       S51164       CHRACA11       199       397       2.24       10.1       55       54       3       2.238       107       673       657       288       4       19       44       19       44       19       44       19       44       19       44       19       44       14       4       14       4       4       2054       2281       228       107       11       198       6       6       77       627       2287       728       1003       175       1615       66       6       72       2367       2289       128       103       175       164       77       627       2367       2289       128       128       143       139       2367       143       143       936       245       2369       144       139       147       140       947       143       139       147       140       139       147       140       1377       144 </td <td>CHAPMAN</td> <td>714759</td> <td>ORNGCA11</td> <td>9,921</td> <td>19,842</td> <td>1.01</td> <td>0.45</td> <td>56</td> <td>62</td> <td>4</td> <td>3</td> <td>2158</td> <td>1793</td> <td>2397</td> <td>2265</td> <td>1066</td> <td>90</td> <td>1558</td> <td>612</td> <td>37</td>	CHAPMAN	714759	ORNGCA11	9,921	19,842	1.01	0.45	56	62	4	3	2158	1793	2397	2265	1066	90	1558	612	37
CHUMURILLA         BS91788         CHWOCLATI         1,3/6         2,7/8         2,2/8         1,9/7         6/3         6/3         2,88         1,0         5,10         1,9/8         8           CHUUALAR         851104         CHUCALTI         1,99         9         3,07         2,222         1,01         55         55         4         3,2054         1,28         1,03         44         1,84         39         0           CHUALAN         1,84         3,999         6,199         0,71         0,42         4         42         8         7         4,058         30,02         527         499         311         95         337         2,40         59           CLAYTON         23,074         LSOLCALT         12,78         25,558         0,70         0,35         6         6         7         3         7         1,916         1,917         1,916         4,918         1,917         1,916         1,918         4,917         1,916         4,918         1,917         1,916         1,918         1,917         1,916         1,918         4,918         1,917         1,916         1,918         1,918         1,917         1,916         1,918         1,918         1,918	CHICO MAIN	530438	CHICCA01	14,199	28,399	1.20	0.59	51	58	4	3	2620	2111	4100	3917	2000	241	2722	1226	119
CHULAN TALEAST 619719 CHUSCA11 198 395 2.22 100 35 30 4 5 2.438 143 105 105 105 46 1 84 37 246 59 CLAYTON 255081 CYTRCA11 198 396 6.198 155 0.89 41 44 8 7 4 3 2.554 2.81 7.28 708 424 28 478 247 56 CLAYTON 255081 CYTRCA11 198 3969 1.55 0.89 41 44 4 3 2.554 2.81 7.28 708 424 28 478 24 778 708 708 708 708 708 708 708 708 708	CHOWCHILLA	559158	CHWCCA11	1,376	2,751	2.04	0.87	57	62	3	2	2238	1907	673	657	288	16	501	196	6
CICLATION       915/19       CITUCAL11       1,94       3,98       0,1,95       0,1,1,1       0,		610710		3 000	6 100	0.71	0.42	25	12	4	37	4269	2002	527	103	40	05	207	240	50
CLEAR LAKE OAKS         TOTZB3         CLOKCA11         12.760         25.860         0.75         0.33         65         60         7         4         2706         2157         2287         2128         103         175         1615         676         87           CLINTON         5001CA11         1.163         2.226         2.48         178         2.8         34         6         7         8407         424         289         2128         103         447         344         73           CLOVIS         50160         CLNGCAD1         1.163         2.251         1.24         51         7         5         4         4343         2862         682         656         1532         44         484         208         73         73         744         444         8         5         643         2822         1086         1050         165         167         455         43         2433         2461         1174         175	CLAYTON	925081	CYTNCA11	1 984	3 969	1.55	0.42	41	42	4	1	2574	2381	738	709	424	28	478	240	5
CLINTON         323844         LSANCASE         9,218         19,438         10,7         0.55         48         57         6         4         335         2422         2369         2192         1226         189         1457         689         49           CLOVERDALE         707244         CODICA11         11,197         23,857         1.55         0.54         65         72         3         2         1611         1.259         4465         4337         54         4444         208         337         54         4444         208         337         55         45         4464         208         6337         56         47         3235         316         116         1145         017         017         15,745         017         017         15,745         017         016         015         015         015         015         015         015         015         015         015         0165         015         015         0165<	CLEAR LAKE OAKS	707283	CLOKCA11	12 780	25 560	0.75	0.00	56	60	5	4	2706	2157	2287	2128	1003	175	1615	676	87
CLOVERDALE         T072241         CODICATI         1183         2326         2.48         17.8         28         34         9         7         5497         4124         691         661         497         163         497         344         73           COALINGA         559160         CLNGCA11         1.131         2.261         2.51         0.54         65         77         3         2         1611         129         4465         4305         1552         47         3229         942         163           COBLMINGA         559160         CLNGCA11         429         888         3.25         2.23         1.3         36         12         9         6627         5059         333         315         2.00         101         2.25         155         47           COLLAG         650010         COLACA01         7.773         15,745         0.33         0.39         55         5         5         3044         174         129         1414         1292         1414         1297         170         123         555         13         2413         1493         1171         170         155         141         249         2413         1393         1171 <td>CLINTON</td> <td>323644</td> <td>LSANCA56</td> <td>9 218</td> <td>18 436</td> <td>1 07</td> <td>0.55</td> <td>48</td> <td>57</td> <td>6</td> <td>4</td> <td>3395</td> <td>2452</td> <td>2369</td> <td>2192</td> <td>1226</td> <td>189</td> <td>1457</td> <td>689</td> <td>49</td>	CLINTON	323644	LSANCA56	9 218	18 436	1 07	0.55	48	57	6	4	3395	2452	2369	2192	1226	189	1457	689	49
CLOVIS       559159       CLVSCA11       11.978       23.957       1.55       0.54       65       72       3       2       111       12.59       4.465       4.305       15.52       4.7       3259       942       16         COALINGA       559160       CLNCACA11       4.29       8.58       3.25       2.23       31       36       12       9       6627       559       335       315       2.30       101       2.25       155       4.7         COLLEGE       61972       S00CA11       3.553       7.745       0.93       0.39       58       64       4       3       2023       1641       1976       1650       167       356       167       356       167       356       167       356       167       356       167       356       167       358       167       3084       2413       1933       1175       160       1365       309       126       309       126       127       344       117       67       242       2217       1440       5840       573       3244       183       127       176       2262       339       126       130       126       130       127       127 <t< td=""><td>CLOVERDALE</td><td>707284</td><td>CODLCA11</td><td>1,163</td><td>2,326</td><td>2.48</td><td>1.78</td><td>28</td><td>34</td><td>9</td><td>. 7</td><td>5497</td><td>4124</td><td>691</td><td>661</td><td>497</td><td>163</td><td>497</td><td>344</td><td>73</td></t<>	CLOVERDALE	707284	CODLCA11	1,163	2,326	2.48	1.78	28	34	9	. 7	5497	4124	691	661	497	163	497	344	73
COALINGA       559160       CLNGCO11       1,131       2,261       2,261       2,23       31       56       57       5       4       3483       2062       666       337       54       4444       208       33         CODBM OUNTAIN       707255       CBMTCA11       3,533       7,105       1.29       0,72       44       48       8       5       4543       2022       1096       1050       615       165       679       356       43         COLLAGA       5001       COLACAD1       7,873       15,745       0,93       0,39       58       64       4       3       2032       1644       1744       1607       730       56       1167       461       155       55       5       3084       2811       1929       1841       929       1841       926       926       408       825       390       12       55       5       3084       2813       1172       1106       56       414       30       2413       1933       1172       1106       302       2817       364       32       247       3043       1217       672       2826       373       324       42       2917       366 <td< td=""><td>CLOVIS</td><td>559159</td><td>CLVSCA11</td><td>11,978</td><td>23,957</td><td>1.55</td><td>0.54</td><td>65</td><td>72</td><td>3</td><td>2</td><td>1611</td><td>1259</td><td>4465</td><td>4305</td><td>1552</td><td>47</td><td>3259</td><td>942</td><td>16</td></td<>	CLOVIS	559159	CLVSCA11	11,978	23,957	1.55	0.54	65	72	3	2	1611	1259	4465	4305	1552	47	3259	942	16
COBB MOUNTAIN       707285       CBMTCA11       429       858       3.25       2.23       31       36       12       9       6627       509       335       315       230       101       225       155       47         COLLEGE       613762       SNDGCA11       3,553       7,105       129       0,72       44       48       8       5       45.3       2022       164       176       165       679       356       43         COLTON       909720       COTNCA11       4,506       9,011       1.78       0.90       55       5       5       3084       2814       1929       1841       972       170       1235       555       45         COLUMBUS       661358       BKFDCA13       3.327       6.654       1.47       0.70       60       70       4       2       217       1440       5840       573       2344       282       3926       127       36       177       3.332       2.40       1.13       53       59       4       3       2261       1831       949       98       448       17       528       238       4       0       0.00       355       5       4       202	COALINGA	559160	CLNGCA01	1,131	2,261	2.51	1.24	51	57	5	4	3483	2962	682	656	337	54	464	208	33
COLLEGE       619782       SNDGCA11       3,563       7,105       1.29       0,72       44       48       8       5       4543       2922       1096       1050       615       679       356       64       43       2022       1046       1754       1050       760       760       767       4461       155         COLTON       909720       COTNCA11       4,506       9,011       1.78       0.90       50       55       5       3084       2814       1929       1841       972       170       1235       555       85         COLMMOUS       661366       BKFDCA13       3,327       6,654       1.47       0,70       52       55       4       3       211       1833       1172       1106       562       40       822       61275       36       1275       30       22       1807       1369       3247       3043       1217       67       2262       736       17       30       244       149       9       364       3226       1831       949       898       448       110       363       14       26       17       53       5       4       2628       2899       4029       3797	COBB MOUNTAIN	707285	CBMTCA11	429	858	3.25	2.23	31	36	12	9	6627	5059	335	315	230	101	225	155	47
COLMA       650010       COLACA01       7,873       15,745       0.93       0.39       58       64       4       3       2032       1644       1754       1607       730       56       161       161       155       56       56       56       56       56       50       3084       2217       1440       5840       573       2344       2825       3234       283       437       237       30       264       147       630       226       1330       244       13       53       59       4       3       2226       131       949       88       448       17       128       31       238       46       2007       217       106       0.45       57       59       5       4       2628       2389       4029       379       1728       311       289	COLLEGE	619782	SNDGCA11	3,553	7,105	1.29	0.72	44	48	8	5	4543	2922	1096	1050	615	165	679	356	43
COLTON       909720       CONNCA11       4,506       9,011       1.7.8       0.90       50       55       5       30.84       2814       1929       1841       972       170       1235       555       55       55       50       30.42       2814       1929       1841       972       170       1235       555       55       55       50       30.44       2814       1929       1841       972       170       1235       555       55       50       2413       3133       1712       1106       562       40       825       32413       3133       1717       67       2262       736       176       178       3177       33       949       949       3943       1217       67       2262       736       176       237       30       264       149       9         CORNOA       51721       CORNCA11       1,651       3,302       2.40       1.13       53       59       4       3       2226       1831       949       898       448       17       2528       2.38       402       3797       1728       112       1808       39       128       188       6       4312       3666       2674	COLMA	650010	COLACA01	7,873	15,745	0.93	0.39	58	64	4	3	2032	1644	1754	1607	730	56	1167	461	15
COLUMBUS       661358       BKFDCA13       3,327       6,654       1,4       0,70       52       65       4       3       2413       1933       1172       1106       562       40       825       390       12         COMPTON       310609       CMTICA01       13,817       27,742       1,75       0,70       60       70       4       2       2413       1389       3247       3043       1217       67       2262       736       177         CORNCORD       925009       CNCRCA01       12,273       24,546       1,10       0,41       63       70       3       22       1807       1369       3247       3043       1217       67       2262       736       177         CORNIA       530440       CRNCA11       15,887       31,775       1.06       0,45       57       59       5       4       2628       2839       4029       3797       1728       311       2893       148       88       60         CORONA       619723       CRMCA11       8,346       16,693       0,73       0,34       54       57       5       4       2036       1690       2055       148       48       48	COLTON	909720	COTNCA11	4,506	9,011	1.78	0.90	50	55	5	5	3084	2814	1929	1841	972	170	1235	555	85
COMPTON       310609       CMTNCA01       13,871       27,742       1,75       0,70       60       70       4       2       217       1440       5840       5573       2344       282       3926       1275       36         CONNCORD       925009       CNCRCAD1       12,73       24,546       1.10       0.41       63       70       3       2167       136       3247       3043       1217       67       22262       736       17         CORNING       530440       CRNGCA12       1,770       3,539       0.90       0.56       38       48       5       3       3214       2278       382       357       237       30       264       149       9       98       448       17       528       238       4         CORNA       949722       CRNDCA11       8,346       16,693       0.73       0.34       54       57       5       4       2029       2574       1463       1379       672       111       1283       485       61         CORONADE       949725       CSMSCA11       8,504       17,008       1.01       0.36       64       69       4       3       2036       1690	COLUMBUS	661358	BKFDCA13	3,327	6,654	1.47	0.70	52	55	4	3	2413	1933	1172	1106	562	40	825	390	12
CONCORD       925009       CNCRCA01       12,170       32,434       10       0.41       63       70       3       2       1807       1369       3247       3043       1217       67       2262       736       17         CORDELLA       707286       CORDCA12       1,651       3,302       2.40       1.13       53       59       4       3       2226       1831       949       898       448       17       528       238       4         CORNING       530440       CRNGCA11       15,867       31,775       1.06       0.45       57       59       4       2628       2389       4029       3797       1728       311       2983       1218       188         CORONA DEL MAR       949722       CRNDCA11       2,337       4.674       0.49       0.26       47       53       8       6       4312       3646       277       263       148       46       201       99       28       COSTA MESA       949725       CSMSCA11       8,504       17,008       1.01       0.36       64       69       4       3       2036       1690       2055       1930       741       96       1519       488       39	COMPTON	310609	CMTNCA01	13,871	27,742	1.75	0.70	60	70	4	2	2217	1440	5840	5573	2344	282	3926	1275	36
CORDELIA       70/286       CORDA12       1,770       3,539       0.90       0.95       38       48       5       3       3214       2278       382       357       237       30       264       149       9         CORNING       530440       CRNGCA12       1,651       3,302       2.40       1.13       53       59       5       4       2628       2389       4029       3797       1728       311       2893       1218       188         CORONA       949722       CRDMCA11       8,346       16,693       0.73       0.34       54       57       5       4       2909       2574       1463       1379       672       117       1083       485       61       0.45       57       5       4       2909       2574       1463       148       46       201       99       28         CORONAD       619723       CRNDCA11       8,504       17,008       1.01       0.36       64       69       4       3       2036       1690       2055       1930       741       96       1519       488       39         COTTONVOOD       530441       CTWCA11       7008       3.21       1.87       42	CONCORD	925009	CNCRCA01	12,273	24,546	1.10	0.41	63	70	3	2	1807	1369	3247	3043	1217	67	2262	736	17
CORNING       530440       CRNGLA12       1,631       3,302       2.40       1,13       53       59       4       3       2226       1631       949       690       446       17       528       238       4         CORONA       951721       CORNCA11       15.887       31,775       1.06       0.45       57       59       5       4       2628       2389       4029       3979       1728       311       2893       485       61         CORONA       619723       CRNDCA11       2,337       4,674       0.49       0.26       47       53       8       6       4312       3646       277       263       148       46       201       9       28         COSTA MESA       949725       CSMSCA11       8,504       1,00       0.10       0.36       64       69       4       32036       1690       2055       1930       741       96       1519       488       39         COTTONWOOD       530441       CTWCA11       2,685       5,365       3.21       1.87       42       51       6       4       3568       2539       2066       190       1201       176       1477       34       5	CORDELIA	707286	CORDCA12	1,770	3,539	0.90	0.56	38	48	5	3	3214	2278	382	357	237	30	264	149	9
CORONA DEL MAR       501/21       CORNCATI       15,067       51,73       1.00       0.43       57       53       4       2020       2369       4023       1379       1672       117       1083       485       61         CORONA DEL MAR       949722       CRNDCA11       2,337       4,674       0.49       0.26       47       53       8       6       4312       3646       277       263       148       46       201       99       28         COSTA MESA       949725       CSMSCA11       8,504       17,008       1.01       0.36       64       69       4       3       2036       1690       2055       1930       741       96       1519       488       39         COTATI       707287       CTTICA12       2,685       5,371       1.06       0.70       34       38       10       8568       4830       680       647       452       147       731       98         COTTONWOOD       530441       CTWLCA11       2,682       5,365       3.21       1.87       42       51       6       4       3568       239       2066       1990       1201       176       1419       734       59 <t< td=""><td>CORINING</td><td>051721</td><td></td><td>1,001</td><td>3,302</td><td>2.40</td><td>1.13</td><td>53</td><td>59</td><td>4</td><td>3</td><td>2220</td><td>1031</td><td>4020</td><td>2707</td><td>448</td><td>211</td><td>228</td><td>238</td><td>4</td></t<>	CORINING	051721		1,001	3,302	2.40	1.13	53	59	4	3	2220	1031	4020	2707	448	211	228	238	4
CORONADC       619722       CNDMCAT1       0,940       10,93       0.7       0.5		931721	CRDMCA11	8 346	16 603	0.73	0.45	54	57	5	4	2020	2509	4029	1370	672	117	1083	1210	61
COSTA MESA       949725       CSMSCA11       8,071       17,003       10,071       0,071       0,070       34       38       10       8       5668       4830       680       647       452       187       477       313       98         COTATI       707287       CTTICA12       2,685       5,371       1.06       0.70       34       38       10       8       5668       4830       680       647       452       187       477       313       98         COTTONWOOD       530441       CTWDCA11       2,682       5,365       3.21       1.87       42       51       6       4       3568       2539       2066       1990       1201       176       1419       734       59         COULTERVILLE       209161       CTVLCA11       759       1,518       3.12       2.21       29       37       11       9       6237       4275       569       560       403       17       32       209       54         COYOTE WELLS       760726       CYWLCA11       6       120       2.15       0.83       61       74       6       2       2434       1118       31       30       120       136		619723	CRNDCA11	2 337	4 674	0.70	0.04	47	53	8	- 6	4312	3646	277	263	148	46	201	99	28
COTATILE       707287       CTTICA12       2,685       5,371       1.06       0.70       34       38       10       8       5868       4830       680       647       452       187       477       313       98         COTATIL       2,682       5,365       3.21       1.87       42       51       6       4       3568       2539       2066       1990       1201       176       1419       734       59         COUTONWOOD       530441       CTWLCA11       759       1,518       3.12       2.21       29       37       11       9       6237       4275       569       560       403       147       324       209       54         COYOTE WELLS       760726       CYWLCA11       60       120       2.15       0.83       61       74       6       2       2434       1118       31       30       12       3       21       6       1       100       110       CROCKETT       510011       CRCTCA02       374       748       0.96       0.67       30       33       7       6       4785       4564       86       83       60       23       59       40       11       CRCKETT <td>COSTA MESA</td> <td>949725</td> <td>CSMSCA11</td> <td>8 504</td> <td>17 008</td> <td>1.01</td> <td>0.20</td> <td>64</td> <td>69</td> <td>4</td> <td>3</td> <td>2036</td> <td>1690</td> <td>2055</td> <td>1930</td> <td>741</td> <td>96</td> <td>1519</td> <td>488</td> <td>39</td>	COSTA MESA	949725	CSMSCA11	8 504	17 008	1.01	0.20	64	69	4	3	2036	1690	2055	1930	741	96	1519	488	39
COTTONWOOD       530441       CTWDCA11       2,682       5,365       3.21       1.87       42       51       6       4       3568       2539       2066       1990       1201       176       1419       734       59         COULTERVILLE       209161       CTVLCA11       759       1,518       3.12       2.21       29       37       11       9       6237       4275       569       560       403       147       324       209       54         COVOTE WELLS       760726       CYWLCA11       60       120       2.15       0.83       61       74       6       2       2434       1118       31       30       12       3       21       6       1         CROCKETT       510011       CRCTCA02       374       748       0.96       0.67       30       33       7       6       4785       4564       86       83       60       23       59       40       11         CROKETT       510010       CRUCA12       112       224       2.67       2.08       22       25       6       4       4627       3376       72       71       56       7       4       3       2338	COTATI	707287	CTTICA12	2.685	5.371	1.06	0.70	34	38	10	8	5868	4830	680	647	452	187	477	313	98
COULTERVILLE       209161       CTVLCA11       759       1,518       3.12       2.21       29       37       11       9       6237       4275       569       560       403       147       324       209       54         COYOTE WELLS       760726       CYWLCA11       60       120       2.15       0.83       61       74       6       2       2434       1118       31       30       12       3       21       6       1         CROCKETT       510011       CRCTCA02       374       748       0.96       0.67       30       33       7       6       4785       4564       86       83       60       23       59       40       11         CROWS LANDING       209162       CWLDCA12       112       224       2.67       2.08       22       25       6       4       4627       3376       72       71       56       7       48       36       2       24       2.67       2.08       22       25       6       4       4627       3376       72       71       56       7       48       36       2       24       209       54         CULVER CITY       310608	COTTONWOOD	530441	CTWDCA11	2,682	5,365	3.21	1.87	42	51	6	4	3568	2539	2066	1990	1201	176	1419	734	59
COYOTE WELLS       760726       CYWLCA11       60       120       2.15       0.83       61       74       6       2       2434       1118       31       30       12       3       21       6       1         CROCKETT       510011       CRCTCA02       374       748       0.96       0.67       30       33       7       6       4785       4564       86       83       60       23       59       40       11         CROCKETT       510011       CRCTCA02       374       748       0.96       0.67       30       33       7       6       4785       4564       86       83       60       23       59       40       11         CROCKETT       310608       CLCYCA11       10.929       21.857       1.09       0.46       58       67       4       3       2338       1509       2851       2603       1201       120       1631       605       24         CYPRESS       714702       ANHMCA11       11.280       22.559       1.19       0.58       51       55       5       4       2704       1203       1201       120       1631       605       263       265       15	COULTERVILLE	209161	CTVLCA11	759	1,518	3.12	2.21	29	37	11	9	6237	4275	569	560	403	147	324	209	54
CROCKETT       510011       CRCTCA02       374       748       0.96       0.67       30       33       7       6       4785       4564       86       83       60       23       59       40       11         CROWS LANDING       209162       CWLDCA12       112       224       2.67       2.08       22       25       6       4       4627       3376       72       71       56       7       48       36       2         CULVER CITY       310608       CLCYCA11       10.929       21,857       1.09       0.46       58       67       4       3       2338       1509       2851       2603       1201       120       1631       605       24         CYPRESS       714702       ANHMCA11       11,280       22,559       1.19       0.58       51       55       5       4       2774       230       3229       3039       1572       252       2237       1030       115         DANVILLE       925012       DAVLCA12       7,103       14,207       1.07       0.51       52       58       4       3       2406       1926       1823       1701       866       26       26       97	COYOTE WELLS	760726	CYWLCA11	60	120	2.15	0.83	61	74	6	2	2434	1118	31	30	12	3	21	6	1
CROWS LANDING       209162       CWLDCA12       112       224       2.67       2.08       22       25       6       4       4627       3376       72       71       56       7       48       36       2         CULVER CITY       310608       CLCYCA11       10.929       21,857       1.09       0.46       58       67       4       3       2338       1509       2851       2603       1201       120       1631       605       24         CYPRESS       714702       ANHMCA11       11,280       22,559       1.19       0.58       51       55       5       4       2774       230       3229       3039       1572       252       2237       1030       115         DANVILLE       925012       DAVLCA12       7,103       14,207       1.07       0.51       52       58       4       3       2406       1926       1823       1701       866       68       1268       901       50       97         DAVIS       530442       DAVSCA11       5,754       11,509       0.96       0.62       35       43       11       7       6083       4167       1331       1258       862       285	CROCKETT	510011	CRCTCA02	374	748	0.96	0.67	30	33	7	6	4785	4564	86	83	60	23	59	40	11
CULVER CITY       310608       CLCYCA11       10,929       21,857       1.09       0.46       58       67       4       3       2338       1509       2851       2603       1201       120       1631       605       24         CYPRESS       714702       ANHMCA11       11,280       22,559       1.19       0.58       51       55       5       4       2774       2303       3229       3039       1572       252       2237       1030       115         DANVILLE       925012       DAVLCA12       7,103       14,207       1.07       0.51       52       58       4       3       2406       1926       1823       1701       866       68       1268       563       97         DAVIS       530442       DAVSCA11       5,754       11,509       0.96       0.62       35       43       11       7       6083       4167       1331       1258       862       285       901       550       97         DEL MAR       858727       DLMRCA12       7,535       15,071       0.72       0.40       45       48       5       5       3500       2989       1299       1227       717       158       908	CROWS LANDING	209162	CWLDCA12	112	224	2.67	2.08	22	25	6	4	4627	3376	72	71	56	7	48	36	2
CYPRESS       714702       ANHMCA11       11,280       22,559       1.19       0.58       51       55       4       2774       2350       3229       3039       1572       252       2237       1030       115         DANVILLE       925012       DAVLCA12       7,103       14,207       1.07       0.51       52       58       4       3       2406       1926       1823       1701       866       68       1268       563       26         DAVIS       530442       DAVSCA11       5,754       11,509       0.96       0.62       35       43       11       7       6083       4167       1331       1258       862       285       901       550       97         DEL MAR       858727       DLMRCA12       7,535       15,071       0.72       0.40       45       48       5       5       3500       2989       1299       1227       717       158       908       498       81         DEL REY       559163       DLRYCA11       188       376       2.66       1.02       62       74       3       2       1860       1335       120       114       46       3       89       25       1	CULVER CITY	310608	CLCYCA11	10,929	21,857	1.09	0.46	58	67	4	3	2338	1509	2851	2603	1201	120	1631	605	24
DANVILLE       925012       DAVLCA12       7,103       14,207       1.07       0.51       52       58       4       3       2406       1926       1823       1701       866       68       1268       563       26         DAVIS       530442       DAVSCA11       5,754       11,509       0.96       0.62       35       43       11       7       6083       4167       1331       1258       862       285       901       550       97         DEL MAR       858727       DLMRCA12       7,535       15,071       0.72       0.40       45       48       5       5       3500       2989       1299       1227       717       158       908       498       81         DEL MAR       858727       DLMRCA12       7,535       15,071       0.72       0.40       45       48       5       5       3500       2989       1299       1227       717       158       908       498       81         DEL REY       559163       DLRYCA11       188       376       2.66       1.02       62       74       3       2       1860       1335       120       114       46       3       89       25	CYPRESS	714702	ANHMCA11	11,280	22,559	1.19	0.58	51	55	5	4	2774	2350	3229	3039	1572	252	2237	1030	115
DAVIS       530442       DAVSCA11       5,754       11,509       0.96       0.62       35       43       11       7       6083       4167       1331       1258       862       285       901       550       97         DEL MAR       858727       DLMRCA12       7,535       15,071       0.72       0.40       45       48       5       5       3500       2989       1299       1227       717       158       908       498       81         DEL REY       559163       DLRYCA11       188       376       2.66       1.02       62       74       3       2       1860       1335       120       114       46       3       89       25       1         DELANO       661367       DELNCA11       2,953       5,906       2.02       1.07       47       51       5       3       2592       2051       1429       1365       757       74       1055       545       22         DINURA       550164       DINECA011       2,923       2,946       2,328       0.01       62       62       2       2,3292       1492       1365       757       74       1055       545       2       2	DANVILLE	925012	DAVLCA12	7,103	14,207	1.07	0.51	52	58	4	3	2406	1926	1823	1701	866	68	1268	563	26
LDEL MAR         858/2/         DLMRCA12         7,535         15,0/1         0.72         0.40         45         48         5         5         3600         2989         1299         1227         717         158         908         498         81           DEL REY         559163         DLRYCA11         188         376         2.66         1.02         62         74         3         2         1860         1335         120         114         46         3         89         25         1           DELANO         661367         DELNCA11         2,953         5,906         2.02         1.07         47         51         5         3         2592         2051         1429         1365         757         74         1055         545         22           DINURA         550164         DINECA011         1023         23         946         23         20         2051         1429         1365         757         74         1055         545         22	DAVIS	530442	DAVSCA11	5,754	11,509	0.96	0.62	35	43	11	7	6083	4167	1331	1258	862	285	901	550	97
DELARY 559163 DERVEATE 188 376 2.66 1.02 62 74 3 2 1860 1335 120 114 46 3 89 25 1 DELANO 661367 DELNCATE 2,953 5,906 2.02 1.07 47 51 5 3 2592 2051 1429 1365 757 74 1055 545 22 DINURA 550164 DINECALL 1.022 3 846 3.29 0.01 62 69 3 2 2062 1852 1400 1055 400 35 555 200 0	DEL MAR	858727	DLMRCA12	7,535	15,071	0.72	0.40	45	48	5	5	3500	2989	1299	1227	717	158	908	498	81
UPELAND 001307 DELINCATI 2,933 3,900 2.02 1.07 47 51 5 3 2592 2051 1429 1305 757 74 1055 545 22		559163	DELNOAAA	188	3/6	2.66	1.02	62	74	3	2	1860	1335	120	114	46	3	1055	25	1
		550161	DELINGATT	∠,903 1.000	2,906	2.02	1.07	47	51	5	3	2092	2051	1429	1056	101	74 2F	1005	045 202	22



						Ta	ble 4A.6	(page 4	l of 13)										
							Pct	Pct	# days	# days		Average							
			Access	Access	OOS per	00S>24	Cleared	Cleared	to clear	to clear	Average	CPUC							
			Lines (avg	Lines (avg	100 ALs	per 100	w/in 24	w/in 24	90%	90%	005	005			005 >		CPUC	CPUC	CPUC
Wire Center Name	WireConter	CU U	for Quarter)	for Ouerter)	per	ALs per	hours (upodi)	hours (adi)	(upodi)	(adi)	Duration	Duration	00S Totol	005 > 1	24 Hours	005 > 1 (	00S > 1	00S> (	UUS > 1 Week
	707443		<b>Quarter</b> )	Quarter)	1.66	1 22	(unauj) 27	(auj)	(unauj)		(mins) 6147	(mins) 5052		718	FIGURS	160	573	24 nours //11	78
	310613	ELSGCA12	5 265	10 531	1.00	0.30	64	69	4	3	1915	1405	1371	1103	495	36	916	331	12
DOWNEYVILLE PEARL	530444	DWNVCA11	270	540	1.82	1.39	24	26	13	7	7210	4350	118	111	90	33	60	48	7
DULZURA	619728	DLZRCA11	568	1.135	1.84	1.09	41	50	.0	. 3	3106	2352	251	240	149	16	165	88	. 4
DUNNIGAN	530445	DNGNCA12	160	320	2.57	2.05	20	25	9	7	6694	5611	99	95	79	19	73	57	8
DUNSMUIR	530446	DNSMCA11	536	1,073	1.37	0.66	52	60	3	3	2111	1901	176	164	85	4	87	36	1
EARLIMART	661368	ERLMCA11	512	1,024	2.58	1.51	42	46	5	3	2917	2241	317	310	185	15	233	131	4
EDGEWOOD/N HIGHL	916478	NHLDCA11	5,901	11,803	1.57	0.97	38	44	6	5	4223	3305	2219	2124	1375	319	1509	883	115
EDWARDS	661369	EDWRCA01	86	172	0.19	0.19	0	0	3	2	2951	2258	4	4	4	0	2	2	0
EL CAJON	619729	ELCJCA11	5,587	11,175	1.47	0.79	46	48	6	5	3493	3087	1968	1886	1061	209	1275	678	70
EL CENTRO	760730	ELCNCA01	5,445	10,889	1.19	0.37	69	75	2	2	1658	1068	1549	1485	482	45	996	263	3
EL DORADO HILLS	916454	FLSMCA13	3,684	7,368	0.97	0.63	35	39	7	6	4627	3632	858	817	561	167	635	414	66
EL PORTAL	209241	YSMTCA12	331	662	2.39	2.19	8	12	13	10	9307	7308	190	185	174	79	120	110	37
EL SOBRANTE	510013	ELSBCA11	4,417	8,834	1.39	0.86	38	42	7	5	4302	3429	1470	1407	916	258	1078	647	115
EL TORO	949731	ELTRCA11	15,447	30,894	0.97	0.40	58	63	5	4	2570	2226	3587	3344	1497	274	2455	942	148
ELK	707288	ELK CA11	241	482	3.11	2.32	26	29	11	8	6427	5333	180	178	134	41	134	92	21
ELK CREEK	530448	EKCKCA11	123	245	2.51	2.04	19	26	7	6	5256	4125	74	72	60	17	47	36	3
ELMONTE	626611	ELMNCA01	13,916	27,832	1.09	0.64	41	47	6	5	3655	2729	3634	3418	2127	365	2293	1280	120
EMPIRE	916501	SCRMCA12	5,809	11,618	1.20	0.75	38	42	6	5	4421	3814	1678	1601	1044	249	1145	688	105
ENCINITAS	200102	ENCICATZ	0,000	13,077	1.00	1.20	24	55	0	5	3410	2917	1307	1ZZ4 500	206	140	402	407	10
ESCALON	209192	ESCLUATI ESCNCA01	1,202	2,004	1.90	0.47	54	41	5	4	2027	2947	2505	2459	1205	40	402	247	10
ESCONDIDO	530/50	ESCINCAUT ESCINCAUT	3/18	21,594	2 /1	1.87	22	27	2	4 5	2937	2024	2090	2400	1205	37	156	115	13
	714739	GRGVCA01	10 134	20 268	0.95	0.40	58	62	4	3	2114	1702	2315	2169	982	90	1580	627	33
FUREKA	707289	EURKCA01	6 378	12 756	0.88	0.40	58	65	3	2	1918	1577	1351	1278	570	18	861	317	10
EXPORT/OIL DAL E	661383	OLDI CA11	4 129	8 257	1 59	0.77	52	56	4	- 3	2598	2067	1576	1514	762	83	1148	519	32
FAIR OAKS	916451	FROKCA11	10.562	21,124	1.17	0.73	38	43	. 7	6	4352	3460	2957	2813	1845	513	2199	1321	221
FAIRFIELD	707290	FRFDCA01	7.154	14.308	1.02	0.58	43	52	6	4	3886	2735	1751	1644	997	195	1167	600	51
FAIRVIEW	661357	BKFDCA12	8,874	17,748	1.25	0.56	55	59	4	3	2202	1721	2666	2491	1200	101	1840	819	18
FALLBROOK	760735	FLBKCA12	4,985	9,971	2.37	1.60	32	36	7	5	4186	3386	2831	2748	1917	338	2024	1333	144
FARMERSVILLE	559165	FRVLCA11	594	1,188	1.78	0.73	59	67	3	2	1769	1398	253	232	104	4	176	64	1
FELTON	831108	FETNCA11	1,334	2,667	1.96	1.24	37	42	8	5	4388	3004	626	616	396	89	332	203	21
FILLMORE	805370	FLMRCA11	1,093	2,185	1.07	0.52	52	55	5	3	2418	1914	281	265	136	13	200	98	4
FIREBAUGH P ST	559166	FRBHCA11	778	1,557	1.57	0.55	65	69	2	2	1615	1394	294	281	102	4	206	64	3
FIVE POINTS	559167	FVPNCA11	183	366	2.74	1.14	58	62	3	2	1743	1337	120	114	50	2	87	35	0
FOLSOM	415068	SNFCCA21	9,665	19,330	0.52	0.24	54	60	5	4	2502	1945	1213	1050	557	82	800	380	30
FOLSOM MONTROSE W	//916536	FLSMCA14	2,526	5,051	0.64	0.38	40	48	6	5	3709	2791	385	361	232	59	289	163	19
FOLSOM NIMBUS	916453	FLSMCA12	2,525	5,051	0.51	0.31	39	41	7	5	3798	3141	307	289	187	44	237	148	24
FONTANA	909736	FNTACA11	8,652	17,304	1.97	0.91	54	58	4	4	2522	2258	4083	3875	1881	252	2759	1208	149
FURESTVILLE	707291	FSVLCA11	930	1,860	3.15	2.29	27	37	12	9	/407	5112	703	686	510	207	390	257	79
FORT BRAGG	707292	FIBRCA02	3,988	7,976	1.92	1.21	37	43	11	9	5904	4683	1833	1801	1157	463	12/0	/40	237
FORTUNA	10/293	FIUNCA11	1,442	2,883	0.71	0.27	62	69	4	2	1960	1545	245	219	93	5	14/	1265	2
	400132 510026	SNJSCA14	13,075	20,149	1.10	0.70	40	44	/ 7	5	4123	341/	3033	3438	219/	012 477	2332	1305	∠/b 177
	661404	LEBCCA12	0,030	33,275 1 060	1.70	0.43	43 ⊿2	48	/ 5	с 2	4000	322 I 2440	200	2135	1704	477	1903	1097	177
	661371	EZEKCA12	900	1 9/0	1.20	0.73	40	50	5	ა ა	2404	∠ <del>44</del> 0 1829	300 451	426	221	24	310	103	4
FREMONT ADAMS	510015	FRMTCA12	9,339	18.678	0.86	0.39	54	57	5	4	2856	2463	1933	1827	883	120	1412	642	71



CONFIDENTIAL AND PROPRIETARY PER P.U. CODE § 583, GENERAL ORDER 66-D, & D.16-08-024

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							Pct	Pct	# days	# days		Average							
			Access	Access	OOS per	00S>24	Cleared	Cleared	to clear	to clear	Average	CPUC							
			Lines (avg	Lines (avg	100 ALs	per 100	w/in 24	w/in 24	90%	90%	00S	00S	008	000 > 1	005 >	000 > 1		CPUC	CPUC
Wire Center Name	WireContor	CLU	Ouartor)	Ouartor)	per	ALS per	(upadi)	(adi)	(unadi)	(adi)	(mine)	(mine)	Total	bour	Z4 Houre	wook	bour '		Wook
EREMONT MAIN	510014	ERMTCA11	11 013	22 027	0.96	0.44	(unauj) 54	(auj) 59	(unauj)	(auj) 4	2870	2383	2534	2384	1155	169	1758	753	77
FRENCH GUI CH	530455	FRGI CA11	115	230	1.96	1.52	22	24	7	5	4407	4039	54	53	42	7	34	26	4
FRESNO E TULARE ST	559172	FRSNCA12	5.915	11.829	1.78	0.78	56	63	4	3	2160	1677	2531	2434	1113	51	1846	719	9
FRESNO MAIN	559168	FRSNCA01	10.914	21.827	2.20	1.02	54	61	4	3	2297	1697	5768	5541	2670	170	4185	1735	37
FRESNO POLK AVE	559245	FRSNCA14	4,674	9,347	1.68	0.74	56	60	4	3	2197	1793	1880	1810	833	42	1464	618	12
FRESNO SIERRA AVE	559170	FRSNCA13	9,142	18,283	1.28	0.46	64	70	3	2	1732	1374	2801	2678	1012	38	2174	683	13
FRESNO WOODWARD	559247	FRSNCA15	1,538	3,076	0.85	0.33	61	68	4	3	1925	1494	313	286	121	11	234	84	4
FRONTIER	916519	WSCRCA11	4,834	9,667	1.09	0.66	39	45	7	5	4011	3255	1260	1154	764	195	809	493	89
FRUITRIDGE	916502	SCRMCA13	4,310	8,621	1.69	1.16	31	40	7	5	4393	3542	1748	1683	1205	286	1162	729	113
FRUITVALE/KELLOG	510037	OKLDCA04	6,843	13,685	1.27	0.67	47	53	5	4	3113	2498	2086	1949	1101	184	1555	782	73
FULLERTON	714737	FUTNCA01	11,174	22,348	1.23	0.62	49	55	5	4	2983	2478	3301	3128	1676	269	2238	1030	116
FURNACE CREEK	760738	FRCKCA11	155	310	1.02	0.97	5	9	16	12	11512	9291	38	38	36	22	23	21	11
GALT	209171	GALTCA11	2,079	4,158	1.57	0.97	39	48	6	4	3465	2374	785	751	482	72	481	270	11
GARDEN	916499	SCRMCA03	12,399	24,798	1.36	0.85	38	43	7	6	4500	3564	4038	3764	2520	784	2712	1673	356
GARDENA	310615	GRDNCA01	16,803	33,607	1.60	0.63	60	66	4	3	2097	1587	6455	6025	2551	226	4282	1581	63
GARNET	858762	PCBHCA01	6,006	12,013	1.25	0.73	41	44	6	5	3740	3091	1795	1703	1057	243	1281	741	94
GAZELLE	530456	GZLLCA11	56	112	0.67	0.22	67	100	2	0	1144	82	9	8	3	0	2	0	0
GEORGETOWN	530457	GRTWCA11	1,644	3,288	4.29	3.19	26	34	11	9	6435	4608	1692	1662	1259	434	810	555	133
GERBER	530458	GRBRCA11	264	527	2.28	0.92	60	67	3	2	1776	1297	144	137	58	1	95	34	0
GEYSERVILLE	707294	GYVLCA11	371	743	2.05	1.43	31	37	10	7	5591	3751	183	178	127	47	122	80	15
GLADSTON	916500	SCRMCA11	8,263	16,526	1.29	0.83	36	42	7	6	4477	3606	2552	2413	1642	496	1607	991	180
GLENDALE	818614	GLDLCA11	20,309	40,617	0.82	0.33	59	68	4	2	2104	1509	3982	3770	1621	111	2669	915	29
GLENVIEW	831121	SLNSCA12	728	1,455	0.82	0.36	57	63	4	3	2287	1932	143	138	62	4	98	38	1
GONZALES	831110	GNZLCA11	795	1,589	1.45	0.58	60	63	3	2	1816	1640	276	264	110	5	194	/8	2
GOSHEN	559246	GSHNCATT	936	1,873	1.96	0.97	50	49	4	3	2329	2071	440	425	218	16	281	145	3
GRANITE	209221	SKINCATI	11,009	22,017	1.32	0.73	44	10	0	4	3480	2071	3475	3269	1933	320	2495	1314	80 500
	530459 626650	GRVYCAUI	12,503	20,000	2.07	1.37	34 54	41		1	2625	41/4	0201	2420	4113	1408	3947	2444	593
	020000	CNEDCA11	1 276	33,173	1.07	0.01	54	62	2	4	2000	1611	2004	2439	270	101	206	164	30
GREENFIELD	530/60	GNFDCATT GRNDCA13	1,270	2,002	1.09	0.91	52	03 75	3	2	2092	1222	52	544 17	10	10	280	104	2
	530461	GRINDCA13	1 1 4 0	2 2 2 1	1.30	1 15	32	10	4	2	5330	1233	165	450	31/	86	327	206	40
	200173	GVI DCA11	2 4 2 4	1 8/8	2.28	1.13	28	38	12	0	7217	4320	1327	1271	057	400	720	477	130
	707295	GULL CA11	1 234	2 468	2.20	1.04	17	21	12	10	7780	6299	697	687	579	217	494	396	115
GUERNEVILLE	707296	GUVI CA11	900	1 800	1 73	1.00	30	37	12	10	7347	5450	374	356	262	123	252	170	59
GUSTINE	209174	GUSTCA11	830	1,000	2 12	0.95	55	62	4	3	2280	1772	422	412	189	11	304	118	3
GYPSUM CANYON	714809	YRI NCA12	830	1 659	0.41	0.00	57	65	4	3	2458	1885	82	76	35	5	54	18	1
HACIENDA	925083	PLTNCA13	2.068	4,136	0.27	0.09	67	73	2	2	1803	1156	134	117	44	2	87	27	0
HALF MOON BAY	650016	HMBACA12	3.043	6.085	1.19	0.70	41	44	6	5	3170	2706	870	825	513	57	573	340	26
HAMILTON CITY	530462	HMCYCA11	203	405	1.71	0.82	52	57	4	3	2365	1997	83	77	40	4	64	30	3
HANFORD	559175	HNFRCA01	5,285	10,570	1.72	0.72	58	63	3	2	1941	1575	2186	2098	910	53	1531	592	22
HARDING	760716	CRLSCA11	3,262	6,524	0.83	0.40	52	55	6	5	3267	2903	653	607	313	70	490	239	41
HAWTHORNE	310618	HWTHCA01	7,294	14,588	1.53	0.73	52	57	4	3	2576	1905	2678	2472	1279	150	1636	761	37
HAYWARD DEPOT RD	510018	HYWRCA11	7,373	14,747	0.84	0.38	55	60	4	3	2616	2051	1483	1377	667	109	1123	475	42
HAYWARD MAIN	510017	HYWRCA01	10,809	21,617	1.15	0.59	49	54	5	5	3040	2624	2992	2807	1519	298	2023	971	138
HEALDSBURG	707297	HLBGCA11	3,401	6,803	1.97	1.38	30	37	9	7	5478	3884	1605	1546	1124	388	1094	730	162
HERALD	209176	HERLCA11	364	728	4.68	3.24	31	47	9	4	4488	2190	409	396	283	63	197	117	4
HERCULES	510080	HRCLCA11	3,779	7,558	1.13	0.69	39	49	7	5	4104	2996	1023	955	629	169	636	356	68



						Ta	ble 4A.6	(page 6	of 13)										
							Pct	Pct	# days	# days		Average							
			Access	Access	OOS per	00S>24	Cleared	Cleared	to clear	to clear	Average	CPUC							
			Lines (avg	Lines (avg	100 ALS	per 100	w/in 24	w/in 24	90%	90%	OUS	00S	008	008 > 1	24	008 > 1			
Wire Center Name	WireCenter	сш	Quarter)	Quarter)	month	month	(unadi)	(adi)	(unadi)	(adi)	(mins)	(mine)	Total	hour	Hours	week	hour 2	24 hours	Week
HICKORY/SALINAS	831120	SLNSCA11	3 120	6 240	1 16	0.41	(unadj) 65	( <b>ddj)</b> 70	3	( <b>auj</b> ) 2	1910	1421	870	818	308	21	635	210	6
HIGHLAND	909741	HGLDCA11	3.074	6,149	1.65	0.69	58	58	3	- 3	2018	1838	1216	1168	510	22	860	353	9
HOLLISTER	831111	HLSTCA11	3,962	7,924	1.00	0.40	60	65	3	2	1868	1538	953	905	377	23	696	264	10
HOLLY STREET	510039	OKLDCA12	10,725	21,450	1.30	0.64	51	55	5	4	2878	2359	3348	3054	1653	270	2268	1095	90
HOLLYWOOD	323616	HLWDCA01	13,237	26,474	1.03	0.57	44	51	5	4	2818	2140	3285	3005	1825	162	2144	1165	32
HOLTVILLE	760742	HLVLCA11	676	1,352	1.69	0.47	72	80	2	1	1508	887	274	260	76	9	164	34	0
HOMEWOOD	530463	HMWDCA11	1,439	2,878	1.01	0.74	27	35	13	9	8462	5677	350	333	257	136	189	128	45
HOPLAND	707298	HPLDCA12	248	497	2.55	1.83	28	30	11	8	5536	4470	152	142	109	29	110	82	17
HORNBLEND	858763	PCBHCA11	795	1,589	1.83	1.11	39	43	7	5	3791	3034	348	325	212	49	263	162	22
HORNBROOK	530464	HRBKCA11	306	613	3.21	1.58	51	54	3	3	2085	1813	236	231	116	5	148	71	3
HUGHSON	209177	HGSNCA11	774	1,549	2.04	1.33	35	39	5	4	3291	2729	379	367	247	22	266	170	6
HUNTER	831122	SLNSCA13	907	1,813	2.20	1.00	54	65	4	3	2360	1927	478	461	218	23	332	123	6
HUNTINGTON PARK	323617	HNPKCA01	9,833	19,666	1.47	0.47	68	74	3	2	1692	1112	3475	3226	1116	78	2250	630	14
	559178	HURNCATT	435	870	2.21	1.00	55	61	3	2	1956	1455	231	218	104	4	155	66	1
	101299		2 172	1 244	2.01	0.52	20	00	2	2	1004	1207	220	211	276	05	217	40	51
	415019		2,172	4,344	0.05	0.55	30 64	44	9	0	470Z	1105	442	411	270	95	116	194	21
IMPERIAL REACH	619744		2 790	5 580	1 20	0.55	45	48	8	2	4372	3577	805	760	443	126	590	326	81
INGLEWOOD	310619		7 301	14 602	1.20	0.00	53	59	4	3	2663	1853	2764	2517	1306	120	1641	738	32
INVERNESS	415020	INVRCA11	511	1.021	1.98	1.34	33	34	11	7	6667	4786	243	235	164	53	175	121	22
IONE	209179	IONECA11	1.094	2,187	2.60	1.60	39	48	9	5	4901	3034	682	661	419	110	410	223	27
IRVINE	949745	IRVNCA01	6,371	12,743	0.89	0.43	52	58	5	4	2837	2333	1368	1319	657	102	1013	426	45
IVANHOE	916498	SCRMCA02	10,599	21,198	1.44	0.87	39	46	6	5	4056	3250	3659	3478	2222	562	2500	1396	222
IVANHOE ELM ST	559180	IVNHCA11	605	1,210	2.60	1.24	52	54	4	3	2247	1840	377	365	180	7	274	128	2
JACKSON	209181	JCSNCA01	1,887	3,773	1.78	0.95	47	57	7	4	3728	2396	807	770	431	112	501	228	29
JACUMBA	619746	JCMBCA11	439	879	2.53	1.48	42	54	5	3	3036	1865	267	260	156	20	158	75	5
JAMESTOWN	209182	JMTWCA11	1,038	2,076	2.65	1.64	38	54	8	5	4425	2622	659	620	408	111	355	182	27
JAMUL	619851	JAMLCA60	433	867	1.85	1.16	37	39	7	5	3817	3127	192	184	121	22	123	78	9
JULIAN	760748	JULNCA12	1,175	2,351	2.77	1.68	39	49	5	3	3386	2502	781	762	474	53	470	249	10
JUNCTION AVE.	408145	SNJSCA21	7,948	15,897	0.44	0.23	48	50	5	3	3116	2540	841	792	439	52	555	299	19
JUNIPER	415061	CRMLCA11	15,339	30,679	1.02	0.53	48	55	5	4	2885	2198	3760	3501	1958	280	2543	1231	76
KELSEY VILLE	707300	KLVLCA12	1,438	2,877	2.12	1.38	35	41	11	9	5/83	4505	732	/10	4//	191	544	330	120
	03111Z	KGCTCATT	1,///	3,554	1.19	0.59	50	5/ 71	4	3	1905	1708	508	488	203	19	337	100	4
KNIGHTS FERRY	209184	KUEVCA11	1,513	3,020	2.29	1 39	47	55	3	2	2378	1874	109	103	290	20	73	32	4
KYBUR7	530465	KYBRCA11	85	170	2.01	1.00	18	21	10	7	8098	6350	49	48	40	18	33	27	8
	818621	LACRCA11	8 800	17 601	1.07	0.50	53	64	4	3	2228	1600	2257	2122	1053	71	1428	553	26
LA HONDA	650021	LAHNCA11	468	936	2.65	1.71	36	50	5	4	3233	2476	298	286	192	22	110	60	5
LA JOLLA	858750	LAJLCA11	5.002	10.005	0.97	0.51	48	50	6	5	3281	2729	1160	1080	607	130	825	439	71
LA MESA	619752	LAMSCA01	8,026	16,051	1.25	0.67	46	52	6	5	3454	2689	2399	2263	1295	291	1491	749	96
LA PALMA	714703	ANHMCA12	2,528	5,056	0.89	0.35	60	65	4	3	1971	1578	541	504	214	14	395	146	9
LAFAYETTE	925022	LFYTCA11	3,055	6,110	1.14	0.51	55	64	3	3	2065	1525	834	795	374	19	524	206	5
LAGRANGE/D PEDRO	209185	LGRNCA12	1,058	2,116	3.66	2.80	23	31	8	6	5259	3969	929	903	711	182	569	412	62
LAGUNA NIGUEL	949749	LGNGCA12	4,722	9,445	0.77	0.32	58	63	5	4	2888	2509	869	816	362	80	648	245	50
LAKE BERRYESSA	707301	LKBRCA11	233	466	2.81	2.27	19	24	14	11	8374	5792	157	157	127	50	103	79	16
LAKE LOS ANGELES	661405	LKLACA11	649	1,297	1.36	0.62	55	66	3	3	2192	1605	212	203	96	7	160	55	3
LAKE WILDWOOD	530535	DLRYCA11	1,945	3,890	2.31	1.47	36	46	11	7	5722	3818	1078	1042	688	258	718	409	98



						Ta	ble 4A.6	(page 7	' of 13)										
							Pct	Pct	# days	# days		Average							
			Access	Access	OOS per	00S>24	Cleared	Cleared	to clear	to clear	Average	CPUC							
			Lines (avg )	Lines (avg	100 ALS	per 100	w/in 24	w/in 24	90%	90%	OUS	OUS	008	006 > 1	24	008 > 1			
Wire Center Name	WireCenter	сш	Ouarter)	Ouarter)	month	month	(unadi)	(adi)	(unadi)	(ibe)	(mine)	(mine)	Total	hour	Hours	week		24 hours	Week
LAKE/PASADENA	626651	PSDNCA12	8 153	16 306	1 00	0.51	(unacij) 49	( <b>duj</b> ) 57	(unauj) 5	( <b>duj</b> ) 4	2871	2051	1966	1822	1005	123	1303	620	38
LAKEPORT	707302	LKPTCA02	2,607	5.215	1.59	0.99	38	42	9	. 8	5084	4236	993	948	619	221	750	462	129
LAKESIDE	619751	LKSDCA12	2,341	4,683	1.43	0.82	43	46	6	6	3556	3043	803	770	458	99	531	294	38
LAMONT	661372	LAMTCA11	1,132	2,264	2.16	1.14	47	52	5	3	2943	2341	587	558	311	25	399	204	6
LANKERSHIM	818646	NHWDCA01	8,854	17,708	1.27	0.50	61	70	4	2	2189	1449	2704	2544	1067	131	1609	522	23
LARKSPUR	415023	LRKSCA11	4,039	8,078	1.19	0.73	39	48	7	6	4058	3142	1152	1097	703	169	672	385	67
LATON	559186	LATNCA11	263	526	4.60	2.50	46	54	4	3	2596	2107	290	287	158	15	198	92	2
LE GRAND	209187	LGRDCA11	256	512	2.38	1.11	53	62	4	2	2075	1472	146	140	68	6	94	38	1
LEBEC	661373	LEBCCA11	444	887	2.56	1.45	44	48	4	3	2685	2260	273	265	154	19	194	104	5
LEMON	714701	ANHMCA01	11,520	23,041	0.95	0.40	58	63	4	3	2236	1889	2639	2456	1113	108	1770	680	41
LEMORE MAIN	559188	LEMRCA11	1,768	3,537	1.98	0.81	59	63	3	2	1825	1416	842	802	342	22	562	214	3
LEMORE WYMAN	559189	LEMRCA12	104	208	0.56	0.32	43	63	7	2	3765	1814	14	14	8	3	8	3	0
LEONA VALLEY	661374	LNVYCA11	429	859	1.98	0.86	56	62	3	2	2391	1756	204	198	89	8	120	46	3
LEWISTON	530466	LSTNCA11	565	1,130	2.16	1.66	23	32	8	6	4791	3374	293	281	225	49	181	131	16
LINCOLN	916467	LNCLCA11	1,148	2,297	1.27	0.71	44	53	5	4	3225	2257	350	335	195	44	239	119	9
LINDA VISTA	858779	SNDGCA03	11,239	22,477	0.94	0.49	48	51	6	5	3326	2939	2538	2379	1319	278	1780	925	144
	661375	LTRKCA11	1,297	2,593	2.72	1.48	46	60	4	3	2608	1725	846	820	461	29	434	1/8	(
	530468	LVOKCATT	887	1,774	1.54	1.09	30	34	8	6	4672	3930	328	318	231	58	257	1/5	34
	920020		8,388	10,775	1.03	0.49	52	57 47	4	3	2474	2000	2000	1968	984	70 27	1500	0/1	32
	209190		7 790	15 560	2.75	1.73	37	47 52	1	4	2151	2204	4757	243	2602	217	2240	1662	2 74
	209191		1,700	324	1 00	0.08	44	53 64	2	4	1700	1268	4/5/	4001	2003	0	JZ49 //3	1002	/4
	310622	LOMTCA11	8 028	16 056	1.30	0.50	43 57	63	4	2	2174	1632	2414	2278	1033	79	1591	619	21
LOOMIS	916470	LOMSCA11	1 895	3 789	1.20	0.01	44	52	5	4	2970	2258	586	561	329	55	413	206	20
LOS ALAMOS	707319	SNRSCA11	3,719	7.438	1.25	0.77	38	46	8	6	5374	3306	1119	1063	689	205	770	435	67
LOS ALTOS	650024	LSATCA11	5.823	11.645	1.99	1.34	33	37	8	7	4833	3829	2775	2677	1870	551	1637	1071	174
LOS ANGELES MADISO	213625	LSANCA02	7.216	14.433	0.56	0.29	49	55	4	3	2620	1971	978	882	497	52	668	337	13
LOS ANGELES MADISOI	213624	LSANCA02	11,734	23,468	0.85	0.41	51	57	4	3	2714	2135	2395	2113	1167	127	1603	770	29
LOS ANGELES UNION	213627	LSANCA06	6,414	12,829	0.91	0.52	43	50	5	4	2968	2249	1403	1301	803	76	922	497	17
LOS BANOS	209193	LSBNCA12	2,809	5,617	1.29	0.60	54	56	4	3	2402	2112	870	830	403	24	627	293	11
LOS MOLINOS	530469	LSMLCA11	475	951	2.19	0.98	55	63	3	2	1834	1466	250	240	112	3	155	63	0
LOWER LAKE	707304	LWLKCA11	2,720	5,440	2.88	1.79	38	46	12	8	6359	4350	1881	1806	1166	487	1210	695	241
LOYALTON	530471	LLTNCA11	627	1,254	1.03	0.72	30	34	8	6	5544	3877	155	150	109	40	103	71	15
MADERA	559194	MADRCA11	5,546	11,092	2.01	0.68	66	72	3	2	1629	1324	2670	2574	904	28	1988	569	13
MADERA BONADELLE	559243	MADRCA12	542	1,084	3.17	1.35	58	65	3	2	1795	1416	413	397	175	2	274	102	0
MAGNOLIA/N.HLWD.	818647	NHWDCA02	17,483	34,966	1.20	0.50	58	68	4	2	2187	1500	5056	4728	2100	241	2988	1007	52
MARINA	831113	MARNCA11	1,789	3,579	1.02	0.47	54	62	4	3	2264	1637	438	402	200	10	307	130	4
MARKET STREET	619783	SNDGCA12	3,014	6,028	1.65	0.95	43	46	8	7	4409	3893	1196	1144	684	213	812	455	134
MARTINEZ	925030	MRTZCA11	4,680	9,360	1.10	0.48	57	63	4	3	2102	1606	1241	1157	539	36	816	324	13
	530472		4,813	9,627	2.20	1.37	38	48	1	6	4261	3076	2538	2439	1583	419	1663	916	139
	101307		1,443	2,885	1.01	0.45	55	65	3	2	2032	1513	350	328	156	5	213	۲۵۵ ۱۹۹۸	3
MENDOCINO	323629	LSANGA08	15,932	31,863	1.48	0.81	45	52	6	5	3600	2642	1064	5238	3105	710	3482	1804	228
	550105		1,003	3,123	2.38	1.02	32	30	11	9	1967	4941	2/0	242	120	215	123	409	140
	650028	MNPKCA11	5 01/	10.029	1.07	1.37	20	/ I 27	2	27	4820	3020	249 2411	242	00 1635	3 430	1515	900	2 150
MERCED	209196	MRCDCA01	7 509	15 019	2.00	0.56	61	68	ر د	2	1910	1469	2575	2329	1000	430 47	1801	623	17
MERIDAN	530473	MRDNCA11	188	377	3.07	2.14	30	32	10	9	5471	4678	139	137	97	29	107	74	16



						Ta	ble 4A.6	(page 8	8 of 13)										
							Pct	Pct	# days	# days		Average							
			Access	Access	OOS per	00S>24	Cleared	Cleared	to clear	to clear	Average	CPUČ							
			Lines (avg	Lines (avg	100 ALs	per 100	w/in 24	w/in 24	90%	90%	005	005		00014	005 >	000 1 4	CPUC	CPUC	CPUC
Wire Center Name	WireConter	CU U	TOP Quarter)	TOP Outputter)	per	ALS per	nours (upodi)	nours (adi)	(upodi)	(adi)	Duration	Juration	Total	005 > 1	Z4	005 > 1	005 > 1	005 > 1	005 > 1 Week
	661260	RKEDCA15	Quarter)	Quarter)	1.06	1 12	(unauj)	(auj)	(unauj)	(auj)	(mins) 2050	(mins) 2456	172	167	nours	12	129	24 nours 67	VVeek
MEYERS/APACHE	530512	STAHCA13	1 082	2 164	1.00	0.66	34	40	10	7	6447	4306	261	247	172	82	162	93	28
MIDDI FTOWN	707306	MDTWCA11	1,002	2,104	2.03	1 26	38	43	11	9	5749	4504	589	569	364	157	449	262	86
MILL VALLEY	415027	MI VYCA01	5 019	10 038	1 12	0.72	36	42	8	7	4803	3793	1352	1266	870	286	922	583	125
MILLBRAE	650026	MLBRCA11	3,530	7.059	0.94	0.44	53	61	4	. 3	2344	1822	799	742	373	25	459	191	7
MILPITAS	408114	MLPSCA11	7.643	15,286	1.00	0.56	44	48	5	4	3122	2643	1838	1751	1029	123	1288	708	39
MIRA MESA	858786	SNDGCA16	7,585	15,170	0.77	0.43	45	48	6	5	3693	3119	1402	1324	776	185	978	543	78
MIRANDA	707308	MRNDCA11	364	727	1.84	1.24	33	43	6	5	3485	2704	161	151	108	12	77	49	3
MISSION VIEJO	949806	MSVJCAAT	2,682	5,363	0.72	0.32	56	58	5	4	2806	2398	466	438	203	39	327	143	20
MISSION/SO. PAS.	626660	SPSDCA11	3,914	7,827	0.90	0.45	50	58	5	4	2995	2237	842	788	422	65	543	252	19
MODESTO KELLOGG	209200	MDSTCA03	3,706	7,412	1.46	0.87	40	46	5	4	3031	2433	1298	1239	777	76	923	529	25
MODESTO MAIN	209199	MDSTCA02	15,878	31,756	1.24	0.71	42	49	5	4	3108	2431	4712	4504	2723	285	3439	1850	83
MODESTO-KINGSWOOI	0 209201	MDSTCA04	1,618	3,237	1.00	0.55	45	51	5	3	2758	2086	390	365	213	22	272	143	3
MOJAVE	661376	MOJVCA01	767	1,534	1.83	0.85	53	69	4	2	2811	1937	337	319	157	20	210	74	3
MOKELUMNE HILL	209202	MKHLCA12	233	465	3.85	2.58	33	45	9	5	5029	2988	215	209	144	39	124	72	9
MONTAGUE	530529	MTAGCA11	669	1,338	1.23	0.50	59	66	4	4	2287	2036	197	185	81	10	97	37	4
MONTE RIO	707309	MNRICA11	633	1,265	1.73	1.24	28	36	11	9	6000	4434	263	251	189	67	172	117	32
MONTEBELLO	323642	LSANCA35	10,533	21,066	1.16	0.68	42	48	5	4	3318	2459	2942	2806	1708	242	2095	1138	84
MONTEREY	831115	MTRYCA01	7,791	15,582	0.94	0.40	57	62	3	2	2097	1603	1760	1654	756	51	1191	495	13
MONTROSE	415065	FLSMCA14	16,013	32,026	0.88	0.49	44	52	5	4	3137	2386	3386	3183	1884	294	2391	1247	105
MOORPARK	805377	MRPKCA12	3,393	6,786	0.81	0.36	56	64	3	2	2111	1707	662	624	290	13	490	187	8
MORAGA	925029	MURGCA12	2,287	4,574	1.45	0.75	48	60	4	3	2798	2606	795	769	412	21	472	202	5
MORO	031123	SLINGCA 14	1,037	3,274	1.99	0.03	00 EE	04	4	3	1006	1/00	102	101	320	32	327	200	2
MOSS BEACH	650031	MSBHCA11	1,525	2 204	1.17	0.52	55 /1	45	4 5	3	2080	2/32	420	403	191	15	230	02	2
MOUNT SHASTA	530474	MTSHCA12	1,102	2,204	0.01	0.01	60	70	3	3	1868	1/00	203	230	145	1	210	72	2
	510040		6.078	12 155	0.85	0.50	42	47	7	5	3805	3091	1247	1150	725	179	828	476	84
MOUNTAIN PASS	760753	MTPSCA11	18	37	1 13	0.00	20	40	5	3	4175	2753	5	5	125	0	3	2	0
MOUNTAIN VIEW	650032	MTVWCA11	10 408	20.816	0.86	0.48	45	50	6	6	3534	2894	2150	2041	1188	243	1416	746	99
MURPHYS	209203	MRPHCA11	1,134	2.268	2.88	1.97	32	40	9	6	5185	3984	783	763	535	149	455	282	34
NAPA	707310	NAPACA01	10,764	21,529	1.50	0.97	35	44	10	6	6521	4127	3871	3704	2501	761	2407	1429	240
NATIONAL CITY	619754	NTCYCA11	2.037	4.073	1.10	0.53	52	56	6	5	3236	2660	540	513	259	65	406	182	35
NEVADA CITY	530475	NVCYCA11	4,134	8,267	2.35	1.52	35	40	11	8	5731	4281	2333	2242	1510	575	1450	915	259
NEWCASTLE	916476	NWCSCA11	1,272	2,545	2.88	2.07	28	35	12	8	6492	4519	879	857	632	235	566	386	95
NEWHALL	661379	NHLLCA01	7,763	15,527	0.83	0.33	60	65	4	2	2298	1745	1542	1429	615	65	960	359	21
NEWMAN	209204	NWMNCA12	758	1,516	1.38	0.67	52	58	4	3	2465	2022	251	236	121	9	181	82	6
NIAGARA	530490	PLVLCA12	2,918	5,836	2.68	1.97	26	33	13	10	7325	5188	1877	1822	1381	581	1083	760	223
NICASIO	415033	NICSCA11	296	592	2.05	1.58	23	31	11	9	6917	5267	146	145	112	53	92	64	22
NICE	707311	NICECA11	675	1,351	2.59	1.52	41	44	10	8	5106	4377	419	393	247	93	310	186	63
NICOLAUS	530477	NCLSCA12	129	258	4.71	3.26	31	37	8	6	4791	3431	146	142	101	31	100	65	12
NILAND	760855	NILDCA12	113	225	1.81	0.44	76	80	2	2	1269	1067	49	48	12	0	33	6	0
NIPOMO	805380	NIPMCA11	1,470	2,941	1.03	0.49	53	60	5	2	2901	1652	365	346	173	39	204	74	3
NOMAD	661409	BKFDCA19	2,744	5,488	0.91	0.42	54	56	4	3	2506	1936	600	565	275	24	429	196	6
NORMANDY	323633	LSANCA12	13,257	26,514	1.20	0.65	46	51	5	4	2956	2264	3829	3476	2063	238	2481	1341	58
NOR TH MATHILDA	408139	SNVACA11	2,160	4,321	1.03	0.57	45	51	6	5	3943	3017	536	503	297	101	347	179	38
NORTH NATOMAS	916537	NSCRCA12	2,894	5,788	0.59	0.34	43	51	5	4	3428	2704	409	381	234	48	303	160	13
NOR TH SAN JUAN	530480	NSJNCA11	579	1,158	4.20	3.32	21	24	11	9	6678	5091	583	565	461	179	298	236	64



						Tal	ble 4A.6	(page 9	) of 13)										
							Pct	Pct	# days	# days		Average							
			Access	Access	OOS per	00S>24	Cleared	Cleared	to clear	to clear	Average	CPUC			008 >		CRUC	CRUC	CRUC
			for	for	ner	ALsper	hours	hours	005	005	Duration	Duration	005	005 > 1	24	005>1 (	00S > 1	008 >	005 > 1
Wire Center Name	WireCenter	CLLI	Quarter)	Quarter)	month	month	(unadi)	(adi)	(unadi)	(adi)	(mins)	(mins)	Total	hour	Hours	week	hour 2	24 hours	Week
NORTH STAR	530516	TRUCCA12	817	1.634	0.22	0.12	47	46	8	5	7058	3055	43	38	23	5	32	19	3
NORTH YUBA	530481	NYUBCA11	619	1,237	2.40	1.57	35	45	8	5	4436	3027	356	344	233	55	226	133	17
NORTHRIDGE	818648	NORGCA11	15,120	30,240	1.13	0.46	59	68	4	2	2295	1710	4089	3876	1667	184	2728	914	75
OAKDALE	209205	OKDLCA11	2,853	5,706	1.93	1.15	40	46	5	4	3061	2375	1324	1271	790	87	886	498	25
OAKLAND	510038	OKLDCA11	11,954	23,908	0.96	0.54	43	48	7	5	3797	3050	2752	2526	1556	381	1722	965	162
OAKLEY	925041	OKLYCA11	1,592	3,185	1.10	0.44	60	63	3	2	1895	1596	421	396	169	7	301	121	2
OAKVIEW	805381	OKVWCA11	883	1,767	1.78	0.95	47	51	5	3	2624	2005	378	358	201	26	261	138	10
OCCIDENTAL	707312	OCDNCA11	843	1,686	2.48	1.67	33	39	9	6	5188	3258	501	487	337	113	286	183	28
OCEANSIDE	760758	OCSDCA11	6,026	12,052	0.90	0.44	51	54	6	5	3366	2909	1302	1233	643	141	992	482	88
OJAI	805382	OJAICA11	2,441	4,882	1.25	0.70	44	53	5	3	3040	2212	730	690	412	45	424	209	12
OLIVE	714760	ORNGCA13	7,251	14,502	0.95	0.38	60	67	4	3	2193	1636	1657	1551	664	61	1120	384	18
ORANGE COVE	559206	ORCVCA11	571	1,142	2.99	1.23	59	65	4	2	2265	1814	410	402	169	16	338	124	4
ORANGE WEST	714761	ORNGCA14	4,373	8,746	0.62	0.26	58	63	4	3	2213	1783	648	611	274	25	470	182	10
ORANGEVALE	916482	ORVACA11	3,292	6,583	1.70	1.04	39	45	7	6	4348	3355	1342	1271	820	248	968	566	111
ORINDA	925042	ORNDCA11	2,546	5,091	2.06	1.00	52	57	4	3	2288	1791	1260	1214	609	26	838	375	4
ORLAND	530483	ORLDCA11	1,882	3,765	2.24	1.14	49	57	5	4	2832	2293	1014	978	517	62	731	330	33
OROSI	559207	ORSICA11	1,122	2,243	3.05	1.35	56	62	4	2	2311	1631	822	793	363	26	643	259	6
OROVILLE EAST	530485	ORVLCA12	1,901	3,802	4.50	3.05	32	46	11	6	5561	3467	2054	1995	1392	433	1046	590	116
OROVILLE MAIN	530484	ORVLCA11	4,922	9,845	2.71	1.70	37	44	10	8	5147	3941	3196	3077	2014	682	1900	1109	253
OTAY MESA	619853	OTMSCA11	1,313	2,626	0.71	0.41	43	44	7	6	4157	3741	225	212	128	43	178	105	27
PACIFICA	650043	PCFCCA11	4,183	8,366	1.12	0.54	52	58	4	3	2382	1865	1129	1067	543	49	731	318	20
PALMDALE	661384	PLDLCA01	6,216	12,433	0.78	0.23	/1	75	3	2	1939	1544	1159	1058	338	23	808	222	9
PALMDALE EAST	661412	PLDLCATT	1,358	2,717	0.74	0.23	69	12	3	2	1/2/	1384	242	227	/4	(	174	53	3
	650045	PLALCA02	13,314	26,629	0.86	0.48	44	49	1	6	3619	2951	2748	2560	1533	325	1//1	973	134
PALO ALTO SOUTH	600046	PLALCA 12	5,210	10,421	0.98	0.57	42	47	1	0	4065	3200	1220	1151	113	1/4	100	432	13
	530486	PRDSCATT	4,583	9,166	2.30	1.12	52	64	0	· 5	3238	2420	2030	2413	1227	215	1307	503	57
PARADISE PINES	530487	PRDSCA12	1,630	3,200	3.33	1.98	41	62	5	3	2040	1024	2201	1204	020	87 77	1475	220	9
	115072	SNDEC A11	4 010	9 020	0.96	0.59	41	10	7	6	2040	2011	2301	790	929	151	560	212	62
	559208		4,019	1 452	1.61	0.50	6/	40	1	2	1522	1271	281	260	400	101	224	76	02
	530488		108	215	2.75	1 03	30	38	5	2	3378	216/	201	203	50	1	224	18	0
PASO ROBLES	805385	PSRBCA01	6 970	13 940	1 18	0.48	59	68	3	2	1080	1540	1982	1881	803	42	1253	419	13
	760764	PALACA11	1 008	2 017	1.10	1 16	42	47	5	4	2823	2378	481	465	281	29	346	190	15
PEDLEY	951765	PDI YCA11	3 545	7 090	1.00	0.37	71	75	2	2	1532	1189	1072	1030	314	11	728	189	3
PEPPERWOOD	707313	PPWDCA11	85	170	2.35	1.67	29	39	6	3	3331	2197	48	48	34	3	31	19	0
PESCADERO	650051	PSCDCA11	635	1.270	2.36	1.45	38	43	6	5	3441	3011	359	343	221	41	202	123	17
PETALUMA	707314	PTLMCA01	6.783	13,566	1.02	0.67	34	38	10	8	5976	4790	1656	1575	1098	431	1255	821	232
PINE VALLEY	619766	PNVYCA11	343	686	1.91	1.04	45	55	5	4	2770	1930	157	153	86	9	96	45	2
PINECREST	209209	PNCRCA11	1,073	2,146	0.96	0.66	32	41	10	6	5657	3236	248	238	169	62	126	81	13
PIRU	805386	PIRUCA11	191	382	1.09	0.55	50	60	5	2	2723	1542	50	49	25	3	32	13	0
PISMO BEACH	805387	PSBHCA11	1,104	2,208	1.03	0.42	59	73	5	2	2477	1480	274	257	112	22	161	47	4
PITTSBURG MAIN	925049	PSBGCA01	3,323	6,647	1.16	0.49	58	61	4	3	2174	1579	927	872	392	24	653	271	3
PIXLEY	559210	PXLYCA11	392	783	3.31	2.08	37	45	6	4	3719	2711	311	305	195	33	211	117	9
PLACENTIA	714767	PLCNCA11	7,746	15,492	0.92	0.41	56	60	4	3	2402	2074	1707	1615	756	78	1168	478	32
PLACER HILLS	530429	AUBNCA11	1,980	3,960	2.56	1.76	31	38	12	7	6281	4114	1215	1189	836	331	695	445	104
PLACERVILLE	530489	PLVLCA11	9,134	18,268	3.23	2.23	31	37	9	7	5253	3914	7083	6875	4897	1416	4388	2885	532
PLANADA	209211	PLNDCA11	377	755	2.29	0.94	59	64	3	3	3049	2943	207	201	85	7	154	58	5



CONFIDENTIAL AND PROPRIETARY PER P.U. CODE § 583, GENERAL ORDER 66-D, & D.16-08-024

						Tab	le 4A.6	(page 1	0 of 13)										
							Pct	Pct	# days	# days		Average							
			Access	Access	OOS per	00S>24	Cleared	Cleared	to clear	to clear	Average	CPUC							
			Lines (avg	Lines (avg	100 ALs	per 100	w/in 24	w/in 24	90%	90%	005	005			005 >		CPUC	CPUC	CPUC
Wire Center Nome	Wire Contor	<b>C</b> 111	for Outputer)	for	per	ALs per	hours	hours	00S	(odi)	Duration I	Duration	OOS	005 > 1	24	005 > 1	005 > 1	005 >	005 > 1
	wireCenter		<b>Quarter)</b>	20 406	2.40	1 1 2	(unadj)		(unadj)		(mins) 2610	(mins) 1619	<b>Otal</b>	nour 5444	2725	Week 254	2195	1250	Week
	916/01		213	20,400	2.40	3 30	31	35	2	6	5067	3050	244	2/1	160	58	154	1209	20
PLEASANTON BAY ST	925047	PLTNCA12	5 437	10 874	0.67	0.20	57	65	4	3	2243	1575	877	821	379	26	596	222	20
	323634	LSANCA13	8 031	16,061	2.32	0.23	59	66	4	3	2134	1530	4466	4018	1819	170	2803	1079	42
PLYMOUTH MAIN	209212	PLMOCA11	1 958	3 915	4 10	2 53	38	48	8	5	4382	2861	1925	1887	1189	290	1093	588	74
POINT ARENA	707315	PNARCA11	702	1 403	2 23	1.86	17	19	13	11	8030	6983	376	374	313	128	264	214	73
POINT REYES	415048	PRSNCA11	1.020	2.040	1.23	0.83	32	39	10	6	4850	3643	302	284	204	55	202	135	23
PORTERVILLE	559213	PTVLCA11	7.477	14.953	1.90	1.02	46	52	5	3	2997	2145	3406	3275	1833	254	2331	1152	53
PORTOLA	530492	PTOLCA01	1,233	2,465	0.78	0.45	42	45	7	6	4015	3207	231	218	134	40	139	80	11
POTTER VALLEY	707316	PTVYCA11	628	1,256	3.16	2.54	20	23	14	11	8653	6545	477	474	383	157	380	294	95
POWAY MIDLAND	858768	POWYCA11	3,744	7,488	0.77	0.38	51	57	6	4	3021	2465	696	663	343	60	503	226	28
QUINCY	530493	QNCYCA12	2,179	4,357	1.79	1.25	30	34	8	7	5694	4655	936	892	651	174	541	370	65
R. S. MARGARITA	949808	RSMGCA11	2,689	5,378	0.55	0.27	52	55	6	5	3505	3337	358	349	173	36	273	122	25
RAMONA	760769	RAMNCA11	2,569	5,138	1.73	0.91	47	55	5	3	2779	1984	1068	1023	563	61	703	327	16
RAMPART	213632	LSANCA11	16,384	32,767	0.88	0.47	47	53	5	4	2864	2075	3453	3117	1837	204	2113	1134	43
RAN. PENASQUITOS	858854	RNPSCA11	1,972	3,945	0.56	0.31	44	47	6	5	3610	3075	264	250	147	37	179	101	17
RANCHO BERNARDO	858770	RBRNCA11	6,021	12,042	0.69	0.31	55	58	5	4	2681	2249	992	929	447	63	724	322	26
RANCHO MURIETTA	916533	RNMRCA11	761	1,522	0.94	0.50	47	50	7	5	4207	3234	172	163	92	16	123	66	4
RANCHO SAN DIEGO	619852	RNSDCA11	1,099	2,198	0.86	0.48	44	47	7	4	3770	2782	227	214	126	31	149	81	8
RANCHO SANTA FE	858771	RSFECA12	4,167	8,335	1.17	0.71	39	43	8	7	4774	4051	1175	1126	713	208	855	504	114
RED BLUFF	530494	RDBLCA01	4,899	9,799	1.65	0.71	57	66	3	2	1877	1470	1939	1846	829	23	1215	443	4
REDDING ENTERPR.	530531	RDNGCA11	4,942	9,885	1.17	0.51	56	63	4	4	2309	1849	1393	1311	608	52	1002	398	20
REDDING MAIN	530495	RDNGCA02	7,758	15,515	1.50	0.69	54	62	4	4	2306	1833	2789	2669	1279	95	1885	759	31
REDWOOD	209223	SKTNCA14	2,017	4,034	1.37	0.80	42	48	5	4	3322	2517	662	633	386	48	502	277	12
REDWOOD CITY	650053	RDCYCA01	10,544	21,087	1.04	0.58	45	50	5	4	3054	2507	2632	2454	1460	153	1633	881	44
REGENTS	858785	SNDGCA15	8,882	17,764	0.54	0.29	47	47	6	5	3410	3052	1144	1079	609	135	832	463	78
REPUBLIC	323643	LSANCA38	8,943	17,886	1.71	0.81	52	64	4	3	2604	1647	3662	3440	1742	194	2023	800	36
RESEDA	818652	RESDCA01	14,161	28,322	1.20	0.48	60	67	4	3	2141	1677	4068	3839	1640	151	2744	975	59
RIALTO	909773	RILTCA11	5,576	11,152	1.84	0.85	54	57	5	4	2673	2496	2457	2311	1140	178	1646	736	100
RICHMOND	213630	LSANCA09	9,098	18,197	0.86	0.39	55	60	4	3	2330	1730	1881	1682	845	82	1219	553	25
RICHMOND MACDONAL	LL510052	RCMDCA11	10,067	20,134	1.73	1.03	41	46	6	5	3867	3131	4188	3959	2488	633	3021	1709	271
RICHVALE	530496	RCVACA11	125	251	1.46	0.96	34	50	11	11	5827	4089	44	41	29	11	26	15	4
RIODELL	707317	RIDECA11	310	619	1.09	0.48	56	60	3	3	1992	1650	81	75	36	0	49	20	0
RIOLINDA	916526	RILNCA12	1,637	3,274	1.98	1.38	30	36	/	6	4889	3841	//6	/48	544	156	501	336	59
RIVERBANK	209214	RVRBCATT	1,408	2,816	1.33	0.76	43	51	5	4	2741	2076	450	419	257	19	313	169	4
RIVERDALE	559215	RVDLCATT	463	925	3.72	1.61	57	63	3	2	1/9/	1340	413	397	179	10	296	115	1
RIVERSIDE ORANGE	951774	RVSDCA01	11,292	22,585	0.98	0.45	54	57	5	4	2465	2087	2659	2512	1228	160	1904	834	68
	910527	RUKLUAUI	1,743	3,480	0.64	0.29	54	62	5	4	2437	1/20	207	241	123	10	184	250	0 77
	101331	RIPKCATI	2,932	5,803	1.00	0.49	39 E 4	42	10	8 2	2501	4481	200	53Z	348	129	415	208	11
	661261		1,000	0,210	1.09	0.07	54	04 59	4	2	2001	1003	1001	1176	571	44 56	027	199	10
POSEMEND	626654	DOSMOA11	4,0/3	9,140	1.00	0.49	04 29	30	4	3 E	2449	1991	1234	2205	07 I 1544	202	90/ 1520	400	18
	B 916541	RSVICAN	3,30Z	8 700	0.64	0.09	30 15	40 52	5	5	2020	2000 2121	2000	2000	270	292	1000	240	10
	9/9791	S ICPCA12	5 4 2 9	10 859	0.04	0.35	-+5	53	6	4 5	3330	2080	128/	1214	642	135	885	2 <del>4</del> 0 421	75
SACRAMENTO MAIN	916497	SCRMCALP	3,429 8.065	16 121	0.99	0.49	30	04 ⊿5	6	5	4074	2083	13/17	1214	827	221	831	4∠ I 501	75
SAIPAN	619780	SNDGCA05	3 085	6 160	1 / 9	0.43	39 45	40	7	6	3064	3474	1047	1037	500	157	776	425	7.5 Q.8
SALINAS MAIN	831119	SLNSCA01	8,200	16,400	0.90	0.32	64	68	3	2	1875	1536	1763	1667	635	43	1295	452	10



						Tab	le 4A.6	(page 1	1 of 13)										
							Pct	Pct	# days	# days		Average							
			Access	Access	100 Als	00S>24 ner 100	Cleared	Cleared	to clear	to clear	Average	OOS			008>		CPUC	CPUC	CPUC
			for	for	per	ALs per	hours	hours	005	005	Duration	Duration	005	00S > 1	24	00S>1 (	DOS > 1	005 >	005 > 1
Wire Center Name	WireCenter	CLLI	Quarter)	Quarter)	month	month	(unadj)	(adj)	(unadj)	(adj)	(mins)	(mins)	Total	hour	Hours	week	hour 2	24 hours	Week
SAN ANDREAS	209216	SNADCA11	1,595	3,190	4.23	2.28	46	62	6	3	3238	1989	1620	1571	872	151	875	360	26
SAN ARDO	831124	SNARCA11	132	263	1.52	0.85	44	61	5	3	2659	1700	48	44	27	3	27	13	1
SAN BRUNO	650055	SNBUCA02	12,991	25,981	0.95	0.39	59	64	3	3	1955	1621	2975	2743	1228	86	1845	712	19
SAN CARLOS	650056	SNCRCA11	8,888	17,775	0.88	0.47	47	52	5	4	2996	2334	1868	1748	997	103	1121	579	22
SAN CLEMENTE	949776	SNCLCA12	3,568	7,137	0.84	0.38	55	57	5	5	2994	2576	721	680	325	75	501	223	39
SAN DIEGO 37TH ST	619781	SNDGCA06	5,535	11,071	1.16	0.73	37	37	8	7	4725	4031	1547	1520	970	282	1085	685	138
SAN FRANCISCO 35TH S	\$415060	SNFCCA05	13,565	27,130	0.74	0.38	49	54	5	4	2767	2186	2411	2230	1222	166	1665	834	53
SAN FRANCISCO 9TH A	415064	SNFCCA13	12,216	24,433	0.75	0.40	47	53	5	4	3193	2374	2191	1948	1160	203	1427	764	65
SAN FRANCISCO MCCO	1415059	SNFCCA04	13,963	27,926	0.63	0.35	44	50	6	4	3397	2658	2110	1980	1175	225	1477	794	75
SAN GABRIEL	626658	SNGBCA01	6,618	13,236	1.03	0.63	39	47	6	5	3918	3003	1633	1552	999	185	1069	596	55
SAN GERONIMO	415069	SNGNCA11	581	1,163	3.71	2.84	24	33	11	8	6477	4656	518	507	396	165	297	209	56
SAN JOSE CHYNOWETH	1408131	SNJSCA13	10,469	20,938	1.26	0.72	43	51	5	3	3102	2247	3176	3054	1798	206	1979	1005	39
SAN JOSE MAIN	408130	SNJSCATZ	17,772	35,544	1.28	0.79	38	42	1	0	4453	3704	2440	2007	3385	951	3325	2020	370
SAN JOSE MAIN	408128	SNJSCAUZ	17,572	35,145	1.06	0.43	48	51	5 4	4	2900	2301	3403	3237	1/98	209	1242	642	42
	400133	SNJSCA15	7,200	14,520	1.00	0.00	40	50	4	4	2202	2107	1040	100	1000	122	1242	60	40
SAN JUAN BAUTISTA	510070	SNJNCATT	11 227	1,003	1.04	0.61	51	56	4	3	2092	2107	2025	2955	1/00	255	2256	1026	2
SAN LUCAS	831135	SNLNCATT	54	22,000	2.76	0.55	11	52	1	4	2042	1718	3035	2000	20	200	2200	1030	57
	805389	SNLOCA01	6 261	12 523	0.80	0.40	56	52	4	2	2424	1708	13/1	1258	505	118	783	272	15
SAN MARCOS	760792	SNMCCA11	7 183	14,366	0.03	0.40	52	54	5	4	2030	2545	1418	1357	678	115	1103	512	68
SAN MARTIN	408136	SNMACA11	855	1 710	2.51	1 69	33	40	6	4	4082	2501	515	496	347	63	244	150	6
SAN MATEO	650071	SNMTCA11	10 303	20 605	0.95	0.45	52	57	4	. 3	2497	1924	2341	2194	1123	91	1581	708	19
SAN PEDRO	310659	SNPDCA01	9.931	19.863	1.31	0.58	56	63	4	3	2207	1569	3131	2916	1381	125	1824	753	25
SAN RAFAEL MAIN	415072	SNRFCA01	9.473	18,946	1.03	0.63	39	45	8	6	4578	3471	2339	2216	1426	443	1586	925	181
SAN RAMON	925074	SNRMCA11	5,596	11,193	0.66	0.29	56	63	4	3	2375	1867	881	810	385	28	590	238	11
SAN YSIDRO	619794	SNYSCA12	1,810	3,620	1.38	0.83	40	43	9	7	4957	4391	601	562	361	116	412	249	63
SANTA CLARA-BELLOM	1408137	SNTCCA11	12,515	25,030	1.07	0.67	38	45	6	5	4041	3324	3226	3018	2006	508	1958	1170	225
SANTA CRUZ	831125	SNCZCA01	8,431	16,861	1.22	0.68	44	49	6	4	3351	2548	2462	2344	1376	228	1504	821	79
SANTA CRUZ CAPITOLA	831126	SNCZCA11	6,659	13,319	1.10	0.56	49	53	6	4	3151	2551	1754	1678	903	153	1136	565	53
SANTA MARGARITA	805390	SNMICA11	680	1,360	2.53	1.47	42	49	6	4	3196	2135	413	398	240	38	254	138	6
SANTA ROSA MAIN	707320	SNRSCA01	17,233	34,467	1.13	0.64	43	50	7	5	4842	3320	4664	4396	2639	691	3229	1725	242
SANTEE	619795	SANTCA01	3,157	6,313	0.95	0.49	48	52	5	4	3122	2505	721	667	373	75	456	237	24
SATICOY	805391	SATCCA12	2,788	5,577	1.04	0.47	55	60	5	4	3170	2830	693	650	315	47	513	217	29
SAUGUS	661407	SAGSCA11	3,689	7,377	1.07	0.47	56	62	3	2	2170	1596	948	904	416	38	596	227	11
SAUSALITO	415075	SSLTCA11	2,326	4,651	0.92	0.54	41	47	7	6	4322	3404	511	471	302	90	371	211	44
SCOTTS VALLEY	831116	SCVYCA01	1,794	3,587	1.41	0.72	49	55	6	4	2856	2172	606	567	308	51	401	194	14
SEASIDE	831117	SESDCA11	2,597	5,194	0.93	0.38	60	64	4	3	2171	1751	580	547	234	16	421	165	7
SEBASTAPOL	707321	SBSTCA11	3,732	7,464	1.96	1.31	33	39	7	6	4563	3394	1758	1684	1172	325	1186	770	115
SELMA	559217	SELMCA11	2,360	4,719	2.44	0.93	62	68	3	2	2418	1982	1381	1311	528	52	1031	357	20
SEQUOIA PARK ASH MI	1559152	ASMICATI	95	190	2.63	2.10	20	19	1	9	4100	4608	60	60	48	6	30	22	2
SHAFTER	001392 530503	SHETCA11	1,128	2,256	2.33	1.22	48	52	4	3	2599	1934	631	602	330	32	4//	245	11
	030003	SHLKCAU1	407	814	3.48	2.09	40	48 74	6	6	4080	3631	340	333	204	34 100	197	108	18
	010000	SHOKCAUT	10,32U	10.266	0.98	0.39	00 65	71	4	2	2149	1400	4297	3947 1110	1/13	100	2008	010	42
SHINGLE SPRINGS	530504	SCSPCA11	4 708	9 506	0.94 212	1.53	22	/3 ⊿1	3	2	5030	3681	2782	2600	403	500	01Z 1810	220 1110	105
SHOSHONE	760796	SHSHCA11	152	3,330	2.42 1 85	4.06	16	20	9 10	7	6500	4742	18/	181	15/	50	126	102	195
SIERRA CITY	530505	SRCYCA11	450	899	2.02	1.69	10	24	10	7	7161	5383	218	211	182	64	127	102	22



						Tab	le 4A.6	(page 1	2 of 13)										
							Pct	Pct	# days	# days		Average							
			Access	Access	OOS per	00S>24	Cleared	Cleared	to clear	to clear	Average	CPUC			008 >		CRUC	CRUC	CRUC
			for	for	ber	ALsper	hours	hours	OOS	00S	Duration	Duration	oos	00S > 1	24	00S>1 (	DOS > 1	00S >	00S > 1
Wire Center Name	WireCenter	CLLI	Quarter)	Quarter)	month	month	(unadj)	(adj)	(unadj)	(adj)	(mins)	(mins)	Total	hour	Hours	week	hour	24 hours	Week
SIERRAVILLE	530506	SRVLCA11	178	356	1.05	0.63	40	42	6	5	4197	3308	45	36	27	10	29	21	4
SILVERADO	714797	SLVRCA11	213	426	1.66	0.96	42	47	4	4	2383	2103	85	81	49	1	41	21	0
SIMI	805393	SIMICA11	11,232	22,463	0.85	0.30	65	73	3	2	1843	1370	2302	2162	807	68	1690	492	18
SMARTVILLE	530507	SMAVCA11	402	804	2.65	1.73	35	39	8	5	4200	3253	256	252	167	37	158	98	10
SODA SPRINGS	530508	SDSPCA11	678	1,356	2.03	1.44	29	37	11	9	7946	6014	330	317	234	111	178	116	41
SOLEDAD	831118	SLDDCA11	1,306	2,612	1.31	0.55	58	64	4	3	2165	1874	412	393	173	9	294	119	4
SOLEMINT	661394	SLMNCA11	5,019	10,039	1.22	0.52	57	65	3	3	2438	1912	1471	1389	629	63	926	341	25
SONOMA	707323	SONMCA12	5,581	11,163	1.52	1.02	33	42	8	5	5982	3493	2034	1960	1370	381	1254	778	101
SONORA	209218	SNRACA13	6,540	13,080	2.15	1.43	33	42	9	6	5129	3492	3376	3267	2248	708	2033	1241	216
SOUTH GATE	323655	SGATCA01	7,045	14,090	1.83	0.65	64	72	3	2	1788	1237	3091	2931	1102	79	1899	570	16
SOUTH TAHOE SUSSEX	530509	STAHCA01	3,727	7,453	1.00	0.69	31	38	10	8	6438	4477	893	843	619	248	573	379	95
SPACE PARK	408143	SNTCCA01	5,938	11,875	0.57	0.31	46	48	5	5	3467	2988	816	760	444	106	540	302	58
SPECTRUM-IRVINE	949810	IRVNCA12	2,090	4,179	0.42	0.17	61	60	4	3	2195	1956	213	196	83	9	1//	/5	4
	559219	SPVLCATI	955	1,910	3.35	2.44	27	35	10	4	4992	3398	/0/	739	560	110	450	321	21
	101310	STRINCATT	2,920	5,055	1.19	0.02	31	50	10	1	2224	3031	2006	2677	2150	103	2602	1425	155
	415007	SINFUCATZ	20,247	2 7 5 1	1.09	1.32	40	32	0	5	4000	2071	3990	5077	2159	422	2092	1420	100
	200220	SIDHCATI	1,370	2,751	2.05	1.00	20	31	9	5	409Z 2626	2075	5446	5220	2220	90	2609	2169	40
	530513	STEPCA11	165	22,149	2.05	1.20	38	30	6	5	3568	2075	0440	0220	58	15	5090 61	2100	109
STRATEORD	559224	SRERCA11	100	266	4 23	1.47	59	61	3	3	1866	1708	135	132	56	3	94	38	2
SUISUN CITY	707324	SUISCA11	486	973	0.45	0.20	57	62	6	3	3496	2708	53	48	23	5	41	17	2
SUNOI	925077	SUNI CA11	216	431	2.38	1.39	41	48	5	4	2778	2025	123	121	72	6	87	45	3
SUNSET	323640	LSANCA29	7.028	14.055	1.46	0.84	43	50	7	5	3967	2931	2469	2309	1412	353	1494	814	121
SUTTER CREEK	209225	STCKCA11	929	1.858	2.67	1.56	42	50	8	4	3846	2555	595	577	348	69	345	179	15
TAHOE CITY	530514	THCYCA01	3,412	6,823	0.81	0.54	34	39	12	10	7287	5644	664	620	441	201	367	241	86
TALLY	209248	MDSTCA05	912	1,825	0.79	0.42	47	55	4	3	2339	1835	173	157	91	6	122	61	1
TAMARACK	530511	STAHCA12	174	347	3.75	2.91	22	25	14	11	9079	6456	156	142	121	61	92	78	29
TASSAJARA	925085	DAVLCA13	3,202	6,403	0.66	0.31	53	58	4	3	2370	1966	510	471	241	14	363	166	7
TEHACHAPI CURRY ST	661395	THCHCA01	2,757	5,514	2.11	1.17	45	53	7	4	3618	2520	1399	1348	776	172	853	432	53
TEMPLE	661359	BKFDCA14	10,199	20,397	1.68	0.80	53	57	4	3	2441	1901	4104	3925	1946	150	2979	1332	45
TEMPLETON	805396	TMTNCA11	949	1,897	0.88	0.39	56	70	3	3	1942	1354	200	188	88	2	112	36	1
TENNYSON	619784	SNDGCA14	3,854	7,708	1.02	0.58	43	45	8	7	4108	3667	946	898	535	144	667	386	93
TERRA BELLA	559226	TRBLCA11	531	1,061	3.58	2.26	37	44	6	5	3849	3223	456	440	288	42	302	177	9
THIRD AVENUE	619718	CHVSCA11	5,609	11,219	1.42	0.79	44	46	8	6	4095	3590	1906	1803	1069	299	1359	774	174
THIRD STREET	415066	MDSTCA03	6,204	12,408	0.92	0.51	45	51	5	4	2938	2311	1372	1308	756	107	1000	503	37
THORNTON	209227	THTNCA11	145	290	2.70	1.87	31	32	5	4	3955	3650	94	93	65	5	68	47	2
THREE RIVERS	559228	THRRCA11	753	1,505	4.54	3.21	29	33	6	5	4434	3501	820	801	579	74	360	241	29
TIBURON	415005	TBRNCATT	2,201	4,401	0.85	0.56	34	37	8	1	4951	3969	449	420	295	95	329	223	52
TIPTON	559229	TPINCA11	287	574	2.95	2.02	32	35	6	3	3697	2580	203	198	139	22	138	88	4
TORRALES	707325	TMLSCATZ	302	10 177	1.15	0.82	29	33	8	0	2393	4027	100	1290	(   654	23	70	49	10
TRACY	310001	TRACCATI	0,089 5.097	12,177	1.03	0.45	)C	04 15	4	3	242	1005	1005	1389	1764	00 727	1026	303	105
TRES DINIOS	203230	TPPSCA11	2,967	512	2.00	1.23	38 /0	40	C A	4	3429 2287	2032	2007	2/30	7/	231	1930	51	105
	707326	TRNDC411	200	729	2.30	1.20	49 /6	60 50	4	3 2	2105	1819	170	162	01	-+	102	45	2
TRUCKEE	530515	TRUCCA11	4 751	9 503	0.80	0.60	-10	 	11	2	7783	6004	1014	967	679	340	535	331	110
TULARE	559231	TUI RCA11	5 478	10 957	1 76	0.84	52	-+0 57	4	3	2205	1726	2312	2209	1102	51	1663	753	11
TURLOCK	209232	TRLCCA11	9,230	18,459	1.41	0.79	44	49	5	4	3006	2422	3116	2981	1749	185	2232	1188	65



Process         Access         Occess         Access         Occess         Access         Occess         Access         Occess							Tab	ole 4A.6	(page 1	3 of 13)										
Lesses         Access         000 per by         000 per by								Pct	Pct	# days	# days		Average							
Lines (arg) Lines (arg) 100 ALS         per AL				Access	Access	OOS per	00S>24	Cleared	Cleared	to clear	to clear	Average	CPUC							
Whr Center Name         ULL         Ord         ppt         ALS per         Nome         Nome         ODS         Distant         Distant <thdistant< th="">         Distant         Distant</thdistant<>				Lines (avg	Lines (avg	100 ALs	per 100	w/in 24	w/in 24	90%	90%	005	005			00S >		CPUC	CPUC	CPUC
TATIN HUMBER         TATIN HUMBER<	Mire Center Nome	Wire Contor	<u></u>	for Outputer)	for	per	ALs per	hours	hours	(unodi)	00S	Duration	Duration	00S	005 > 1	24	005 > 1	005 > 1	00S>	005 > 1
TUSTIN 70       TUSTCA70       #86       1.732       0.49       0.19       e1       83       2       1.2       0.23       2.40       1.5       7.3       0.28       2.73       0.20       7.35       0.20       7.35       0.20       7.35       0.20       7.35       0.20       7.35       0.20       7.35       0.20       7.35       0.20       7.35       0.20       7.35       0.20       7.35       0.20       7.35       0.20       7.35       0.20	TUSTIN 11	71/798	TUSTCA11		10 808	0.90	0.41	(unauj) 54	(auj)	(unauj)	(auj)	(mins) 2728	(mins) 2/02	21/0	2033	086	121	1//3	24 nours 600	Week 56
TWAMP HATTE         20233         TWAMPRCAT         2.17         1.47         S2         44         10         6         5239         3400         1129         1082         765         218         616         371         575         218         616         371         575         212         575         212         575         212         575         212         575         212         575         212         575         212         575         212         575         212         575         218         616         371         1575         212         575         218         616         371         1575         212         171         172         174	TUSTIN 70	714805	TUSTCA70	3,343 866	1 732	0.30	0.41	61	63		3	2304	1954	102	2000	300 40	5	73	28	2
UKAHA         TOTAZE         UKHCAU1         5.004         10.008         14.3         0.89         38         42         10         8         5.845         4.160         1721         1324         1086         373         1215         753         220           UNIVGRETY         610778         SNDGCA2         7.403         1.4,807         0.82         0.44         45         49         6         4008         3263         1451         1369         202         1012         544         171         27         29         10         8         5927         406         255         4         3306         212         213         133         214         143         458           VALELUE         707330         VULCA1         6.819         1.05         4.5         5         4         3376         2584         220         133         212         133         214         653         582         4         3100         262         134         43         43         43         436         436         436         436         436         436         436         436         436         436         436         436         436         436         436         436	TWAIN HARTE	209233	TWHRCA11	2 170	4 340	2 17	1 47	32	44	10	6	5429	3400	1129	1082	765	218	616	371	57
UNION CITY         S10078         UNICYCATI         6.489         12.977         1.11         0.53         53         58         4         4         2004         215         1738         1527         820         96         126         541         160           UPPER LAKE VALLEY RT0732B         UPUKCA11         523         1.046         2.35         1.71         27         29         10         8         6207         4006         2.95         2.91         2.15         8.3         2.01         1.43         43           VACALLEY CT732B         UVUKCA11         3.128         1.23         0.23         1.21         0.66         46         52         4         3.130         2.328         9.272         2.237         1.33         1.835         9.92         4.24         4.46         1.28         1.33         4.0         5           VALLEY CRNC         707332         VYFRCA11         3.44         4.9         0.4         4.45         2.46         4.45         2.267         7.21         1.19         1.63         3.1         4.0         1.63         3.1         4.0         1.19         1.19         1.11         1.11         1.11         1.11         1.11         1.11		707328	UKIHCA01	5.004	10.008	1.43	0.89	38	42	10	8	5345	4160	1721	1634	1066	373	1215	753	202
UNIVERSITY         619778         UNIVERCUT         7.403         1.4.807         0.82         0.45         4.5         49         8         6         4.008         28.81         14.51         13.89         756         202         1012         5.44         13.8           VACAVILLE         70733         VCVLCA12         7.47         1.4.854         1.29         0.73         4.3         51         5         4         3576         2.584         2.317         18.8         18.5         982         2.237         13.8         18.5         982         4.2         4.4         3.5         9.5         4.6         3.2         2.34         14.8         1.35         4.6         5         4.6         3.2         2.34         1.4         1.63         1.5         4.3         2.52         1.5         4.3         2.82         9.6         4.6         3.2246         1.04         1.35         1.5         4.3         2.55         1.15         0.43         6.3         3.243         1.00         1.16         7.0         2.9         9.0         1.35         1.06         5.3         3.6         3.6         3.6         3.6         3.6         3.6         3.6         3.6         3.2         <	UNION CITY	510078	UNCYCA11	6,489	12,977	1.11	0.53	53	58	4	4	2604	2215	1736	1627	820	96	1286	581	60
UPPERLAKE VALLEY RT07230         UPLKCA11         523         1.046         2.35         1.71         2.7         27         10         8         5927         4006         295         291         216         83         201         1.31         85           VACLUCIO         70731         VLUCA01         8.519         17.037         1.21         0.65         46         52         4         313         233         247         233         183         1835         952         42.3           VALLEY ORD         70732         VVTRCA11         3.42         491         1.29         0.43         2.8         2.9         5         4466         3277         1.31         1155         7.3         4         5         2.71         1.31         1155         7.4         2         2.12         1501         4.66         3277         1.31         1155         7.64         3.3         2.77         1.31         1155         7.64         3.3         2.77         1.31         1155         7.64         3.3         2.71         1.31         156         4.4         2.9         2.12         1.500         177         2.66         3.3         2.71         3.3         2.58         1.500	UNIVERSITY	619778	SNDGCA02	7,403	14,807	0.82	0.45	45	49	8	6	4008	3263	1451	1369	796	202	1012	544	118
VACAVILLE         707330         VCVLCA12         7.427         14,848         1.29         0.73         43         65         4         376         2864         2304         2160         1337         183         1835         982         42           VALLEY CENTRE         76079         VLCTCA11         3,129         6,285         1,72         0,84         51         65         4         310         239         472         237         137         183         1835         982         42           VALLEY FORTRE         76079         VLCTCA11         2,46         411         2,88         1,15         0,43         63         72         4         2         127         118         717         64         3         2637         2111         814         78         826         632         329         28         29         9         64         64         3         1305         1070         71         65         64         4         3         2637         2111         814         78         804         704         732         94         703         74         76         32637         2106         313         180         717         843         84	UPPER LAKE VALLEY R	RE 707329	UPLKCA11	523	1,046	2.35	1.71	27	29	10	8	5927	4906	295	291	215	83	201	143	43
VALLEJO       70731       VALLGA01       8.519       17.07       1.21       0.85       46       52       5       4       3130       239       2472       2327       1337       183       1835       952       42       15         VALLEY FORD       70732       VYFRCA11       3.41       2.628       1.6       6.288       1.1       4.91       4.9       9       6       4655       327       711       71       721       2.04       6.91       6.91       5.77       71       71       721       2.04       6.91       6.91       7.03       7.71       6.95       955       957       6       6.95       3277       1.11       8.05       6.91       7.01       7.1       7.0	VACAVILLE	707330	VCVLCA12	7,427	14,854	1.29	0.73	43	51	5	4	3576	2584	2304	2169	1303	214	1637	861	58
VALLEY CENTER         760799         VLCTCA11         3.129         6.3.8         1.72         0.8.4         51         56         4         3         2246         1846         12.89         12.3         632         36         927         42.3         15           VALLEY SPRINGS         209234         VYSPCA11         1.441         2.883         3.66         2.08         41         49         9         6         4695         3277         12.31         1155         72.1         2.04         613         35.5         58           VENTURAMONTALVO         805400         VNTRCA02         3.447         6.894         0.98         0.48         51         57         4         3         2.637         2.111         814         760         395         45         591         2.20         2.3         2.9         2.9         1.2         1.0         1.111         1.0         0.65         64         4         3         1.598         1.684         1.0         1.0         0.67         5.5         5.65         2.51         1.686         3.9         2.94         2.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0	VALLEJO	707331	VLLJCA01	8,519	17,037	1.21	0.65	46	52	5	4	3130	2339	2472	2327	1337	183	1835	952	42
VALLEY FORD         707332         VYFRCA11         244         129         9         5         4665         3289         76         74         55         13         53         40         5           VALLEY SPRINGS         202343         VYSRCA11         1.4.14         2.883         3.56         2.68         411         499         6         4595         3277         1231         1156         718         4.792         4.98         7.33         47           VENTURARIEN         806040         VNTRCA11         6.894         0.71         0.31         66         64         4         3         2431         1800         180         77         228         339         2.9         90         13.0         776         56         66         3         3         2.258         1803         3100         290         17.7         2283         392         31         1917         1.11         0.65         45         47         7         6         3896         342.8         1803         310         1732         497         10.0         121         233         121         233         130         1732         133         30         1732         330         2252         <	VALLEY CENTER	760799	VLCTCA11	3,129	6,258	1.72	0.84	51	56	4	3	2246	1846	1289	1253	632	36	927	423	15
VALLEY SPRINGS         209234         VYSPCA11         1.441         2.883         3.56         2.08         41         49         9         6         4585         3277         1231         1195         721         204         611         355         658           VENTURAMPIR         805400         VNTRCA02         3.447         6.894         0.98         0.71         0.31         56         64         4         3         2637         2111         814         769         395         45         591         2.70         23           VENTURAMONTALV0         805507         VINACA11         9.20         1.31         0.57         56         61         3         3         1586         1365         144         40         16         0         22         9         0           VISLAL MAIN         505075         VISLAL         1.910         1.52         0.56         47         7         6         3986         3.434         2293         2183         1206         310         1722         8947         130         1732         4947         100         120         333         120         121         233         114         1417         1417         310	VALLEY FORD	707332	VYFRCA11	245	491	1.29	0.93	28	29	9	5	4665	3289	76	74	55	13	53	40	5
VAN NUYS         818662         VNNYCA02         14,792         29,865         1.15         0.43         63         72         4         2         2142         1500         4065         37.66         1509         178         2488         733         47           VENTURAMIN         503599         VNTRCA11         6,920         13,840         0,71         0,31         66         64         4         3         2431         1800         1183         10.76         67         832         331         156         44         40         16         0         22         9         0           VISAL <mmin< td="">         559235         VISICA11         9,880         19,761         1.31         0.57         66         61         3         32,258         1803         3100         2980         1360         172         248         44         170         150         44         40         160         4065         3563         2514         1608         161         172         2491         100         172         248         48         810         221         233         144         160         161         33         262         156         1733         61         3037</mmin<>	VALLEY SPRINGS	209234	VYSPCA11	1,441	2,883	3.56	2.08	41	49	9	6	4595	3277	1231	1195	721	204	691	355	58
VENTURANCINC         805400         VNTRCA10         3,694         0,89         0,48         51         57         4         3         2637         2111         814         769         395         45         591         270         233           VINA         530517         VINACA12         91         182         202         0.73         64         67         3         3         1266         1100         1130         076         64         67         3         3         1266         100         226         920         31           VISLA         MAINA         559235         VISLCA11         9,80         19,761         112         0.65         45         47         7         6         3968         3434         2263         210         173         243         19,87         170         125           WALACE         209236         WILSCA11         533         1,046         4.68         3.49         26         32         8         5         0302         256         244         135         30         198         821         11           WALACE         2095079         WINCKCA11         15,22         31,045         0.83         277 <t< td=""><td>VAN NUYS</td><td>818662</td><td>VNNYCA02</td><td>14,792</td><td>29,585</td><td>1.15</td><td>0.43</td><td>63</td><td>72</td><td>4</td><td>2</td><td>2142</td><td>1500</td><td>4065</td><td>3756</td><td>1509</td><td>178</td><td>2498</td><td>733</td><td>47</td></t<>	VAN NUYS	818662	VNNYCA02	14,792	29,585	1.15	0.43	63	72	4	2	2142	1500	4065	3756	1509	178	2498	733	47
VENURAMONTALVO 806399         VNIRCA11         6,920         13,840         0,71         0.31         56         64         4         3         2431         1800         1183         1076         517         66         832         339         29           VISALA MAIN         559235         VISLCA11         9,860         19,761         1.31         0.57         66         61         3         3         1586         166         166         167         3         3160         2960         1350         77         2263         932         31           VISALA         760800         VISTA         0.655         16.11         1.19         0.65         45         47         6         396         2655         2514         1608         369         1664         1070         125           WALKER RASIN         616479         NUSCAL1         479         957         2.23         1.18         47         53         7         6         353         527         256         244         135         30         129         242         148         10         10         1470         130         322         246         33         250         664         12         244	VENTURA/FIR	805400	VNTRCA02	3,447	6,894	0.98	0.48	51	57	4	3	2637	2111	814	769	395	45	591	270	23
VINA         530517         VINACA12         91         182         2.02         0.73         64         67         3         3         1586         144         40         16         0         22         9         0           VISLAL MAIN         550255         VISICA12         8.065         16,111         1.19         0.65         45         47         7         6         3998         3434         2293         218         1266         310         1732         947         180           WALKAG         661401         WUSCA11         523         1.046         4.88         3.49         26         32         8         5         5032         256         244         135         0.16         988         310         22:1         23           WALLACE         202028         WUCCA11         15:52         31.045         0.85         0.33         62         70         3         2         1804         130         310         2988         1213         60         2075         644         12         WATSONVILCE         8314         130         130         328         512         284         46         381         193         10           WALLACE<	VENTURA/MONTALVO	805399	VNTRCA11	6,920	13,840	0.71	0.31	56	64	4	3	2431	1800	1183	1076	517	66	832	339	29
VISALA MAIN       589235       VISLCA11       9,880       19,761       1.31       0.57       56       61       3       3       2258       1803       31/00       2960       1350       77       2263       932       31         WABASH       916479       NSCRCA11       9,843       19,667       1.12       0.66       30       45       6       5       3968       344       2293       2183       1266       310       722       23         WALKER BASIN       61101       WLBSCA11       479       957       2.23       1.14       47       53       7       6       5337       2572       256       244       135       30       159       82       11         WARNER SPRINGS       760001       WNSPCA12       483       985       2.79       2.00       28       34       5       5       370       293       131       246       33       220       148       10         WASCO       616402       WNSPCA12       433       985       2.77       2.83       1.78       37       43       5       4       2941       235       148       142       49       511       299       221       WASCO <td>VINA</td> <td>530517</td> <td>VINACA12</td> <td>91</td> <td>182</td> <td>2.02</td> <td>0.73</td> <td>64</td> <td>67</td> <td>3</td> <td>3</td> <td>1586</td> <td>1365</td> <td>44</td> <td>40</td> <td>16</td> <td>0</td> <td>22</td> <td>9</td> <td>0</td>	VINA	530517	VINACA12	91	182	2.02	0.73	64	67	3	3	1586	1365	44	40	16	0	22	9	0
VISIA         / FOB000         VISICA12         8.055         16,111         1.19         0.66         45         47         7         6         3998         34.44         2293         2183         1206         310         17.32         947         160           WALKER BASIN         661401         WLBSCA11         523         1.046         4.68         3.49         26         32         8         5         5032         2554         4.68         369         221         23           WALLACE         209265         WLICCA11         479         957         2.33         1.62         70         3         2         164         1370         3169         2938         1213         60         2075         684         12           WARNER SPRIOS         706001         WNSPCA12         483         985         2.79         2.00         28         34         5         3730         2973         330         322         226         33         20         148         100         WASCON         661402         WASCOA01         1.181         2.961         1.73         0.76         47         52         5         4         2934         2357         3441         304	VISALIA MAIN	559235	VISLCA11	9,880	19,761	1.31	0.57	56	61	3	3	2258	1803	3100	2960	1350	77	2263	932	31
WARSH         9164/9         NSCRA11         9,44         10,68/         1.12         0.08         39         45         5         366         2958         203         2014         1008         39         184         10/0         125           WALLACE         209236         WLLCCA11         479         957         2.23         1.18         47         53         7         6         3537         2672         256         244         135         30         159         82         11           WALNDT CREEK         925079         WNCKCA11         15,522         31,045         0.85         0.33         62         70         3         2         1804         130         0.9203         538         512         236         3.3         202         148         10           WATEGR         2093         538         512         244         46         381         139         129           WATEGR         2093         534         1.837         1.43         0.76         752         5         4         2934         2357         3441         330         122         123         1182         73         118         71         11         118         10 <td>VISTA</td> <td>760800</td> <td>VISTCA12</td> <td>8,055</td> <td>16,111</td> <td>1.19</td> <td>0.65</td> <td>45</td> <td>47</td> <td>/</td> <td>6</td> <td>3998</td> <td>3434</td> <td>2293</td> <td>2183</td> <td>1266</td> <td>310</td> <td>1732</td> <td>947</td> <td>180</td>	VISTA	760800	VISTCA12	8,055	16,111	1.19	0.65	45	47	/	6	3998	3434	2293	2183	1266	310	1732	947	180
WALLACE       209236       WILCCA11       479       997       2.23       1.18       47       53       7       6       353       226       2.44       135       0.16       4.30       6.8       310       22.1       2.3         WALLACE       29236       WILCCA11       15,522       31,045       0.85       0.83       62       70       3       2       1804       1370       3169       2938       1213       60       2075       684       12         WARNER SPRINGS       760801       WNSPCA12       433       985       2.79       2.00       28       34       5       5       3730       322       226       33       20       148       10         WARDER SPRINGS       760801       WNSPCA12       2.3070       2.83       1.78       37       43       5       4       2334       2357       3441       3304       1822       251       2324       1182       73         WARDEN STRORD       209238       WARACA11       297       595       1.71       1.54       10       10       11       9       1216       12305       122       10       10       37       70       WARDEN STRORDA11       237		916479	NSCRCA11	9,843	19,687	1.12	0.68	39	45	6	5	3865	2958	2635	2514	1608	369	1864	1070	125
WALLACE       203236       WILCKATI       4/9       99       2.23       1.16       4/7       53       7       0       533       2/12       200       244       135       30       159       62       11         WARNER SPRINGS       760801       WINCKCATI       15,52       31,045       0.85       0.33       62       70       3       2184       130       316       2938       121       60       2075       644       12         WARNER SPRINGS       760801       WINSCATI       1,035       2,070       283       1,78       37       43       5       4       3311       2888       702       684       442       49       511       299       223         WATSONVILLE       831141       WTVLCA01       1,052       20,104       1.43       0.76       7       52       5       4       2931       2241       182       73         WAWONA       209238       WANACATI       1.178       2.866       1.71       1.54       10       10       11       9       516       122       101       43       76       71       11         WEED       530518       WEEDCAOI       1.133       2.266		001401	WLBSCATT	523	1,040	4.08	3.49	20	32	8	0	0 0032	3594	200	5/8	438	88	310	221	23
WARDER SPRINGS       230/9       WINSPCAL1       13,322       31,943       0.83       0.279       2.00       28       13/10       3189       2938       1213       60       2/07       604       14       100       322       236       33       220       144       100         WARNER SPRINGS       700801       WNSPCAL12       433       1,96       1.00       47       53       6       3       2970       2093       538       512       284       46       381       190       100       47       53       6       3       2970       2093       538       512       284       46       381       190       100       47       53       6       3       2970       2093       538       512       284       46       381       182       2251       234       1182       73       114       43       180       70       71       11       44       42       49       511       154       10       11       9       1216       1230       120       100       43       71       111       433       331       307       124       3       31       1163       490       331       3050       31		209230	WLLCCATT	479	907	2.23	1.10	47	53	1	6	) 3037 1904	2072	200	244	135	30	159	8Z	10
WASCO       661402       WASCO       100       473       200       20       37       53       203       220       460       10         WASCO       661402       WASCOA1       1,181       2,301       1.90       1.00       47       53       6       3       2970       203       538       512       284       46       381       193       10         WATESNVILLE       831411       VTVLCA01       10,052       2,070       2.83       1.78       37       43       5       4       3311       2668       702       664       442       49       511       299       22         WATSONVILLE       831411       201       10,052       2,070       2.83       1.73       0.6       45       53       6       53503       2491       5873       5493       3250       666       3714       1913       221         WEED       530618       WEEDCA01       1,173       2,264       64       63       72       2       2       170       034       31       307       124       3       189       57       0       WEED       305020       WTLCA11       1,172       22,344       1.40       0.82		925079 760801		15,522	31,045	0.00	2.00	28	24	5	2	3730	2073	330	2930	236	23	2075	1/18	12
WATER       OB       OB       TAB       T	WASCO	661402		1 1 8 1	2 361	1 00	2.00	47	53	6	3	2070	2003	538	512	230	46	220	140	10
MATSONULLE       B31141       WITLCA01       10.052       20.104       1.43       0.76       47       52       5       4       2934       2357       3441       3041       122       251       2324       1182       73         WANSONNA       209238       WANACA11       1.77       255       1.71       1.54       10       11       9       12156       12305       122       120       110       43       76       71       11         WEEDSTER       323631       LSANCA10       14.178       28,356       1.73       0.96       45       53       6       53051       491       587       5493       322       6686       3714       1913       221         WEED       530518       WEOTCA11       68       137       1.95       0.73       63       53       3       3       157       10       15       7       0         WHEATLAND       530520       WTLOCA12       679       1.399       3.27       2.35       28       34       8       7       4970       3980       534       521       384       102       371       256       49         WILLOW       AS3052       WTLCA12 <td< td=""><td>WATERFORD</td><td>209237</td><td>WTERCA11</td><td>1,101</td><td>2,001</td><td>2.83</td><td>1.00</td><td>37</td><td>43</td><td>5</td><td>4</td><td>3311</td><td>2688</td><td>702</td><td>684</td><td>442</td><td>40</td><td>511</td><td>299</td><td>22</td></td<>	WATERFORD	209237	WTERCA11	1,101	2,001	2.83	1.00	37	43	5	4	3311	2688	702	684	442	40	511	299	22
WAWONA       209238       WANACA11       297       595       1.71       1.54       10       10       11       9       12156       1220       122       120       110       43       76       71       11         WEBD       530518       WEEDCA01       14,178       28,356       1.73       0.96       45       53       6       5       3503       2491       5873       5493       3250       666       3714       1913       221       0       16       7       0       0       0       1780       1334       331       307       124       3       189       57       0         WECTT       707333       WEOTCA11       68       137       1.95       0.73       63       53       3       3       1547       1924       32       31       102       15       7       0         WHET ROAD       408129       SNJSCA11       1.172       2.2344       1.40       0.82       42       46       5       4       3554       298       321       34       1456       1004       414       1069       693       234         WILLOWS       530521       WLTSCA12       2.578       5.156	WATSONVILLE	831141	WTVI CA01	10 052	20 104	1 43	0.76	47	52	5	4	2934	2357	3441	3304	1822	251	2324	1182	73
WEBSTER       323631       LSANCA10       14,178       28,356       1.73       0.96       45       53       6       5       3503       2491       5873       5493       3250       686       3714       1913       221         WEED       530518       WEEDCA01       1,133       2,266       1.22       0.46       63       72       3       2       1780       1334       331       307       124       3       189       57       0         WEOT       707333       WEOTCA11       68       137       1.95       0.73       63       53       3       1547       1924       32       31       12       0       15       7       0         WHEATLAND       530520       WTLDCA12       679       1,359       3.27       2.35       28       34       8       7       4970       3980       534       521       344       102       371       256       49         WILLITS       707334       WLTSCA11       1.471       2.2344       1.40       0.82       42       46       5       4       3554       2659       3759       3603       2198       272       127       4       210       93 </td <td>WAWONA</td> <td>209238</td> <td>WANACA11</td> <td>297</td> <td>595</td> <td>1 71</td> <td>1 54</td> <td>10</td> <td>10</td> <td>11</td> <td>ç</td> <td>12156</td> <td>12305</td> <td>122</td> <td>120</td> <td>110</td> <td>43</td> <td>76</td> <td>71</td> <td>11</td>	WAWONA	209238	WANACA11	297	595	1 71	1 54	10	10	11	ç	12156	12305	122	120	110	43	76	71	11
WEED       530518       WEEDCA01       1,133       2,266       1.22       0.46       63       72       3       2       1780       1334       331       307       124       3       189       57       0         WEOTT       707333       WEOTCA11       68       137       1.95       0.73       63       53       3       3       1547       1924       32       31       12       0       15       7       0         WHEATLAND       530520       WTLDCA12       2.578       5,156       2.48       1.62       35       4       3554       2653       3759       3603       2198       299       2473       1396       87         WILLITS       707334       WLTSCA12       2,578       5,156       2.48       1.62       35       40       12       9       6335       4799       1534       1456       1004       414       1069       663       239       11       111       129       2,598       2.21       1.13       49       56       5       4       2896       2397       689       666       352       49       474       218       29       WILMICWAS       350521       WUMSCA11       1,	WEBSTER	323631	LSANCA10	14.178	28.356	1.73	0.96	45	53	6	5	3503	2491	5873	5493	3250	686	3714	1913	221
WEOTT       707333       WEOTCA11       68       137       1.95       0.73       63       53       3       1547       1924       32       31       12       0       15       7       0         WHATLAND       530520       WTLDCA12       679       1.359       3.27       2.35       28       34       8       7       4970       3980       534       521       384       102       371       256       49         WHITE ROAD       408129       SNJSCA11       11,172       22,344       1.40       0.82       42       46       5       4       3554       2653       3759       3603       2198       299       2473       1396       87         WILLOW PASS       925050       PSBGCA11       1,471       2,941       0.82       0.36       56       59       4       3       1970       1762       288       272       127       4       210       93       1         WILLOW S       530521       WLWSCA11       1,299       2,598       2.21       1.13       49       56       5       4       289       2397       689       666       32       474       249       225       141 <t< td=""><td>WEED</td><td>530518</td><td>WEEDCA01</td><td>1,133</td><td>2.266</td><td>1.22</td><td>0.46</td><td>63</td><td>72</td><td>3</td><td>2</td><td>1780</td><td>1334</td><td>331</td><td>307</td><td>124</td><td>3</td><td>189</td><td>57</td><td>0</td></t<>	WEED	530518	WEEDCA01	1,133	2.266	1.22	0.46	63	72	3	2	1780	1334	331	307	124	3	189	57	0
WHEATLAND       530520       WTLDCA12       679       1,359       3.27       2.35       28       34       8       7       4970       3980       534       521       384       102       371       256       49         WHITE ROAD       408129       SNJSCA11       11,172       22,344       1.40       0.82       42       46       5       4       3554       2653       3759       3603       2198       299       2473       1396       87         WILLITS       707334       WLTSCA12       2,578       5,156       2.88       1.62       35       40       12       9       6335       4799       1534       1456       1004       414       1069       693       234         WILLOWS       530521       WLWSCA11       1,299       2,598       2.21       1.13       49       56       5       4       2896       2397       689       666       352       49       474       218       29         WILDWS       530521       WLMGCA01       7,527       15,055       1.70       0.75       56       62       4       3       2445       1702       3063       2867       1357       149       1892	WEOTT	707333	WEOTCA11	68	137	1.95	0.73	63	53	3	3	1547	1924	32	31	12	0	15	7	0
WHITE ROAD       408129       SNJSCA11       11,172       22,344       1.40       0.82       42       46       5       4       3554       2653       3759       3603       2198       299       2473       1396       87         WILLITS       707334       WLTSCA12       2,578       5,156       2.48       1.62       35       40       12       9       6335       4799       1534       1456       1004       414       1069       693       234         WILLOW PASS       925050       PSBGCA11       1,471       2,941       0.82       0.36       56       59       4       3       1970       1762       288       272       127       4       210       93       1         WILLOWS       530521       WLWSCA11       1,299       2,598       2.21       1.13       49       56       5       4245       1702       3063       2867       1357       149       1892       767       27         WINDSOR       707335       WNDSCA11       9.727       15,055       1.70       0.75       56       62       4       3       2445       1702       3063       2867       1357       149       1892       767	WHEATLAND	530520	WTLDCA12	679	1,359	3.27	2.35	28	34	8	7	4970	3980	534	521	384	102	371	256	49
WILLITS       707334       WLTSCA12       2,578       5,156       2.48       1.62       35       40       12       9       6335       4799       1534       1456       1004       414       1069       693       234         WILLOW PASS       925050       PSBGCA11       1,471       2,941       0.82       0.36       56       59       4       3       1970       1762       288       272       127       4       210       93       1         WILLOWS       530521       WLWSCA11       1,299       2,598       2.21       1.13       49       56       5       4       2896       2397       689       666       352       49       474       218       29         WILMINGTON       310664       WLMGCA01       7,527       15,055       1.70       0.75       56       62       4       3       2445       1702       3063       2867       1357       149       1892       767       27         WINDSOR       707335       WNDSCA11       3,796       7,593       1.32       0.65       51       54       4       4       2644       2255       1204       1138       594       74       895       <	WHITE ROAD	408129	SNJSCA11	11,172	22,344	1.40	0.82	42	46	5	4	3554	2653	3759	3603	2198	299	2473	1396	87
WILLOW PASS       925050       PSBGCA11       1,471       2,941       0.82       0.36       56       59       4       3       1970       1762       288       272       127       4       210       93       1         WILLOWS       530521       WLWSCA11       1,299       2,598       2.21       1.13       49       56       5       4       2896       2397       689       666       352       49       474       218       29         WILMINGTON       310664       WLMGCA01       7,527       15,055       1.70       0.75       56       62       4       3       2445       1702       3063       2867       1357       149       1892       767       27         WINDSOR       707335       WNDSCA11       2,258       4,515       0.97       0.63       35       40       8       7       565       514       341       102       409       215       16         WOODCREST       951775       RVSDCA11       3,796       7,593       1.32       0.65       51       54       4       2644       2255       1204       1138       594       74       895       426       44         WO	WILLITS	707334	WLTSCA12	2,578	5,156	2.48	1.62	35	40	12	g	6335	4799	1534	1456	1004	414	1069	693	234
WILLOWS       530521       WLWSCA11       1,299       2,598       2.21       1.13       49       56       5       4       2896       2397       689       666       352       49       474       218       29         WILMINGTON       310664       WLMGCA01       7,527       15,055       1.70       0.75       56       62       4       3       2445       1702       3063       2867       1357       149       1892       767       27         WINDSOR       707335       WNDSCA11       2,258       4,515       0.97       0.63       35       40       8       7       5655       4444       525       514       341       102       409       251       47         WINTERS       530522       WNTRCA11       971       1,942       2.18       1.42       35       40       7       4       369       3074       507       489       322       60       346       21       16         WOODCREST       951775       RVSDCA11       797       1,594       3.12       1.67       46       51       5       3       2612       2165       596       579       320       20       378       192	WILLOW PASS	925050	PSBGCA11	1,471	2,941	0.82	0.36	56	59	4	3	1970	1762	288	272	127	4	210	93	1
WILMINGTON       310664       WLMGCA01       7,527       15,055       1.70       0.75       56       62       4       3       2445       1702       3063       2867       1357       149       1892       767       27         WINDSOR       707335       WNDSCA11       2,258       4,515       0.97       0.63       35       40       8       7       5655       4444       525       514       341       102       409       251       47         WINTERS       530522       WNTRCA11       971       1,942       2.18       1.42       35       40       7       4       4369       3074       507       489       332       60       346       215       16         WOODCREST       951775       RVSDCA11       3,796       7,593       1.32       0.65       51       54       4       4       2644       2255       1204       1138       594       74       895       426       44         WOODLAKE       559239       WDLDCA11       5,843       11,686       1.43       0.93       35       40       8       7       5268       4253       2010       1923       1311       344       1471       <	WILLOWS	530521	WLWSCA11	1,299	2,598	2.21	1.13	49	56	5	4	2896	2397	689	666	352	49	474	218	29
WINDSOR       707335       WNDSCA11       2,258       4,515       0.97       0.63       35       40       8       7       5655       4444       525       514       341       102       409       251       47         WINTERS       530522       WNTRCA11       971       1,942       2.18       1.42       35       40       7       4       4369       3074       507       489       332       60       346       215       16         WOODCREST       951775       RVSDCA11       3,796       7,593       1.32       0.65       51       54       4       4       2644       2255       1204       1138       594       74       895       426       44         WOODLAND       530523       WDLCA11       797       1,594       3.12       1.67       46       51       5       3       2612       2165       596       579       320       20       378       192       5         WOODLAND       530523       WDLCA11       5,843       11,686       1.43       0.93       35       40       8       7       5268       4253       2010       1923       1311       344       1471       927	WILMINGTON	310664	WLMGCA01	7,527	15,055	1.70	0.75	56	62	4	3	2445	1702	3063	2867	1357	149	1892	767	27
WINTERS       530522       WNTRCA11       971       1,942       2.18       1.42       35       40       7       4       4369       3074       507       489       332       60       346       215       16         WOODCREST       951775       RVSDCA11       3,796       7,593       1.32       0.65       51       54       4       4       2644       2255       1204       1138       594       74       895       426       44         WOODLAKE       559239       WDLKCA11       797       1,594       3.12       1.67       46       51       5       3       2612       2165       596       579       320       20       378       192       5         WOODLAND       530523       WDLCA11       7,843       11,686       1.43       0.93       35       40       8       7       5268       4253       2010       1923       1311       344       1471       927       157         YORBA LINDA       714802       YRLNCA11       4,786       9,572       0.79       0.33       59       64       3       3       2290       1930       913       855       376       38       658       244 </td <td>WINDSOR</td> <td>707335</td> <td>WNDSCA11</td> <td>2,258</td> <td>4,515</td> <td>0.97</td> <td>0.63</td> <td>35</td> <td>40</td> <td>8</td> <td>7</td> <td>5655</td> <td>4444</td> <td>525</td> <td>514</td> <td>341</td> <td>102</td> <td>409</td> <td>251</td> <td>47</td>	WINDSOR	707335	WNDSCA11	2,258	4,515	0.97	0.63	35	40	8	7	5655	4444	525	514	341	102	409	251	47
WOODDCREST       951775       RVSDCA11       3,796       7,593       1.32       0.65       51       54       4       4       2644       2255       1204       1138       594       74       895       426       44         WOODLAKE       559239       WDLKCA11       797       1,594       3.12       1.67       46       51       5       3       2612       2165       596       579       320       20       378       192       5         WOODLAND       530523       WDLCA11       5,843       11,686       1.43       0.93       35       40       8       7       5268       4253       2010       1923       1311       344       1471       927       157         YORBA LINDA       714802       YRLNCA11       4,786       9,572       0.79       0.33       59       64       3       3       2290       1930       913       855       376       38       658       244       18         YOSEMITE MAIN       209240       YSMTCA11       4,786       9,572       0.79       0.32       65       81       3       2290       1930       128       125       112       24       115       99	WINTERS	530522	WNTRCA11	971	1,942	2.18	1.42	35	40	7	4	4369	3074	507	489	332	60	346	215	16
WOODLAKE       559239       WDLKCA11       797       1,594       3.12       1.67       46       51       5       3       2612       2165       596       579       320       20       378       192       5         WOODLAND       530523       WDLDCA11       5,843       11,686       1.43       0.93       35       40       8       7       5268       4253       2010       1923       1311       344       1471       927       157         YORBA LINDA       714802       YRLNCA11       4,786       9,572       0.79       0.33       59       64       3       3       2290       1930       913       855       376       38       658       244       18         YOSEMITE MAIN       209240       YSMTCA11       544       1,088       0.98       0.86       13       16       8       7       5767       4830       128       125       112       24       115       99       18         YOUNTVILLE       707336       YNVLCA11       1,075       2,150       1.60       1.06       34       39       7       6       5071       4185       413       401       273       55       230	WOODCREST	951775	RVSDCA11	3,796	7,593	1.32	0.65	51	54	4	4	2644	2255	1204	1138	594	74	895	426	44
WOODLAND       530523       WDLDCA11       5,843       11,686       1.43       0.93       35       40       8       7       5268       4253       2010       1923       1311       344       1471       927       157         YORBA LINDA       714802       YRLNCA11       4,786       9,572       0.79       0.33       59       64       3       3       2290       1930       913       855       376       38       658       244       18         YOSEMITE MAIN       209240       YSMTCA11       544       1,088       0.98       0.86       13       16       8       7       5767       4830       128       125       112       24       115       99       18         YOUNTVILLE       707336       YNVLCA11       1,075       2,150       1.60       1.06       34       39       7       6       5071       4185       413       401       273       55       230       147       17         YREKA       530524       YREKCA11       1,851       3,701       0.90       0.32       65       81       3       2       1694       1108       400       375       141       7       162       5	WOODLAKE	559239	WDLKCA11	797	1,594	3.12	1.67	46	51	5	3	2612	2165	596	579	320	20	378	192	5
YORBA LINDA       /14802       YRLINGATI       4,786       9,572       0.79       0.33       59       64       3       3       2290       1930       913       855       376       38       658       244       18         YOSEMITE MAIN       209240       YSMTCA11       544       1,088       0.98       0.86       13       16       8       7       5767       4830       128       125       112       24       115       99       18         YOUNTVILLE       707336       YNVLCA11       1,075       2,150       1.60       1.06       34       39       7       6       5071       4185       413       401       273       55       230       147       17         YREKA       530524       YREKCA11       1,851       3,701       0.90       0.32       65       81       3       2       1694       1108       400       375       141       7       162       53       2       250       2597       1502       1420       53       52       20       257       2502       2597       1502       1420       53       52       20       257       2502       2597       1502       1420 <td< td=""><td>WOODLAND</td><td>530523</td><td>WDLDCA11</td><td>5,843</td><td>11,686</td><td>1.43</td><td>0.93</td><td>35</td><td>40</td><td>8</td><td>7</td><td>5268</td><td>4253</td><td>2010</td><td>1923</td><td>1311</td><td>344</td><td>1471</td><td>927</td><td>157</td></td<>	WOODLAND	530523	WDLDCA11	5,843	11,686	1.43	0.93	35	40	8	7	5268	4253	2010	1923	1311	344	1471	927	157
TOSEMILE MAIN       209240       TOMILATI       544       1,088       0.86       13       16       8       7       5767       4830       128       125       112       24       115       99       18         YOUNTVILLE       707336       YNVLCA11       1,075       2,150       1.60       1.06       34       39       7       6       5071       4185       413       401       273       55       230       147       17         YREKA       530524       YREKCA11       1,851       3,701       0.90       0.32       65       81       3       2       1694       1108       400       375       141       7       162       35       2         VILBACITY       530525       XBCY001       6.448       12807       0.98       0.50       49       57       7       5       2507       1502       1420       774       1450       57       2       2507       1502       1420       774       1450       57       2       2       2507       1502       1420       774       1450       57       2       2       2507       1502       1420       774       1450       57       2       2		/14802	YRLNCA11	4,786	9,572	0.79	0.33	59	64	3	3	5 2290	1930	913	855	376	38	658	244	18
TOURIVILLE 707330 TINULATI 1,075 2,150 1.60 1.06 34 39 7 6 5071 4185 413 401 273 55 230 147 17 YREKA 530524 YREKCA11 1,851 3,701 0.90 0.32 65 81 3 2 1694 1108 400 375 141 7 162 35 2 VIIBACITY 530525 VRCYCA01 6.448 12.807 0.98 0.50 49 57 7 5 2560 2597 4502 4420 774 4140 59 90		209240	Y SIVE CA11	544	1,088	0.98	0.86	13	16	8	7	5/67	4830	128	125	112	24	115	99	18
TRERA 30024 TRERVALL 1,001 3,101 0.30 0.32 00 01 3 2 1094 1100 400 370 141 7 102 30 2 VIIBACITY 530505 VECYANI 6.4/8 12.807 0.08 0.50 40 57 7 5 2550 2507 4502 4/20 774 474 4450 507 00		101330		1,075	2,150	1.60	1.06	34	39	/	6	0 50/1	4185	413	401	2/3	55	230	14/	17
		530524	VRCVCA01	1,001	12 007	0.90	0.32	CO 40	01 57	3 7	2	2550	2507	400	1/20	141	174	1150	50	2



### **AT&T Service Quality Performance**

ETI has undertaken a number of detailed analyses of AT&T service quality and performance in resolving out-of-service conditions both statewide and, more importantly, on a wire center-bywire center basis.

## "Adjusted" vs. "actual" results

As we explained in Chapter 4 above, GO 133-C/D does not hold ILECs responsible for the entire outage duration if a Sunday or federal holiday intervenes. Outage durations are thus adjusted *for GO 133-C/D compliance purposes* by subtracting Sunday or federal holiday hours that fall within an outage situation. Certain additional situations as discussed in Chapter 4 above have also been treated as "excluded" even though, from the customer's perspective, the service is not functioning. ETI does not believe that it is appropriate to entirely exclude all instances where, upon encountering an out-of-service condition, the customer has requested an appointment date/time at the customer's convenience *because the requirement to accommodate the customer's personal needs in order to effect a restoration of service is a direct result of the service outage itself*. Instead, the delay in the ultimate restoration of service attributable to the additional time needed to satisfy the customer's request for an appointment should be adjusted out of the total out-of-service duration. ETI has been advised that such an adjustment is already reflected in the "CPUC Duration" calculation provided on the individual Trouble Report data records. Figures 4A.4 through 4A.12 provide the OOS data on both an actual and an adjusted basis.

### Out-of-service more than one hour

There has been a slight upward trend over the 8-year study period in the number of trouble reports per 100 access lines, as shown on Figure 4A.2. Some problems can be quickly resolved, – for example, advising the customer to make sure that the handset is plugged in or that the battery in a cordless phone has not run down. By eliminating those OOS conditions that can typically be cleared up quickly, we can focus upon conditions that will require more complex remedial measures. As shown on Figure 4A.3, there has been a somewhat greater upward trend in the average duration of all OOS conditions over one (1) hour in duration over the 8-year study period. A principal focus of the Commission's concerns regarding ILEC service quality is with respect to the frequency and duration of out-of-service conditions. GO 133-C/D has placed particular emphasis upon protracted out-of-service situations, focusing specifically upon POTS lines that are not restored within the first 24 hours.









**Figure 4A.3.** There has been a steady increase in the average duration of AT&T California out-of-service incidents lasting more than one hour (actual).



As shown in Figure 4A.3, after eliminating all out-of-service conditions that had been cleared within the first hour, the trend in average duration of all remaining out-of-service situations for AT&T has been steadily increasing over the study period, from 2,408 minutes (1.67 days) in the first quarter of 2010 to 3,109 minutes (2.16 days) in the fourth quarter of 2017 – i.e., *it took AT&T some 29% longer on average to restore a service outage* at the end of the 8-year study period than at its outset.

**B** 

The trend in average duration of all out-of-service conditions, excluding those cleared within one hour, for AT&T has been steadily increasing over the study period.

### Duration of out-of-service conditions

Figures 4A.4 and 4A.5 provide the average duration of all OOS conditions and the average duration of OOS conditions greater than 24 hours, respectively, together with their long-term trend lines, on an actual basis. Figures 4A.6 and 4A.7 present these same metrics on an adjusted (i.e., excluding Sunday/holiday hours and OOS conditions deemed beyond the carrier's control) basis. As the results show, for AT&T California overall, the actual durations of all reported service outages, as reflected in the trend line, have steadily increased over the full study period, from 2,239 minutes (1.55 days) in 1Q2010 2010 to 2,933 minutes (2.04 days) as of 4Q2017 i.e., some 31% longer. For outages that remained uncleared after 24 hours, their trend line average durations was lengthened by 47%, from 3,676 minutes (2.55 days) in 1Q2010 to 5,393 minutes (3.75 days) over the same period. The results were somewhat better for all OOS when Sunday/holiday hours and "excluded" situations were eliminated, but the trend was still in the upward direction. Duration trend values for all OOS increased by 13.3%, from 1,932 minutes (1.34 days) in 1Q2010 to 2,186 minutes (1.52 days) in 4Q2017. For outages exceeding 24 hours, the corresponding figures were 3,301 minutes (2.29 days) to 4,386 minutes (3.04 days), some 33% longer. As with the various other metrics, there is considerable variation within each of the five attribute dimensions. Figure 4A.8 plots AT&T's Out-of-service over 24 hours, indicating roughly an 12% increase in the rate of such incidents over the full study period.



Over the 2010-2017 study period, AT&T's average OOS duration over 24 hours has increased by roughly 12%.





**Figure 4A.4.** The average duration of all AT&T California out-of-service incidents (actual) has been on the rise over the 2010-2017 study period.



**Figure 4A.5.** The average duration of all AT&T California (actual) out-ofservice incidents over 24 hours has significantly increased over the 2010-2017 study period.





**Figure 4A.6.** The average duration of all AT&T California out-of-service incidents (adjusted) has been increasing over the 2010-2017 study period.



**Figure 4A.7.** The average duration of all AT&T California (adjusted) outages lasting more than 24 hours has been increasing over the 2010-2017 study period.





**Figure 4A.8.** The rate of AT&T California out-of-service conditions over 24 hours (actual) has risen by about 12% over the 2010-2017 study period.



# **Out-of-service conditions cleared within 24 hours**

The average duration of AT&T out-of-service conditions has been increasing over the study period, as plotted on Figure 4A.3 above. GO 133-C/D has placed particular emphasis upon POTS lines that are not restored within the first 24 hours. Taken over the full 8-year (2010-2017) period, AT&T data identify a total of 5,000,823 trouble reports that involved an out of service condition of varying durations. 2,480,362 of these – nearly half – remained uncleared after 24 hours. Even on an adjusted basis, there were still 2,318,185 outages – some 46.4% – that remained uncleared after 24 hours. The various clearance rates are summarized in Table 4A.7 below:

Т	able 4A.7												
AT&T	CALIFORNIA												
QUANTITIES OF ACTU OUT-OF-SE JANUARY 2010 TH	JAL AND ADJ RVICE CONDI IROUGH DEC	USTED ("C TIONS EMBER 20	PUC") 17										
	Actua	al	Adjust	ed									
ConditionQuantityPctQuantityPctOut-of-Service - all types5,000,823100,05,000,823100,0													
Condition         Quantity         Pct         Quantity         Pct           Out-of-Service – all types         5,000,823         100.0         5,000,823         100.0													
Out-of-Service – less than one (1) hour	328,335	6.6%	388,363	7.8%									
Out-of-Service – 1 to 6 hours	858,274	17.2%	824,448	16.5%									
Out-of-Service – 6 to 12 hours	272,591	5.5%	369,533	7.4%									
Out-of-Service – 12 to 24 hours	1,061,261	21.2%	1,100,294	22.0%									
Out-of-Service – more than 24 hours	2,480,362	49.6%	2,318,185	46.4%									
Out-of-Service – more than 1 week	272,442	5.4%	182,823	3.7%									
Excluded (beyond carrier's control)	830,780	16.6%											
NOTES. So-called "Excluded" OOS conditions have	e not been elimina	ted from these	e results.										

GO 133-C/D §3.4(c) establishes a "Minimum Standard Reporting Level" requiring that "90% of all out of service trouble reports [be cleared] within 24 hours [as] the set minimum standard." As Table 4A.7 demonstrates, over the 8-year period since adoption of GO 133-C/D, AT&T has not come even remotely close to meeting this requirement. 49.6% of the roughly 5-million out-of-service conditions remained uncleared after 24 hours; even on an adjusted basis, where Sunday and federal holiday hours were subtracted out of the outage duration, 46.4% of



out-of-service conditions remained uncleared after 24 hours. To satisfy the §3.4(c) requirement, these percentages would need to drop to less than 10%.

49.6% of the roughly 5-million out-of-service conditions (46.4% on an "adjusted" basis) remained uncleared after 24 hours. To satisfy the GO 133-C §3.4(c) requirement, these percentages would need to drop to less than 10%.

There was considerable variation across all of AT&T's 612<sup>80</sup> California wire centers both in terms of percent of out-of-service trouble tickets cleared within 24 hours and the number of days required to clear 90% of all out-of-service conditions. Table 4A.8 below provides the results of linear regression trend line calculations for the GO 133-C/D §3.4(c) "set minimum standard" of "90% of all out of service trouble reports within 24 hours" for each of the 612 AT&T California wire centers. The table also provides similar trend line calculations for the number of days required to clear 90% of all out-of-service conditions, and for each on both an actual and adjusted basis.

The values shown for the trend lines are the coefficient of the independent variable in each case – i.e., percent cleared within 24 hours or days required to clear 90% – and would appear graphically as the slope of a plotted trend line. For the "percentage cleared within 24 hours" metrics, a positive value of the coefficient indicates improvement over time (i.e., an upward sloping trend line); a negative value indicates that over time the ILEC's record of meeting this standard has been deteriorating. For "days required to clear 90%," a negative value of the slope of the trend line indicates that, over time, it is taking less time for the ILEC to meet the 90% completion objective – thus, an improvement in performance. Positive values for the coefficient of "days required to clear 90%" indicates that it is taking longer for the Company to reach the target 90% cleared threshold.

We have sorted this table by the coefficient of Percent Cleared within 24 Hours, from lowest to highest. The "Coefficient" shown for each of the four metrics on this table represent the slope of the estimated trend line based upon the actual out-of-service incidents experienced in the wire center over the full 8-year period. A positive value for the coefficient indicates an upward trend – i.e., that if plotted on a graph the trend line would go from the lower left to the upper right of the chart. The higher the positive value of a coefficient, the greater the rate of increase over time.



<sup>80.</sup> AT&T furnished several tabulations of its California wire centers, with differing numbers of wire centers, over the course of the study (615 in its response to DR-01A,Data Request 3, Attachment 4; 624 in response to DR-03A, Data Requests 1,2, and 6, Corrected Attachment 1; 622 in DR-03A, Corrected Attachment 2; 626 in DR-03A, Corrected Attachment 2, DR-03A, Corrected Attachment 4). The GO 133-C/D service quality data covers only 612 wire centers.

The regression calculations were prepared using quarterly time-series data. The table provides the starting and ending values for the variable being examined (e.g., the starting and ending values for the percentage of out-of-service tickets cleared within 24 hours) and the mean value over the full 8-year period. The regression coefficient represents the change, up or down, in the trend on a per-quarter basis. For example, the following values are shown for AT&T's Sonoma wire center (SONMCA12) with respect to the Percent Cleared within 24 Hours.

	Sonoma	<ul> <li>Percent out-o</li> </ul>	f-service cleared	d within 24 hours	
Mean Value (Mean Val)	Regression Coefficient (Coef)	<i>t</i> -statistic ( <i>t</i> -stat)	Confidence Interval (Conf.)	Starting value - 1st Quarter 2010 (1Q10 Val)	Ending value - 4th Quarter 2015 (4Q15 Val)
47.49	-0.9080	-3.1259	99.6%	61.56	33.41

From this, we learn that the mean (average) percentage of out-of-service conditions cleared by AT&T within 24 hours was 47.49% over the full 8-year period. At the beginning of the period (first quarter 2010), AT&T was clearing 61.56% within 24 hours; by the end of the period (fourth quarter of 2015), only 33.41% were being cleared within 24 hours. The "regression coefficient" of -0.9080 is interpreted as the change in the predicted trend per quarter – *i.e.*, as each quarter went by, the percent cleared within 24 hours was *decreasing* by approximately 0.91%. The *t*-statistic is a measure of the statistical significance of the estimated coefficient. In general, a *t*-value with an absolute value in excess of roughly 2.0 denotes statistical significance at the 95% confidence level. Here, a *t*-value of =3.1259 corresponds to a confidence level of 99.6%. The confidence level corresponding with the *t*-values are also provided on the tables.



											Tal	ole 4A.8	3												
											AT&T C	CALIFOR	RNIA												
									W	RE CEN		RFORM	IANCE 7	IRENDS	3										
										OVER I	HE PER	100 10	2010-40	J2017											
		_	Sorted	by Coeffic	cient Of Pe	et Cleared v	vithin 24 ho tual)	ours		Pct clea	ared within 2	24 hrs (adiu	usted)			Dav	vs to Clear t	90% (actual)			l i i i i i i i i i i i i i i i i i i i	Davs	to Clear 90	% (adjusted	1
Vire Center Name	Wire Ctr	CLLI	Mean Val	Coef	t-stat	Conf. 1	IQ10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 10	Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 10	10 Val 4Q17 Val
BAKER MOUNTAIN PASS	760705 760753	BAKRCA11 MTPSCA11	23.20 21.46	-1.4969	-5.4862 -1.5885	100.0% 87.8%	46.41 39.84	0.00 -4.53	40.1385 33.5213	-0.9176 0.2157	-257.7% 20.4%	0.99	54.36 30.75	25.92 37.44	12.3350 7.8423	0.8207	319.2% 51.2%	1.00 0.39	-0.39 6.16	25.06 10.22	10.7552 6.6397	0.6830	304.5% 66.2%	1.00 0.49	0.17 21.3413
ROCKWAY	530434	BCWYCA11	57.66	-1.2915	-4.9897	100.0%	77.68	37.64	71.4157	-0.9427	-377.2%	1.00	86.03	56.80	3.8693	0.2486	367.3%	1.00	0.02	7.72	3.0170	0.2092	373.4%	1.00	-0.23 6.25963
EDWARDS	661369 530471	EDWRCA01	55.96	-1.2129	-1.1540	74.3%	70.99	33.39	65.3821	0.0635	6.8%	0.05	64.60	66.56 54.46	1.8706	-0.0914	-225.4%	0.97	3.00	0.17	1.6026	-0.0811	-261.0%	0.99	2.59 0.07304
VALON	310603	AVLNCA11	50.58	-1.1207	-3.1229	99.6%	67.95	33.21	74.3934	-0.4241	-107.8%	0.33	80.97	67.82	5.4877	0.1471	151.4%	0.86	3.74	7.23	4.0040	0.0817	116.4%	0.75	2.74 5.27111
ROWS LANDING	209162	CWLDCA12	42.42	-1.0815	-1.8452	92.5%	59.18	25.65	61.0171	-0.2239	-38.9%	0.30	64.49	57.55	3.3274	0.0450	90.6%	0.63	2.63	4.02	2.4408	0.0070	16.8%	0.13	2.34 2.55239
	707300	KLVLCA12 SONMCA12	48.81	-0.9768	-3.1373	99.6% 99.6%	63.95 61.56	33.67	61.8424	-0.7877	-253.4%	0.98	74.05 68.39	49.63 59.57	5.9647 5.7481	0.3182	384.6% 264.1%	1.00	1.03	10.90	4.8272	0.2407	316.1%	1.00	1.10 8.55791
QUINCY	530493	QNCYCA12	46.25	-0.8962	-3.3313	99.8%	60.14	32.36	64.4932	-0.2979	-128.4%	0.79	69.11	59.88	4.1175	0.1682	377.5%	1.00	1.51	6.72	3.2532	0.1337	347.2%	1.00	1.18 5.3249
ROHNERT PARK	707337	RTPKCA11	55.32	-0.8852	-3.3592	99.8%	69.04	41.60	65.6676	-0.6619	-241.8%	0.98	75.93	55.41	5.3574	0.2998	426.6%	1.00	0.71	10.00	4.4282	0.2647	446.7%	1.00	0.33 8.53055
PORTOLA	530492 530506	SRVI CA11	59.18 53.73	-0.8809	-3.1624	99.7% 88.2%	72.83 67.42	45.52 40.41	70.9735	-0.6311	-252.0%	0.98	80.75 73.81	61.19 57.93	3.1519	0.1007	359.8% 293.9%	1.00	1.59	4.71	2.5437	0.0835	292.7% 327.5%	0.99	1.25 3.83856
CLEAR LAKE OAKS PAI	LM 707304	LWLKCA11	49.15	-0.8579	-3.1750	99.7%	62.45	35.85	63.7710	-0.3807	-124.8%	0.78	69.67	57.87	6.7210	0.4348	400.8%	1.00	-0.02	13.46	4.7643	0.2412	327.7%	1.00	1.03 8.5027
PETALUMA	707314	PTLMCA01	51.32	-0.8310	-3.1267	99.6%	64.20	38.44	62.3378	-0.5597	-197.2%	0.94	71.01	53.66	5.2581	0.3102	489.1%	1.00	0.45	10.07	4.1212	0.2517	463.7%	1.00	0.22 8.02313
NONTE RIO STINSON BEACH	707309 415076	MNRICA11 STBHCA11	39.62	-0.8278	-3.2069	99.7% 99.7%	52.45 52.27	26.79 26.70	55.9596 53.8743	-0.2876	-94.4% -308.3%	0.65	60.42 66.05	51.50 41.70	6.2672 5 1968	0.2650	481.9% 306.5%	1.00	2.16	10.37	4.7874	0.2048	400.6% 294.7%	1.00	1.61 7.96153
OS ALAMOS	707319	SNRSCA11	54.27	-0.8107	-3.1317	99.6%	66.84	41.71	67.1383	-0.3888	-180.5%	0.92	73.16	61.11	5.2149	0.3253	294.9%	0.99	0.17	10.26	3.4215	0.1255	394.1%	1.00	1.48 5.36645
OLSOM MONTROSE V	VA 916536	FLSMCA14	54.28	-0.7995	-3.4251	99.8%	66.67	41.88	66.3540	-0.4214	-168.2%	0.90	72.89	59.82	3.7231	0.1210	411.6%	1.00	1.85	5.60	2.9415	0.0910	341.9%	1.00	1.53 4.35205
ALLEY FORD	707332 916453	VYFRCA11 FLSMCA12	41.28 53.81	-0.7943	-2.4285	97.9% 99.8%	53.60 66.00	28.97 41.62	57.6715 63.8839	-0.5305	-145.3% -259.4%	0.84	65.89 74.85	49.45 52.92	5.5104 3.9406	0.2998	403.6% 465.9%	1.00	0.86	10.16	4.1314	0.1755	338.4% 390.4%	1.00	1.41 6.85184 1.25 4.91921
SHOSHONE	760796	SHSHCA11	21.96	-0.7824	-2.6711	98.8%	34.09	9.84	38.8058	0.4672	125.8%	0.78	31.56	46.05	8.9096	0.0459	44.9%	0.34	8.20	9.62	7.4120	-0.0050	-5.2%	0.04	7.49 7.33529
SOUTH TAHOE SUSSE	X / 530509	STAHCA01	45.44	-0.7765	-3.3862	99.8%	57.47	33.40	62.6252	-0.3029	-121.3%	0.77	67.32	57.93	4.7331	0.1702	264.8%	0.99	2.09	7.37	3.8722	0.1499	269.4%	0.99	1.55 6.19533
	707287	CT LICA12 WNDSCA11	50.01 49.23	-0.7739	-2.7093	98.9% 99.7%	62.00 61.17	38.01	62.0244 62.2892	-0.4361	-152.6% -192.4%	0.86	68.78 70.81	55.26 53.77	5.9010 4 6329	0.3447	436.0% 422.9%	1.00	0.56	11.24 7.63	4.6180 3.6122	0.2624	403.0%	1.00	0.55 8.68493
EL PORTAL	209241	YSMTCA12	17.56	-0.7620	-4.5685	100.0%	29.37	5.75	36.9903	0.0133	4.6%	0.04	36.78	37.20	10.8142	0.3962	272.9%	0.99	4.67	16.96	8.6230	0.2769	231.9%	0.97	4.33 12.9153
POINT ARENA	707315	PNARCA11	27.76	-0.7567	-3.3049	99.8%	39.49	16.03	45.8865	-0.2279	-77.6%	0.56	49.42	42.35	7.0111	0.3252	413.1%	1.00	1.97	12.05	5.5799	0.2711	426.4%	1.00	1.38 9.78255
	707281 530444	DWNVCA11	29.16	-0.7555	-2.3607	97.5% 98.2%	40.87	17.45	51.5154 55.2497	0.2182 -0.1657	49.8%	0.38	48.13 57.82	54.90 52.68	4.2235	0.0757	287.6%	0.99	3.05	5.40 8.06	4.4225	0.2229	233.9% 236.0%	0.97	0.97 7.8771∠ 2.21 6.32814
SANTA ROSA MAIN	707320	SNRSCA01	58.20	-0.7512	-3.0056	99.5%	69.84	46.55	69.1682	-0.3843	-167.5%	0.90	75.13	63.21	4.5522	0.2754	275.5%	0.99	0.28	8.82	3.1150	0.1233	394.1%	1.00	1.20 5.02567
ROSEVILLE LEAD HILL	BL916541	RSVLCANL	63.26	-0.7481	-2.7296	99.0%	74.85	51.66	73.9217	-0.4005	-180.1%	0.92	80.13	67.71	3.1464	0.0127	31.1%	0.24	2.95	3.34	2.4603	-0.0020	-5.4%	0.04	2.49 2.42966
AKEPORT	707306	MDTWCATT LKPTCA02	45.94 52.00	-0.7431	-2.2171	96.6% 97.7%	57.46 63.45	34.42 40.55	59.646 i 62.8919	-0.5034	-152.3% -217.0%	0.86	67.45 72.78	51.84 53.00	6.7027 5.4188	0.3634	390.0% 429.8%	1.00	0.81	12.34	5.0604 4.4825	0.2606	363.5% 390.2%	1.00	1.02 9.09919
JPPER LAKE VALLEY F	RD 707329	UPLKCA11	42.02	-0.7370	-2.5407	98.4%	53.45	30.60	59.2404	-0.4595	-144.1%	0.84	66.36	52.12	5.6485	0.2770	487.3%	1.00	1.36	9.94	4.2814	0.1819	385.8%	1.00	1.46 7.10073
GUERNEVILLE	707296	GUVLCA11	41.75	-0.7368	-2.8497	99.2%	53.17	30.33	58.4607	-0.2223	-82.0%	0.58	61.91	55.02	6.2245	0.3270	455.4%	1.00	1.16	11.29	4.9507	0.2647	451.8%	1.00	0.85 9.05357
SEBASTAPOL BLAIRSDEN	530433	BLRSCA12	48.81	-0.7359	-2.5419	98.4% 98.5%	60.22 59.56	37.40	62.2462 65.9641	-0.4174	-146.8% -122.8%	0.85	68.72 71.26	55.78 60.66	4.6458 3.9061	0.1837	322.3% 301.2%	0.99	1.80	6.22	3.7478 3.4316	0.1431	293.3% 208.5%	0.99	1.53 5.96503
POTTER VALLEY	707316	PTVYCA11	25.80	-0.7275	-4.2488	100.0%	37.08	14.53	45.3421	-0.5447	-228.2%	0.97	53.78	36.90	7.3076	0.3625	409.1%	1.00	1.69	12.93	5.8964	0.2979	402.4%	1.00	1.28 10.5146
ELK	707288	ELK CA11	28.95	-0.6917	-1.8338	92.4%	39.67	18.23	43.2166	-0.1245	-29.9%	0.23	45.15	41.29	6.5664	0.3989	492.1%	1.00	0.38	12.75	5.5758	0.3110	475.1%	1.00	0.75 10.3969
IURNACE CREEK	530463 760738	FRCKCA11	46.73	-0.6705	-2.2715	97.0% 97.7%	57.25 21.17	0.38	68.3366 29.1893	-0.3321	-119.2% 147.3%	0.75	73.48 17.48	63.19 40.90	4.2792	0.2058	326.3% 195.8%	0.94	1.09	13.82	3.2895 9.4712	0.1655	314.8% 196.8%	0.94	0.73 5.85157 6.63 12.5946
MEYERS/APACHE	530512	STAHCA13	46.08	-0.6611	-2.1616	96.2%	56.33	35.83	64.5140	-0.2809	-97.6%	0.66	68.87	60.16	4.6778	0.1836	306.2%	1.00	1.83	7.52	3.8432	0.1441	267.3%	0.99	1.61 6.0767
BRADLEY	805363	BRDLCA90	44.07	-0.6582	-1.7669	91.3%	54.27	33.87	57.9941	0.3808	86.5%	0.61	52.09	63.90	4.0019	0.0428	101.6%	0.68	3.34	4.67	3.2289	0.0900	293.5%	0.99	1.88 4.66841
EL DORADO HILLS	916454 415005	FLSMCA13 TBRNCA11	52.49 45.23	-0.6564	-2.1525	96.1% 95.8%	62.67 55.29	42.32 35.17	64.2705 58.3008	-0.4876 -0.3964	-159.4% -131.4%	0.88	71.83	56.71 52.16	4.120b 5.5871	0.0992	280.4% 227.8%	0.99	2.58	5.66 8.59	3.2337	0.0875	293.5% 211.8%	0.99	1.88 4.58932
RENCH GULCH	530455	FRGLCA11	41.66	-0.6447	-1.1340	73.5%	51.65	31.66	57.0486	-0.0907	-19.3%	0.15	58.45	55.64	5.1490	0.1189	129.8%	0.80	3.31	6.99	4.2387	0.1048	129.9%	0.80	2.61 5.86377
AUBURN	530428	AUBNCA01	46.30	-0.6426	-2.1904	96.4%	56.26	36.34	63.6861	-0.1833	-66.5%	0.49	66.53	60.85	5.4263	0.2349	349.0%	1.00	1.79	9.07	4.0481	0.1645	333.5%	1.00	1.50 6.59801
	530515 707284	TRUCCA11	54.32 41.70	-0.6378	-2.3681	97.6% 99.6%	64.21 51.57	44.44 31.84	71.7102 55.4514	-0.2541	-96.9% 150.5%	0.66	75.65	67.77 50.43	4.1537	0.1591	274.1%	0.99	1.69	6.62 9.16	3.1127	0.1384	286.2%	0.99	0.97 5.25764
VAWONA	209238	WANACA11	19.21	-0.6352	-2.1795	96.3%	28.96	9.27	38.1493	0.2564	58.3%	0.44	34.21	42.16	16.5073	1.7909	180.0%	0.92	-10.99	44.53	14.0961	1.5473	180.8%	0.92	-9.66 38.3041
SAN GERONIMO	415069	SNGNCA11	36.23	-0.6268	-2.7765	99.1%	45.94	26.51	51.6227	-0.1457	-50.4%	0.38	53.88	49.36	5.8483	0.1792	266.9%	0.99	3.07	8.63	4.7565	0.1615	282.3%	0.99	2.25 7.25948
	707328	UKIHCA01	46.18	-0.6116	-2.5594	98.4%	55.66 52.75	36.70	58.7145	-0.3551	-133.8%	0.81	64.22	53.21	6.0422 5.3317	0.3077	367.5%	1.00	1.27	10.81	4.6892	0.2288	321.7%	1.00	1.14 8.2358
OSEMITE MAIN	209240	YSMTCA11	27.31	-0.6072	-2.4278	97.9%	36.72	17.90	37.7184	-0.6442	-238.4%	0.98	47.70	27.73	5.6696	0.2140	101.9%	0.68	4.94	6.40	4.6598	0.0415	111.6%	0.33	4.02 5.30311
TOMALES	707325	TMLSCA12	38.13	-0.5957	-2.3586	97.5%	47.37	28.90	53.2577	-0.1873	-78.9%	0.56	56.16	50.35	5.4797	0.2332	396.3%	1.00	1.87	9.09	4.2692	0.1829	385.2%	1.00	1.43 7.10462
GRASS VALLEY	530459 510011	GRVYCA01	49.05	-0.5951	-2.0967	95.6%	58.27	39.82	66.4252 58.6837	-0.2020	-74.6%	0.54	69.56	63.29 56.48	5.3003	0.2024	329.1%	1.00	2.16	8.44	4.1348	0.1492	319.1%	1.00	1.82 6.4476
EWISTON	530466	LSTNCA11	37.34	-0.5822	-1.8848	93.1%	46.37	28.32	58.2218	0.2548	77.1%	0.24	54.27	62.17	5.2389	0.1237	163.7%	0.89	3.49	6.98	3.9297	0.0721	130.6%	0.80	2.81 5.04763
	707295	GUILI CA11	25.87	-0.5785	-3 6885	99.9%	34 84	16 91	43 1260	-0.0971	-43.8%	0.34	44 63	41 62	7 1028	0.3024	458 1%	1 00	2 42	11 79	5 4670	0 2285	419.4%	1.00	1.93 9.00857



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										Та	able 4A	.8 (page	2 of 10)													
				Pct cle	ared within	n 24 hrs (ac	tual)			Pct clea	red within	24 hrs (adju	usted)			Day	ys to Clear	90% (actual)	)			Days	to Clear 9	0% (adjuste	d)	
Wire Center Name	Wire Ctr	CLLI	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	1Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	Q10 Val 4Q	17 Val
NORTH NATOMAS	916537	NSCRCA12	57.56	-0.5779	-1.9578	94.1%	66.51	48.60	67.3071	-0.2105	-77.8%	0.56	70.57	64.04	3.4676	0.0890	310.7%	1.00	2.09	4.85	2.8078	0.0742	316.8%	1.00	1.66 3.9	95721
FORESTVILLE	707291	FSVLCA11	40.04	-0.5758	-2.4013	97.7%	48.96	31.11	57.8965	0.0799	29.1%	0.23	56.66	59.13	6.6093	0.3297	471.6%	1.00	1.50	11.72	5.0308	0.2534	426.5%	1.00	1.10 8.9	35822
NAPA	530445 707310	NAPACA01	30.93 49.38	-0.5689	-1.7355	90.7% 91.4%	39.77 58.19	22.08	42.0488	-0.0452	-12.1%	0.10	43.35	41.95	5.6543	0.2656	8.3% 219.6%	0.96	5.39 1.54	5.54 9.77	4.4559	-0.0214	-39.5% 216.0%	0.30	4.79 4.	84406
GRASS VALLEY	530532	GRVYCA11	39.72	-0.5686	-2.1667	96.2%	48.53	30.90	60.7252	-0.0963	-32.8%	0.25	62.22	59.23	6.9154	0.2366	231.9%	0.97	3.25	10.58	5.1364	0.1745	208.9%	0.95	2.43 7.8	84074
PARKWAY	415073	SNRFCA11	52.68	-0.5684	-1.8768	93.0%	61.49	43.87	65.7580	-0.1872	-59.9%	0.45	68.66	62.86	4.7922	0.1815	320.0%	1.00	1.98	7.61	3.9076	0.1477	320.4%	1.00	1.62 6.1	19647
IGNACIO	415019	IGNCCA12	49.02	-0.5662	-1.9409	93.9%	57.80	40.25	61.6830	-0.2943	-89.4%	0.62	66.25	57.12	5.3363	0.2178	316.9%	1.00	1.96	8.71	4.1355	0.1643	274.2%	0.99	1.59 6.6	58294
BODEGA BAY	707305	BDBACA11	39.57	-0.5658	-2.6281	98.7%	48.34	30.80	53.3270	-0.2281	-85.9%	0.60	58.13	49.79	6.1124 4.9746	0.2909	486.5% 359.4%	1.00	1.60	10.62	4.8620	0.2478	494.9%	1.00	1.02 8.	10226
COBB MOUNTAIN	707285	CBMTCA11	41.17	-0.5580	-1.8285	92.3%	49.82	32.52	57.0261	-0.2153	-65.1%	0.48	60.36	53.69	8.1566	0.4378	248.1%	0.98	1.37	14.94	6.2469	0.3053	245.3%	0.98	1.51 10	.9796
FRUITRIDGE	916502	SCRMCA13	47.84	-0.5567	-1.8508	92.6%	56.47	39.21	62.8508	0.0603	21.0%	0.16	61.92	63.79	4.2538	0.1110	310.4%	1.00	2.53	5.97	3.3320	0.0878	280.8%	0.99	1.97 4.6	89356
ALTA/DUTCH FLATS	530447	DTFLCA11	26.31	-0.5438	-2.7010	98.9%	34.74	17.89	56.8641	0.3277	97.7%	0.66	51.79	61.94	7.0933	0.2134	245.0%	0.98	3.79	10.40	5.5070	0.1809	261.8%	0.99	2.70 8.3	31132
ST HELSON	209120 707318	STHNCA11	21.00	-0.5368	-2.4080	98.1% 96.1%	29.95	33.64	43.0715	0.5735	53.7%	0.85	34.78 57.24	52.50 61.60	5 3086	0.0049	8.4% 174.2%	0.07	3.82	6.80	4.9574	-0.0277	-50.2% 168.2%	0.38	2 94 51	32739
TIPTON	559229	TPTNCA11	36.17	-0.5311	-1.9173	93.6%	44.40	27.94	48.8018	-0.1088	-33.7%	0.26	50.49	47.12	4.8682	-0.0017	-2.4%	0.02	4.89	4.84	3.9461	-0.0270	-48.9%	0.37	4.36 3.5	52812
NORTH STAR	530516	TRUCCA12	55.82	-0.5292	-1.1218	72.9%	64.02	47.61	66.9777	-0.7918	-180.3%	0.92	79.25	54.70	7.0791	0.5260	160.1%	0.88	-1.07	15.23	3.1000	0.0493	110.4%	0.72	2.34 3.8	86445
SPACE PARK	408143	SNTCCA01	60.55	-0.5228	-1.8715	92.9%	68.65	52.44	71.3135	-0.1065	-38.4%	0.30	72.96	69.66	3.4018	0.1285	325.1%	1.00	1.41	5.39	2.6436	0.1217	360.5%	1.00	0.76 4.5	52971
	415048	PRSNCA11	40.94	-0.5168	-1.8877	93.2%	48.95	32.93	53.0450	-0.0975	-32.6%	0.25	57.00	53.98	5.2982	0.1868	289.7%	0.99	2.40	8.19	4.0333	0.1404	354.1%	1.00	1.86 6.2	20984
YOUNTVILLE	707336	YNVLCA11	42.27	-0.5139	-1.7356	90.7%	50.22	34.30	62.3882	0.0919	28.5%	0.22	60.96	63.81	5.9960	0.2458	244.5%	0.98	2.19	9.81	4.2155	0.0993	210.0%	0.96	2.68 5.7	75438
TAHOE CITY	530514	THCYCA01	53.15	-0.5111	-1.8251	92.2%	61.08	45.23	68.0709	-0.1772	-64.5%	0.48	70.82	65.32	4.3520	0.1829	287.9%	0.99	1.52	7.19	3.2960	0.1492	278.1%	0.99	0.98 5	i.6083
SAN JOSE DIAL WAY	408130	SNJSCA12	52.96	-0.5108	-1.6388	88.9%	60.88	45.04	67.4342	-0.0594	-18.5%	0.15	68.35	66.51	4.3522	0.1522	361.7%	1.00	1.99	6.71	3.3802	0.1275	328.0%	1.00	1.40 5.3	35699
	707292	FIBRCA02	43.76	-0.4889	-2.1935	96.4%	51.34	36.18	58.3379	-0.0762	-28.9%	0.23	59.52	57.16 61.01	6.0333	0.3207	485.4%	1.00	1.06	11.00	4.6358	0.2337	403.7%	1.00	1.01 8	1.2586
LAGRANGE/D PEDRO	209185	LGRNCA12	43.33	-0.4654	-1.4705	84.8%	43.86	29.44	53,2860	0.1344	40.0%	0.71	51.20	55.37	5.0915	-0.0071	-30.1%	0.28	3.99	6.19	4.0000	0.0783	202.0%	0.95	2.97 5	57005
CALISTOGA	707282	CLSTCA11	36.48	-0.4641	-1.9083	93.4%	43.67	29.29	56.9991	0.4373	157.2%	0.87	50.22	63.78	6.8644	0.2783	203.9%	0.95	2.55	11.18	5.5740	0.2561	216.1%	0.96	1.60 9.5	54412
MILL VALLEY	415027	MLVYCA01	46.16	-0.4627	-1.6919	89.9%	53.33	38.98	60.5385	-0.1150	-43.7%	0.33	62.32	58.76	5.8334	0.2190	263.9%	0.99	2.44	9.23	4.4410	0.1777	280.9%	0.99	1.69 7.1	19483
SANTA CLARA-BELLOM	Y 408137	SNTCCA11	55.22	-0.4621	-1.3892	82.5%	62.38	48.05	69.7811	0.0179	5.5%	0.04	69.50	70.06	3.8520	0.1245	262.1%	0.99	1.92	5.78	2.9989	0.1142	280.6%	0.99	1.23 4.1	76867
EMPIRE	916501	SCRMCA12	48.20	-0.4610	-1.6572	89.2% 87.1%	57.93	41.05	59.5503 63.5114	-0.2587	-85.5%	0.60	64 46	55.54 62.57	5.1300 4.0614	0.2549	430.1% 311.2%	1.00	2.39	9.09 5.73	4.2623	0.2031	262.3%	0.99	1.11 7.4	+1003 52157
PLACER HILLS	530429	AUBNCA11	42.95	-0.4516	-1.4948	85.5%	49.95	35.95	64.3497	0.1358	45.8%	0.35	62.24	66.46	5.6287	0.2425	368.5%	1.00	1.87	9.39	4.1985	0.1649	342.1%	1.00	1.64 6.7	75494
CAPELLA/IVANHOE	707327	IVNHCA11	42.01	-0.4479	-1.6412	88.9%	48.95	35.07	56.6741	0.0031	1.1%	0.01	56.63	56.72	7.1324	0.4244	361.0%	1.00	0.55	13.71	5.2272	0.2709	346.2%	1.00	1.03	9.426
CAMPTONVILLE	530436	CMPVCA11	28.70	-0.4442	-1.5684	87.3%	35.58	21.81	56.2515	0.0919	30.1%	0.23	54.83	57.68	5.9275	0.2003	349.0%	1.00	2.82	9.03	4.3741	0.1058	314.6%	1.00	2.73 6.0	)1462
BIG SUR BI LIE LAKE	831101 707278	BGSRCA11	32.20	-0.4432	-2.0012	94.6% 88.7%	33.93	20.19	43.8402	-0.1130	-32.8% 76.6%	0.26	45.59	42.09 58.16	7.3571 4.7358	0.1660	163.9% 200.5%	0.89	4.78	9.93	5.6871	0.1444	165.8%	0.90	3.45 7.9 2.70 4 ·	J2549 10850
PEPPERWOOD	707313	PPWDCA11	34.88	-0.4386	-0.8395	59.2%	41.76	28.16	53.8035	-0.0339	-5.7%	0.05	54.34	53.28	3.7637	0.0549	144.8%	0.84	2.90	4.60	3.6045	0.0691	60.0%	0.45	2.52 4.6	66321
SACRAMENTO MAIN	916497	SCRMCALR	52.02	-0.4343	-1.4564	84.5%	58.76	45.29	66.7206	-0.0549	-19.0%	0.15	67.57	65.87	4.2225	0.0973	257.8%	0.99	2.71	5.73	3.2756	0.0809	245.5%	0.98	2.02 4.5	52984
LOOMIS	916470	LOMSCA11	55.30	-0.4132	-1.5753	87.5%	61.71	48.90	69.6378	-0.1343	-52.1%	0.39	71.72	67.56	3.2509	0.0421	153.1%	0.86	2.60	3.90	2.6028	0.0410	160.8%	0.88	1.97 3.2	23756
GEYSERVILLE	707294	GYVI CA11	48.00	-0.4066	-1.3167	80.2%	54.30 46.04	33.51	54 2621	-0.0472	-14.3%	0.11	53.35	65.53 55.18	4.0703	0.1296	285.9%	0.99	2.67	0.00 8.22	3.5804	0.1323	286.9%	0.99	2.03 61	37300 12783
GETGERVILLE	707283	GIVEOATT	45.32	-0.4042	-1.3635	81.7%	51.58	39.05	61.5527	-0.2193	-73.8%	0.53	64.95	58.15	6.1924	0.3584	330.2%	1.00	0.64	11.75	4.0492	0.2032	406.6%	1.00	0.90 7.1	19818
NICASIO	415033	NICSCA11	36.25	-0.4038	-1.2447	77.7%	42.51	29.99	55.9051	0.2499	84.9%	0.60	52.03	59.78	5.9451	0.2113	315.2%	1.00	2.67	9.22	4.8512	0.1846	340.0%	1.00	1.99 7.7	71186
OCCIDENTAL	707312	OCDNCA11	43.72	-0.3993	-1.4884	85.3%	49.91	37.53	61.0460	0.0587	19.6%	0.15	60.14	61.96	5.4088	0.2006	241.6%	0.98	2.30	8.52	4.1919	0.1358	194.3%	0.94	2.09 6.2	29658
LARKSPUR FAIR OAKS	415023 916451	EROKCA11	45.66	-0.3845	-1.5393	80.6%	51.62	39.70	62 0749	-0.0001	0.0%	0.00	60.33 64.99	60.32 59.16	5.7787	0.1848	236.7%	0.98	2.91	8.64	4.3277	0.1152	196.9% 268.4%	0.94	2.54 6.	84632
ALLEGHANEY	530425	ALGHCA11	26.74	-0.3820	-0.5692	42.7%	33.04	21.20	52.4176	0.0839	10.7%	0.08	51.03	53.63	6.3081	0.0068	5.3%	0.04	6.20	6.41	4.6465	-0.0424	-36.4%	0.28	5.33 4.0	01257
MIRA MESA	858786	SNDGCA16	59.27	-0.3783	-1.2274	77.1%	65.13	53.41	69.0669	-0.0776	-25.3%	0.20	70.27	67.86	3.5475	0.1084	268.8%	0.99	1.87	5.23	2.8459	0.0816	237.2%	0.98	1.58 4.1	11031
NEVADA CITY	530475	NVCYCA11	43.70	-0.3777	-1.2891	79.3%	49.56	37.85	63.1235	-0.0125	-3.9%	0.03	63.32	62.93	5.9204	0.2167	312.5%	1.00	2.56	9.28	4.6238	0.1655	277.2%	0.99	2.06 7.1	18971
LIVE OAK GARNET	530468 858762	LVOKCA11	45.22	-0.3762	-1.1615	74.6%	51.05	39.39	56.8043 62.1686	-0.1/58	-51.8%	0.39	59.53	54.08 61.51	4.4814	0.1137	268.0%	0.99	2.72	6.24 5.60	3.7941	0.1001	295.8%	0.99	2.24 5	1.3463
FOXWORTHY	408132	SNJSCA14	54.70	-0.3632	-1.1876	75.6%	60.33	49.07	68.7206	0.0427	16.6%	0.13	67.96	69.48	3.7827	0.1264	271.0%	0.99	1.82	5.74	2.9242	0.1063	274.9%	0.92	1.28 4.5	57126
DIXON	707443	DIXNCA11	39.57	-0.3600	-1.3627	81.7%	45.15	33.99	51.8192	-0.1310	-47.6%	0.36	53.85	49.79	5.7375	0.0858	140.8%	0.83	4.41	7.07	4.8043	0.0773	143.0%	0.84	3.61 6.0	00178
TERRA BELLA	559226	TRBLCA11	43.46	-0.3561	-1.0509	69.9%	48.97	37.94	53.4614	0.0905	25.1%	0.20	52.06	54.86	4.8331	0.0054	11.3%	0.09	4.75	4.92	4.1203	0.0018	4.4%	0.03	4.09 4	.1481
	916467 707275	LNCLCA11	57.65	-0.3475	-1.1640	74.7%	63.03	52.26	/2.1318	-0.0583	-21.1%	0.17	73.04	71.23	3.1348	0.0301	106.5%	0.71	2.67	3.60	2.4123	0.0288	124.5%	0.78	1.97 2.8	35848 78865
SAUSALITO	415075	SSLTCA11	47.98	-0.3469	-1.4464	oo.∠% 84.2%	53.35	42.60	61.0613	-0.1322	-46.5%	0.86	63.11	59.01	5.2655	0.1857	239.1%	0.49	2.39	8.14	4.2854	0.1660	44.7 % 215.0%	0.34	4.04 5.1	85852
BOONVILLE	707280	BNVLCA11	24.44	-0.3434	-1.7909	91.7%	29.76	19.12	40.9207	-0.0256	-10.3%	0.08	41.32	40.52	7.2569	0.3269	433.3%	1.00	2.19	12.32	5.7854	0.2590	414.6%	1.00	1.77 9.8	80002
WARNER SPRINGS	760801	WNSPCA12	35.71	-0.3430	-1.5504	86.9%	41.03	30.40	53.2118	0.0997	33.1%	0.26	51.67	54.76	4.0877	0.0588	220.8%	0.97	3.18	5.00	3.1074	0.0211	101.8%	0.68	2.78 3.4	43373
SANTA MARGARITA	805390	SNMICA11	52.47	-0.3418	-1.2425	77.7%	57.77	47.18	66.0983	0.2637	86.4%	0.61	62.01	70.19	3.7526	0.0518	157.4%	0.87	2.95	4.56	2.8154	0.0063	28.5%	0.22	2.72 2.9	91344 07348
MARYSVILLE	530472	MYVICA01	43.87	-0.3332	-1.2236	77.0%	49.07	46.63	67.9181	0.2361	93.2%	0.64	64.26	71.58	3.9476	0.1188	258.9%	0.99	2.99	9.37 5.79	4.0995	0.0858	239.2%	0.98	1.83 4.4	48764
WABASH	916479	NSCRCA11	53.45	-0.3320	-1.0669	70.6%	58.60	48.31	66.2687	-0.0220	-7.4%	0.06	66.61	65.93	3.8199	0.0862	252.4%	0.98	2.48	5.16	3.0010	0.0751	256.4%	0.98	1.84 4.1	16519
CARROLL STREET	408138	SNVACA01	55.08	-0.3245	-0.9716	66.1%	60.11	50.05	69.8638	0.1668	51.1%	0.39	67.28	72.45	3.9592	0.1225	247.0%	0.98	2.06	5.86	3.0860	0.1009	233.1%	0.97	1.52 4.6	85022



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										Та	able 4A	.8 (page	3 of 10)												
				Pct cle	eared within	n 24 hrs (ac	tual)			Pct clea	red within	24 hrs (adji	usted)			Daj	ys to Clear	90% (actua	)			Days	s to Clear 9	0% (adjusted	)
Wire Center Name	Wire Ctr	CLLI	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 10	10 Val 4Q17 Val
SAN RAFAEL MAIN	415072	SNRFCA01	49.66	-0.3184	-1.0829	71.3%	54.60	44.73	62.3495	-0.0527	-16.8%	0.13	63.17	61.53	5.1361	0.1694	256.8%	0.98	2.51	7.76	4.0603	0.1393	273.8%	0.99	1.90 6.21976
PALO ALTO MAIN	650045	PLALCA02	56.51	-0.3123	-0.9690	66.0%	61.35	51.67	70.6871	0.0054	1.7%	0.01	70.60	70.77	4.1491	0.1336	291.9%	0.99	2.08	6.22	3.0901	0.1097	299.1%	0.99	1.39 4.78984
GARDEN	916499	SCRMCA03	48.94	-0.3106	-1.0493	69.8%	53.75	44.12	62.8381	-0.0028	-0.9%	0.01	62.88	62.79	4.5568	0.1048	267.2%	0.99	2.93	6.18	3.5480	0.0897	257.9%	0.99	2.16 4.93803
WILLIIS	707334	WLISCA12	39.79 40.56	-0.3045	-1.2481	77.9%	44.51	35.07	55.4346	-0.0081	-3.1%	0.02	55.56	55.31	6.4157	0.3033	365.3%	1.00	1./1	11.12	5.0111	0.2289	324.3%	1.00	1.46 8.55867
ORANGEVALE	916482	ORVACA11	40.50	-0.3030	-1.0760	71.1%	40.20	43.91	61 2941	-0.0881	-29.3%	0.03	62.66	59.71	4 4293	0.1742	316.3%	1.00	2.90	6.30	3 6818	0.1272	243.5%	1 00	2.30 0.24403
GLADSTON	916500	SCRMCA11	47.88	-0.2946	-0.9748	66.3%	52.44	43.31	63.2752	0.0730	23.6%	0.19	62.14	64.41	4.5099	0.1046	257.1%	0.98	2.89	6.13	3.5580	0.0945	263.2%	0.99	2.09 5.02332
BUSH-PINE	415058	SNFCCA01	53.58	-0.2906	-1.1284	73.2%	58.08	49.08	67.9238	0.1035	41.6%	0.32	66.32	69.53	3.8599	0.0844	320.6%	1.00	2.55	5.17	2.6876	0.0629	259.7%	0.99	1.71 3.66215
TAMARACK	530511	STAHCA12	29.43	-0.2892	-0.9384	64.5%	33.92	24.95	56.7170	0.1341	31.0%	0.24	54.64	58.80	7.2466	0.3619	414.2%	1.00	1.64	12.86	4.9856	0.1371	220.9%	0.97	2.88 7.12563
VALLEJO	707331	VLLJCA01	55.20	-0.2882	-1.1478	74.0%	59.67	50.74	67.5115	-0.1215	-43.8%	0.34	69.39	65.63	3.7274	0.0569	182.3%	0.92	2.85	4.61	2.8580	0.0269	115.1%	0.74	2.44 3.27531
	707286	CORDCA12	52.63	-0.2832	-1.1017	69.0%	57.03	48.07	66 5270	0.1325	48.9%	0.37	65.65	67.40	3 7000	0.0703	191.5%	0.94	2.83	5.25 4.75	2 8857	0.0597	08.1%	0.91	2.47 4.32438
REGENTS	858785	SNDGCA12	58.97	-0.2827	-0.9060	62.8%	63.35	54.58	67.3124	-0.0615	-19.5%	0.15	68.27	66.36	3.4424	0.0785	222.7%	0.03	2.03	4.66	2.8888	0.0808	239.8%	0.98	1.64 4.1407
SPRINGVILLE	559219	SPVLCA11	31.13	-0.2798	-1.1223	73.0%	35.46	26.79	48.0707	0.3613	105.2%	0.70	42.47	53.67	5.7725	-0.0014	-2.6%	0.02	5.79	5.75	4.5053	-0.0533	-119.4%	0.76	5.33 3.6786
NORTH MATHILDA	408139	SNVACA11	56.71	-0.2791	-0.8131	57.8%	61.04	52.39	70.0458	0.1900	58.7%	0.44	67.10	72.99	4.1716	0.1307	190.3%	0.93	2.15	6.20	3.2166	0.1062	167.9%	0.90	1.57 4.86207
SIERRA CITY	530505	SRCYCA11	22.01	-0.2740	-1.1954	75.9%	26.26	17.76	52.3939	0.3286	86.7%	0.61	47.30	57.49	6.6969	0.0738	98.1%	0.67	5.55	7.84	5.1723	0.1083	187.9%	0.93	3.49 6.85048
HOPLAND	707298	HPLDCA12	38.05	-0.2728	-0.8506	59.8%	42.27	33.82	51.5215	-0.1948	-76.6%	0.55	54.54	48.50	6.4308	0.2166	251.3%	0.98	3.07	9.79	4.7493	0.1706	291.0%	0.99	2.10 7.39404
	019751	LKSDCA12	52.35	-0.2675	-1.0112	64.3%	50.49	48.20	65 3437	0.1626	60.6% 34.0%	0.45	62.79	66.85	4.1287	0.0694	183.3%	0.92	3.05	3.50	3.3127	0.0494	138.3%	0.82	2.55 4.07761
HARDING	209246	CRI SCA11	59.09	-0.2670	-0.9359	71.2%	63.93	55.87	67 9328	-0.0970	-35.6%	0.20	69.33	66.54	4 1306	0.0025	164.4%	0.00	2 47	5.09	3 4039	0.0887	-23.0% 157.7%	0.19	2.79 2.03497
OTAY MESA	619853	OTMSCA11	58.07	-0.2588	-0.7394	53.5%	62.09	54.06	66.4886	-0.0817	-23.5%	0.18	67.76	65.22	3.4382	0.1057	215.2%	0.96	1.80	5.08	2.8333	0.1025	240.8%	0.98	1.24 4.42272
SAN JOSE MAIN	408128	SNJSCA02	61.98	-0.2517	-0.9611	65.6%	65.88	58.08	73.7571	-0.0123	-4.6%	0.04	73.95	73.57	3.0858	0.0527	201.0%	0.95	2.27	3.90	2.2322	0.0402	176.5%	0.91	1.61 2.85458
LOS ANGELES MADISC	DN/213624	LSANCA02	58.03	-0.2500	-1.1412	73.7%	61.90	54.15	68.0605	0.0036	1.7%	0.01	68.01	68.12	3.2166	0.0220	91.6%	0.63	2.88	3.56	2.4275	0.0106	50.3%	0.38	2.26 2.59201
FRONTIER	916519	WSCRCA11	50.75	-0.2440	-0.7926	56.6%	54.54	46.97	63.9173	-0.0426	-13.7%	0.11	64.58	63.26	4.3579	0.1111	290.9%	0.99	2.64	6.08	3.4220	0.0947	282.6%	0.99	1.95 4.89021
RIO LINDA	916526	RILNCA12	45.22	-0.2368	-0.7207	52.3%	48.89	41.54	58.8269	0.1079	33.6%	0.26	57.15	60.50	4.6228	0.0781	186.7%	0.93	3.41	5.83	3.6866	0.0766	214.9%	0.96	2.50 4.8/3/
BENICIA	707277	BNCICA11	51.24	-0.2334	-0.3234	25.3 % 67.6%	55 54	47.21	64 3061	-0.0197	-6.6%	0.05	64 61	64.00	3.9254	0.0279	106.4%	0.30	3.46	4.39	3.0416	0.0079	48.3%	0.89	2 87 3 21559
ALMADEN	408134	SNJSCA18	48.91	-0.2322	-0.8242	58.4%	52.51	45.32	64.7977	0.0607	21.7%	0.17	63.86	65.74	3.8262	0.0031	9.2%	0.07	3.78	3.87	2.9502	0.0041	14.2%	0.11	2.89 3.01454
WHITE ROAD	408129	SNJSCA11	58.24	-0.2319	-0.7155	52.0%	61.83	54.64	70.4269	0.1633	52.0%	0.39	67.90	72.96	3.2792	0.0408	137.1%	0.82	2.65	3.91	2.5278	0.0311	113.9%	0.74	2.05 3.00984
PIXLEY	559210	PXLYCA11	39.91	-0.2277	-0.6840	50.1%	43.44	36.38	51.7539	0.2212	60.6%	0.45	48.33	55.18	4.8322	-0.0167	-25.3%	0.20	5.09	4.57	3.9819	-0.0268	-47.8%	0.36	4.40 3.5669
COLLEGE	619782	SNDGCA11	52.27	-0.2275	-0.8683	60.8%	55.80	48.75	64.5206	0.2070	76.3%	0.55	61.31	67.73	4.6390	0.0835	172.3%	0.91	3.34	5.93	3.5243	0.0395	114.5%	0.74	2.91 4.13695
	200223	DLMRGA12	55.68	-0.2252	-0.7645	55.0%	59.17	52.19	61 0108	0.0698	23.9%	0.19	64.97 50.36	62.68	3.7763	0.0594	146.4%	0.85	2.86	4.70	3.1156	0.0458	124.6%	0.78	2.41 3.82566
RANCHO SAN DIEGO	619852	RNSDCA11	53.84	-0.2230	-0.7789	55.8%	57.27	50.41	65.2133	0.2363	84.7%	0.20	61.55	68.88	4.2540	0.0917	192.7%	0.94	2.83	5.67	3.2840	0.0500	125.3%	0.78	2.51 4.0592
LOS ALTOS	650024	LSATCA11	45.67	-0.2200	-0.7433	53.7%	49.08	42.26	62.1123	0.1320	44.6%	0.34	60.07	64.16	5.2296	0.1559	234.8%	0.97	2.81	7.65	3.7590	0.1125	291.7%	0.99	2.02 5.50243
CHULA VISTA-EAST	619719	CHVSCA12	53.91	-0.2196	-0.7232	52.5%	57.32	50.51	63.8480	-0.0363	-11.4%	0.09	64.41	63.29	4.0625	0.1409	283.1%	0.99	1.88	6.25	3.2207	0.1091	260.5%	0.99	1.53 4.9116
IVANHOE	916498	SCRMCA02	50.82	-0.2191	-0.7198	52.3%	54.21	47.42	64.9778	0.0955	30.6%	0.24	63.50	66.46	4.1346	0.0958	258.6%	0.99	2.65	5.62	3.2401	0.0817	252.2%	0.98	1.97 4.50629
NIAGARA	530490	PLVLCA12	36.50	-0.2183	-0.8953	62.2%	39.89	33.12	54.7711	0.3074	122.0%	0.77	50.01	59.54	6.1929	0.1577	227.9%	0.97	3.75	8.64	5.0285	0.1227	213.3%	0.96	3.13 6.93032
SANTEE	910478 610705	SANTCA01	58.16	-0.2158	-0.6795	49.8% 55.4%	54.68 61.48	47.99 54.84	68 7809	0.1014	33.0% 43.7%	0.26	67.04	70.53	3,8680	0.0762	206.0%	0.95	2.85	5.21 4.75	3.2462	0.0653	206.1%	0.95	2.23 4.20847
CHALLENGE	530437	CHLNCA11	36.36	-0.2134	-0.7227	52.5%	39.67	33.05	64.9508	0.8524	281.0%	0.99	51.74	78.16	5.6775	0.1328	175.8%	0.91	3.62	7.74	3.8030	0.0787	218.1%	0.96	2.58 5.02282
PALO ALTO SOUTH	650046	PLALCA12	54.20	-0.2133	-0.6480	47.8%	57.50	50.89	69.4541	0.0684	20.8%	0.16	68.39	70.51	4.7054	0.1620	195.2%	0.94	2.19	7.22	3.5670	0.1343	194.4%	0.94	1.49 5.64883
LA MESA	619752	LAMSCA01	53.62	-0.2127	-0.8179	58.0%	56.92	50.32	66.1103	0.2875	109.3%	0.72	61.65	70.57	4.1730	0.0716	182.1%	0.92	3.06	5.28	3.4022	0.0455	129.4%	0.79	2.70 4.10669
FRANKLIN	510036	OKLDCA03	55.57	-0.2100	-0.7215	52.4%	58.83	52.32	68.9803	0.0135	4.5%	0.04	68.77	69.19	3.9437	0.1155	292.7%	0.99	2.15	5.73	2.8309	0.0919	269.3%	0.99	1.41 4.25505
PLACERVILLE	530489	PLVLCA11	42.44	-0.2037	-0.6872	50.3%	45.59	39.28	58.6897	0.2723	94.5%	0.65	54.47	62.91	5.4324	0.1057	182.8%	0.92	3.79	7.07	4.2144	0.0774	166.4%	0.89	3.01 5.41384
RORTH YUBA	530481 530450	ESPRCA11	43.02	-0.2029	-0.6737	49.5% 50.5%	40.70 30.34	40.47	49 6206	0.2078	79.9% 61.0%	0.57	46.66	52 58	4.3352	0.1031	223.2%	0.97	2.74	5.93	3.4700	0.0942	251.1%	0.98	2.01 4.93038
37TH STREET	619781	SNDGCA06	47.46	-0.1953	-0.6921	50.6%	50.49	44.44	58.1038	0.0668	23.1%	0.18	57.07	59.14	4.9131	0.1451	313.6%	1.00	2.66	7.16	3.9947	0.1099	283.9%	0.99	2.29 5.69746
LINDA VISTA	858779	SNDGCA03	53.69	-0.1927	-0.8507	59.9%	56.68	50.70	63.6017	0.0771	29.5%	0.23	62.41	64.80	4.3059	0.0858	241.0%	0.98	2.98	5.64	3.5500	0.0752	227.9%	0.97	2.38 4.71623
RAN. PENASQUITOS	858854	RNPSCA11	55.46	-0.1918	-0.6100	45.4%	58.44	52.49	66.0410	0.0995	28.5%	0.22	64.50	67.58	3.7678	0.0777	210.6%	0.96	2.56	4.97	3.1308	0.0685	189.2%	0.93	2.07 4.19286
MODESTO MAIN	209199	MDSTCA02	49.69	-0.1916	-0.7510	54.2%	52.66	46.72	61.2619	0.1224	46.9%	0.36	59.36	63.16	3.9740	0.0239	74.1%	0.54	3.60	4.34	3.0961	0.0105	41.8%	0.32	2.93 3.25935
HAYWARD MAIN	510017	HYWRCA01	60.89	-0.1830	-0.6623	48.7%	63.72	58.05	71.3984	0.0796	29.1%	0.23	70.16	72.63	3.1304	0.0786	244.6%	0.98	1.91	4.35	2.4666	0.0692	240.5%	0.98	1.39 3.53924
SAN MARCUS	/00/92	SININCCATT MLDSCA11	57.60	-0.1749	-0.6527	48.1%	60.35	55.00	60.2206	-0.0916	-33.4%	0.20	67.86	70.59	3.3804	0.0453	00.6%	0.72	2.00	4.08	2.7527	0.0338	103.1%	0.62	2.23 3.27098
ROCKLIN	916527	RCKLCA01	65.83	-0.1712	-0.6115	45.5%	68.47	63.16	75.8462	-0.0175	-7.1%	0.06	76.12	75.57	2.8211	0.0284	104.7%	0.70	2.38	3,26	2.1984	0.0307	128.6%	0.79	1.72 2.67618
PLEASANT GROVE	916491	PLGVCA12	37.04	-0.1699	-0.5538	41.6%	39.68	34.41	51.8702	0.1937	56.4%	0.42	48.87	54.87	5.0362	0.0864	183.1%	0.92	3.70	6.37	4.0950	0.0672	146.5%	0.85	3.05 5.13612
ANNAPOLIS	707322	ANNPCA11	16.93	-0.1692	-0.4258	32.7%	19.54	14.29	38.5642	0.8916	177.8%	0.91	24.80	52.44	7.9324	0.2901	298.4%	0.99	3.46	12.45	6.4794	0.2844	351.3%	1.00	2.31 11.1205
TRACY	209230	TRACCA11	46.11	-0.1666	-0.7277	52.8%	48.69	43.53	59.2653	0.1898	86.5%	0.61	56.32	62.21	4.1673	0.0353	114.6%	0.74	3.62	4.71	3.3297	0.0329	129.3%	0.79	2.82 3.83922
MERIDAN	530473	MRDNCA11	40.66	-0.1590	-0.4128	31.7%	43.13	38.20	52.8566	0.2091	52.3%	0.40	49.62	56.10	5.9749	0.2316	207.4%	0.95	2.39	9.56	4.8278	0.1897	193.7%	0.94	1.89 7.76776
DELANO	408145	DELNOA11	63.87 51.50	-0.1570	-0.4943	37.5%	66.30 54.00	61.44 40.19	74.0142 60.5191	0.0753	24.6%	0.19	72.85 58.46	75.18 62.59	3.0435	0.0196	-36 4%	0.49	2.74	3.35	2.2521	0.0177	-86 7%	0.49	3 90 2.52621
MIRANDA	707308	MRNDCA11	38.27	-0.1550	-0.6017	44.8%	40.68	35.87	61.3933	0.5378	40.9%	0.91	53.06	69.73	4.3648	0.0201	-331.7%	1.00	2.89	5.84	3.4199	0.0422	225.4%	0.97	2.06 4.77852
MOSS BEACH	650031	MSBHCA11	45.26	-0.1547	-0.5236	39.6%	47.66	42.86	61.8947	0.3391	108.2%	0.71	56.64	67.15	4.1939	0.1023	186.4%	0.93	2.61	5.78	3.2883	0.0816	153.1%	0.86	2.02 4.55243



										Ta	able 4A	.8 (page	4 of 10)												
				Pct cl	eared withi	n 24 hrs (ac	tual)			Pct clea	red within	24 hrs (adj	usted)			Day	ys to Clear	90% (actual	)			Days	to Clear 9	0% (adjuste	d)
Wire Center Name	Wire Ctr	CLLI	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	4Q17 Val	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	Q10 Val 4Q17 Val
SAN CARLOS	650056	SNCRCA11	56.29	-0.1536	-0.5076	38.5%	58.67	53.91	69.7560	0.1978	65.9%	0.49	66.69	72.82	3.6902	0.0726	242.5%	0.98	2.56	4.82	2.7346	0.0610	235.2%	0.97	1.79 3.67957
OCEANSIDE	760758	OCSDCA11	55.58	-0.1520	-0.6110	45.4%	57.93	53.22	64.8252	0.0369	13.2%	0.10	64.25	65.40	4.1542	0.1046	202.6%	0.95	2.53	5.77	3.3772	0.0773	169.6%	0.90	2.18 4.57563
WATERFORD	209237	WTERCA11	48.92	-0.1511	-0.5280	39.9% 40.1%	31.20 43.55	46.57	53 5286	0.1574	53.8% 87.3%	0.41	28.24 49.49	57.57	4.8065	0.1135	202.4%	0.95	3.05 4.35	0.57	3.7529	0.0856	214.1%	0.96	2.43 5.07999
WOODLAND	530523	WDLDCA11	46.96	-0.1483	-0.5046	38.3%	49.26	44.66	58.3727	0.1838	65.4%	0.48	55.52	61.22	4.7444	0.1030	208.5%	0.95	3.15	6.34	3.8786	0.0839	199.5%	0.95	2.58 5.17854
FAIRFIELD	707290	FRFDCA01	56.04	-0.1477	-0.5518	41.5%	58.33	53.75	68.0502	0.2486	91.7%	0.63	64.20	71.90	3.6169	0.0482	159.7%	0.88	2.87	4.36	2.8178	0.0318	124.2%	0.78	2.33 3.31017
EARLIMART	661368	ERLMCA11	46.56	-0.1450	-0.3923	30.2%	48.80	44.31	55.4258	0.1108	30.8%	0.24	53.71	57.14	4.2937	-0.0089	-14.4%	0.11	4.43	4.16	3.5539	-0.0407	-75.9%	0.55	4.19 2.92275
	805354	RDCVCA01	63.00 55.40	-0.1427	-0.4895	37.2%	65.21 57.60	60.78 53.20	72.7541 69.0018	0.2414	85.9% 59.0%	0.60	69.01	76.50	2.8151	-0.0133	-48.6% 286.7%	0.37	3.02	2.61	2.2649	-0.0128	-53.4% 281.1%	0.40	2.46 2.06643
TURLOCK	209232	TRLCCA11	49.61	-0.1361	-0.4494	34.4%	51.72	47.51	59.6332	0.1561	52.7%	0.40	57.21	62.05	4.2104	0.0163	37.1%	0.29	3.96	4.46	3.3587	0.0141	40.5%	0.31	3.14 3.57773
SAN FRANCISCO MC	COP 415059	SNFCCA04	53.85	-0.1343	-0.5646	42.4%	55.93	51.77	67.7723	0.0852	32.4%	0.25	66.45	69.09	3.8343	0.0756	276.9%	0.99	2.66	5.01	2.7700	0.0695	295.9%	0.99	1.69 3.8475
CAMP PENDLETON	760714	CMPDCA01	45.03	-0.1342	-0.1833	14.4%	46.98	42.82	53.8889	0.0464	6.0%	0.05	53.22	54.65	3.8540	-0.0759	-74.9%	0.54	4.96	2.60	2.6925	-0.0768	-85.4%	0.60	3.79 1.4053
HUGHSON STOCKTON MAIN	209177	HGSNCA11	41.11	-0.1339	-0.4846	36.9%	43.18	39.03	54.2957 62.4635	0.2153	68.5% 73.8%	0.50	50.96 59.18	57.63	4.6729	-0.0129	-24.2% 145.0%	0.19	4.87	4.47	3.5095	-0.0071	-25.6% 143.5%	0.20	3.62 3.39913
EL SOBRANTE	510013	ELSBCA11	50.15	-0.1298	-0.3892	30.0%	52.16	48.14	63.6951	0.0903	28.5%	0.33	62.30	65.09	3.9987	0.1051	265.1%	0.99	2.37	5.63	3.1679	0.0876	249.1%	0.98	1.81 4.52602
SCOTTS VALLEY	831116	SCVYCA01	52.47	-0.1279	-0.4782	36.4%	54.45	50.49	66.7748	0.0543	18.0%	0.14	65.93	67.62	4.8176	0.0873	89.8%	0.62	3.46	6.17	3.6995	0.0658	77.3%	0.55	2.68 4.71951
MODESTO KELLOGG	209200	MDSTCA03	47.55	-0.1268	-0.4734	36.1%	49.51	45.58	59.3248	0.1760	63.8%	0.47	56.60	62.05	4.1209	0.0193	52.9%	0.40	3.82	4.42	3.2772	0.0195	67.9%	0.50	2.98 3.5788
STEINER	415067	SNFCCA12	53.91	-0.1248	-0.5682	42.6%	55.84	51.97	67.2436	0.0919	37.4%	0.29	65.82	68.67	3.9118	0.0860	324.3%	1.00	2.58	5.24	2.8685	0.0698	286.7%	0.99	1.79 3.95112
CARLSBAD CAMINO	/IDA 760717	CRI SCA12	59.43	-0.1242	-0.5291	40.0% 34.7%	59.67 61.32	57.54	68 6196	0.1849	80.5% 12.9%	0.57	68.05	69 19	3.4909	0.0030	9.2%	0.07	3.44 2.46	3.54 5.38	3 2209	-0.0114	-35.5% 200.0%	0.28	2.90 2.54238
WHEATLAND	530520	WTLDCA12	45.41	-0.1206	-0.3328	25.8%	47.28	43.54	60.7331	0.2729	78.5%	0.56	56.50	64.96	4.2529	0.1184	210.5%	0.96	2.42	6.09	3.5716	0.0943	221.2%	0.97	2.11 5.03392
NORTH SAN JUAN	530480	NSJNCA11	26.64	-0.1198	-0.5131	38.8%	28.49	24.78	51.2303	0.6773	197.7%	0.94	40.73	61.73	6.2400	0.1358	224.2%	0.97	4.14	8.34	5.1266	0.1040	187.5%	0.93	3.52 6.73782
TEMPLETON	805396	TMTNCA11	64.36	-0.1195	-0.3461	26.8%	66.21	62.51	73.7244	0.3613	115.3%	0.74	68.12	79.33	2.6734	-0.0138	-51.0%	0.39	2.89	2.46	2.3033	-0.0162	-66.4%	0.49	2.55 2.05206
FRUITVALE/KELLOG	916533 510037	OKI DCA04	54.10 57.71	-0.1161	-0.3894	30.0%	55.90 59.50	52.30	68 7838	-0.0558	-18.1%	0.14	63.64	61.91 70.38	4.1780	0.1592	240.0%	0.98	1.71	6.65 4.48	3.3567	0.1088	187.9%	0.93	1.67 5.04253
BEALE CAPEHART-BI	EALE 530431	BEALCA11	45.48	-0.1134	-0.1282	10.1%	46.86	43.35	58.3832	0.5379	59.2%	0.27	51.84	68.51	3.1645	-0.0779	-139.6%	0.83	4.11	1.70	2.3487	-0.0354	-74.8%	0.53	2.75 1.65835
PASO ROBLES	805385	PSRBCA01	64.19	-0.1130	-0.4547	34.8%	65.94	62.44	73.9957	0.3167	144.8%	0.84	69.09	78.90	2.7723	-0.0028	-11.5%	0.09	2.82	2.73	2.2834	-0.0160	-72.3%	0.52	2.53 2.03537
WOODCREST	951775	RVSDCA11	57.95	-0.1072	-0.3403	26.4%	59.61	56.29	69.3302	0.1195	33.4%	0.26	67.48	71.18	3.5696	-0.0080	-16.8%	0.13	3.69	3.45	2.8328	0.0008	1.9%	0.01	2.82 2.84531
RIO DELL	707317	RIDECA11	56.43	-0.1071	-0.3128	24.3%	58.09	54.77	72.2510	0.0676	24.4%	0.19	71.20	73.30	3.1961	0.0175	56.1%	0.42	2.92	3.47	2.5395	-0.0033	-13.7%	0.11	2.59 2.48787
VENTURA/FIR	805400	VNTRCA02	58.68	-0.0983	-0.3809	29.4%	60.20	57.16	69.2655	0.0739	28.5%	0.22	68.12	70.41	3.7952	-0.0092	-4.5%	0.18	3.83	3.76	2.8209	0.0324	-47.1%	0.63	2.32 3.32234
UNIVERSITY	619778	SNDGCA02	52.53	-0.0952	-0.3445	26.7%	54.00	51.05	63.6417	0.1812	64.0%	0.47	60.83	66.45	4.5163	0.1280	262.4%	0.99	2.53	6.50	3.5761	0.0974	223.1%	0.97	2.07 5.08546
PASKENTA	530488	PSKNCA11	33.17	-0.0911	-0.1758	13.8%	34.61	31.78	63.7351	0.6032	109.2%	0.72	54.20	72.90	5.6981	0.0370	39.2%	0.30	5.11	6.26	4.0798	-0.0139	-17.6%	0.14	4.29 3.86133
MODESTO-KINGSWO	OD 209201	MDSTCA04	53.76	-0.0887	-0.3049	23.8%	55.13	52.38	64.2524	0.2387	88.1%	0.61	60.55	67.95	3.8435	0.0098	24.9%	0.19	3.69	4.00	3.1409	0.0097	27.9%	0.22	2.99 3.29109
WALKER BASIN	661401	WLBSCA11	30.93	-0.0872	-0.2343	31.2%	32.28	29.58	52,9726	0.5116	174.3%	0.90	45.04	60.90	5.7239	-0.0221	-31.4%	0.24	6.07	5.38	4.4002	-0.0421	-68.9%	0.88	5.17 3.86434
MONTROSE	415065	FLSMCA14	50.67	-0.0863	-0.4060	31.2%	52.01	49.33	65.7451	0.0856	35.1%	0.27	64.42	67.07	3.9959	0.0854	342.1%	1.00	2.67	5.32	2.9631	0.0604	265.5%	0.99	2.03 3.89956
SATICOY	805391	SATCCA12	57.33	-0.0859	-0.3810	29.4%	58.66	55.99	67.0963	0.0451	18.5%	0.15	66.40	67.80	3.7369	0.0052	10.8%	0.09	3.66	3.82	2.7909	0.0426	145.3%	0.84	2.13 3.45178
GRANITE	209221	SKTNCA11	50.09	-0.0853	-0.3183	24.8%	51.42	48.77	62.2129	0.1220	46.3%	0.35	60.32	64.10	4.0424	0.0479	155.4%	0.87	3.30	4.78	3.1359	0.0325	136.4%	0.82	2.63 3.63946
	951721 760800	VISTCA12	57.31	-0.0804	-0.2764	21.6%	58.56	50.06	61 6288	0.1580	47.7% 54.5%	0.36	64.48 59.41	63.85	4.0329	0.0351	67.9% 183.7%	0.50	2.49	4.58	3.2493	0.0323	69.1% 163.1%	0.51	2.75 3.74961
HORNBLEND	858763	PCBHCA11	46.30	-0.0791	-0.2864	22.3%	47.53	45.08	57.5191	0.0933	28.1%	0.22	56.07	58.97	4.7133	0.0661	164.5%	0.89	3.69	5.74	3.7846	0.0385	101.6%	0.68	3.19 4.38184
RAMONA	760769	RAMNCA11	52.49	-0.0757	-0.2960	23.1%	53.66	51.31	65.5647	0.3077	126.2%	0.78	60.80	70.33	3.6710	0.0080	21.0%	0.17	3.55	3.80	2.8312	-0.0196	-61.2%	0.45	3.14 2.52673
HOLLYWOOD	323616	HLWDCA01	51.08	-0.0751	-0.3270	25.4%	52.24	49.91	64.7781	0.2731	111.2%	0.73	60.55	69.01	4.2579	-0.0254	-56.1%	0.42	4.65	3.86	3.3129	-0.0379	-89.1%	0.62	3.90 2.72586
SHINGLE SPRINGS	530504	SGSPCA11	44.20	-0.0750	-0.2591	20.3%	45.36	43.04	60.3288	0.3356	110.4% 53.3%	0.72	55.13 66.21	65.53	3 3776	0.1288	240.4%	0.98	3.09	7.09	3.8813	0.0807	184.8%	0.93	2.63 5.13135
HERCULES	510070	HRCLCA11	50.20	-0.0712	-0.2536	19.9%	51.23	49.02	63.6616	0.3108	102.2%	0.40	58.84	68.48	4.1984	0.1135	257.2%	0.98	2.44	5.96	3.1709	0.0867	237.4%	0.98	1.83 4.51435
SAN LUCAS	831135	SNLCCA11	34.31	-0.0697	-0.1393	11.0%	35.39	33.23	48.9161	0.1894	29.2%	0.23	45.98	51.85	4.1375	-0.0689	-165.0%	0.89	5.21	3.07	3.2462	-0.0729	-211.1%	0.96	4.38 2.11694
FOLSOM	415068	SNFCCA21	62.53	-0.0676	-0.2828	22.1%	63.58	61.49	72.8644	0.1780	76.2%	0.55	70.10	75.62	3.2141	0.0601	229.7%	0.97	2.28	4.14	2.3116	0.0414	180.1%	0.92	1.67 2.95341
SAN GABRIEL	626658	SNGBCA01	48.22	-0.0655	-0.2296	18.0%	49.23	47.20	63.3982	0.4360	145.8%	0.85	56.64	70.16	4.3891	-0.0019	-3.2%	0.02	4.42	4.36	3.4421	-0.0200	-38.8%	0.30	3.75 3.13274
ESCONDIDO	760733	ESCNCA01	50.52 61.42	-0.0639	-0.2424	19.0%	51.51 62.40	49.54	69 7790	0.0484	51.1%	0.13	67.60	04.04 71.95	3.7958	-0.0622	90.5%	0.63	4.76 2.84	2.83	2.9122	-0.0299	46.8%	0.69	2 45 2 94945
OROVILLE EAST	530485	ORVLCA12	44.51	-0.0598	-0.1725	13.6%	45.44	43.59	68.3176	0.6581	247.9%	0.98	58.12	78.52	5.9028	0.1486	204.0%	0.95	3.60	8.21	4.1871	0.0893	175.1%	0.91	2.80 5.57124
SAN FRANCISCO 9TH	AVI415064	SNFCCA13	53.70	-0.0597	-0.2579	20.2%	54.62	52.77	67.6205	0.1578	63.9%	0.47	65.17	70.07	3.9663	0.0800	327.3%	1.00	2.73	5.21	2.8420	0.0691	303.9%	1.00	1.77 3.91271
SAN JOSE CHYNOWE	TH .408131	SNJSCA13	55.03	-0.0553	-0.1731	13.6%	55.89	54.17	69.5137	0.4168	138.3%	0.82	63.07	75.99	3.4299	0.0178	56.0%	0.42	3.16	3.71	2.6024	0.0037	13.6%	0.11	2.55 2.65964
THIRD STREET	415066	MDSTCA03 RSMGCA11	53.37 58.04	-0.0548	-0.21/5	17.1% 14.1%	54.22 58.88	52.52	68 6676	0.2399	91.1%	0.63	62.97 67.31	70.40	3.5700	0.0658	251.8% 183.3%	0.98	2.55	4.59	2.6688	0.0533	238.4%	0.98	1.84 3.49464
HAYWARD DEPOT RI	049008 0 510018	HYWRCA11	62.87	-0.0539	-0.1864	14.7%	63.71	62.04	72.6258	0.1317	47.6%	0.20	70.58	74.67	2.9616	0.0659	211.8%	0.92	2.30	3.98	2.2629	0.0595	223.6%	0.92	1.34 3.1853
OAKDALE	209205	OKDLCA11	46.44	-0.0525	-0.1788	14.1%	47.25	45.62	58.8629	0.2741	94.2%	0.65	54.61	63.11	4.2075	0.0011	2.9%	0.02	4.19	4.22	3.3317	0.0001	0.4%	0.00	3.33 3.33361
RIVERSIDE ORANGE	951774	RVSDCA01	58.99	-0.0493	-0.1466	11.6%	59.76	58.23	68.3965	0.2355	67.5%	0.50	64.75	72.05	3.6012	-0.0091	-18.6%	0.15	3.74	3.46	2.8968	-0.0019	-4.0%	0.03	2.93 2.86796
THIRD AVENUE	619718 707333	CHVSCA11	55.24	-0.0489	-0.1579	12.4%	56.00	54.48 40.02	65.0164	0.2056	66.8%	0.49	61.83 58 80	68.20 77.95	4.0023	0.1208	237.3%	0.98	2.13	5.88	3.2564	0.0990	222.1%	0.97	1.72 4.79156
OJAI	805382	OJAICA11	51.11	-0.0479	-0.1865	14.7%	51.85	50.37	65.5056	0.3014	113.3%	0.73	60.83	70.18	3.6967	-0.0453	-100.5%	0.68	4.40	2.99	2.6553	-0.0177	-83.6%	0.59	2.93 2.38042



CONFIDENTIAL AND PROPRIETARY PER P.U. CODE § 583, GENERAL ORDER 66-D, & D.16-08-024

Table 4A.8 (page 5 of 10)																									
				Pct cle	eared within	n 24 hrs (ac	tual)			Pct clea	red within	24 hrs (adju	usted)			Day	vs to Clear	90% (actua	I)			Days	s to Clear 9	0% (adjusted	)
Wire Center Name	Wire Ctr	CLLI	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	1Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	IQ10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 10	10 Val 4Q17 Val
C STREET	619777	SNDGCA01	51.10	-0.0473	-0.1761	13.9%	51.83	50.36	61.6462	0.3330	123.5%	0.77	56.49	66.81	4.7893	0.1471	308.7%	1.00	2.51	7.07	3.7129	0.0923	235.1%	0.97	2.28 5.1437
HALF MOON BAY	650016	HMBACA12	47.31	-0.0454	-0.1751	13.8%	48.01	46.61	61.0799	0.1261	41.7%	0.32	59.13	63.03	4.4109	0.0960	157.9%	0.88	2.92	5.90	3.4095	0.0758	140.7%	0.83	2.23 4.58449
INVERNESS	415020	INVRCA11	35.08	-0.0417	-0.1509	11.9%	35.72	34.43	49.0848	-0.0402	-12.0%	0.09	49.71	48.46	6.4086	0.2431	234.6%	0.97	2.64	10.18	4.9368	0.2145	254.2%	0.98	1.61 8.26088
GROVELAND	209173	GVI DCA11	36.17	-0.0297	-0.1254	9.7%	36.63	35.71	54 5489	0.2094	312.3%	1.00	42.53	66.57	5 8844	0.0988	192.1%	0.94	2.36	7.03	4 5105	0.0099	29.6%	0.87	2.24 4.40828 4.24 4.77894
RANCHO SANTA FE	858771	RSFECA12	46.86	-0.0247	-0.0943	7.5%	47.25	46.48	58.3402	0.2689	92.9%	0.64	54.17	62.51	4.8925	0.1256	210.9%	0.96	2.95	6.84	3.9962	0.1014	194.7%	0.94	2.42 5.56826
GRIDLEY	530461	GRDLCA11	46.82	-0.0216	-0.0664	5.3%	47.15	46.48	58.2008	0.3688	124.0%	0.78	52.48	63.92	4.3407	0.1067	209.8%	0.96	2.69	6.00	3.6206	0.0883	212.5%	0.96	2.25 4.98868
GEORGETOWN	530457	GRTWCA11	32.58	-0.0198	-0.0768	6.1%	32.89	32.27	57.2307	0.8012	282.1%	0.99	44.81	69.65	5.8088	0.1214	190.9%	0.93	3.93	7.69	4.6091	0.0994	195.7%	0.94	3.07 6.14923
ESCALON	209192	LSANCA11	40.46	-0.0146	-0.0495	3.9%	40.69 54.77	40.23 54.33	54.5804 67.0006	0.2994	96.3% 111.5%	0.66	49.94	59.22 71.28	4.5/31	-0.0016	-3.6%	0.03	4.60	4.55	3.7486	-0.0191	-49.1%	0.37	4.05 3.45204
COTTONWOOD	530441	CTWDCA11	53.73	-0.0138	-0.0300	3.2%	53.94	53.52	68.6591	0.3004	95.5%	0.65	64.00	73.32	4.4150	0.0699	90.4%	0.63	3.33	5.50	3.4235	0.0602	97.2%	0.66	2.49 4.35662
ELMONTE	626611	ELMNCA01	49.72	-0.0121	-0.0416	3.3%	49.91	49.53	63.2721	0.3434	109.3%	0.72	57.95	68.60	4.3509	-0.0140	-23.8%	0.19	4.57	4.13	3.4209	-0.0274	-52.9%	0.40	3.85 2.99667
COULTERVILLE	209161	CTVLCA11	35.85	-0.0117	-0.0423	3.4%	36.03	35.67	55.3998	0.8325	323.7%	1.00	42.50	68.30	5.4295	0.0607	85.3%	0.60	4.49	6.37	4.2345	0.0211	37.3%	0.29	3.91 4.56106
BEN LOMOND	831103	BNLMCA11	45.52	-0.0070	-0.0222	1.8%	45.63	45.41	63.7695	0.4175	122.1%	0.77	57.30	70.24	5.0381	0.0942	91.7%	0.63	3.58	6.50	3.8091	0.0763	121.2%	0.77	2.63 4.99216
VACAVILLE SANTA CRUZ	707330	VCVLCA12	52.21	-0.0002	-0.0006	0.0%	52.21	52.20	64.3405	0.3461	123.7%	0.77	58.98 61.58	69.71 70.42	3.9935	0.0340	121.3%	0.55	3.47	4.52	3.1482	0.0205	54.8% 126.1%	0.41	2.83 3.46569
YUBA CITY	530525	YBCYCA01	56 79	0.0003	0.0009	0.1%	56.76	56.81	67 0465	0.2603	90.1%	0.63	63.01	70.42	3 6473	0.0819	202.3%	0.77	2 23	5.06	3.0100	0.0715	202.5%	0.78	1 79 4 22883
KYBURZ	530465	KYBRCA11	19.10	0.0045	0.0147	1.2%	19.03	19.17	43.2982	-0.0099	-2.1%	0.02	43.45	43.14	9.8168	0.0184	12.6%	0.10	9.54	10.11	6.8532	0.0522	51.9%	0.39	6.06 7.68078
OAKLAND	510038	OKLDCA11	54.68	0.0051	0.0170	1.3%	54.60	54.76	68.0108	0.2293	72.1%	0.52	64.46	71.56	3.9259	0.1119	270.5%	0.99	2.19	5.66	2.9377	0.0927	264.5%	0.99	1.50 4.37458
OROVILLE MAIN	530484	ORVLCA11	48.79	0.0071	0.0197	1.6%	48.68	48.90	66.6096	0.5847	190.6%	0.93	57.55	75.67	5.4030	0.1525	189.8%	0.93	3.04	7.77	4.1596	0.1172	212.5%	0.96	2.34 5.97637
RANCHO BERNARDO	858770	RBRNCA11	63.06	0.0101	0.0415	3.3%	62.90	63.21	72.0562	0.1981	77.3%	0.55	68.99	75.13	3.1727	0.0092	23.9%	0.19	3.03	3.32	2.4866	-0.0012	-3.6%	0.03	2.51 2.46747
	619784 858768	SNDGCA14	49.47	0.0131	0.0535	4.2%	49.27	49.68	68 6273	0.21/5	80.5%	0.57	57.05	63.80 73.88	4.8412	0.1120	239.7%	0.98	3.11	6.58	3.9129	0.0896	209.9%	0.96	2.52 5.30194
BISHOP BANCH	925082	BSRNCA70	66.39	0.0178	0.0645	4.3%	66 11	66 66	75 6174	0.3367	69.8%	0.78	72 41	78.83	2 7498	0.0340	106.4%	0.54	2 27	3.23	2.0125	0.0102	62.9%	0.21	2.03 2.97039
JAMUL	619851	JAMLCA60	37.13	0.0197	0.1086	8.6%	36.82	37.43	51.5311	0.1657	66.0%	0.49	48.96	54.10	5.0701	0.0838	182.5%	0.92	3.77	6.37	4.0049	0.0365	90.5%	0.63	3.44 4.57112
ARCADIA	626602	ARCDCA11	50.49	0.0202	0.0711	5.6%	50.18	50.80	64.6059	0.2261	72.6%	0.53	61.10	68.11	4.2435	-0.0237	-41.2%	0.32	4.61	3.88	3.3379	-0.0311	-59.4%	0.44	3.82 2.85529
SAN YSIDRO	619794	SNYSCA12	52.46	0.0211	0.0585	4.6%	52.14	52.79	61.8035	0.3921	114.3%	0.74	55.73	67.88	4.1531	0.1266	240.8%	0.98	2.19	6.12	3.4425	0.1152	254.0%	0.98	1.66 5.22732
SAN JOSE SAN FILIPE	408133	SNJSCA15	56.72	0.0235	0.0762	6.0%	56.35	57.08	69.1722	0.3348	109.3%	0.72	64.00	74.38	3.3400	0.0182	59.2%	0.44	3.06	3.62	2.6903	0.0176	62.8%	0.47	2.42 2.9643
BURREGU SPRINGS	760707	ALMDCA11	52.00	0.0254	0.0946	7.5%	65.60 52.50	66.39 53.30	81.5635	0.3887	152.5%	0.86	75.54 62.21	87.59	2.8021	0.0166	69.2% 153.3%	0.51	2.54	3.06	2.3117	0.0244	109.2%	0.72	1.93 2.6896 2.12 3.3434
GOSHEN	559246	GSHNCA11	52.33	0.0233	0.1062	8.4%	51.97	52.83	61.4343	0.3309	126.4%	0.43	56.30	66.56	3.6037	-0.0362	-77.5%	0.56	4.16	3.04	2.9445	-0.0474	-112.7%	0.73	3.68 2.21006
RIVERBANK	209214	RVRBCA11	49.44	0.0283	0.1026	8.1%	49.00	49.88	59.7995	0.1983	70.5%	0.51	56.73	62.87	4.2351	0.0380	66.3%	0.49	3.65	4.82	3.1931	0.0098	30.1%	0.23	3.04 3.34522
RICHMOND MACDONAL	D 510052	RCMDCA11	50.69	0.0289	0.0899	7.1%	50.25	51.14	63.3350	0.2390	70.6%	0.51	59.63	67.04	4.0963	0.0978	232.7%	0.97	2.58	5.61	3.2309	0.0821	221.4%	0.97	1.96 4.5028
ROSEMEAD	626654	ROSMCA11	47.38	0.0321	0.1090	8.6%	46.88	47.87	62.7736	0.5072	166.6%	0.89	54.91	70.63	4.5555	-0.0170	-26.9%	0.21	4.82	4.29	3.5292	-0.0409	-75.4%	0.54	4.16 2.89461
SHAFTER	661392	SHFTCA11	51.07	0.0345	0.1076	8.5%	50.53	51.60	59.6843	0.2389	165.0%	0.54	55.98	63.39	4.1027	-0.0137	-21.6%	0.17	4.31	3.89	3.2740	-0.0365	-68.4%	0.50	3.84 2.70862
FALLBROOK	760735	ELBKCA12	39.74	0.0331	0.1223	9.7%	39.07	40.41	52 8740	0.3247	131.8%	0.89	47.84	57.91	4.2014	0.0008	36.6%	0.01	4.23	4.27	3.8685	0.0107	-13.3%	0.10	3.70 4.03417
S. J. CAPISTRANO	949791	SJCPCA12	57.10	0.0448	0.1480	11.7%	56.40	57.79	66.9410	0.3192	106.1%	0.70	61.99	71.89	4.0102	0.0323	60.0%	0.45	3.51	4.51	3.2522	0.0252	50.2%	0.38	2.86 3.64296
FELTON	831108	FETNCA11	47.21	0.0457	0.1430	11.3%	46.50	47.92	66.4239	0.5377	153.9%	0.87	58.09	74.76	5.2097	0.1159	134.5%	0.81	3.41	7.01	3.9884	0.0776	99.9%	0.67	2.79 5.19053
SAUGUS	661407	SAGSCA11	61.00	0.0484	0.2081	16.3%	60.25	61.75	73.0639	0.4601	198.3%	0.94	65.93	80.20	3.0453	0.0065	26.2%	0.20	2.95	3.15	2.3800	0.0037	15.7%	0.12	2.32 2.43722
LITTLE ROCK	661375	LTRKCA11	56.44	0.0485	0.1803	14.2%	55.68	57.19	69.4511	0.5983	206.6%	0.95	60.18	78.73	3.4301	-0.0271	-82.8%	0.59	3.85	3.01	2.6300	-0.0494	-191.3%	0.93	3.40 1.86456
SUTTER CREEK	209225	STCKCA11	47.71	0.0510	0.1495	11.8%	46.92	48.50	65.5184	0.4798	1/6.4%	0.91	58.08	72.96	4.6000	0.0080	14.0%	0.11	4.48	4.72	3.5554	0.0193	45.0%	0.34	3.26 3.85398
EUREKA	707289	EURKCA01	58.18	0.0524	0.2254	17.7%	57.37	58.99	70.1536	0.4178	189.7%	0.93	63.68	76.63	3.1019	0.0157	68.9%	0.50	2.40	3.35	2,4953	0.0180	85.3%	0.60	2.22 2.77372
ARLINGTON	951704	ARTNCA11	57.82	0.0557	0.1792	14.1%	56.95	58.68	67.8651	0.2305	66.5%	0.49	64.29	71.44	3.5473	-0.0018	-4.0%	0.03	3.58	3.52	2.8854	0.0032	7.5%	0.06	2.84 2.93539
PORTERVILLE	559213	PTVLCA11	45.76	0.0641	0.2543	19.9%	44.76	46.75	56.6193	0.4279	152.8%	0.86	49.99	63.25	4.6120	0.0005	1.2%	0.01	4.60	4.62	3.7203	-0.0188	-53.0%	0.40	4.01 3.42854
RICHMOND	213630	LSANCA09	57.66	0.0655	0.2726	21.3%	56.65	58.68	68.1927	0.3739	158.1%	0.88	62.42	74.01	3.4965	-0.0064	-20.2%	0.16	3.59	3.40	2.7189	-0.0205	-69.5%	0.51	3.04 2.40009
THORNTON	209227	THTNCA11	39.14	0.0666	0.2160	17.0%	38.10	40.17	55.6432	0.2780	73.7%	0.53	51.33	59.95	4.2027	-0.0064	-19.0%	0.15	4.30	4.10	3.4957	-0.0052	-15.2%	0.12	3.58 3.41544
	050043	PCFCCA11	58.49	0.0608	0.2287	17.9%	57.44	59.54	64 0074	0.4129	141.6%	0.83	65.02 57.02	77.82	3.0070	0.0417	191.8%	0.94	2.36	3.65	2.2938	0.0321	70.6%	0.91	3.85 2.83000
ARCATA	707276	ARCTCA11	54.72	0.0030	0.2597	20.3%	53.61	55.83	66.1867	0.4112	157.2%	0.87	59.81	72.56	3.0754	0.0144	63.8%	0.47	2.85	3.30	2.3894	0.0048	26.3%	0.21	2.32 2.46357
NOMAD	661409	BKFDCA19	57.40	0.0729	0.3139	24.4%	56.27	58.53	66.4169	0.2489	86.7%	0.61	62.56	70.28	3.4940	-0.0222	-68.4%	0.50	3.84	3.15	2.7909	-0.0386	-123.3%	0.77	3.39 2.19338
SAN MATEO	650071	SNMTCA11	58.08	0.0733	0.2714	21.2%	56.94	59.21	71.1910	0.2881	106.3%	0.70	66.73	75.66	3.0802	0.0380	175.3%	0.91	2.49	3.67	2.3024	0.0301	158.5%	0.88	1.84 2.76867
BOULDER CREEK	831102	BLCKCA11	48.94	0.0756	0.2699	21.1%	47.77	50.11	67.1885	0.5309	185.7%	0.93	58.96	75.42	5.1399	0.0943	98.4%	0.67	3.68	6.60	3.9896	0.0760	95.6%	0.65	2.81 5.16818
ASHLEY	209222	SKTNCA12	45.50	0.0789	0.2618	20.5%	44.28	46.73	60.1705	0.2736	88.3%	0.62	55.93	64.41	4.2951	0.0131	34.9%	0.27	4.09	4.50	3.3932	0.0220	78.5%	0.56	3.05 3.73459
HOLLY STREET	/14/3/ 510039	FUTNCAU1	52.60	0.0802	0.2837	22.1%	57.03	53.84 59.54	69 9662	0.3796	124.6%	0.78	58.75 66.67	70.52	4.3689	0.0051	9.4% 194.4%	0.07	4.29	4.45	3.4545	-0.0043	-8.5% 207.8%	0.07	3.52 3.38/4/
TEHACHAPI CURRY ST	661395	THCHCA01	49.54	0.0914	0.2550	27.5%	48.12	50.95	63.9616	0.4914	207.1%	0.95	56.34	71.58	4.4774	-0.0116	-20.9%	0.16	4.66	4.30	3.4612	-0.0440	-94.7%	0.65	4.14 2.77901
MILLBRAE	650026	MLBRCA11	59.06	0.0914	0.3224	25.1%	57.64	60.47	72.4719	0.5242	207.3%	0.95	64.35	80.60	3.0685	0.0204	78.2%	0.56	2.75	3.38	2.3240	0.0177	79.0%	0.56	2.05 2.59775
ANGELS CAMP	209150	ANCMCA01	40.89	0.0917	0.3287	25.5%	39.47	42.31	60.0177	0.5476	189.7%	0.93	51.53	68.51	5.1146	0.0334	55.1%	0.41	4.60	5.63	4.1416	0.0137	29.4%	0.23	3.93 4.35449
ALHAMBRA	626601	ALHBCA01	49.28	0.0923	0.3034	23.6%	47.85	50.71	63.9820	0.4429	140.7%	0.83	57.12	70.85	4.4597	-0.0141	-23.7%	0.19	4.68	4.24	3.4967	-0.0321	-61.2%	0.45	3.99 2.9985
WASCO	661402	WASCCA01	50.93	0.0937	0.2944	23.0%	49.48	52.39	61.7817	0.2535	166.40	0.56	57.85	65.71	4.2835	0.0121	20.1%	0.16	4.10	4.47	3.3377	-0.0213	-40.7%	0.31	3.67 3.00823
DUITLINGAIVE	000000	DICTINOMO	00.00	0.0944	0.3307	20.3%	57.19	00.11	12.1930	0.4210	100.4%	0.07	00.00	10.13	3.2004	0.0010	204.1 %	0.90	2.40	4.09	2.0010	0.0300	143.1 %	0.04	1.00 2.0000



Vire Carbon Manage         Vire Carbon Value         Code         Latal         Conf.         Coll Val         Adjusted         Days to Clear 90% (setual)         Days to Clear 90% (setual) </th <th></th> <th>Та</th> <th>able 4A</th> <th>.8 (page</th> <th>6 of 10)</th> <th></th>											Та	able 4A	.8 (page	6 of 10)												
Wire Canter Name         Wire Cir.         CLLI         Mean Val         Coof         t-stat         Conf.         1Q10 Val         4Q17 Val         Mean Val         Coof         t-stat         Conf.         1Q10 Val         4Q17 Val         Mean Val         Coof         t-stat         Conf.         1Q10 Val         4Q17 Val         Mean Val         Coof         t-stat         Conf.         1Q10 Val         4Q17 Val         Mean Val         Coof         t-stat         Conf.         1Q10 Val         4Q17 Val         Mean Val         Coof         t-stat         Conf.         1Q10 Val         4Q17 Val         Mean Val         Coof         t-stat         Conf.         1Q10 Val         4Q17 Val         Mean Val         Coof         t-stat         Conf.         1Q10 Val         4Q17 Val         Mean Val         Coof         t-stat         Conf.         1Q10 Val         4Q17 Val         Mean Val         Coof         t-stat         Conf.         1Q10 Val         4Q17 Val         Mean Val         Coof         t-stat         Conf.         1Q10 Val         4Q17 Val         Mean Val         Coof         t-stat         Conf.         1Q10 Val         4Q17 Val         Mean Val         Coof         t-stat         Conf.         1Q10 Val         4Q17 Val         Mean Val         Cor					Pct cle	ared within	n 24 hrs (ac	tual)			Pct clea	red within	24 hrs (adju	usted)			Day	s to Clear !	90% (actual	)			Days	to Clear 90	0% (adjuste	d)
FONTANA         99736         FNTACA11         56.69         0.9473         29.9%         55.27         55.86         69.9038         0.495         122.2%         0.79         61.92         74.49         3.682         -0.128         -21.5%         0.17         3.89         3.403         0.073         -0.0096         -18.3%         0.14         3.22         2.924           CENTRAL VALLEY         530528         CNVYCA11         60.52         0.1030         0.4400         3.44%         58.92         62.12         7.07676         0.584         126.1%         0.78         66.33         75.21         4.891         0.0054         14.3%         0.098         3.414         3.68         2.5798         0.0248         80.1%         0.57         2.20         2.964           WINTERS         530522         WINTRCA11         43.17         0.1082         0.484         126.1%         0.765         6.633         75.21         4.966         0.0054         1.334         0.67         4.86         0.076         4.186         0.076         4.182         0.017         5.756         6.939         0.0165         0.633         7.91         4.0068         0.076         4.126         0.0076         4.126         0.077         1.006%	Wire Center Name	Wire Ctr	CLLI	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	1Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	Q10 Val 40	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	Q10 Val 4Q17 Val
CENTRAL VALLEY         530528         CNVYCA11         54.2         0.104         0.274         21.5%         52.77         55.88         69.9038         0.488         150.9%         0.86         62.31         77.50         4.2766         0.0682         88.8%         0.62         3.23         3.404         0.0478         80.9%         0.58         2.678         0.284         12.61%         0.78         6.63.3         75.0         4.2766         0.068         4.11         3.58         2.578         0.0478         0.0478         0.048         0.072         10.05%         0.075         10.68         0.075         10.68         0.668         4.166         0.651         95.00         0.652         95.4%         0.612         95.653         95.4%         0.625         65.74         0.668         0.0705         10.68         0.075         10.68         0.075         10.68         0.075         10.05%         0.075         0.650         95.4%         0.672         3.441         0.0765         0.44         0.67         4.58         0.070         5.756         66.98         4.0668         0.056         1.45         0.46         0.47         0.46         0.47         0.46         0.47         0.46         0.47         4.48	FONTANA	909736	FNTACA11	56.69	0.0954	0.3473	26.9%	55.22	58.17	68.2074	0.4055	129.2%	0.79	61.92	74.49	3.6882	-0.0128	-21.5%	0.17	3.89	3.49	3.0735	-0.0096	-18.3%	0.14	3.22 2.92444
VENTURAMONTALVO         605399         VNTRCA11         60.52         0.1030         0.44%         58.92         62.12         70.76         0.2864         126.1%         0.78         66.33         75.21         3.4931         0.0054         11.3%         0.09         3.41         3.56         2.578         0.0248         80.1%         0.57         2.20         2.967         0.725         10.66         1.75         64.1         4.610           FRAZER PARK         661404         LEBCCA12         47.5         0.1087         0.485         2.5784         0.001         0.568         4.75         66.33         75.16         68.98         4.0668         4.076         4.86         3.277         3.265         0.078         4.46         2.207         0.058         0.224         0.0031         2.55.%         0.99         2.00         4.884           OAKLEY         926041         OKLYCA11         60.42         0.119         0.486         2.17         0.0185         0.3367         0.1375         0.0345         61.3%         0.46         2.44         3.91         2.2447         0.0079         46.6%         2.12         4.1364         4.1364         4.1364         4.1364         4.1364         4.1364         4.1364	CENTRAL VALLEY	530528	CNVYCA11	54.32	0.1004	0.2747	21.5%	52.77	55.88	69.9038	0.4898	150.9%	0.86	62.31	77.50	4.2766	0.0682	89.8%	0.62	3.22	5.33	3.4045	0.0478	80.9%	0.58	2.66 4.1454
WINTERS         530522         WINTRUATI         43.17         0.1082         0.343         27.0%         41.50         44.50         50.5948         0.505         10.39%         0.89         49.13         54.78         52.907         0.0725         100.5%         0.68         41.7         64.78         52.907         0.0725         101.3%         0.41         41.09         0.0323         54.4%         0.217         57.85         66.98         0.670         57.65         66.98         0.675         45.8         2.0791           PESCADERO         660051         PSCDCA11         60.42         0.1199         0.4868         37.0%         58.66         62.27         70.0858         0.3263         133.7%         0.81         65.03         75.14         3.3757         0.0345         61.3%         0.46         2.2447         0.0073         45.66         0.907         4.1966         0.0988         307.9%         1.00         2.66         5.63         1.55.28         0.9048         0.0179         7.08         5.64         4.848         -0.0179         1.24         4.1472         4.1472         4.1472         4.1472         4.1472         4.1472         4.147         6.70         3.156         6.924         4.9848         6.0179 <td>VENTURA/MONTALVO</td> <td>805399</td> <td>VNTRCA11</td> <td>60.52</td> <td>0.1030</td> <td>0.4500</td> <td>34.4%</td> <td>58.92</td> <td>62.12</td> <td>70.7676</td> <td>0.2864</td> <td>126.1%</td> <td>0.78</td> <td>66.33</td> <td>75.21</td> <td>3.4931</td> <td>0.0054</td> <td>11.3%</td> <td>0.09</td> <td>3.41</td> <td>3.58</td> <td>2.5798</td> <td>0.0248</td> <td>80.1%</td> <td>0.57</td> <td>2.20 2.96404</td>	VENTURA/MONTALVO	805399	VNTRCA11	60.52	0.1030	0.4500	34.4%	58.92	62.12	70.7676	0.2864	126.1%	0.78	66.33	75.21	3.4931	0.0054	11.3%	0.09	3.41	3.58	2.5798	0.0248	80.1%	0.57	2.20 2.96404
PESCADER       601494       LEBC/L1       41,35       0.1101       0.3053       23.084       0.2016       0.3016       0.3016       0.3016       0.3017       50.38       4.00313       50.34%       0.0131       4.305       2.217       3.2063       -0.01031       4.435       0.1132       0.0131       4.435       0.1131       0.4033       1.42.2%       0.04       4.435       0.0131       50.34%       0.0131       50.34%       0.0131       50.34%       0.0101       4.305       2.217       0.0031       4.435       0.0131       4.435       0.0131       4.435       0.0131       50.34%       0.0101       4.305       2.217       0.0031       4.435       0.0131       50.34%       0.0101       4.302       0.0103       4.435       0.0131       50.34%       0.0451       53.34%       0.0103       4.435       0.0131       4.435       0.0131       4.435       0.0131       4.302       0.0131       4.302       0.0213       53.34%       0.046       2.24       3.4410       0.0013       4.435       0.131       4.435       0.131       4.336       0.351       4.337       0.313       0.5633       1.3375       0.0345       61.33%       0.101       4.33       0.313       0.5635       5		530522	WNIRCA11	43.17	0.1082	0.3481	27.0%	41.50	44.85	56.9548	0.5050	163.9%	0.89	49.13	64.78	5.2907	0.0725	100.6%	0.68	4.17	6.41	4.1096	0.0323	54.4%	0.41	3.61 4.61094
Construction       Construction <th< td=""><td>PESCADERO</td><td>650051</td><td>PSCDCA12</td><td>47.90</td><td>0.1007</td><td>0.3003</td><td>29.0%</td><td>40.27</td><td>49.04</td><td>60 3339</td><td>0.5010</td><td>105.0%</td><td>0.70</td><td>51.60</td><td>69.07</td><td>4.0000</td><td>0.0013</td><td>-90.4 %</td><td>1.00</td><td>2.65</td><td>5.27</td><td>3.2003</td><td>0.0705</td><td>-140.2 % 265.5%</td><td>0.04</td><td>2 00 4 88477</td></th<>	PESCADERO	650051	PSCDCA12	47.90	0.1007	0.3003	29.0%	40.27	49.04	60 3339	0.5010	105.0%	0.70	51.60	69.07	4.0000	0.0013	-90.4 %	1.00	2.65	5.27	3.2003	0.0705	-140.2 % 265.5%	0.04	2 00 4 88477
NATIONAL CITY         619754         NTCYCA11         55.31         0.1268         0.4036         31.1%         53.34         57.27         64.0279         0.3517         111.1%         0.72         58.58         69.48         3.943         0.1055         20.38%         0.95         2.36         5.63         3.1356         0.0653         153.3%         0.86         2.12         4.147           HERALD         209176         HERCA11         39.34         0.1279         0.4539         34.7%         41.32         60.3967         26.16         0.954         4.884         -0.0179         12.1%         0.17         5.07         4.70         3.659         0.0053         163.3 %         0.86         3.63         3.9363         0.719         12.7%         0.71         4.70         6.70         4.70         6.70         4.70         6.70         7.41         5.726         6.007         7.038         3.715         0.0179         12.7%         0.71         6.77         7.723         0.85         3.81         5.714         1.93         0.817         5.777         5.727         5.726         5.004         0.669         7.47         1.0104         6.02         7.038         3.715         0.7024         5.777         5.068	OAKLEY	925041	OKLYCA11	60.42	0.1199	0.4868	37.0%	58.56	62.27	70.0858	0.3263	133.7%	0.81	65.03	75.14	3.3757	0.0345	61.3%	0.46	2.84	3.91	2.2447	0.0079	46.6%	0.36	2.12 2.36664
HERALD       209176       HERLCA11       39.34       0.1279       0.4539       34.7%       37.36       41.32       60.3967       0.5897       216.1%       0.96       51.26       69.54       4.884       -0.0119       -21.3%       0.17       5.07       4.70       3.659       0.0022       6.0%       0.06       3.63       3.693       3.653       65.726         ELK CREEK       53048       EKCKA11       36.42       0.1279       0.237       23.2%       28.68       32.65       48.586       0.6408       148.3%       0.85       38.67       55.74       5.726       0.701       112.7%       0.44       4.06       3.37       2.8456       0.0007       -26.1%       0.202       -58.38       0.719       112.7%       0.44       4.06       3.37       2.8456       0.0007       -26.1%       0.202       -26.3%       0.44       4.68       -0.017       -26.1%       0.202       -58.38       0.719       112.7%       0.716       0.376       0.437       2.8456       -0.0057       -26.1%       0.202       -26.3%       0.044       4.68       -0.017       -26.1%       0.007       4.68       4.684       -0.017       4.11       -0.106       -0.337       0.0156       2.379	NATIONAL CITY	619754	NTCYCA11	55.31	0.1268	0.4036	31.1%	53.34	57.27	64.0279	0.3517	111.1%	0.72	58.58	69.48	3.9943	0.1055	203.8%	0.95	2.36	5.63	3.1356	0.0653	153.3%	0.86	2.12 4.14733
ELK CRCEEK       530448       EKCKCA11       30.62       0.1279       0.2379       23.2%       23.6%       0.640       148.3%       0.85       38.87       58.74       5.57.87       5.57.87       0.701       112.7%       0.70       4.47       6.70       4.5649       0.0734       135.1%       0.81       34.45       5.723       2.868       0.0719       112.7%       0.73       4.47       6.70       4.5649       0.0734       135.1%       0.81       34.45       5.723       2.7561         PINEGREST       209209       PNCRA15       5.87       0.1312       0.5571       41.9%       33.70       37.77       57.7232       0.950       411.2%       1.00       4.292       72.53       5.904       0.644       4.98       6.82       4.670       -0.9005       -0.9%       0.01       4.68       4.63       37.17       0.77       57.7232       0.950       411.2%       1.00       4.292       72.53       5.904       0.0592       92.3%       0.64       4.98       6.82       4.679       0.3073       1.33       3.351         JUNIPER       41501       CRILCA11       5.816       6.275       5.876       5.876       5.876       6.24       3.977       0.313       <	HERALD	209176	HERLCA11	39.34	0.1279	0.4539	34.7%	37.36	41.32	60.3967	0.5897	216.1%	0.96	51.26	69.54	4.8848	-0.0119	-21.3%	0.17	5.07	4.70	3.6599	0.0022	6.0%	0.05	3.63 3.69354
FHESNO WOODWARD       559247       FRSNCAT5       56.42       0.1292       0.4138       31.8%       54.42       55.826       0.3094       96.6%       0.66       60.79       70.38       3.715       -0.0220       -58.3%       0.44       4.06       3.37       2.8465       -0.0057       -26.1%       0.20       2.93       2.193       -10220       -29.3%       0.44       4.06       3.37       2.8465       -0.0057       -26.1%       0.20       2.93       2.193       -10220       -29.27       55.35       5.904       0.0220       -88.3%       0.44       4.06       3.37       2.8465       -0.0005       -9.9%       0.01       4.68       4.670       -0.0005       -9.9%       0.01       4.33       2.846       6.827       0.63       6.313       0.505       9.21       0.55       9.21       0.55       8.58       0.015       5.876       0.57       8.68       6.23       7.42       3.623       7.42       3.623       0.014       4.111       -0.016       -5.3%       0.38       4.90       3.26       3.77       5.68       6.276       0.256       0.237       6.23       7.42       3.624       0.0484       4.637       0.409       3.39       2.99       0.419	ELK CREEK	530448	EKCKCA11	30.62	0.1279	0.2979	23.2%	28.68	32.65	48.5885	0.6408	148.3%	0.85	38.87	58.74	5.5628	0.0719	112.7%	0.73	4.47	6.70	4.5649	0.0734	135.1%	0.81	3.45 5.72677
PINENCISION         2092U9         PINENCALI         53.74         0.1312         0.337         41.93         0.337         0.1712         0.337         0.1712         0.337         0.1712         0.337         0.1712         0.337         0.1712         0.337         0.1712         0.337         0.1712         0.337         0.1712         0.337         0.1712         0.1712         0.1712         0.1717         0.1712         0.1717         0.1712         0.1717         0.1717         0.1717         0.1712         0.1717	FRESNO WOODWARD	559247	FRSNCA15	56.42	0.1292	0.4138	31.8%	54.42	58.42	65.5826	0.3094	96.6%	0.66	60.79	70.38	3.7151	-0.0220	-58.3%	0.44	4.06	3.37	2.8456	-0.0057	-26.1%	0.20	2.93 2.75658
JUNIPER 415061 CRULCA11 53.81 0.1315 0.6077 45.2% 51.78 55.85 68.2752 0.3836 158.7% 0.88 62.33 74.22 3.6234 0.0484 185.7% 0.93 2.87 4.37 2.6399 0.0459 205.2% 0.95 1.93 3.351 FRESNO POLK AVE 559245 FRSNCA14 52.72 0.1316 0.4964 37.7% 50.68 54.76 62.5558 0.2376 80.5% 0.57 58.87 66.24 3.9717 -0.132 -35.0% 0.27 4.18 3.77 3.1423 -0.0162 -53.7% 0.40 3.39 2.83 43.3307 SAN FRANCISCO 35H 51415060 SNFCCA05 5.364 0.1340 0.5902 30.3% 50.51 54.79 62.7445 0.3963 109.6% 0.72 56.62 68.87 4.165 0.0555 23.9.% 0.98 2.90 4.74 2.6358 0.0448 207.5% 0.95 1.33 3.351 DULZURA 619728 DLZRCA11 40.06 0.1382 0.549 40.8% 37.92 42.20 55.6736 0.4262 120.5% 0.76 49.07 62.28 4.206 -0.0078 -22.6% 0.18 4.32 4.08 3.5240 -0.020 -64.1% 0.47 3.83 3.2146 SUNOL 925077 SUNLCA11 52.55 0.1413 0.3167 24.6% 50.36 54.74 66.7844 0.4289 104.4% 0.70 60.14 73.43 3.5716 -0.0073 -131.2% 0.80 4.66 2.48 2.7361 -0.0314 -67.2% 0.49 4.22 2.445 LIVINE 619700 ALPICA11 40.551 41.7% 45.08 49.47 61.9076 0.676 250.6% 0.98 51.42 72.40 3.8162 0.0369 150.2% 0.140 3.1520 0.0071 28.4% 0.22 3.04 3.22445 0.2276 0.98 51.42 72.40 3.8162 0.0369 150.2% 0.98 1.408 3.1520 0.0071 28.4% 0.22 3.04 3.2540 0.0211 0.496 2.24 2.2455 0.141 0.496 2.47 57.6 50.276 6.158 4.272 0.98 51.42 72.40 3.8162 0.0369 150.2% 0.80 4.66 2.48 2.7361 -0.0314 -67.2% 0.49 3.22 2.4455 0.4111 0.496 73.7% 53.07 75.6 50.970 0.676 7250.6% 0.98 51.42 72.40 3.8162 0.0369 150.2% 0.196 3.462 2.4 3.9 3.1520 0.0071 28.4% 0.22 3.04 3.2540 0.22 3.04 3.2540 0.2011 0.496 73.7% 53.07 54.56 50.076 0.676 75.08 73.7% 0.98 7.28 7376 0.014 73.43 3.156 0.01	MONTEBELLO	323642	LSANCA35	48.67	0.1312	0.5360	41.9%	46.63	50 71	61 7772	0.9550	130.7%	0.80	42.92	67.47	2.9004 4.4111	-0.0316	-50.3%	0.84	4.90	3.92	3 5379	-0.0005	-0.9%	0.01	4.08 4.00748
FRESNO POLK AVE       559245       FRSNCA14       52.72       0.1316       0.4964       37.7%       50.68       54.76       62.5558       0.2376       80.5%       0.57       58.87       66.24       3.9717       -0.0132       -35.0%       0.27       4.18       3.77       3.1423       -0.0162       -53.7%       0.40       3.39       2.8911         SAN FRANCISCO 35TH ST415060       SNFCCA05       53.64       0.1340       0.5902       44.1%       51.57       57.27       67.4270       0.2498       91.2%       0.63       63.55       71.30       3.8188       0.0595       239.7%       0.98       2.90       4.74       2.6358       0.0448       207.5%       0.95       1.94       3.3162         CORONADO       619728       DLZRCA11       40.06       0.1382       0.5409       40.8%       37.92       42.20       56.763       0.4262       120.5%       0.76       49.07       62.26       68.87       4.1665       0.0078       -22.6%       0.18       4.32       4.08       3.5240       -0.0020       -64.1%       0.47       3.83       3.2146         SUNOL       925077       SUNLCA11       52.55       0.1413       0.3167       24.6%       49.47       6.6764	JUNIPER	415061	CRMLCA11	53.81	0.1315	0.6077	45.2%	51.78	55.85	68.2752	0.3836	158.7%	0.88	62.33	74.22	3.6234	0.0484	185.7%	0.93	2.87	4.37	2.6399	0.0459	205.2%	0.95	1.93 3.35184
SAN FRANCISCO 35TH \$1415060         SNFCCA05         5.8.4         0.1340         0.5902         44.1%         51.57         57.27         67.4270         0.2498         91.2%         0.63         63.55         71.30         3.8168         0.0595         239.7%         0.98         2.90         4.74         2.6358         0.0448         207.5%         0.95         1.94         3.3160           CORONADO         619723         CRNDCA11         52.65         0.1380         0.392         30.3%         50.51         54.79         62.7445         0.3933         109.6%         0.72         56.62         68.87         4.1665         0.0655         110.9%         0.72         3.15         51.8         3.3280         0.0599         0.56.%         0.70         2.49         4.163           DULZURA         619720         JLERCA11         40.06         0.1382         0.549         42.02         50.736         6.726 32         12.05%         0.76         4.90         6.2067         0.0708         -2.26%         0.18         3.3         2.408         4.04         4.063         4.2026         -0.0708         -2.26%         0.18         4.32         4.08         5.244         0.47         3.33         2.44         3.516         -0.	FRESNO POLK AVE	559245	FRSNCA14	52.72	0.1316	0.4964	37.7%	50.68	54.76	62.5558	0.2376	80.5%	0.57	58.87	66.24	3.9717	-0.0132	-35.0%	0.27	4.18	3.77	3.1423	-0.0162	-53.7%	0.40	3.39 2.89196
CORONADO         619723         CRNDCA11         52.65         0.1380         0.3925         30.3%         50.51         54.746         0.3953         109.6%         0.72         56.62         68.87         4.1665         0.0655         110.3%         0.72         3.15         5.18         3.3280         0.0539         105.6%         0.70         2.49         4.165         0.0655         110.3%         0.72         3.15         5.18         3.3280         0.0539         105.6%         0.70         2.49         3.124           DULZURA         619728         DLZRCA11         40.60         0.1382         0.549         40.8%         50.51         4.74         6.736         0.4261         120.5%         0.76         49.07         62.28         4.2026         -0.0078         -2.26%         0.18         4.32         4.08         3.5240         -0.0314         -67.2%         0.49         3.83         2.2145           SUNDL         925077         SUNLCA11         52.55         0.1413         0.3167         45.08         4.4269         10.448         0.70         60.14         73.43         3.5716         -0.0703         -31.12%         0.80         4.66         2.48         2.7361         -0.014         -67.2%	sAN FRANCISCO 35TH S	ST415060	SNFCCA05	53.64	0.1340	0.5902	44.1%	51.57	55.72	67.4270	0.2498	91.2%	0.63	63.55	71.30	3.8168	0.0595	239.7%	0.98	2.90	4.74	2.6358	0.0448	207.5%	0.95	1.94 3.33079
DULZIRA 619728 DLZRCA11 40.06 0.1382 0.5409 40.8% 37.92 42.20 55.6736 0.4262 120.5% 0.76 49.07 62.28 4.2026 -0.0078 -22.6% 0.18 4.32 4.08 3.5240 -0.0200 -64.1% 0.47 3.83 3.2140 SUNOL 925077 SUNLCA11 52.55 0.1413 0.3167 24.6% 50.36 54.74 66.7844 0.4289 104.4% 0.70 60.14 73.43 3.5716 -0.073 -31.2% 0.80 4.66 2.48 2.7361 -0.0314 -67.2% 0.49 3.22 2.248 ALPINE 619700 ALPICA12 47.27 0.1416 0.5551 41.7% 45.08 49.47 61.9076 0.6767 250.6% 0.98 51.42 72.40 3.8162 0.0369 150.2% 0.86 3.24 4.39 3.1520 0.0071 28.4% 0.22 3.04 3.2615 DLVINE 949745 IRVNCAD1 53 50 1.471 0.4967 37.7% 53.07 57.63 65.9072 0.4666 153.6% 0.97 58 72.08 7250 0.016 5.248% 0.19 3.89 3.66 2.9051 0.0165 29.66% 0.21 6.2400	CORONADO	619723	CRNDCA11	52.65	0.1380	0.3925	30.3%	50.51	54.79	62.7445	0.3953	109.6%	0.72	56.62	68.87	4.1665	0.0655	110.9%	0.72	3.15	5.18	3.3280	0.0539	105.6%	0.70	2.49 4.16343
SUNCL 925017 SUNCCATT 52:55 0.1413 0.3167 24:06 50.36 94:74 06.7844 04:269 104:47% 0.70 00.14 73:43 3.57/16 -0.0703 -131.2% 0.80 4:06 2:46 2:7361 -0.0314 -0.12% 0.49 3.22 2:328 ALPINE 619700 ALPICA12 47:27 0.1416 0.5551 41:7% 45:08 49:47 61:9076 0.6767 250:6% 0.98 51:42 72:40 3.8162 0.0369 150:2% 0.86 3.24 4:39 3.1520 0.0071 28:4% 0.22 3.04 3.2451 JEVINE 940745 IEVNCANT 53 5 0.1471 0.4967 37.7% 53.07 57.63 65:9072 0.4666 153.6% 0.97 582 72.98 3.7250 -0.016 5.38% 0.10 3.89 3.66 2.051 0.0165 39.6% 0.31 5.2%	DULZURA	619728	DLZRCA11	40.06	0.1382	0.5409	40.8%	37.92	42.20	55.6736	0.4262	120.5%	0.76	49.07	62.28	4.2026	-0.0078	-22.6%	0.18	4.32	4.08	3.5240	-0.0200	-64.1%	0.47	3.83 3.21463
		925077		52.55 47.27	0.1413	0.3167	24.0% 41.7%	20.30 45.08	54.74 49.47	61 9076	0.4289	250.6%	0.70	51 42	73.43	3.57.10	-0.0703	-131.2% 150.2%	0.80	3 24	2.48	2.7301	-0.0314	-07.2% 28.4%	0.49	3.22 2.24953
10.10 0 0.10 0.10 0.10 0.10 0.10 0.10 0	IRVINE	949745	IRVNCA01	55.35	0.1410	0.4967	37.7%	53.07	57.63	65.9027	0.4566	153.6%	0.87	58.82	72.98	3.7250	-0.0105	-24.8%	0.19	3.89	3.56	2.9051	-0.0165	-39.6%	0.22	3.16 2.64999
BEAR VALLEY 209155 BVLYCA11 21.80 0.1521 0.8997 62.5% 19.44 24.15 56.4511 1.0198 293.7% 0.99 40.64 72.26 9.8632 0.1156 80.4% 0.57 8.07 11.66 6.0656 0.0023 3.5% 0.03 6.03 6.017	BEAR VALLEY	209155	BVLYCA11	21.80	0.1521	0.8997	62.5%	19.44	24.15	56.4511	1.0198	293.7%	0.99	40.64	72.26	9.8632	0.1156	80.4%	0.57	8.07	11.66	6.0656	0.0023	3.5%	0.03	6.03 6.10125
AIRPORT 310628 LSANCA07 54.19 0.1539 0.6136 45.6% 51.80 56.58 68.4061 0.5769 228.1% 0.97 59.46 77.35 4.3843 -0.0222 -43.8% 0.34 4.73 4.04 3.4066 -0.0455 -91.5% 0.63 4.11 2.7014	AIRPORT	310628	LSANCA07	54.19	0.1539	0.6136	45.6%	51.80	56.58	68.4061	0.5769	228.1%	0.97	59.46	77.35	4.3843	-0.0222	-43.8%	0.34	4.73	4.04	3.4066	-0.0455	-91.5%	0.63	4.11 2.70141
GALT 209171 GALTCA11 48.16 0.1568 0.6043 45.0% 45.73 50.59 63.3041 0.5679 235.4% 0.97 54.50 72.11 4.1869 -0.0238 -54.0% 0.41 4.56 3.82 3.2999 -0.0310 -91.0% 0.63 3.78 2.8187	GALT	209171	GALTCA11	48.16	0.1568	0.6043	45.0%	45.73	50.59	63.3041	0.5679	235.4%	0.97	54.50	72.11	4.1869	-0.0238	-54.0%	0.41	4.56	3.82	3.2999	-0.0310	-91.0%	0.63	3.78 2.81875
MOUNTAIN 510040 OKLDCA13 50.81 0.1573 0.5133 38.9% 48.37 53.25 65.6492 0.3262 94.6% 0.65 60.59 70.70 4.1463 0.0884 215.1% 0.96 2.78 5.52 3.1704 0.0672 188.4% 0.93 2.13 4.212	MOUNTAIN	510040	OKLDCA13	50.81	0.1573	0.5133	38.9%	48.37	53.25	65.6492	0.3262	94.6%	0.65	60.59	70.70	4.1463	0.0884	215.1%	0.96	2.78	5.52	3.1704	0.0672	188.4%	0.93	2.13 4.21255
UCAPTIOL \$25058 LSANUA23 47.09 0.1007 0.5446 41.0% 44.00 49.58 62.5133 0.5214 106.1% 0.90 54.53 70.059 4.6526 -0.0404 -04.6% 0.48 5.26 4.01 3.0512 -0.0522 -0.0562 0.0464 -0.052 0.0521 -0.052 0.0521 -0.052 0.0521 -0.052 0.0521 -0.052 0.0521 -0.052 0.0521 -0.052 0.0521 -0.052 0.0521 -0.052 0.0521 -0.052 0.0521 -0.052 0.0521 -0.052 0.0521 -0.052	RIGGS	520432	LSANCA23	47.09	0.1607	0.5446	41.0%	44.60	49.58	62.0133	0.5214	168.1%	0.90	54.53 54.67	70.69	4.6326	-0.0404	-64.8%	0.48	5.26	4.01	3.6912	-0.0362	-64.6% 210.1%	0.48	4.25 3.13069
DIGGG 30492 DGGGCATT 47.46 0.0010 0.373 29.2% 94.90 49.99 02.3970 04900 141.4% 0.63 94.07 10.13 4.0000 0.1210 100.1% 0.92 2.97 0.14 3.0132 0.1142 215.1% 0.90 2.04 3.0451 SANTA CRUZ CAPITOLA BR1126 SNCZCATT 55.88 0.1631 0.5455 411% 53.46 58.41 66.9331 0.3666 125.4% 0.78 6.12 0.5064 124.2% 0.78 3.11 574 3.5644 0.0608 114.1% 0.74 5.365	SANTA CRUZ CAPITOLA	1831126	SNCZCA11	47.40 55.88	0.1610	0.5453	29.2% 41.1%	44.90 53.36	49.99	66 9331	0.4966	125.4%	0.83	61.25	72.62	4.0300	0.1210	124.2%	0.92	2.97	5.79	3 5644	0.0698	219.1%	0.90	2.04 5.58268
SONORA 209218 SNRACA13 43.91 0.1649 0.5642 42.3% 41.36 46.47 60.4565 0.7060 288.0% 0.99 49.51 71.40 5.1057 0.0490 83.5% 0.59 4.35 5.86 3.9558 0.0090 18.9% 0.15 3.82 4.0957	SONORA	209218	SNRACA13	43.91	0.1649	0.5642	42.3%	41.36	46.47	60.4565	0.7060	268.0%	0.99	49.51	71.40	5.1057	0.0490	83.5%	0.59	4.35	5.86	3.9558	0.0090	18.9%	0.15	3.82 4.09514
LAGUNA NIGUEL 949749 LGNGCA12 59.74 0.1668 0.5486 41.3% 57.15 62.32 68.5202 0.3534 115.8% 0.74 63.04 74.00 3.6925 0.0198 39.4% 0.30 3.39 4.00 2.9913 0.0042 9.1% 0.07 2.93 3.0560	LAGUNA NIGUEL	949749	LGNGCA12	59.74	0.1668	0.5486	41.3%	57.15	62.32	68.5202	0.3534	115.8%	0.74	63.04	74.00	3.6925	0.0198	39.4%	0.30	3.39	4.00	2.9913	0.0042	9.1%	0.07	2.93 3.05607
LA JOLLA 858750 LAJLCA11 52.71 0.1669 0.6944 50.7% 50.13 55.30 63.2627 0.3187 123.3% 0.77 58.32 68.20 4.0753 0.0499 132.0% 0.80 3.30 4.85 3.2546 0.0414 119.6% 0.76 2.61 3.8967	LA JOLLA	858750	LAJLCA11	52.71	0.1669	0.6944	50.7%	50.13	55.30	63.2627	0.3187	123.3%	0.77	58.32	68.20	4.0753	0.0499	132.0%	0.80	3.30	4.85	3.2546	0.0414	119.6%	0.76	2.61 3.89671
MURPHYS 209203 MRPHCA11 38.81 0.1669 0.6485 47.9% 36.22 41.40 59.0152 0.8156 342.5% 1.00 46.37 71.66 5.4278 0.0448 87.3% 0.61 4.73 6.12 4.2336 0.0097 24.5% 0.19 4.08 4.3891	MURPHYS	209203	MRPHCA11	38.81	0.1669	0.6485	47.9%	36.22	41.40	59.0152	0.8156	342.5%	1.00	46.37	71.66	5.4278	0.0448	87.3%	0.61	4.73	6.12	4.2336	0.0097	24.5%	0.19	4.08 4.38355
IUSTIN // /14009 IUSTGA/// 06.30 0.10/3 0.4492 34.4% 05.3/1 06.89 /2.9104 0.2250 05.5% 0.44 09.42 /0.40 3.1255 0.0429 120.0% 0.76 2.46 3.79 2.35/6 0.0326 100.5% 0.70 1.85 2.600	INDERIAL REACH	610744		66.30 54.24	0.1673	0.4492	34.4%	63.71 51.63	68.89 56.85	72.9104	0.2250	58.5%	0.44	69.42 57.30	76.40	3.1255	0.0429	126.0%	0.78	2.46	3.79	2.3576	0.0326	105.6%	0.70	1.85 2.86295
1.13 1.13 1.13 1.13 1.13 1.13 1.13 1.13	CARMEL VALLEY	831106	CRVYCA11	44.25	0.1755	0.6216	46.1%	41.53	46.97	61.4619	0.4985	165.8%	0.89	53.73	69.19	5.1156	0.0680	93.3%	0.64	4.06	6.17	3.5275	0.0225	42.6%	0.30	3.18 3.87566
JACKSON 209181 JCSNCA01 49.88 0.1781 0.5008 38.0% 47.12 52.64 67.9446 0.4955 177.5% 0.91 60.26 75.62 4.3920 0.0139 27.8% 0.22 4.18 4.61 3.4092 0.0161 46.7% 0.36 3.16 3.6585	JACKSON	209181	JCSNCA01	49.88	0.1781	0.5008	38.0%	47.12	52.64	67.9446	0.4955	177.5%	0.91	60.26	75.62	4.3920	0.0139	27.8%	0.22	4.18	4.61	3.4092	0.0161	46.7%	0.36	3.16 3.65894
MARKET STREET 619783 SNDGCA12 50.05 0.1782 0.6190 46.0% 47.29 52.81 60.3808 0.5183 180.8% 0.92 52.35 68.42 4.3335 0.1039 195.9% 0.94 2.72 5.94 3.5040 0.0690 152.0% 0.86 2.43 4.5737	MARKET STREET	619783	SNDGCA12	50.05	0.1782	0.6190	46.0%	47.29	52.81	60.3808	0.5183	180.8%	0.92	52.35	68.42	4.3335	0.1039	195.9%	0.94	2.72	5.94	3.5040	0.0690	152.0%	0.86	2.43 4.57373
LOCKEFORD 209190 LCFRCA11 45.82 0.1792 0.6071 45.2% 43.05 48.60 60.2421 0.4972 150.6% 0.86 52.53 67.95 4.2869 -0.0216 -53.1% 0.40 4.62 3.95 3.1695 -0.0198 -84.0% 0.59 3.48 2.8622	LOCKEFORD	209190	LCFRCA11	45.82	0.1792	0.6071	45.2%	43.05	48.60	60.2421	0.4972	150.6%	0.86	52.53	67.95	4.2869	-0.0216	-53.1%	0.40	4.62	3.95	3.1695	-0.0198	-84.0%	0.59	3.48 2.86221
THREE RIVERS 559228 THRRCA11 34.03 0.1812 0.8732 61.1% 31.22 36.83 54.9490 1.2716 485.7% 1.00 35.24 74.66 4.9683 -0.0164 -21.6% 0.17 5.22 4.71 4.1316 -0.0170 -23.0% 0.18 4.40 3.8691	THREE RIVERS	559228	THRRCA11	34.03	0.1812	0.8732	61.1%	31.22	36.83	54.9490	1.2716	485.7%	1.00	35.24	74.66	4.9683	-0.0164	-21.6%	0.17	5.22	4.71	4.1316	-0.0170	-23.0%	0.18	4.40 3.86804
SOLEMINI 061394 SLIMICATI 00.25 0.1044 0.0205 30.0% 07.39 05.11 / 1.0310 0.0024 2094% 0.99 02.49 01.17 2.3970 -0.0000 -3.22% 0.29 3.12 2.07 2.3950 -0.0004 -1.6% 0.01 2.40 2.0306 DIALTO 0.00773 DITCATI 5.415 0.1857 0.6124 5.6% 51.27 5.73 6.4877 0.4884 151.3% 0.86 57 27 27.40 3.0673 .01053 .0176 .015 3.84 271 0.1001 .15% 0.10 1.40 2.302		909773	RILTCA11	60.25 54.15	0.1844	0.6263	28.0% 45.6%	51.39	57.03	64 8272	0.6024	259.4%	0.99	62.49 57.26	72.40	2.9970	-0.0080	-32.2%	0.25	3.1Z 4.05	2.87	2.3958	-0.0004	-1.8%	0.01	2.40 2.36664
61760 50776 5153 0.186 0.691 55.8 48.64 54.3 61.255 0.766 166.1% 0.89 53.84 68.62 4.226 0.100 205.3% 0.95 2.67 5.79 3.470 0.0691 157.3% 0.87 2.40 4.542	SAIPAN	619780	SNDGCA05	51.53	0.1868	0.6961	50.8%	48.64	54.43	61.2258	0.4768	166.1%	0.89	53.84	68.62	4.2296	0.1006	205.3%	0.95	2.67	5.79	3.4703	0.0691	157.3%	0.87	2.40 4.54202
REDDING MAIN 530495 RDNGCA02 58.94 0.1870 0.5254 39.7% 56.04 61.84 71.3947 0.4992 156.1% 0.87 63.66 79.13 3.9293 0.0525 71.5% 0.52 3.12 4.74 3.0802 0.0386 65.4% 0.48 2.48 3.6785	REDDING MAIN	530495	RDNGCA02	58.94	0.1870	0.5254	39.7%	56.04	61.84	71.3947	0.4992	156.1%	0.87	63.66	79.13	3.9293	0.0525	71.5%	0.52	3.12	4.74	3.0802	0.0386	65.4%	0.48	2.48 3.67897
TASSAJARA 925085 DAVLCA13 58.99 0.1880 0.7204 52.3% 56.07 61.90 68.6861 0.3744 144.5% 0.84 62.88 74.49 3.0268 0.0095 52.1% 0.39 2.88 3.17 2.2995 -0.0025 -14.9% 0.12 2.34 2.260F	TASSAJARA	925085	DAVLCA13	58.99	0.1880	0.7204	52.3%	56.07	61.90	68.6861	0.3744	144.5%	0.84	62.88	74.49	3.0268	0.0095	52.1%	0.39	2.88	3.17	2.2995	-0.0025	-14.9%	0.12	2.34 2.26061
WATSONVILLE 831141 WTVLCA01 51.59 0.1924 0.7136 51.9% 48.60 54.57 62.9922 0.4520 159.7% 0.88 55.99 70.00 4.2595 0.0512 118.7% 0.76 3.47 5.05 3.3876 0.0410 113.6% 0.74 2.75 4.0225	WATSONVILLE	831141	WTVLCA01	51.59	0.1924	0.7136	51.9%	48.60	54.57	62.9922	0.4520	159.7%	0.88	55.99	70.00	4.2595	0.0512	118.7%	0.76	3.47	5.05	3.3876	0.0410	113.6%	0.74	2.75 4.02259
949807 65.88 0.1935 0.6123 45.5% 62.88 68.88 73.4861 0.3935 123.2% 0.77 67.39 79.58 2.9914 0.0054 14.1% 0.11 2.91 3.07 2.3106 -0.0042 -11.6% 0.09 2.38 2.4861 0.3935 123.2% 0.77 67.39 79.58 2.9914 0.0055 14.1% 0.17 2.91 3.07 2.3106 -0.0042 -1.16% 0.09 2.38 2.4861 0.3935 123.2% 0.77 67.39 79.58 2.9914 0.0055 14.1% 0.17 2.91 3.07 2.3106 -0.0042 -1.16% 0.09 2.38 2.4861 0.3935 123.2% 0.77 67.39 79.58 2.9914 0.0055 14.1% 0.17 2.91 3.07 2.3106 -0.0042 -1.16% 0.09 2.38 2.4861 0.3935 123.2% 0.77 67.39 79.58 2.9914 0.0055 14.1% 0.17 2.91 3.07 2.3106 -0.0042 -1.16% 0.09 2.38 2.4861 0.3935 123.2% 0.77 67.39 79.58 2.9914 0.0055 14.1% 0.17 2.91 3.07 2.3106 -0.0042 -1.16% 0.09 2.38 2.4861 0.3935 123.2% 0.77 67.39 79.58 2.9914 0.0055 14.1% 0.17 2.91 3.07 2.3106 -0.0042 -1.16% 0.09 2.38 2.4861 0.3935 123.2% 0.77 67.39 79.58 2.9914 0.0055 14.1% 0.17 2.91 3.07 2.3106 -0.0042 -1.16% 0.09 2.38 2.4861 0.3935 123.2% 0.77 67.39 79.58 2.9914 0.0055 14.1% 0.17 2.91 3.07 2.3106 -0.0042 -1.16\% 0.2935 0.0042 -1.16\% 0.0914 0.0056 14.1% 0.0056 14.1% 0.17 2.91 3.07 2.3106 -0.0042 -1.16\% 0.0914 0.0056 14.1% 0.014 0.0056 14.1% 0.014 0.0056 14.1% 0.014 0.0056 14.1% 0.014 0.0056 14.1% 0.014 0.0056 14.1% 0.014 0.0056 14.1% 0.014 0.0056 14.1% 0.014 0.0056 14.1% 0.014 0.0056 14.1% 0.014 0.0056 14.1\% 0.014 0.0056 14.1\% 0.014 0.0056 14.1\% 0.014 0.0056 14.1\% 0.014 0.0056 14.1\% 0.014 0.0056 14.1\% 0.014 0.0056 14.1\% 0.014 0.0056 14.1\% 0.014 0.0056 14.1\% 0.014 0.0056 14.1\% 0.014 0.0056 14.1\% 0.014 0.0056 14.1\% 0.014 0.0056 14.1\% 0.014 0.0056 14.1\% 0.014 0.0056 14.1\% 0.014 0.0056 14.1\% 0.0056 14.1		949807	DDNCCA44	65.88	0.1935	0.6123	45.5%	62.88	68.88	73.4861	0.3935	123.2%	0.77	67.39	79.58	2.9914	0.0054	14.1%	0.11	2.91	3.07	2.3106	-0.0042	-11.6%	0.09	2.38 2.24528
KEDUNG ENTEKPK, 530531 KUNGCA11 61.39 0.1948 0.552 41.6% 58.38 64.41 /2.315 0.4//5 156.4% 0.8/ 64.91 /9./1 3.9413 0.0559 /194% 0.51 3.08 4.61 2.9/95 0.0424 85.4% 0.00 2.32 3.502	REDDING ENTERPR.	530531 905390	RDNGCA11	61.39	0.1948	0.5532	41.6%	58.38	64.41	72.3115	0.4775	156.4%	0.87	62.20	79.71	3.9413	0.0559	79.4% 57.0%	0.57	3.08	4.81	2.9795	0.0424	85.4%	0.60	2.32 3.63602
DEPECTRUM-IRVINE 949810 IRVINCA12 6578 0.1966 0.5456 0.5456 0.5465 0.9231 0.1760 47.8 % 0.36 67.19 72.65 2.9745 -0.0243 -48.6 % 0.37 3.35 2.60 2.4342 -0.0157 -38.2 % 0.28 2.190	SPECTRUM-IRVINE	949810	IRVNCA12	65.78	0.1946	0.5454	41.1%	62.75	68.81	69.9231	0.1760	47.8%	0.36	67.19	72.65	2.9745	-0.0221	-48.6%	0.37	3.35	2.60	2.4342	-0.0254	-36.2%	0.28	2.68 2.19041
TEMPLE 661359 BKFDCA14 52.67 0.1991 0.7163 52.1% 49.59 55.76 62.8362 0.4819 170.2% 0.90 55.37 70.31 4.1353 -0.0514 -95.1% 0.65 4.93 3.34 3.3074 -0.0572 -119.6% 0.76 4.19 2.4204	TEMPLE	661359	BKFDCA14	52.67	0.1991	0.7163	52.1%	49.59	55.76	62.8362	0.4819	170.2%	0.90	55.37	70.31	4.1353	-0.0514	-95.1%	0.65	4.93	3.34	3.3074	-0.0572	-119.6%	0.76	4.19 2.42042
KING CITY 831112 KGCYCA11 44.11 0.1998 0.7589 54.6% 41.01 47.20 55.8728 0.2932 85.3% 0.60 51.33 60.42 4.1256 -0.0102 -38.0% 0.29 4.28 3.97 3.3772 -0.0033 -12.3% 0.10 3.43 3.3262	KING CITY	831112	KGCYCA11	44.11	0.1998	0.7589	54.6%	41.01	47.20	55.8728	0.2932	85.3%	0.60	51.33	60.42	4.1256	-0.0102	-38.0%	0.29	4.28	3.97	3.3772	-0.0033	-12.3%	0.10	3.43 3.32628
ANDERSON 530427 ARSNCA11 57.03 0.2048 0.5482 41.3% 53.86 60.21 69.3263 0.4686 144.4% 0.84 62.06 76.59 4.0410 0.0469 65.4% 0.48 3.31 4.77 3.3721 0.0449 73.3% 0.53 2.68 4.0680	ANDERSON	530427	ARSNCA11	57.03	0.2048	0.5482	41.3%	53.86	60.21	69.3263	0.4686	144.4%	0.84	62.06	76.59	4.0410	0.0469	65.4%	0.48	3.31	4.77	3.3721	0.0449	73.3%	0.53	2.68 4.06808
MCKINLEYVILLE 707307 MKVLCA11 52.13 0.2064 0.778 55.5% 48.93 55.33 66.5208 0.5163 191.1% 0.93 58.52 74.52 3.3048 0.0317 121.7% 0.77 2.81 3.80 2.6242 0.0179 84.4% 0.59 2.35 2.902	MCKINLEYVILLE	707307	MKVLCA11	52.13	0.2064	0.7738	55.5%	48.93	55.33	66.5208	0.5163	191.1%	0.93	58.52	74.52	3.3048	0.0317	121.7%	0.77	2.81	3.80	2.6242	0.0179	84.4%	0.59	2.35 2.90209
VALLET STRINGS 202534 VISTORTI 40.42 UL2000 U.5319 46.8% 43.19 49.65 64.7008 U.5945 202.6% U.95 55.49 73.92 4.8352 U.4006 7.15% U.52 4.21 5.46 3.7134 0.0472 112.1% U.73 2.98 4.400 U.5945 202.6% U.95 55.49 7.000 U.95 55.40 1.100 U.95 55.40 U.9	VALLEY SPRINGS	209234	VYSPCA11	46.42	0.2085	0.6319	46.8%	43.19	49.65	66 3255	0.5945	202.6%	0.95	55.49 61.9F	73.92	4.8352	0.0314	/1.6%	0.52	4.21	5.46	3.7134	0.04/2	112.1%	0.73	2.98 4.44561
ודובריייסיים או איז	MELROSE	323629	LSANCA08	04.87 48.88	0.2088	0.7514	54.2% 66.0%	45.64	52 12	63 5652	0.2820	90.5% 294.9%	0.00	54 12	73.01	3.9490 4.5180	-0.0314	-01.2% -8.1%	0.40	4.44	3.40 4.45	2.9090	-0.0218	-47.0%	0.11	2.00 2.90404
PALMDALE EAST 661412 PLDLCA11 68.58 0.2149 0.9843 66.7% 65.24 71.91 76.835 0.4233 178.7% 0.92 70.27 83.40 0.0054 15.5% 0.12 276 29.3 2.0066 0.0142 -60.6% 0.45 2.23 1.7865	PALMDALE EAST	661412	PLDLCA11	68.58	0.2149	0.9843	66.7%	65.24	71.91	76.8350	0.4233	178.7%	0.92	70.27	83.40	2.8449	0.0054	15.6%	0.12	2.76	2.93	2.0086	-0.0142	-60.6%	0.45	2.23 1.78899
NORMANDY 323633 LSANCA12 48.87 0.2211 1.0130 68.1% 45.44 52.30 62.0537 0.4395 170.1% 0.90 55.24 68.87 4.3848 -0.0255 -64.9% 0.48 4.78 3.99 3.4800 -0.0310 -84.3% 0.59 3.96 2.9997	NORMANDY	323633	LSANCA12	48.87	0.2211	1.0130	68.1%	45.44	52.30	62.0537	0.4395	170.1%	0.90	55.24	68.87	4.3848	-0.0255	-64.9%	0.48	4.78	3.99	3.4800	-0.0310	-84.3%	0.59	3.96 2.99973
PLACENTIA 714767 PLCNCA11 55.70 0.2235 0.8691 60.9% 52.24 59.17 66.1166 0.4552 150.6% 0.86 59.06 73.17 3.9657 -0.0286 -64.8% 0.48 4.41 3.52 3.1768 -0.0231 -54.1% 0.41 3.53 2.8194	PLACENTIA	714767	PLCNCA11	55.70	0.2235	0.8691	60.9%	52.24	59.17	66.1166	0.4552	150.6%	0.86	59.06	73.17	3.9657	-0.0286	-64.8%	0.48	4.41	3.52	3.1768	-0.0231	-54.1%	0.41	3.53 2.81946
JACUMBA 619746 JCMBCA11 43.49 0.2291 0.9528 65.2% 39.94 47.05 61.1191 0.8785 346.9% 1.00 47.50 74.74 3.8591 0.0563 184.0% 0.92 2.99 4.73 2.8168 0.0029 13.1% 0.10 2.77 2.8621	JACUMBA	619746	JCMBCA11	43.49	0.2291	0.9528	65.2%	39.94	47.05	61.1191	0.8785	346.9%	1.00	47.50	74.74	3.8591	0.0563	184.0%	0.92	2.99	4.73	2.8168	0.0029	13.1%	0.10	2.77 2.86218
MUCKK0 BAY 8053/8 MKBACA11 60.02 0.2297 0.8298 58.7% 56.46 63.58 71.0343 0.8090 350.9% 1.00 58.49 83.57 3.1641 -0.0522 -1.28.4% 0.79 3.97 2.35 2.5336 -0.0635 -176.9% 0.91 3.52 1.526	MURRO BAY	805378	MRBACA11	60.02	0.2297	0.8298	58.7%	56.46	63.58	71.0343	0.8090	350.9%	1.00	58.49	83.57	3.1641	-0.0522	-128.4%	0.79	3.97	2.35	2.5336	-0.0635	-176.9%	0.91	3.52 1.54892
питанции особливовалитион политиона общи около в 1.30 0.2017 0.8508 05.99% 47.71 54.89 64.6139 0.364.3 121.8% 0.77 58.97 70.26 4.0783 0.0924 22.97% 0.97 25.5 551 3.1568 0.0044 2.34% 0.97 1.400/	ALBANY	510001	ALBYCA11	51.30	0.2305	0.8508	59,9%	47.71	54.89	64,6139	0.3643	121.8%	0.65	58.97	70.26	4.0783	0.0924	-34.1%	0.20	2,65	3.37 5,51	3,1568	0.0804	234,8%	0.23	2.04 3.3653



Pct cleared within 24 hrs (actual) Pct cleared within 24 hrs (adjusted) Days to Clear 90% (actual) Days	to Clear 90% (adjusted)
Wire Center Name Wire Ctr CLLI Mean Val Coef t-stat Conf. 1Q10 Val 4Q17 Val Mean Val Coef t-stat Conf. 1Q10 Val 4Q17 Val Mean Val Coef	t-stat Conf. 1Q10 Val 4Q17 Val
SAN CLEMENTE 949776 SNCLCA12 55.73 0.2336 0.7382 53.4% 52.11 59.35 65.8767 0.3789 120.0% 0.76 60.00 71.75 3.7781 0.0255 48.9% 0.37 3.38 4.17 3.2188 0.0171	33.7% 0.26 2.95 3.48454
FREMONT MAIN 510014 FRMTCA11 60.71 0.2370 0.8181 58.0% 57.04 64.38 71.8870 0.3503 107.5% 0.71 66.46 77.32 3.1343 0.0488 137.2% 0.82 2.38 3.89 2.3928 0.0381	124.2% 0.78 1.80 2.98312
BEAR VLLY SPRING 661403 BVSPCA11 41.73 0.2374 0.8166 57.9% 38.05 45.41 60.2972 0.7440 253.2% 0.98 48.77 71.83 4.9510 -0.0211 32.7% 0.25 5.28 4.62 3.7675 -0.0551	101.5% 0.68 4.62 2.91306
SAN MARTIN 408136 SNMACA11 43.81 0.2384 0.9532 65.2% 40.11 47.50 58.6018 0.7694 355.2% 1.00 46.37 70.84 3.6217 0.0504 159.3% 0.88 2.84 4.40 2.7609 0.0306	162.2% 0.89 2.31 3.25443
01-30/01/2017 14000 TRENCAIZ 33:30 0.2400 0.0931 30:7/ 03:37 03:37 03:37 03:07 17:003 0.1411 200.17% 0.36 00.29 03:27 3:3044 0.0214 40:7% 0.37 3:34 4:01 3:0499 0.0117	40.5% 0.51 2.77 5.51659
LA HONDA 650021 LAHNCA11 40.92 0.2465 0.6920 50.6% 37.10 44.74 64.0681 1.0621 328.0% 1.10 47.61 80.53 4.3615 0.0480 76.5% 0.55 3.62 5.11 3.5433 0.0358	75.4% 0.54 2.99 4.09852
TUSTIN 11 714798 TUSTCA11 55.29 0.2467 0.8879 61.9% 51.47 59.12 66.3050 0.5806 197.7% 0.94 57.31 75.30 3.8806 -0.0198 -40.0% 0.31 4.19 3.57 3.0941 -0.0286	-60.5% 0.45 3.54 2.65007
CALABASAS LAS VIRGEN818665 CLBSCA50 59.68 0.2509 0.9209 63.6% 55.79 63.57 70.0497 0.2883 92.5% 0.64 65.58 74.52 3.2980 0.0169 51.1% 0.39 3.04 3.56 2.5582 0.0185	54.4% 0.41 2.27 2.84454
ROSEDALE 661361 BKFDCA17 53.70 0.2528 0.9779 66.4% 49.78 57.62 62.9667 0.5168 190.3% 0.93 54.96 70.98 3.9142 -0.0420 -84.1% 0.59 4.57 3.26 3.2003 -0.0516	113.2% 0.73 4.00 2.40005
INOLEVICUD 310619 IGNUCAUI 94.25 0.2049 I.0050 /1.4% 0.0050 16.9 00.9350 0.57/4 252.9% 0.97 50.00 7.5.90 4.3041 -0.0303 -0.1.% 0.40 4.81 5.87 3.4034 -0.0440 I.0010 -0.1.% 0.40 4.81 5.87 3.4034 -0.0440 I.0010 -0.1.% 0.41 5.29 5.40 5.40 5.40 5.40 5.40 5.40 5.40 5.40	-93.7% 0.04 4.12 2.75100 116.0% 0.75 1.03 3.00144
SEQUIDI PARK ASH MITI 559152 ASMITCA11 2407 02569 0.5476 12/20 2018 2815 48 8760 12476 227.6% 0.97 30.00 68 68 4.680 -0.087 -76.3% 0.55 5.05 385 3.7816 0.0730	84.6% 0.60 2.71 4.96976
HAWTHORNE 310618 HWTHCA01 53.77 0.2645 1.1149 72.7% 49.67 57.87 66.5644 0.5122 201.1% 0.95 58.63 74.50 4.2826 -0.0284 -60.2% 0.45 4.72 3.84 3.4675 -0.0421	-93.5% 0.64 4.12 2.81437
MISSION/SO.PAS. 626660 SPSDCA11 54.28 0.2653 0.9327 64.2% 50.16 58.39 69.7262 0.4351 138.4% 0.82 62.98 76.47 3.9658 -0.0456 -80.9% 0.58 4.67 3.26 3.0377 -0.0444	-86.5% 0.61 3.73 2.35018
ANTIOCH 925003 ANTCCA11 60.99 0.2664 1.1539 74.3% 56.86 65.11 70.6412 0.2940 124.0% 0.78 66.08 75.20 2.9987 0.0337 121.3% 0.77 2.48 3.52 2.3305 0.0348	151.5% 0.86 1.79 2.86927
BEERKLEY 510004 BKLYCA01 55.24 0.2669 0.9337 64.2% 51.10 59.38 67.7216 0.4724 165.1% 0.89 60.40 75.04 3.7265 0.0781 203.6% 0.95 2.52 4.94 2.8650 0.0699	205.2% 0.95 1.78 3.94804
PLEASANTON BAY SI 925047 PLINCAT2 61.57 0.2669 1.1391 7.3.% 57.43 65.71 7.25493 0.5073 226.3% 0.97 64.69 80.41 2.8507 0.0049 25.2% 0.20 2.77 2.93 2.1318 0.0005	3.0% 0.02 2.12 2.13918
LCOI 209191 LCOICAOI 30.47 0.2012 0.3333 04.3% 40.33 04.01 05.3144 0.3015 202.1% 0.35 35.31 12.40 3.3046 -0.0012 -20.3% 0.10 4.10 3.07 3.1012 -0.0234 DITTSRIBC MAIN 957049 DSRGCADI 58.99 0.2575 1.0008 60.4% 54.84 63.14 69.5408 0.354 121.5% 0.77 64.54 74.62 3.0583 0.017 67.8% 0.50 2.79 3.32 2.3013 0.0119	-90.1% 0.07 5.52 2.73004 50.2% 0.38 2.14 2.50417
BUENA PARK 714710 BNPKCA11 51.14 0.2684 1.0208 68.5% 46.98 55.30 63.5863 0.6129 206.2% 0.95 54.09 73.09 4.4035 -0.0081 -15.3% 0.12 4.53 4.28 3.4763 -0.0120	-23.9% 0.19 3.66 3.29093
FORTUNA 707293 FTUNCA11 59.50 0.2684 1.0198 68.4% 55.34 63.66 71.3642 0.5174 219.6% 0.96 63.34 79.38 2.8385 0.0183 75.0% 0.54 2.55 3.12 2.1433 0.0019	12.7% 0.10 2.11 2.17275
CORONA DEL MAR 949722 CRDMCA11 54.53 0.2665 0.9431 64.7% 50.37 58.69 64.2619 0.4101 127.4% 0.79 57.91 70.62 3.8744 -0.0144 -29.8% 0.23 4.10 3.65 3.1035 -0.0167	-35.9% 0.28 3.36 2.84506
LIVERMORE 925025 LVMRCA11 59.32 0.2692 1.0289 68.9% 55.15 63.50 69.0271 0.4154 163.3% 0.89 62.59 75.47 2.9524 0.0085 38.5% 0.30 2.82 3.08 2.2563 0.0033	17.1% 0.13 2.20 2.30823
LOS BANOS 209193 LSBNCA12 57.72 0.2726 0.9685 66.0% 53.50 61.95 66.7727 0.4007 135.4% 0.81 60.56 72.98 3.2207 -0.0296 -107.4% 0.71 3.68 2.76 2.5524 -0.0180	-88.0% 0.61 2.83 2.27363
UCHAPTMAIN 14(39 URINGUATI 33.36 U.2/1/2 I.U419 094/% 31.09 350.06 07.460U U.3003 19U.07% U.33 36.06 /0.29 3.6132 -0.0436 -957.% U.53 4.30 3.14 2.9035 -0.0433 -0.0431	-18.0% 0.14 3.61 3.32414
SILVERADO 774797 SILVRCA11 3981 02777 0765 50% 3551 4412 600403 04993 1050% 0.70 5230 6778 42466 -0.0451 -951% 0.65 4.95 3,55 3,2406 -0.0585	-132.4% 0.80 4.15 2.33423
LAMONT 661372 LAMTCA11 47.79 0.2783 0.9759 66.3% 43.48 52.11 58.8765 0.6474 218.5% 0.96 48.84 68.91 4.2715 -0.0458 -76.8% 0.55 4.98 3.56 3.4021 -0.0523	-100.3% 0.68 4.21 2.59099
BREA 714709 BREACA12 52.85 0.2799 1.1399 73.7% 48.51 57.18 64.6670 0.5349 189.6% 0.93 56.38 72.96 4.1413 -0.0431 -92.1% 0.64 4.81 3.47 3.1844 -0.0459	-100.6% 0.68 3.90 2.47249
WEBSTER 323631 LSANCA10 47.58 0.2800 1.4424 84.1% 43.24 51.92 62.6038 0.6229 291.8% 0.99 52.95 72.26 4.7421 -0.0078 -14.9% 0.12 4.86 4.62 3.6181 -0.0308	-67.5% 0.50 4.10 3.14053
BRENTWOOD 925007 BRWDCA12 58,94 0.2824 1.1062 72.3% 54.56 63.32 68.4849 0.3696 136.7% 0.82 62.76 74.21 3.1872 0.0163 43.3% 0.33 2.93 3.44 2.5842 0.0171	44.4% 0.34 2.32 2.84926
PRESIVO MIAIN 309100 FRSNCAU1 49.93 0.2602 1.0493 09.06 40.54 94.32 01.1/20 0.4204 136.4% 0.02 50.20 06.23 4.1424 -0.0227 -0.14% 0.40 4.31 5.76 5.2/97 -0.0360 EDEDENEID 91100 CNEDPOALI 45.29 0.9474 1328 90.8% 41.41 50.23 57.4/20 0.4921 156.6% 0.87 5.00 63.00 4.294 0.4156 57 8% 0.43 4.48 3.08 3.2584 0.0156	121.8% U.17 3.88 2.08175 68.8% 0.50 3.60 3.11715
DEMON 7/4701 ANHORANI 5624 0286 1057 70.2% 5182 6067 671510 0568 1876% 0.93 585 257578 3734 -0.025 -5757% 0.43 412 334 2.9278 -0.036	-75.6% 0.54 3.43 2.42213
SAN BRUNO 650055 SNBUCA02 61.12 0.2861 1.0387 69.3% 56.69 65.56 75.2021 0.4219 173.4% 0.91 68.66 81.74 3.0249 0.0072 27.8% 0.22 2.91 3.14 2.2018 0.0226	114.5% 0.74 1.85 2.55283
MONTEREY 831115 MTRYCA01 57.50 0.2881 1.0694 70.7% 53.04 61.97 68.1449 0.4749 163.3% 0.89 60.78 75.51 3.6069 0.0084 20.8% 0.16 3.48 3.74 2.8612 -0.0002	-0.6% 0.00 2.86 2.8581
BETHEL ISLAND 925008 BTISCA11 52.39 0.2898 1.1706 74.9% 47.90 56.88 62.5080 0.2603 102.9% 0.69 58.47 66.54 3.6188 0.0044 10.1% 0.08 3.55 3.69 2.8970 -0.0020	-5.4% 0.04 2.93 2.86531
MOORPARK 805377 MRPKCA12 60.79 0.2958 1.1620 74.6% 56.21 65.38 71.4871 0.4754 190.1% 0.93 64.12 78.86 3.0393 -0.0543 -242.9% 0.98 3.88 2.20 2.2264 -0.0377	181.8% 0.92 2.81 1.64194
DEVERLT MILLS 31000/ BVMLCH01 40:00 0.29/0 1.30/9 07.3% 43.99 30.21 03.07/4 0.0000 300.5% 1.00 53.41 73.74 4.3200 -0.0000 -13.6% 0.11 4.03 4.43 3.3009 -0.0200	-59.3% 0.44 4.02 3.15122
DEWHALL 60140 JULICANI 6320 2366 13151 802% 57.69 694 731515 05444 233.8% 0.97 6471 81.59 2718 -0.0132 -48.9% 0.37 3.18 2.77 2.3377 -0.0118	-47.8% 0.36 2.52 2.15488
SUISUN CITY 707324 SUISCA11 58.21 0.2997 0.7249 52.6% 53.56 62.85 67.1204 0.4212 111.9% 0.73 60.59 73.65 4.4299 0.1559 134.7% 0.81 2.01 6.85 3.4600 0.1181	118.9% 0.76 1.63 5.28986
LAKE/PASADENA 626651 PSDNCA12 54.78 0.3020 1.0880 71.5% 50.10 59.46 68.3058 0.5921 195.4% 0.94 59.13 77.48 3.9026 -0.0402 -71.9% 0.52 4.53 3.28 3.0635 -0.0554	-115.3% 0.74 3.92 2.20407
CARMEL JUNIPERO 831105 CRMLCA11 51.63 0.3031 1.1393 73.7% 46.94 56.33 65.3167 0.6540 223.0% 0.97 55.18 75.45 4.6529 0.1005 139.9% 0.83 3.09 6.21 2.9906 0.0005	2.1% 0.02 2.98 2.99895
YORBA LINDA 7/4802 YRLNCA11 58.27 0.3034 1.1475 74.0% 53.57 62.97 69.1920 0.4761 164.3% 0.89 61.81 76.57 3.5860 -0.0282 -72.3% 0.52 4.02 3.15 2.7847 -0.0321	-81.7% 0.58 3.28 2.28685
ELIONO 949/31 ELINCATI 59./3 U.3040 T.0521 59.9% 55.02 54.44 56.8491 U.5403 180.8% U.92 50.4/ /1.22 54.955 U.0256 49.5% U.526 3.5 2.6 2.6 3.5 U.01/9	19.1% U.15 2.72 2.96647 97.4% 0.66 3.57 2.3213
TWAIN HARTE 20933 TWHCA11 4159 0.3102 1080 1717% 3679 4640 59 4076 0.9313 317.8% 100 45.77 424 5655 0.0569 86.3% 0.61 4.68 6.45 4.1065 0.0075	-16.4% 0.13 4.22 3.99018
BAYWOOD PARK 805362 BYPKCA11 59.65 0.3107 1.0922 71.7% 54.84 64.47 71.2423 0.7454 293.9% 0.99 59.69 82.80 3.0425 -0.0501 -135.4% 0.81 3.82 2.27 2.4164 -0.0554	-165.4% 0.89 3.27 1.55808
MARINA 831113 MARNCA11 56.11 0.3108 1.1407 73.7% 51.29 60.92 66.4823 0.4432 143.5% 0.84 59.61 73.35 3.7313 0.0130 32.5% 0.25 3.53 3.93 2.9171 0.0193	50.6% 0.38 2.62 3.21555
APTOS 831100 APTSCA12 51.69 0.3242 1.1096 72.4% 46.66 56.71 65.3385 0.5397 184.6% 0.93 56.97 73.70 4.3155 0.0570 105.1% 0.70 3.43 5.20 3.3969 0.0476	117.3% 0.75 2.66 4.13408
ARNOLD 209151 ARNLCA11 32.36 0.3250 1.2500 77.9% 27.32 37.40 56.3695 0.8818 319.6% 1.00 42.70 70.04 6.3541 0.0076 10.5% 0.08 6.24 6.47 5.0214 -0.0053	-8.5% 0.07 5.10 4.93904
ANGELES 323641 LSANCA34 51.89 0.3265 1.1811 75.3% 46.82 56.95 63.4323 0.5821 208.1% 0.95 54.41 72.46 4.2423 -0.0489 81.7% 0.58 5.00 3.48 3.3822 -0.0591	·110.6% 0.72 4.30 2.46622
ГГГСЭЛУО Е ГОДИКСЬ 3 0391/2 Г. ГОЛИКСА11 4630 0.3245 1.1453 7.39% 41/0 50.00 01./222 0.0.122 1/1.37% 0.90 53./0 09.00 4.0/49 -0.0403 -101.5% 0.08 4./0 3.45 3.2004 -0.0403 -0.0041 -0.07403 -0.0412 -0.0412 -0.7403 -0.0412 -0.7403 -0.0412 -0.7403 -0.0412 -0.7403 -0.0412 -0.7403 -0.0412 -0.040	-147.1% 0.85 3.92 2.48914
WILDOW PASS 925050 PSBGCA11 56.02 0.3347 1279 79.0% 50.83 61.20 67.0116 0.3396 117.5% 0.75 61.75 72.28 3.4471 0.0374 76.0% 0.55 2.87 4.03 2.5780 0.0227	82.0% 0.58 2.23 2.92957
EXPORT/OILDALE 661383 OLDLCA11 51.33 0.3349 1.3858 82.4% 46.14 56.52 62.4640 0.5778 217.7% 0.96 53.51 71.42 4.2185 -0.0454 -80.0% 0.57 4.92 3.52 3.3902 -0.0456	-89.0% 0.62 4.10 2.68404
FARMERSVILLE 559165 FRVLCA11 51.36 0.3351 1.1390 73.7% 46.16 56.55 60.6609 0.5747 176.6% 0.91 51.75 69.57 3.7640 -0.0398 -79.5% 0.57 4.38 3.15 3.0170 -0.0573	-128.3% 0.79 3.91 2.12899
SAN ARDO 831124 SNARCA11 37.83 0.3362 0.9416 64.6% 32.78 43.20 50.4897 0.6865 156.3% 0.87 40.17 61.45 5.0870 -0.0629 -120.0% 0.76 6.03 4.08 3.8318 -0.0551	-114.0% 0.74 4.66 2.95249
TULARE 559231 TULRCA11 48.93 0.3367 1.5142 86.0% 43.71 54.15 59.5929 0.5593 245.8% 0.98 50.92 68.26 3.7994 -0.0467 -133.3% 0.81 4.52 3.08 3.1268 -0.0530	·148.9% 0.85 3.95 2.30534
PNICULAUS 3041 NULSUA12 33:50 U33719 U.337 53.376 34.72 40.20 55.6129 U8063 1353976 U.94 42.39 59.24 4.511/ UU/51 127.7% U.99 3.35 5.618 3.567/ U.396 Bakkerspield Werppatric 661356 BKEPCol1 49.45 0.3431 1.2068 76.3% 44.15 54.78 60.5448 0.6468 223.1% 0.97 50.64 70.51 4.1880 -0.0475 -90.7% 0.63 4.92 3.45 3.3044 -0.0599	-128.9% 0.79 4.23 2.37321



										Ta	able 4A	.8 (page	8 of 10)												
				Pct cle	ared within	n 24 hrs (ad	ctual)			Pct clea	red within	24 hrs (adj	usted)			Day	/s to Clear	90% (actual	I)			Days	to Clear 9	0% (adjuste	d)
Wire Center Name	Wire Ctr	CLLI	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	Q10 Val 40	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	Q10 Val 4Q17 Val
LA PALMA	714703	ANHMCA12	57.93	0.3444	1.2094	76.4%	52.59	63.27	66.9929	0.4640	151.4%	0.86	59.80	74.18	3.8414	-0.0450	-85.9%	0.60	4.54	3.14	3.0217	-0.0371	-74.1%	0.54	3.60 2.44648
SMARTVILLE	530507	SMAVCA11	44.65	0.3458	0.8403	59.3%	39.29	50.01	63.0133	0.5541	157.8%	0.88	54.43	71.60	4.2136	0.1059	230.6%	0.97	2.57	5.86	3.2086	0.0723	218.1%	0.96	2.09 4.32866
ROSAMOND	661388	RSMDCA11	51.32	0.3473	1.5273	86.3%	45.93	56.70	62.2663	0.6405	256.7%	0.98	52.34	72.19	3.9215	-0.0660	-131.0%	0.80	4.94	2.90	3.0580	-0.0694	-163.9%	0.89	4.13 1.98203
	209202	DI TNCA12	36.69	0.3514	0.8903	62.0%	31.24	42.13	62.1390 78.7756	0.6132	176.2%	0.91	52.63	71.64	0.0750	0.1227	76.7% 68.1%	0.55	4.77	8.58	3.7685	-0.0056	-13.1%	0.10	3.86 3.68143
PLYMOUTH MAIN	209212	PLMOCA11	41.36	0.3604	1.1632	74.6%	35.77	46.94	62.9587	0.8303	305.5%	1.00	50.09	75.83	5.0591	0.0012	2.1%	0.02	5.04	5.08	3.7475	0.0163	46.1%	0.35	3.49 4.00086
CASTAIC	661408	CSTCCA11	64.59	0.3623	1.4083	83.1%	58.97	70.20	74.8790	0.6322	256.0%	0.98	65.08	84.68	2.7805	-0.0042	-16.6%	0.13	2.85	2.72	2.1338	-0.0241	-99.3%	0.67	2.51 1.7604
PINE VALLEY	619766	PNVYCA11	43.57	0.3676	1.7181	90.4%	37.87	49.26	61.1503	0.6865	302.1%	0.99	50.51	71.79	3.9843	0.0113	41.5%	0.32	3.81	4.16	3.1228	-0.0101	-44.0%	0.34	3.28 2.96704
FREMONT ADAMS	510015	FRMTCA12	59.37	0.3691	1.3616	81.7%	53.65	65.10	70.5430	0.4190	132.6%	0.81	64.05	77.04	3.3509	0.0451	103.9%	0.69	2.65	4.05	2.5656	0.0281	78.4%	0.56	2.13 3.00098
SAN RAMON	925074	SNRMCA11	60.79	0.3695	1.4037	83.0%	55.06 30.20	66.51 50.66	/1./636	0.54/1	206.1%	0.95	63.28	80.24	3.1283	-0.0008	-2.7%	0.02	3.14	3.12	2.3567	-0.0020	-9.0%	0.07	2.39 2.32551
DOUGLAS	310613	ELSGCA12	44.93 59.52	0.3090	1.5133	94.0% 86.0%	53.20	65.27	71 1288	0.5243	212 1%	0.96	49.00	79.26	3 9454	-0.0447	-112.6%	0.03	4.67	4.93	2 9910	-0.0190	-42.1%	0.32	3 71 2 2711
METTLER	661360	BKFDCA15	42.57	0.3719	1.2737	78.8%	36.80	48.33	54.3098	0.7448	256.9%	0.98	42.77	65.85	4.3115	0.0313	52.9%	0.40	3.83	4.80	3.5116	0.0138	23.2%	0.18	3.30 3.72609
CHICO MAIN	530438	CHICCA01	56.86	0.3737	1.2010	76.1%	51.07	62.65	69.1365	0.6288	220.2%	0.96	59.39	78.88	3.6237	0.0278	68.6%	0.50	3.19	4.05	3.0044	0.0379	91.5%	0.63	2.42 3.59184
VINA	530517	VINACA12	54.09	0.3778	0.6767	49.6%	48.23	59.95	74.5421	0.9598	204.2%	0.95	59.67	89.42	3.8694	-0.0008	-1.0%	0.01	3.88	3.86	2.8529	-0.0001	-0.2%	0.00	2.85 2.8516
CLAYTON	925081	CYTNCA11	50.13	0.3803	1.4888	85.3%	44.24	56.03	63.9612	0.7102	264.4%	0.99	52.95	74.97	3.5172	-0.0263	-111.1%	0.72	3.92	3.11	2.8433	-0.0206	-95.4%	0.65	3.16 2.52406
ORANGE WEST	714760	ORNGCA13	56.87	0.3809	1.5779	87.5%	50.96	62.77	68,0000	0.6509	240.5%	0.98	58.45	78.62	3.6317	-0.0473	-109.9%	0.72	4.36	2.90	2.8208	-0.0554	-134.5%	0.81	3.68 1.96253
CENTURY CITY	310663	WLANCA01	51.45	0.3861	2.0765	95.4%	45.47	57.43	64.3619	0.6530	321.6%	1.00	54.24	74.48	4.3570	-0.0230	-46.7%	0.36	4.03	4.00	3.4037	-0.0367	-83.5%	0.59	3.97 2.83557
FRAZIER PARK	661371	FZPKCA11	50.50	0.3886	1.4877	85.3%	44.48	56.52	62.8919	0.5023	189.1%	0.93	55.11	70.68	3.7697	-0.0762	-202.3%	0.95	4.95	2.59	3.0027	-0.0808	-188.0%	0.93	4.26 1.74981
LEBEC	661373	LEBCCA11	45.67	0.3902	1.2190	76.8%	39.62	51.71	57.2528	0.6546	211.1%	0.96	47.11	67.40	4.4123	-0.0815	-170.3%	0.90	5.67	3.15	3.6347	-0.0697	-148.9%	0.85	4.71 2.55511
BALBOA	949706	BALBCA01	51.34	0.3970	1.4393	84.0%	45.19	57.49	62.7923	0.5516	186.9%	0.93	54.24	71.34	4.2342	-0.0651	-129.4%	0.79	5.24	3.23	3.2799	-0.0526	-111.2%	0.73	4.09 2.46499
IONE	209179	IONECA11	44.67	0.4000	1.1225	73.0%	38.47	50.87	61.4778	0.8375	270.1%	0.99	48.50	74.46	4.9418	0.0261	45.7%	0.35	4.54	5.35	3.5534	0.0308	90.7%	0.63	3.08 4.0302
	559194 661357	MADRCA11	62.95	0.4027	1.4249	83.6%	56.71 47.50	60.10	71.3417	0.6016	219.7%	0.96	62.02 53.10	80.67	3.0010	-0.0378	-136.1%	0.82	3.59	2.41	2.5155	-0.0489	-170.3%	0.90	3.2/ 1./5/8/
GREEN/PASADENA	626650	PSDNCA11	57.95	0.4091	1.5448	86.7%	51.61	64.30	69.9178	0.5433	189.8%	0.93	61.50	78.34	3.7021	-0.0558	-109.2%	0.00	4.57	2.84	2.9249	-0.0523	-112.3%	0.73	3.73 2.11491
MISSION VIEJO	949806	MSVJCAAT	59.71	0.4102	1.2841	79.1%	53.35	66.07	68.3814	0.5275	161.0%	0.88	60.20	76.56	3.6153	0.0089	17.0%	0.13	3.48	3.75	2.8724	0.0041	8.5%	0.07	2.81 2.9362
HYDESVILLE	707299	HYVLCA11	49.54	0.4141	1.5458	86.8%	43.12	55.95	64.8424	0.6052	233.4%	0.97	55.46	74.22	3.3290	0.0128	46.5%	0.36	3.13	3.53	2.6029	-0.0092	-43.1%	0.33	2.75 2.45969
JAMESTOWN	209182	JMTWCA11	44.32	0.4173	1.4575	84.5%	37.85	50.79	60.5593	1.1614	450.3%	1.00	42.56	78.56	4.9733	0.0202	36.6%	0.28	4.66	5.29	3.8319	-0.0140	-34.4%	0.27	4.05 3.61541
COLUMBUS	661358	BKFDCA13	47.69	0.4247	1.8069	92.0%	41.11	54.28	58.6800	0.6556	250.5%	0.98	48.52	68.84	4.2517	-0.0700	-143.9%	0.84	5.34	3.17	3.4162	-0.0752	-164.3%	0.89	4.58 2.25073
VISALIA MAIN	559235	VISI CA11	49.03	0.4207	1.4029	93.9%	45.02	60.42	63 3426	0.6646	263.4%	0.98	40.24 53.04	73.64	3 6987	-0.0442	-142.6%	0.55	4.77	2 79	2 9877	-0.0536	-112.2%	0.73	3 91 2 06687
LOLETA	707303	LOLTCA11	47.07	0.4408	1.2025	76.2%	40.24	53.90	63.9207	1.0935	336.0%	1.00	46.97	80.87	2.9889	-0.0286	-118.3%	0.75	3.43	2.54	2.3384	-0.0345	-130.7%	0.80	2.87 1.80416
CANOGA PARK	818610	CNPKCA01	61.70	0.4427	1.7067	90.2%	54.84	68.57	72.7272	0.6479	240.9%	0.98	62.68	82.77	3.4525	-0.0526	-121.8%	0.77	4.27	2.64	2.7554	-0.0491	-116.0%	0.75	3.52 1.99476
BALDWIN	559169	FRSNCA11	49.94	0.4474	1.6706	89.5%	43.01	56.88	61.7873	0.5655	199.9%	0.95	53.02	70.55	4.2410	-0.0395	-105.1%	0.70	4.85	3.63	3.2855	-0.0467	-157.4%	0.87	4.01 2.56156
CLINTON	323644	LSANCA56	52.20	0.4549	1.8097	92.0%	45.17	59.27	66.2138	0.6971	248.9%	0.98	55.44	77.05	4.3138	-0.0420	-70.4%	0.51	4.96	3.66	3.3155	-0.0496	-96.3%	0.66	4.08 2.545
CORNING	559157 530440	CRINCA11 CRNGCA12	41.68 54.00	0.4565	1.7694	91.3% 82.5%	34.60 46.82	48.75	53.2013 69.4514	0.5771	238.0%	0.98	44.26 56.54	62.15 82.36	4.2063	-0.0754	-162.5% 19.6%	0.89	5.37	3.04	3.3540	-0.0691	-200.8%	0.95	4.43 2.2824 2.85 3.32647
MADERA BONADELLE	559243	MADRCA12	55.55	0.4642	1.8722	92.9%	48.35	62.74	66.5790	0.6425	240.1%	0.98	56.62	76.54	3.2793	-0.0381	-113.3%	0.73	3.87	2.69	2.6362	-0.0494	-166.2%	0.89	3.40 1.87045
RED BLUFF	530494	RDBLCA01	57.33	0.4652	1.5482	86.8%	50.12	64.54	72.3741	0.7229	267.9%	0.99	61.17	83.58	3.8447	-0.0030	-4.8%	0.04	3.89	3.80	2.7319	-0.0043	-13.2%	0.10	2.80 2.66515
SHERMAN OAKS VENT	UF 818666	SHOKCA05	59.92	0.4680	1.7705	91.4%	52.67	67.17	72.2104	0.6995	266.4%	0.99	61.37	83.05	3.3228	-0.0692	-173.0%	0.91	4.39	2.25	2.5721	-0.0610	-165.1%	0.89	3.52 1.62692
BUSH	714788	SNANCA01	56.94	0.4711	1.6175	88.4%	49.64	64.25	67.1472	0.7113	230.4%	0.97	56.12	78.17	3.7101	-0.0360	-81.8%	0.58	4.27	3.15	2.8988	-0.0343	-86.0%	0.60	3.43 2.36647
	559166 805352	FRBHCA11	57.01	0.4766	1.4563	84.5%	49.62	64.40	64.0105 71.2610	0.6192	185.5%	0.93	54.41 57.10	73.61	3.3989	-0.01/5	-44.3%	0.34	3.67	3.13	2.5382	-0.0349	-149.1%	0.85	3.08 1.99719
SIMI	805393	SIMICA11	64.65	0.4874	2.1975	96.4%	57.10	72.21	74.8020	0.5463	232.3%	0.97	66.33	83.27	2.9046	-0.0393	-150.1%	0.86	3.51	2.30	2.0834	-0.0273	-123.2 %	0.81	2.51 1.6607
TRES PINOS	831140	TRPSCA11	46.44	0.4900	1.5328	86.5%	38.84	54.03	62.1191	0.5907	162.0%	0.88	52.96	71.28	4.3494	0.0355	64.1%	0.47	3.80	4.90	3.8710	0.0290	53.4%	0.40	3.42 4.32056
CLOVIS	559159	CLVSCA11	55.97	0.4904	1.9126	93.5%	48.36	63.57	66.6339	0.6042	211.4%	0.96	57.27	76.00	3.4594	-0.0453	-174.7%	0.91	4.16	2.76	2.6288	-0.0364	-178.6%	0.92	3.19 2.06386
PIRU	805386	PIRUCA11	52.70	0.4915	1.0611	70.3%	45.08	60.32	65.8449	0.7652	174.9%	0.91	53.98	77.71	4.1554	-0.0817	-146.4%	0.85	5.42	2.89	3.1020	-0.1170	-273.9%	0.99	4.92 1.28877
LOMITA	310622	LOMTCA11	52.66	0.4933	2.5511	98.4%	45.01	60.31	66.0742	0.6955	327.6%	1.00	55.29	76.85	4.0932	-0.0559	-120.8%	0.76	4.96	3.23	3.2311	-0.0664	-147.6%	0.85	4.26 2.20236
	805364 925012		56.06	0.4938	2.1605	90.1%	44.00	63.80	66 6872	0.6525	403.0% 235.0%	0.97	56.57	63.56 76.80	3.8135	-0.0226	32.4%	0.25	3.40	2.06	2.6570	-0.0543	-144.5%	0.84	2.67 2.39666
CAYUCOS	805366	CYCSCA11	56.66	0.5113	1.4461	84.2%	48.73	64.58	69.5081	1.0566	396.6%	1.00	53.13	85.89	3.2291	-0.0807	-180.7%	0.92	4.48	1.98	2.6013	-0.0771	-206.8%	0.95	3.80 1.40667
MARTINEZ	925030	MRTZCA11	57.64	0.5114	2.1847	96.3%	49.71	65.57	69.7961	0.7122	276.5%	0.99	58.76	80.83	3.2376	-0.0112	-40.1%	0.31	3.41	3.06	2.5036	-0.0140	-58.8%	0.44	2.72 2.28657
AVENAL	559154	AVNLCA12	40.47	0.5128	1.8603	92.8%	32.52	48.42	50.6117	0.9553	358.0%	1.00	35.81	65.42	4.4239	-0.0752	-176.2%	0.91	5.59	3.26	3.6819	-0.0628	-160.9%	0.88	4.65 2.70924
NORTHRIDGE	818648	NORGCA11	60.96	0.5129	2.1276	95.9%	53.01	68.91	72.1131	0.7188	287.6%	0.99	60.97	83.25	3.5364	-0.0611	-118.7%	0.76	4.48	2.59	2.7556	-0.0567	-118.8%	0.76	3.63 1.87705
GUSTINE	209174	GUSTCA11	53.82	0.5151	1.8189	92.1%	45.84	61.80	63.9288	0.7294	265.1%	0.99	52.62	75.23	3.7534	-0.0849	-198.9%	0.94	5.07	2.44	3.1129	-0.0608	-174.9%	0.91	4.06 2.16974
SAN LUIS OBISPO	805389	SNI OCA01	59.65	0.5151	2.1251	96.2%	52.12 51.66	67.64	70.0055	0.7236	461.5%	1.00	55 85	84 16	3.5741	-0.0009	-131.1%	0.80	4.00	2.55 2.82	2.9303	-0.0519	-103.8%	0.69	3.74 2.13136
AGOURA	818600	AGORCA11	64.01	0.5157	2.1069	95.7%	56.02	72.01	73.1784	0.6273	245.4%	0.98	63.46	82.90	3.1204	-0.0504	-147.9%	0.85	3.90	2.34	2.5190	-0.0506	-139.8%	0.83	3.30 1.73402
PALMDALE	661384	PLDLCA01	66.59	0.5163	2.3827	97.6%	58.58	74.59	74.9798	0.7026	295.1%	0.99	64.09	85.87	2.8620	-0.0418	-155.1%	0.87	3.51	2.21	2.2091	-0.0552	-225.7%	0.97	3.07 1.35303
SHASTA LAKE	530503	SHLKCA01	39.98	0.5250	1.7579	91.1%	31.84	48.12	61.7931	0.9781	319.5%	1.00	46.63	76.95	5.2360	0.0469	51.6%	0.39	4.51	5.96	4.2805	0.0787	95.6%	0.65	3.06 5.49972
HURNBROOK	530464	HRBKCA11	44.19	0.5269	1.4848	85.2%	36.02	52.36	65.4210	0.9052	309.6%	1.00	51.39	79.45	3.6990	-0.0229	-72.1%	0.52	4.05	3.34	2.8466	-0.0093	-35.2%	0.27	2.99 2.70274
LLONA VALLET	001374	LINVIGATI	04.09	0.5219	2.0003	90.0%	40.00	02.07	10.0000	0.0009	201.3%	0.99	51.11	03.02	4.0024	-0.0090	-0.0%	0.03	4.90	4.00	3.1904	-0.0040	-42.9%	0.33	4.04 Z.94008



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										Т	able 4A	.8 (page	9 of 10)												
				Pct cle	ared within	n 24 hrs (ac	tual)			Pct clea	red within	24 hrs (adj	usted)			Day	ys to Clear	90% (actual	)			Days	s to Clear 9	0% (adjuste	d)
Wire Center Name	Wire Ctr	CLLI	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	Q10 Val 4Q17 Val
SAN ANDREAS	209216	SNADCA11	42.32	0.5283	1.6225	88.5%	34.14	50.51	64.3738	1.1216	465.3%	1.00	46.99	81.76	6.5835	0.1060	61.0%	0.45	4.94	8.23	3.7919	-0.0138	-37.2%	0.29	4.01 3.57862
HIGHLAND	909741	HGLDCA11	53.44	0.5317	2.0427	95.0%	45.20	61.68	63.7353	0.6330	215.1%	0.96	53.92	73.55	3.7242	-0.0867	-162.0%	0.88	5.07	2.38	3.0218	-0.0784	-161.0%	0.88	4.24 1.80673
COLMA	650010	COLACA01	57.47	0.5321	2.4883	98.2%	49.22	65.71	69.9276	0.6770	304.6%	1.00	59.43	80.42	3.2929	-0.0015	-7.1%	0.06	3.32	3.27	2.3826	-0.0025	-13.3%	0.10	2.42 2.34421
REPUBLIC	323643	LSANCA38	54.18	0.5330	2.0626	95.2%	45.92	62.44	69.5946	0.9415	367.9%	1.00	55.00	84.19	4.0195	-0.0653	-131.1%	0.80	5.03	3.01	3.0476	-0.0809	-176.5%	0.91	4.30 1.79383
KNIGHTS FERRY	209184	KNFYCA11	42.77	0.5346	2.0674	83.7%	34.48	51.05	57.6069	0.8448	202.8%	0.95	44.51	70.70	4.4935	-0.0673	-137.5%	0.82	5.54	3.45	3.3491	-0.0367	-111.6%	0.73	3.92 2.77977
LOS MOLINOS	530469	LSMLCA11	55.08	0.5464	1.5069	85.8%	46.61	63.54	71.3504	0.7476	216.1%	0.96	59.76	82.94	3.5520	-0.0119	-28.4%	0.22	3.74	3.37	2.6419	-0.0038	-12.0%	0.10	2.70 2.58361
LE GRAND	209187	LGRDCA11	52.72	0.5654	1.6112	88.3%	43.95	61.48	63.9940	0.7846	207.4%	0.95	51.83	76.16	3.3528	-0.0925	-196.1%	0.94	4.79	1.92	2.6443	-0.0866	-229.9%	0.97	3.99 1.30261
VALLEY CENTER	760799	VLCTCA11	49.40	0.5657	3.2526	99.7%	40.63	58.16	60.8934	0.7040	345.1%	1.00	49.98	71.80	3.5122	-0.0197	-86.3%	0.61	3.82	3.21	2.8427	-0.0198	-92.7%	0.64	3.15 2.5365
MENDOTA	559195	MNDTCA11	57.66	0.5683	2.0355	95.0%	48.85	66.46	65.6129	0.6104	204.1%	0.95	56.15	75.07	3.0466	-0.0371	-148.3%	0.85	3.62	2.47	2.4165	-0.0258	-131.6%	0.80	2.82 2.01606
AGUA DULCE	661351	AGDLCA11	52.02	0.5700	2.9123	99.3%	43.19	60.86	67.8056	0.7625	296.9%	0.99	55.99	79.63	3.41/6	-0.0732	-188.8%	0.93	4.55	2.28	2.7586	-0.0445	-111.5%	0.73	3.45 2.06865
SEASIDE	831117	SESDCA11	58 16	0.5701	1.8405	92.5%	51.57 49.18	67.14	66 3507	0.7835	203.9%	0.99	59.00 56.48	83.29 76.22	3.3792	-0.0311	-00.0%	0.48	3.00	2.90	2.4740	-0.0690	-181.1%	0.92	2.88 2.79567
ACTON	661410	ACTNCA11	59.32	0.5805	2.3226	97.3%	50.32	68.32	70.7349	0.8326	306.2%	1.00	57.83	83.64	3.5250	-0.0744	-176.6%	0.91	4.68	2.37	2.8928	-0.0422	-92.1%	0.64	3.55 2.23928
MOJAVE	661376	MOJVCA01	52.69	0.5818	1.8862	93.1%	43.67	61.71	66.8873	0.8417	278.5%	0.99	53.84	79.93	3.5965	-0.0702	-140.3%	0.83	4.68	2.51	2.8309	-0.0846	-198.2%	0.94	4.14 1.51975
BRISTOL	714789	SNANCA11	55.16	0.5843	2.0689	95.3%	46.10	64.21	65.0017	0.7405	243.8%	0.98	53.52	76.48	3.8268	-0.0619	-139.7%	0.83	4.79	2.87	3.0741	-0.0543	-129.3%	0.79	3.92 2.23278
PLYMOUTH	323634	LSANCA13	55.09	0.5952	2.7801	99.1%	45.89	64.35	67.5394	0.7919	350.2%	1.00	55.30	79.85	4.0900	-0.0550	-110.0%	0.72	4.94	3.24	3.2648	-0.0607	-129.1%	0.79	4.20 2.32116
	209211	PLNDCA11	61.08	0.5953	1.9484	94.0%	51.86	70.31	68.9862	0.6851	223.3%	0.97	58.37	79.61	3.1245	-0.0561	-153.6%	0.87	3.99	2.25	3.5748	0.1221	93.1%	0.64	1.68 5.46685
IVANHOE ELM ST	209204	IVNHCA12	54.04 47.32	0.5987	2 2869	89.4% 97.1%	44.76 37.98	63.32 56.72	57 6036	0.0003	306.2%	1.00	53.80 46.29	74.14 68.98	3.0097	-0.0181	-34.8%	0.27	3.97	3.41	2.9075	-0.0565	-146.1%	0.15	2.86 3.0799
SAN JUAN BAUTISTA	831127	SNJNCA11	50.40	0.6059	2.2846	97.1%	41.01	59.80	61.7734	0.6611	255.4%	0.98	51.53	72.02	3.7112	-0.0376	-127.8%	0.79	4.29	3.13	2.7951	-0.0232	-93.7%	0.64	3.16 2.43519
CULVER CITY	310608	CLCYCA11	55.16	0.6064	2.6855	98.8%	45.76	64.56	70.8669	0.8689	334.1%	1.00	57.40	84.33	4.1262	-0.0801	-166.0%	0.89	5.37	2.88	3.0011	-0.0929	-215.4%	0.96	4.44 1.56152
TORRANCE	310661	TRNCCA11	54.89	0.6077	2.7752	99.1%	45.47	64.31	67.0022	0.8080	351.7%	1.00	54.48	79.53	3.9682	-0.0733	-171.0%	0.90	5.10	2.83	3.1660	-0.0730	-172.2%	0.90	4.30 2.0349
DUNSMUIR	530446	DNSMCA11	52.15	0.6083	2.0020	94.6%	42.72	61.58	69.7990	1.0422	386.7%	1.00	53.64	85.95	3.5254	-0.0146	-48.5%	0.37	3.75	3.30	2.9740	0.0284	78.3%	0.56	2.53 3.41454
CAMPO	619/15	CAMPCA11	45.96	0.6087	2.5947	98.6%	36.52	55.39	59.8702	1.1008	435.5%	1.00	42.81	76.93	4.5522	0.1509	131.4%	0.80	2.21	6.89	2.8231	0.0054	34.8%	0.27	2.74 2.9074
MORAGA	920029 559170	FRSNCA13	53.82	0.6241	2.5119	98.3%	41.09	63.50	64 6349	0.6723	323.0%	0.97	54.40	74.87	3.0894	-0.0432	-103.0%	0.87	4.30	3.02	2.0007	-0.0357	-146.0%	0.00	3.44 2.33314
YREKA	530524	YREKCA11	55.59	0.6316	1.9771	94.3%	45.80	65.38	73.2373	1.0204	374.5%	1.00	57.42	89.05	3.2041	-0.0076	-23.8%	0.19	3.32	3.09	2.4475	-0.0214	-88.0%	0.61	2.78 2.11556
LEMORE MAIN	559188	LEMRCA11	54.17	0.6326	2.5484	98.4%	44.36	63.97	64.1490	0.8076	318.9%	1.00	51.63	76.67	3.5595	-0.0644	-178.4%	0.92	4.56	2.56	2.9225	-0.0692	-196.0%	0.94	3.99 1.85022
LATON	559186	LATNCA11	43.70	0.6333	2.0346	94.9%	33.89	53.52	56.6511	0.8856	293.8%	0.99	42.92	70.38	4.1935	-0.0542	-114.9%	0.74	5.03	3.35	3.2385	-0.0624	-169.1%	0.90	4.21 2.27117
ATWATER	209153	ATWRCA12	54.63	0.6334	2.2714	97.0%	44.81	64.45	65.4037	0.7508	275.3%	0.99	53.77	77.04	3.1637	-0.0649	-241.8%	0.98	4.17	2.16	2.6164	-0.0517	-237.6%	0.98	3.42 1.8154
WEED	530518	WEEDCA01	56.00	0.6342	1.7858	91.6%	46.17	65.83	72.2181	1.0323	416.9%	1.00	56.22	88.22	3.1541	-0.0458	-159.6%	0.88	3.86	2.44	2.3633	-0.0194	-90.5%	0.63	2.66 2.06216
SAN PEDRO	310659	SNPDCA01	51.21	0.6445	3.6802	99.9%	41.22	61.20	64.9043	0.8326	385.9%	1.00	52.00	77.81	4.2058	-0.0682	-151.6%	0.86	5.26	3.15	3.3729	-0.0682	-168.4%	0.90	4.43 2.31512
WALNUT CREEK	925079	WNCKCA11	60.78	0.6470	2.9871	99.5%	50.75	70.80	72.4561	0.7397	322.0%	1.00	60.99	83.92	2.9805	-0.0093	-44.2%	0.34	3.12	2.84	2.3037	-0.0140	-71.7%	0.52	2.52 2.08699
COALINGA	559160	CLNGCA01	43.95	0.6541	2.8922	99.3%	33.81	54.08	56.6034	0.8423	304.9%	1.00	43.55	69.66	4.9359	0.0561	85.4%	0.60	4.07	5.81	3.8990	0.0293	57.9%	0.43	3.45 4.35289
WILMINGTON	310664	WLMGCA01	52.37	0.6548	3.4573	99.8%	42.22	62.52	65.0223	0.8250	356.4%	1.00	52.24	77.81	4.3304	-0.0557	-109.2%	0.72	5.19	3.47	3.4385	-0.0668	-145.6%	0.84	4.47 2.40306
	925042	ORNDCA11	49.61	0.6554	2.8539	99.2%	39.45	59.76	63.5297	0.7567	297.8%	0.99	51.80	75.26	3.8342	-0.0159	-53.5%	0.40	4.08	3.59	2.9304	-0.0110	-44.7%	0.34	3.10 2.76042
GLENDALE	818614	GLDLCA11	59.15	0.6649	2.0921	98.9% QQ 1%	47.25	69.46	07.5200 70.3212	0.6964	278.3%	1.00	56.23	78.32 84.41	3.2400	-0.0298	-99.4%	0.67	4.82	2.78	2.5294	-0.0179	-82.1%	0.58	2.81 2.25163
PLEASANT	323626	LSANCA05	53.81	0.6679	2.6868	98.9%	43.46	64.16	70.5609	0.8760	330.0%	1.00	56.98	84.14	4.2533	-0.0840	-149.3%	0.85	5.55	2.95	3.2144	-0.0881	-176.3%	0.91	4.58 1.8481
MAGNOLIA/N.HLWD.	818647	NHWDCA02	58.34	0.6761	2.6286	98.7%	47.86	68.82	71.5839	1.0035	397.7%	1.00	56.03	87.14	3.6434	-0.0719	-155.6%	0.87	4.76	2.53	2.8697	-0.0719	-165.4%	0.89	3.98 1.75494
PAUMA VALLEY	760764	PALACA11	39.68	0.6764	3.3518	99.8%	29.19	50.16	53.5446	0.7653	346.4%	1.00	41.68	65.41	3.9400	-0.0600	-158.7%	0.88	4.87	3.01	3.2301	-0.0366	-98.8%	0.67	3.80 2.66269
PARADISE PINES	530487	PRDSCA12	49.82	0.6817	2.0508	95.1%	39.25	60.39	68.4956	1.4117	689.7%	1.00	46.61	90.38	4.3414	-0.0012	-2.3%	0.02	4.36	4.32	3.1543	-0.0293	-86.5%	0.61	3.61 2.69973
VAN NUYS	818662	VNNYCA02	61.98	0.6828	2.6551	98.8%	51.40	72.56	73.8832	0.9823	417.4%	1.00	58.66	89.11	3.2748	-0.0339	-102.1%	0.68	3.80	2.75	2.5150	-0.0468	-147.1%	0.85	3.24 1.78915
	051765	PDI VCA11	57.14	0.6963	2 6412	91.8%	41.48	67.94	67 3262	0.8853	292.0%	0.99	54.22	80.44	4.5789	-0.0021	-2.0%	0.02	4.61	4.55	2 9265	-0.0063	-9.1%	0.07	3.21 3.01915
PARADISE MAIN	530486	PRDSCA11	54.64	0.7003	2.0160	94.7%	43.79	65.50	69.5997	1.2364	511.0%	1.00	50.44	88.76	4.1684	0.0435	77.3%	0.55	3.49	4.84	3.3891	0.0366	74.9%	0.54	2.82 3.95669
SHERMAN OAKS	818656	SHOKCA01	58.96	0.7099	3.0984	99.6%	47.96	69.96	72.5237	0.9746	433.9%	1.00	57.42	87.63	3.7514	-0.0729	-162.1%	0.88	4.88	2.62	2.8830	-0.0687	-164.6%	0.89	3.95 1.81808
STONYFORD	530513	STFRCA11	33.66	0.7137	2.0621	95.2%	22.59	44.72	51.0370	0.9177	243.6%	0.98	36.81	65.26	5.6668	0.1073	129.0%	0.79	4.00	7.33	4.0150	0.0601	196.3%	0.94	3.08 4.94601
RICHVALE	530496	RCVACA11	46.53	0.7193	1.1704	74.9%	35.38	57.68	63.1327	1.4358	279.4%	0.99	40.88	85.39	4.6497	0.1112	151.2%	0.86	2.93	6.37	3.1899	0.0458	76.0%	0.55	2.48 3.90039
SOLEDAD	831118	SLDDCA11	52.90	0.7200	2.8219	99.2%	41.74	64.06	63.0944	0.9068	331.4%	1.00	49.04	77.15	4.2767	0.0075	11.8%	0.09	4.16	4.39	3.0949	-0.0222	-61.9%	0.46	3.44 2.75158
BOMBAY BEACH	949725 760856		57.00	0.7240	2.0505	98.7% 97.4%	45.78	61 77	59 7291	0.8343	280.9%	1.00	03.00 42.16	79.74	3.7828	-0.0562	-120.5%	0.76	4.65	2.91	2.9779	-0.0557	-128.4%	0.79	3.84 2.11468
CONCORD	925009	CNCRCA01	60.40	0.7357	3.8243	99.9%	49.00	71.81	71.7887	0.8264	381.2%	1.00	58.98	84.60	2.9247	-0.0132	-69.4%	0.51	3.13	2.72	2.2390	-0.0170	-99.8%	0.67	2.50 1.97556
BURRELL	559242	BURLCA11	37.67	0.7395	2.2746	97.0%	26.21	49.14	50.4692	0.9296	273.5%	0.99	36.06	64.88	4.3898	-0.1372	-254.0%	0.98	6.52	2.26	3.6444	-0.0317	-58.3%	0.44	4.14 3.15262
ADAMS	323635	LSANCA14	53.66	0.7509	3.3309	99.8%	42.02	65.30	68.8034	1.0011	392.3%	1.00	53.29	84.32	4.0772	-0.0701	-140.3%	0.83	5.16	2.99	3.1451	-0.0812	-183.8%	0.92	4.40 1.88656
WALLACE	209236	WLLCCA11	45.84	0.7542	2.1616	96.2%	34.15	57.53	61.7535	0.9493	293.8%	0.99	47.04	76.47	4.8829	-0.0083	-12.9%	0.10	5.01	4.75	3.9838	-0.0009	-1.6%	0.01	4.00 3.97061
	831121	SLNSCA12	60.88	0.7607	2.1467	96.0%	49.09	72.67	/1.8110	1.0786	343.0%	1.00	55.09	88.53	3.3095	-0.0429	-100.9%	0.68	3.98	2.64	2.6960	-0.0424	-109.3%	0.72	3.35 2.0385
BURBANK	818605	BRBNCA11	58 11	0.7675	3.0877	99.9% 99.6%	45.40	70.00	70.6571	0.9180	355.9%	1.00	56 43	84.89	3.6500	-0.0275	-90.9%	0.00	5.02 5.12	2.97	2.8853	-0.0232	-92.9%	0.04	4.13 1.64302
GONZALES	831110	GNZLCA11	55.47	0.7731	2.5113	98.3%	43.48	67.45	64.1219	0.7444	227.8%	0.97	52.58	75.66	4.1381	-0.0400	-69.3%	0.51	4.76	3.52	3.3027	-0.0315	-78.7%	0.56	3.79 2.81436
GRENADA	530460	GRNDCA13	51.82	0.7878	1.8329	92.4%	39.61	64.04	72.0340	0.9152	251.1%	0.98	57.85	86.22	3.7882	-0.0278	-77.1%	0.55	4.22	3.36	2.7390	-0.0473	-154.3%	0.87	3.44 1.97569



										Та	ble 4A.	3 (page '	10 of 10	)											
				Pct cle	ared within	n 24 hrs (ac	tual)			Pct clea	red within	24 hrs (adjı	usted)			Day	ys to Clear	90% (actual)	1			Day	s to Clear 90	)% (adjusted	1)
Wire Center Name	Wire Ctr	CLLI	Mean Val	Coef	t-stat	Conf.	IQ10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	1Q10 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 1	210 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf. 10	Q10 Val 4Q17 Val
DEL REY	559163	DLRYCA11	48.68	0.7896	2,2404	96.8%	36.44	60.92	59.2716	1.1013	285.8%	0.99	42.20	76.34	4.1506	-0.0483	-80.1%	0.57	4.90	3.40	3.2234	-0.0491	-110.1%	0.72	3.98 2.46303
AROMAS	831144	ARMSCA11	53.23	0.7960	2.8103	99.2%	40.89	65.56	66.8308	0.8877	298.6%	0.99	53.07	80.59	3.9965	-0.0205	-42.5%	0.33	4.31	3.68	3.0525	-0.0356	-98.2%	0.67	3.60 2.50021
AXMINSTER	323636	LSANCA15	55.40	0.7962	3.3934	99.8%	43.06	67.75	70.7551	1.0198	393.9%	1.00	54.95	86.56	3.9425	-0.0778	-159.4%	0.88	5.15	2.74	2.9815	-0.0910	-199.9%	0.95	4.39 1.57145
SELMA	559217	SELMCA11	51.82	0.7986	2.5169	98.3%	39.44	64.19	61.2564	0.8480	264.1%	0.99	48.11	74.40	3.8923	-0.0666	-124.5%	0.78	4.92	2.86	3.0481	-0.0608	-175.0%	0.91	3.99 2.10625
GARDENA	310615	GRDNCA01	54.24	0.8007	3.7591	99.9%	41.82	66.65	66.6950	0.8879	376.9%	1.00	52.93	80.46	4.0529	-0.0725	-167.0%	0.90	5.18	2.93	3.2371	-0.0707	-172.4%	0.91	4.33 2.14094
BELL	323604	BELLCA11	55.35	0.8104	3.5656	99.9%	42.78	67.91	68.2522	0.9943	382.5%	1.00	52.84	83.66	3.8760	-0.0951	-205.7%	0.95	5.35	2.40	3.0704	-0.1028	-238.6%	0.98	4.66 1.47699
MOUNT SHASTA	530474	MTSHCA12	55.60	0.8107	2.6554	98.8%	43.03	68.16	70.3866	1.0277	444.7%	1.00	54.46	86.32	3.1846	-0.0277	-104.1%	0.69	3.61	2.76	2.4683	-0.0107	-52.9%	0.40	2.63 2.30231
LA CRESCENTA	818621	LACRCA11	53.37	0.8187	3.4108	99.8%	40.68	66.06	66.9207	1.0518	426.8%	1.00	50.62	83.22	4.0083	-0.1150	-210.3%	0.96	5.79	2.23	3.2404	-0.0925	-180.1%	0.92	4.67 1.80657
HANFORD	559175	HNFRCA01	51.53	0.8211	3.7479	99.9%	38.80	64.25	61.4540	1.0003	447.2%	1.00	45.95	76.96	3.5661	-0.0690	-205.2%	0.95	4.64	2.50	2.9722	-0.0659	-204.5%	0.95	3.99 1.95051
TRINIDAD	707326	TRNDCA11	42.75	0.8236	2.3430	97.4%	29.98	55.51	60.4760	1.1934	381.2%	1.00	41.98	78.97	3.8046	-0.0131	-29.5%	0.23	4.01	3.60	3.6975	0.0542	115.4%	0.74	2.86 4.53795
LANKERSHIM	818646	NHWDCA01	59.86	0.8258	3.2816	99.7%	47.06	72.66	71.8727	1.1222	474.1%	1.00	54.48	89.27	3.4037	-0.0686	-181.7%	0.92	4.47	2.34	2.7249	-0.0687	-190.3%	0.93	3.79 1.65972
COMPTON	310609	CMTNCA01	54.84	0.8271	3.9853	100.0%	42.02	67.66	67.9105	1.0037	455.9%	1.00	52.35	83.47	4.0923	-0.0948	-199.8%	0.95	5.56	2.62	3.1962	-0.1003	-223.1%	0.97	4.75 1.64214
HUNTER	831122	SLNSCA13	54.46	0.8312	2.6910	98.9%	41.58	67.34	67.9849	0.9402	276.9%	0.99	53.41	82.56	3.6052	-0.0263	-61.4%	0.46	4.01	3.20	2.8304	-0.0310	-87.9%	0.61	3.31 2.34925
ORLAND	530483	ORLDCA11	48.45	0.8479	2.6787	98.8%	35.31	61.59	60.7405	1.0599	355.7%	1.00	44.31	77.17	4.5426	0.0345	45.4%	0.35	4.01	5.08	3.7824	0.0365	53.6%	0.40	3.22 4.34758
DINUBA	559164	DINBCA01	55.81	0.8560	2.8770	99.3%	42.54	69.08	64.2687	0.9555	325.8%	1.00	49.46	79.08	3.5699	-0.0889	-184.2%	0.92	4.95	2.19	2.9624	-0.0865	-195.2%	0.94	4.30 1.62208
IMPERIAL	760743	IMPRCA11	56.10	0.8682	2.5817	98.5%	42.64	69.56	67.8213	1.0891	369.0%	1.00	50.94	84.70	4.1209	-0.0156	-31.9%	0.25	4.36	3.88	3.0807	-0.0397	-116.1%	0.75	3.70 2.46526
SALINAS MAIN	831119	SLNSCA01	62.06	0.8693	3.5414	99.9%	48.58	75.53	71.1021	0.9491	353.1%	1.00	56.39	85.81	3.1489	-0.0246	-74.4%	0.54	3.53	2.77	2.4360	-0.0247	-84.8%	0.60	2.82 2.05309
ORANGE COVE	559206	ORCVCA11	52.62	0.8708	2.5512	98.4%	39.12	66.12	61.9394	0.9634	299.8%	0.99	47.01	76.87	3.7141	-0.0789	-146.9%	0.85	4.94	2.49	2.8841	-0.0715	-179.5%	0.92	3.99 1.77659
OROSI	559207	ORSICA11	51.33	0.8798	2.8598	99.2%	37.69	64.96	60.2828	1.0049	338.2%	1.00	44.71	75.86	3.8249	-0.0726	-132.3%	0.80	4.95	2.70	3.1116	-0.0837	-174.9%	0.91	4.41 1.81469
HAMILTON CITY	530462	HMCYCA11	49.78	0.8936	2.1519	96.1%	35.93	63.63	58.8924	1.1676	323.1%	1.00	40.79	76.99	3.6590	0.0010	2.5%	0.02	3.64	3.67	3.2022	0.0280	61.0%	0.45	2.77 3.63605
CHOWCHILLA	559158	CHWCCA11	54.07	0.9067	3.2183	99.7%	40.02	68.13	63.0061	0.9683	338.3%	1.00	48.00	78.02	3.2489	-0.0884	-290.2%	0.99	4.62	1.88	2.6911	-0.0791	-294.0%	0.99	3.92 1.46574
HURON	559178	HURNCA11	43.08	0.9082	3.6445	99.9%	29.00	57.15	54.5207	1.0824	382.0%	1.00	37.74	71.30	4.4274	-0.0737	-146.9%	0.85	5.57	3.28	3.5045	-0.0706	-181.2%	0.92	4.60 2.4102
PARAMOUNT	562649	PRMTCA01	53.45	0.9091	4.4108	100.0%	39.36	67.55	66.8927	1.1239	482.8%	1.00	49.47	84.31	4.0260	-0.1046	-220.4%	0.96	5.65	2.41	3.2284	-0.1000	-224.7%	0.97	4.78 1.67778
CHUALAR	831104	CHLRCA11	49.43	0.9140	2.6234	98.7%	35.26	63.60	59.0492	0.8158	252.9%	0.98	46.40	71.69	3.7691	-0.0472	-106.9%	0.71	4.50	3.04	3.1642	-0.0544	-163.6%	0.89	4.01 2.32068
HUNTINGTON PARK	323617	HNPKCA01	57.15	0.9218	4.3346	100.0%	42.86	71.44	69.2394	1.0145	440.3%	1.00	53.51	84.96	3.7513	-0.0962	-211.9%	0.96	5.24	2.26	2.9509	-0.0936	-229.3%	0.97	4.40 1.49973
KINGSBURG	559183	KGBGCA11	54.37	0.9377	2.8768	99.3%	39.84	68.91	64.5153	0.9200	274.3%	0.99	50.26	78.78	3.6318	-0.0857	-157.4%	0.87	4.96	2.30	2.9325	-0.0917	-189.4%	0.93	4.35 1.51139
BUTTE CITY	530435	BTCYCA11	37.73	0.9463	2.4934	98.2%	23.06	52.40	58.8406	1.0935	272.1%	0.99	41.89	75.79	4.4506	0.0132	26.9%	0.21	4.25	4.66	3.6728	0.0141	31.1%	0.24	3.45 3.89208
MONTAGUE	530529	MTAGCA11	50.65	0.9507	3.1379	99.6%	35.92	65.39	68.3817	1.1702	423.2%	1.00	50.24	86.52	3.4334	-0.0179	-55.2%	0.41	3.71	3.16	2.8528	0.0021	8.0%	0.06	2.82 2.88564
STRATFORD	559224	SRFRCA11	46.69	0.9593	3.4492	99.8%	31.82	61.56	56.8267	1.1521	377.6%	1.00	38.97	74.68	4.0035	-0.0953	-184.1%	0.92	5.48	2.53	3.4056	-0.0798	-174.4%	0.91	4.64 2.16869
HICKORY/SALINAS	831120	SLNSCA11	62.23	0.9760	3.5189	99.9%	47.10	77.36	71.5447	0.9990	357.5%	1.00	56.06	87.03	3.2270	-0.0365	-88.4%	0.62	3.79	2.66	2.5717	-0.0340	-94.1%	0.65	3.10 2.0446
SOUTH GATE	323655	SGATCA01	55.21	0.9915	4.8417	100.0%	39.84	70.58	68.4308	1.1324	496.1%	1.00	50.88	85.98	3.9867	-0.1160	-225.8%	0.97	5.79	2.19	3.2322	-0.1119	-229.2%	0.97	4.97 1.49845
MORO	831123	SLNSCA14	55.77	1.0285	3.9171	100.0%	39.83	71.72	67.9918	1.0433	359.8%	1.00	51.82	84.16	4.0521	-0.0639	-120.8%	0.76	5.04	3.06	3.2386	-0.0494	-108.6%	0.71	4.00 2.47245
COYOTE WELLS	760726	CYWLCA11	55.59	1.0296	1.8613	92.8%	39.63	71.54	67.1902	1.1761	218.1%	0.96	48.96	85.42	2.9408	-0.0087	-18.7%	0.15	3.08	2.81	2.0899	-0.0324	-109.9%	0.72	2.58 1.57726
PISMO BEACH	805387	PSBHCA11	59.73	1.0557	4.3283	100.0%	43.37	76.09	69.8886	1.3641	624.0%	1.00	48.75	91.03	3.3296	-0.0686	-131.5%	0.80	4.39	2.27	2.5987	-0.0716	-154.4%	0.87	3.71 1.48865
NILAND	760855	NILDCA12	58.91	1.0803	2.7617	99.0%	42.16	75.65	68.6797	1.0321	281.8%	0.99	52.68	84.68	2.8211	-0.0683	-204.7%	0.95	3.88	1.76	2.2877	-0.0562	-185.0%	0.93	3.16 1.41654
CASTROVILLE	831107	CSVLCA11	58.63	1.1201	4.2394	100.0%	41.27	75.99	68.2616	0.9927	325.0%	1.00	52.87	83.65	3.4993	-0.0506	-130.4%	0.80	4.28	2.72	2.6891	-0.0416	-119.5%	0.76	3.33 2.04348
WILLOWS	530521	WLWSCA11	48.51	1.1347	3.0529	99.5%	30.92	66.10	60.7015	1.3282	398.0%	1.00	40.11	81.29	4.3216	-0.0020	-3.3%	0.03	4.35	4.29	3.5428	0.0107	21.2%	0.17	3.38 3.70798
BRAWLEY	760708	BRWLCA11	56.46	1.1462	4.1990	100.0%	38.69	74.22	65.5231	1.2422	527.0%	1.00	46.27	84.78	3.5891	-0.0642	-179.2%	0.92	4.58	2.59	2.9039	-0.0653	-226.9%	0.97	3.92 1.89221
EL CENTRO	760730	ELCNCA01	58.98	1.1637	4.7218	100.0%	40.94	77.02	67.9967	1.3069	617.6%	1.00	47.74	88.25	3.3843	-0.0564	-151.9%	0.86	4.26	2.51	2.5985	-0.0692	-275.5%	0.99	3.67 1.52607
RIVERDALE	559215	RVDLCA11	45.52	1.1874	4.0541	100.0%	27.11	63.92	57.2869	1.2114	425.5%	1.00	38.51	76.06	4.0403	-0.1135	-213.9%	0.96	5.80	2.28	3.1795	-0.0858	-259.4%	0.99	4.51 1.8498
BAILEY	408142	SNJSCA22	47.30	1.2408	2.6430	98.7%	28.07	66.53	62.6864	1.4980	347.7%	1.00	39.47	85.90	3.4206	-0.0031	-7.5%	0.06	3.47	3.37	2.8410	0.0333	101.4%	0.68	2.34 3.36773
AVILA BEACH	805355	AVBHCA11	52.29	1.2484	3.9003	100.0%	32.94	71.64	63.4878	1.3984	472.1%	1.00	41.81	85.16	3.5743	-0.0172	-30.7%	0.24	3.84	3.31	2.8314	-0.0533	-122.0%	0.77	3.66 2.00592
CALEXICO	760712	CLXCCA12	56.83	1.2727	5.3141	100.0%	37.11	76.56	66.4116	1.4248	679.1%	1.00	44.33	88.50	3.4178	-0.0758	-200.9%	0.95	4.59	2.24	2.5721	-0.0798	-347.8%	1.00	3.81 1.33581
FIVE POINTS	559167	FVPNCA11	39.33	1.2942	4.6270	100.0%	19.27	59.39	50.3553	1.2321	435.7%	1.00	31.26	69.45	3.9165	-0.1252	-252.8%	0.98	5.86	1.98	3.3651	-0.1018	-238.7%	0.98	4.94 1.78757
HOLTVILLE	760742	HLVLCA11	53.11	1.4577	4.9240	100.0%	30.51	75.70	64.2683	1.4379	583.0%	1.00	41.98	86.56	3.8169	-0.0940	-209.6%	0.96	5.27	2.36	3.0614	-0.1097	-348.2%	1.00	4.76 1.36052
CALIPATRIA IMPERIA	L AV 760713	CLPTCA11	55.22	1.5077	4.6924	100.0%	31.85	78.59	66.0556	1.3404	560.7%	1.00	45.28	86.83	3.5956	-0.1394	-427.2%	1.00	5.76	1.44	3.0139	-0.1079	-380.2%	1.00	4.69 1.34181
GAZELLE	530456	GZLLCA11	47.52	1.7058	2.7188	98.9%	24.01	76.89	67.5108	2.0628	403.3%	1.00	39.07	103.02	2.8735	-0.0556	-118.6%	0.76	3.64	1.92	1.8705	-0.0816	-198.2%	0.94	2.92 0.38995



Table 4A.9 summarizes the percentages of out-of-service incidents that are cleared within 24 hours and the number of days required to clear 90%, on both an actual and an adjusted (for weekends and holidays) basis, across all of AT&T's wire centers over the 2010-2017 period. As the results indicate, on a statewide basis AT&T California has not come even close to meeting the 90% cleared within 24 hours standard.

		Table 4	A.9	
		AT&T CALIF	ORNIA	
	PERCENTAGI OUT-OF-SERVIC	ES OF ACTUAL A	AND ADJUSTED (' CLEARED WITHIN	'CPUC") 24 HOURS
	AND	DAYS REQUIRE	D TO CLEAR 90%	
	Act	ual	Ac	ljusted
Quarter	Pct. Cleared within 24 hours	Days Required to Clear 90%	Pct. Cleared within 24 hours	Days Required to Clear 90%
2010q1	33.5%	4.86	36.5%	4.10
2010q2	28.7%	5.04	30.1%	4.14
2010q3	44.6%	4.92	46.8%	4.08
2010q4	41.0%	5.15	43.8%	4.48
2011q1	39.1%	11.52	57.3%	11.15
2011q2	55.3%	2.97	71.9%	2.03
2011q3	62.6%	2.29	77.9%	1.77
2011q4	61.8%	2.64	77.8%	1.86
2012q1	66.7%	2.07	78.4%	1.67
2012q2	65.5%	2.17	76.8%	1.81
2012q3	64.3%	2.44	/5.1%	1.89
2012q4	49.7%	4.22	75.10/	3.05
201301	50.9%	3.13 2.67	75.1%	2.20
2013q2	54.0%	2.07	75.0% 65.6%	1.95
2013q3	59.2%	3.24	71 5%	2.72
2013q4 2014q1	<u> </u>	4.86	58.0%	3.84
2014q1 2014q2	53.9%	4.00	64 3%	3 25
2014q2	61.0%	3 23	70.2%	2 74
2014q4	43.8%	6.15	61.0%	4.92
2015g1	47.1%	5.64	59.7%	4.23
2015g2	63.7%	2.91	73.1%	2.09
2015q3	64.5%	2.81	73.7%	2.04
2015q4	53.5%	3.93	67.0%	2.93
2016q1	45.2%	4.94	61.5%	3.92
2016q2	66.6%	2.70	77.6%	1.91
2016q3	65.9%	2.50	76.8%	1.90
2016q4	46.0%	5.26	61.0%	4.20
2017q1	36.7%	8.08	78.4%	5.49
2017q2	42.9%	6.93	59.4%	5.57
2017q3	45.0%	6.95	58.4%	5.82
2017q4	48.3%	7.02	63.2%	5.30



Figures 4A.9 through 4A.12 plot these data and trends graphically. The AT&T California companywide percentages of OOS cleared within 24 hours - actual and adjusted - are plotted, along with associated trend lines. While there is considerable year-to-year variation in the completion percentages, the long term trend shows some, albeit modest, improvement - i.e., over time, a successively larger percentage of OOS conditions are being cleared within 24 hours. Mathematically, the trend lines for both actual and adjusted have *positive* slopes, reflecting the increasing percentages of OOS completions within 24 hours over time. The values "predicted" by the plotted trend line for actual OOS durations increased from 51% in 2010 to 54% by 2017; for the adjusted durations, the improvement was somewhat greater, going from 59% in 2010 to 72% by 2017.

Another approach to examining this "90% cleared within 24 hours" requirement is to examine the length of time it takes AT&T to reach the 90% cleared threshold. These results are also plotted, for AT&T statewide, on Figures 4A.11 (actual) and 4A.12 (adjusted). On an adjusted basis, the number of days required for 90% OOS cleared ranges from a low of 1.67 days in the first quarter of 2012 to a high of 11.15 days in the first quarter of 2011. For the most recent year (2017), the adjusted number of days to achieve 90% OOS cleared falls in the 5.30 to 5.82 range. The plotted trend lines for both the actual and adjusted days to achieve 90% OOS cleared shows a lengthening of this duration over time. Here, the slope of the trend lines are positive, reflecting the successively larger number of days required to achieve 90% OOS cleared over the 2010-17 period. For the actual OOS durations, the predicted trend line values increase from 3.74 days in 2010 to 5.03 days in 2017; for the adjusted durations, the predicted trend line values increase from 3.23 days in 2010 to 3.72 days in 2017. Had the slope been negative, that would have indicated an improvement in OOS completions over time.



On an adjusted basis, the number of days required for AT&T to Clear 90% of all out-of-service conditions ranged from a low of 1.9 (in the first quarter of 2012) to a high of 8.8 (in the first quarter of 2011). In 2017, the adjusted number of days to achieve 90% OOS cleared falls in the 5.8 to 6.7 range.

There is considerable variation across all of AT&T's 612 California wire centers both in terms of percent OOS cleared within 24 hours and days required to achieve 90% OOS cleared. Trend lines for these four metrics - actual and adjusted percentages of OOS cleared within 24 hours, and actual and adjusted days required to achieve 90% OOS cleared - have been calculated for each wire center. The values shown for the trend lines are the coefficient of the independent variable, time in this case, and would appear graphically as the slope of a plotted trend line.





**Figure 4A.9.** AT&T California has not come even close to achieving the GO 133-C/D §3.4(c) goal of 90% of all OOS cleared within 24 hours (actual).



**Figure 4A.10.** The percentage of all AT&T California OOS cleared within 24 hours (adjusted) has consistently fallen far short of meeting the GO 133-C/D §3.4(c) 90% cleared within 24 hours standard.





**Figure 4A.11.** It continues to take many days for 90% of AT&T California out-of-service incidents to be cleared (actual).



**Figure 4A.12.** It continues to take many days for 90% of AT&T California out-of-service incidents to be cleared (adjusted).



For the "percentages of OOS cleared within 24 hours" metrics, the trend is "days required to achieve 90% OOS cleared" metrics. Here, a positive value of the slope of the trend line indicates that, over time, it is taking longer to meet the 90% completion objective; a negative value indicates an improvement in performance in that it is taking less time to meet the 90% completion objective. Positive values for the "percentages of OOS cleared within 24 hours" metrics indicate an improving trend over time; negative values indicate that the completion percentage is decreasing over time.

Appendix 4A-1 provides a compilation of individual wire center statistics and includes, for each AT&T California wire center, data and trend line calculations for several performance metrics relating to OOS conditions cleared within varying lengths of time.

#### How competition has affected AT&T's response to service quality issues

At first glance, it may be difficult to understand the seemingly inverse relationship between the impact of competition (as reflected in POTS line losses) and AT&T's service quality record. If the market were so competitive that customers confronted actual alternatives to traditional POTS services, one would expect to see the greatest loss of demand in wire centers exhibiting the poorest service quality, with only minimal losses where service quality is being maintained or improved. Yet the actual result appears to be just the opposite – line losses are greatest in those wire centers exhibiting the best performance with respect to addressing and responding to service outages.



There is little effective competition for POTS services. If the market were sufficiently competitive, the greatest loss of demand would occur in wire centers exhibiting the poorest service quality, with only minimal losses where service quality is being maintained or improved. Instead, the greatest drop-off in demand occurred in wire centers with the best service quality records.

A possible explanation for this may be found in testimony filed on behalf of AT&T and SBC in the 2005 SBC/AT&T merger proceeding, A.05-02-027. Prior to that merger, AT&T Corp. was a CLEC in the local service market, competing directly with ILECs such as what was then known as Pacific Bell. In support of the merging partners' efforts to minimize the actual market importance of the competition that AT&T was at that time offering to Pacific Bell, AT&T/SBC witnesses Prof. Dennis Carlton and Hal Sider described pre-merger AT&T Corp.'s plan for withdrawing from the residential local voice services market as a "harvesting" strategy.

.. AT&T no longer markets local/long-distance bundles or stand-alone long distance services, nor does it attempt to win back customers that it has lost.



AT&T executives have characterized their current position as "harvesting" the business and as an "exit over time."<sup>81</sup> ...

AT&T's decision to cease marketing consumer services and to "harvest" its customer base means that, in the absence of the proposed transaction, AT&T's current and historic share overstates its future competitive significance. There are two reasons for this. First, in the absence of the transaction, AT&T's share of subscribers would be lower than its current share as customers continue to migrate away without being replaced. Second, for any given share that AT&T might have in the future, its decision to "harvest" its customer base means that AT &T is not competing to attract new customers.<sup>82</sup> ...

As part of its "harvesting" strategy, AT&T has already instituted price increases. For example, AT&T CEO Dave Dorman has stated that AT&T is "carefully managing the decline in [and] harvest of those businesses that we will exit over time as those customers run off."

AT&T has already raised rates for consumer local and interstate long distance services.

- In late 2004, AT&T raised by \$1 to \$3 per month the retail rates for various local service packages with prices that range from \$12 to \$30 per month.
- In December 2004, AT&T raised rates in a variety of states for "all distance bundles" by \$2 to \$5 per month.
- AT &T has raised the monthly recurring charge for stand alone interstate long distance services by \$1 to \$2 per month for many plans.
- AT&T has also raised a number of the basic rates for international long distance services.<sup>83</sup>

In a "harvesting strategy" of this sort, the firm ceases active marketing of and organizational support for those services that it considers to be on the decline and no longer of strategic importance, relying instead upon customer inertia to maintain its revenue stream, albeit decreasing, for as long as possible. That AT&T has allowed its POTS service quality to

<sup>83.</sup> Id., at paras. 48,49, citations omitted.



<sup>81. 2005</sup> SBC/AT&T merger proceeding, A.05-02-027, Declaration of Dennis W. Carlton and Hal S. Sider, Joint Applicants' Exhibit 1, at para. 41, citing AT&T 4Q04 Earnings Conference Call, January 20, 2005, p. 8..

<sup>82.</sup> Id., at para. 46
deteriorate over the past decade even in the face of putative "competition" suggests that the carrier is and has been pursuing the very same kind of "harvesting" approach for POTS that its predecessor CLEC operation had employed back in the mid- to late-2000s. In fact, and as shown in Table 4A.10 below, concurrently with the deterioration in service quality that was the impetus for this Study, AT&T has effected a succession of even larger rate increases for the very services that it now seeks to exit than its CLEC predecessor had done back in the mid-2000s.



AT&T appears to have adopted a "harvesting strategy" for legacy POTS services. AT&T has ceased active marketing of POTS and has degraded POTS service quality and its responses to trouble reports, relying instead upon successive price increases and customer inertia to maintain its revenue stream, albeit decreasing, for an extended period of time.

			Table	4A.10									
	AT&T CALIFORNIA BASIC RESIDENTIAL (POTS) ACCESS LINE SERVICE RATE INCREASE HISTORY 2006-2018												
		Flat-rat	te Residence	(1FR)	Measured	Rate Reside	ence (1MR)						
% incr       % incr         since       % incr         since       % incr         Monthly       onset of         Year       Eff date         Rate       URF         1/1/10       Rate         URF       1/1/10													
2006	9/1/2006	\$10.69			\$5.70								
2008	1/1/2008	\$10.94	2.34%	1	\$5.83	2.28%	2						
2009	1/1/2009	\$13.50	26.29%	Í	\$7.28	27.72%							
2010	1/1/2010	\$16.45	53.88%		\$8.87	55.61%							
2011	1/1/2011	\$19.95	86.62%	21.28%	\$12.37	117.02%	39.46%						
2012	3/1/2012	\$21.00	96.45%	27.66%	\$15.37	169.65%	73.28%						
2013	1/1/2013	\$23.00	115.15%	39.82%	\$18.25	220.18%	105.75%						
2014	1/1/2014	\$24.00	124.51%	45.90%	\$21.25	272.81%	139.57%						
2015	1/1/2015	\$24.00	124.51%	45.90%	\$21.25	272.81%	139.57%						
2016	1/1/2016	\$25.00	133.86%	51.98%	\$22.25	290.35%	150.85%						
2017	1/1/2017	\$26.00	143.22%	58.05%	\$23.25	307.89%	162.12%						
2018	1/1/2018	\$27.00	152.57%	64.13%	\$24.25	325.44%	173.39%						

As we discuss in detail in Chapter 7, over the 2010-2017 study period AT&T's legacy ILEC operations have taken on a continuously diminishing role as a component of its overall corporate



revenues nationwide. The Company has made minimal investments in its legacy California ILEC services, and has allowed its service quality and response to customer trouble reports to degrade over this time frame. AT&T has also implemented a succession of annual price increases for its basic residential POTS services. In 2006, the CPUC, in adopting the Uniform Regulatory Framework, believed that maintaining traditional regulation price protections was no longer necessary since competition would replace regulation in constraining prices. This same theory would also suggest that competition would be a sufficient inducement to the ILECs to maintain and improve service quality overall, since in a competitive market customers dissatisfied with the incumbent's service quality could "vote with their feet" and take service from a competing provider. AT&T's post-deregulation "harvesting" conduct belies these expectations.

## Effects of geographic and other wire center attributes upon performance results

While examinations of individual wire centers is essential to isolating specific problem areas and sources of concern, it is also instructive to create groups of individual wire centers having similar geographic or other attributes. In that regard, ETI has constructed five different attribute dimensions – (1) the presence of fiber upgrades; (2) wire center size (number of access lines); (3) the percentage decrease (loss) in the number of access lines in service to competing providers and/or to competing services over the study period; (4) the AT&T Technical Field Services (TFS) organization to which the wire center has been assigned; and (5) the population density of the area served by the wire center (households per square mile). For each of these five attribute dimensions, ETI has defined a set of categories whose potential effect upon service quality was then individually examined. These are summarized in Table 4A.11 below. In Table 4A.12, we show, for each of these five attribute dimensions, the category in which each individual AT&T wire center has been classified. In addition, Table 4A.12 also provides the median household income for the population served from the specified wire center.

For example, the Alhambra wire center in Los Angeles County (ALHBCA01) has been assigned to the "Yes" category with respect to Fiber Deployment, to the "Over 20,000 Lines" category with respect to Wire Center Size; to the 70%-80% category with respect to Access Line Loss, to the "1800+ per Square Mile" category with respect to Population Density, to the San Gabriel Technical Field Services District, and to the \$55,000-\$66,999 Median Household Income category.



Table 4A.11 AT&T CALIFORNIA WIRE CENTER ATTRIBUTE DIMENSIONS								
AND CATEGORIES Attribute Dimension Categories								
Fiber upgrade	FTTN or FTTP services available FTTN or FTTP services not available							
Wire Center Size	Less than 1000 lines 1,000-2,999 lines 3,000-10,000 lines 10,001-20,000 lines over 20,000 lines							
Access Line Loss	< 50% 50%-60% 60%-70% 70%-80% over 80%							
Technical Field Services	Greater LA / Bakersfield San Gabriel Bay / Central Coast Southern California Northern California/Central Valley							
Density (Households per square mile)	0-16 per Sq. Mile 17-94 per Sq. Mile 95-449 per Sq. Mile 450-1799 per Sq. Mile 1800 + per Sq. Mile							



Γabl	le	4A.	1	2
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#### AT&T CALIFORNIA WIRE CENTER ATTRIBUTE CLASSIFICATIONS

					Wire Center Size	Pct Line Loss	Household Density	Technical Field Services	Median Household
Wire Center Name	Wire Center	CLLI	County	Fiber	Category	Category	Category	District	Income Category
ACTON	661410	ACTNCA11	LOS ANGELES	No	1001-2999 Lines	60%-70%	17-94 per Sq. Mile	Greater LA / Bakersfield	\$67,000-\$87,999
AGUA DULCE	661351	AGDLCA11	LOS ANGELES	No	1001-2999 Lines	60%-70%	17-94 per Sq. Mile	Greater LA / Bakersfield	\$88,000 +
AGOURA	818600	AGORCA11	LOS ANGELES	Yes	Over 20000 lines	70%-80%	95-449 per Sq. Mile	Greater LA / Bakersfield	\$88,000 +
ALBANY SOLANO	510001	ALBYCA11	ALAMEDA	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +
ALLEGHANEY	530425	ALGHCA11	SIERRA	No	0-1000 Lines	<50%	0	Northern CA / Central Valley	0
ALHAMBRA	626601	ALHBCA01	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	San Gabriel	\$55,000-\$66,999
ALAMEDA CENTRAL	510002	ALMDCA11	ALAMEDA	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
ALPINE	619700	ALPICA12	SAN DIEGO	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Southern CA	\$67,000-\$87,999
ANGELS CAMP	209150	ANCMCA01	CALAVERAS	No	1001-2999 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
ANGWIN	707275	ANGWCA11	NAPA	No	1001-2999 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
ANAHEIM LEMON	714701	ANHMCA01	ORANGE	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$55,000-\$66,999
ANAHEIM CYPRESS	714702	ANHMCA11	ORANGE	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$55,000-\$66,999
ANAHEIM LA PALMA	714703	ANHMCA12	ORANGE	No	3000-10000 Lines	60%-70%	450-1799 per Sq. Mile	Southern CA	\$43,000-\$54,999
ANHM HILLS	714811	ANHMCA17	ORANGE	Yes	3000-10000 Lines	>80%	450-1799 per Sq. Mile	Southern CA	\$88,000 +
ANNAPOLIS	707322	ANNPCA11	SONOMA	No	0-1000 Lines	50%-60%	0	Northern CA / Central Valley	0
ANTIOCH	925003	ANTCCA11	CONTRA COSTA	Yes	Over 20000 lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
APTOS	831100	APTSCA12	SANTA CRUZ	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$88,000 +
ARCADIA	626602	ARCDCA11	LOS ANGELES	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	San Gabriel	\$67,000-\$87,999
ARCATA	707276	ARCTCA11	HUMBOLDT	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
ARROYO GRANDE	805352	ARGRCA12	SAN LUIS OBISPO	No	10001-20000 Lines	70%-80%	17-94 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999
AROMAS	831144	ARMSCA11	SAN BENITO	No	1001-2999 Lines	60%-70%	95-449 per Sq. Mile	Bay / Central Coast	\$88,000 +
ARNOLD	209151	ARNLCA11	CALAVERAS	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
ANDERSON	530427	ARSNCA11	SHASTA	No	3000-10000 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
ARLINGTON	951704	ARTNCA11	RIVERSIDE	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$55,000-\$66,999
ARVIN	661353	ARVNCA11	KERN	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Greater LA / Bakersfield	\$0-\$42,999
SEQUOIA ASH MTN	559152	ASMTCA11	FRESNO	No	0-1000 Lines	<50%	0	Northern CA / Central Valley	0
ATASCADERO	805354	ATSCCA11	SAN LUIS OBISPO	No	10001-20000 Lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999
ATWATER	209153	ATWRCA12	MERCED	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
AUBURN MAIN	530428	AUBNCA01	PLACER	Yes	10001-20000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
AUBURN PLACER HILLS	530429	AUBNCA11	PLACER	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
AVILA BEACH	805355	AVBHCA11	SAN LUIS OBISPO	No	1001-2999 Lines	60%-70%	17-94 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999



	Table 4A.12 (page 2 of 18)											
					Wire Center Size	Pct Line Loss	Household Density	Technical Field Services	Median Household			
Wire Center Name	Nire Cente	r CLLI	County	Fiber	Category	Category	Category	District	Income Category			
AVENAL	559154	AVNLCA12	KINGS	No	1001-2999 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999			
BAKER	760705	BAKRCA11	SAN BERNARDINO	No	0-1000 Lines	50%-60%	0-16 per Sq. Mile	Southern CA	\$0-\$42,999			
BALBOA	949706	BALBCA01	ORANGE	Yes	10001-20000 Lines	60%-70%	1800 + per Sq. Mile	Southern CA	\$88,000 +			
BROCKWAY	530434	BCWYCA11	PLACER	No	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999			
BODEGA BAY	707279	BDBACA11	SONOMA	No	1001-2999 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999			
BEALE	530431	BEALCA11	YUBA	No	0-1000 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999			
BELL	323604	BELLCA11	LOS ANGELES	Yes	10001-20000 Lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$0-\$42,999			
BIGGS	530432	BGGSCA11	BUTTE	No	0-1000 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999			
BIG SUR	831101	BGSRCA11	MONTEREY	No	0-1000 Lines	<50%	0-16 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999			
BRIDGEVILLE	707281	BGVLCA11	HUMBOLDT	No	0-1000 Lines	<50%	0	Northern CA / Central Valley	0			
BAKERSFIELD EMPIRE	661356	BKFDCA11	KERN	Yes	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$54,999			
BAKERSFIELD MAIN FAIR	661357	BKFDCA12	KERN	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$0-\$42,999			
BAKERSFIELD COLUMBU	661358	BKFDCA13	KERN	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Greater LA / Bakersfield	\$55,000-\$66,999			
BAKERSFIELD TEMPLE	661359	BKFDCA14	KERN	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$54,999			
BAKERSFIELD METTLER	661360	BKFDCA15	KERN	No	0-1000 Lines	<50%	0-16 per Sq. Mile	Greater LA / Bakersfield	\$0-\$42,999			
BAKERSFIELD WEST ROS	661361	BKFDCA17	KERN	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Greater LA / Bakersfield	\$88,000 +			
BAKERSFIELD NOMAD	661409	BKFDCA19	KERN	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Greater LA / Bakersfield	\$88,000 +			
BERKELEY BANCROFT	510004	BKLYCA01	ALAMEDA	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999			
BOULDER CREEK	831102	BLCKCA11	SANTA CRUZ	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999			
BLUE LAKE	707278	BLLKCA11	HUMBOLDT	No	0-1000 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999			
BLAIRSDEN	530433	BLRSCA12	PLUMAS	No	1001-2999 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999			
BENICIA	707277	BNCICA11	SOLANO	Yes	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$88,000 +			
BANGOR	530430	BNGRCA11	BUTTE	No	0-1000 Lines	<50%	0	Northern CA / Central Valley	0			
BEN LOMOND	831103	BNLMCA11	SANTA CRUZ	No	1001-2999 Lines	60%-70%	450-1799 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999			
BUENA PARK	714710	BNPKCA11	ORANGE	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$67,000-\$87,999			
BOONVILLE	707280	BNVLCA11	MENDOCINO	No	1001-2999 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999			
BURBANK PALM	818605	BRBNCA11	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$67,000-\$87,999			
BURBANK THORNTON	818606	BRBNCA13	LOS ANGELES	No	1001-2999 Lines	50%-60%	450-1799 per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$54,999			
BRADLEY	805363	BRDLCA90	MONTEREY	No	0-1000 Lines	<50%	0	Bay / Central Coast	0			
BREA	714709	BREACA12	ORANGE	Yes	10001-20000 Lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$67,000-\$87,999			
BURLINGAME	650006	BRLNCA01	SAN MATEO	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +			
BORREGO SPRINGS	760707	BRSPCA11	SAN DIEGO	No	1001-2999 Lines	60%-70%	0-16 per Sq. Mile	Southern CA	\$0-\$42,999			
BRENTWOOD	925007	BRWDCA12	CONTRA COSTA	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$88,000 +			
BRAWLEY	760708	BRWLCA11	IMPERIAL	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Southern CA	\$43,000-\$54,999			



Table 4A.12 (page 3 of 18)											
					Wire Center Size	Pct Line Loss	Household Density	Technical Field Services	Median Household		
Wire Center Name	Wire Center	CLLI	County	Fiber	Category	Category	Category	District	Income Category		
BISHOP RANCH	925082	BSRNCA70	CONTRA COSTA	No	3000-10000 Lines	60%-70%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +		
BUTTE CITY	530435	BTCYCA11	GLENN	No	0-1000 Lines	<50%	0	Northern CA / Central Valley	0		
BETHEL ISLAND	925008	BTISCA11	CONTRA COSTA	Yes	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Bay / Central Coast	\$43,000-\$54,999		
BURRELL	559242	BURLCA11	FRESNO	No	0-1000 Lines	50%-60%	0	Northern CA / Central Valley	0		
BEVERLY HILLS	310607	BVHLCA01	LOS ANGELES	Yes	Over 20000 lines	50%-60%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$67,000-\$87,999		
BEAR VALLEY	209155	BVLYCA11	CALAVERAS	No	0-1000 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
BEAR VLLY SPRING	661403	BVSPCA11	KERN	No	1001-2999 Lines	>80%	17-94 per Sq. Mile	Greater LA / Bakersfield	\$67,000-\$87,999		
BAYWOOD PARK	805362	BYPKCA11	SAN LUIS OBISPO	No	3000-10000 Lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999		
САМРО	619715	CAMPCA11	SAN DIEGO	No	1001-2999 Lines	60%-70%	0-16 per Sq. Mile	Southern CA	\$0-\$42,999		
COBB MOUNTAIN	707285	CBMTCA11	LAKE	No	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
CHICO MAIN	530438	CHICCA01	BUTTE	Yes	Over 20000 lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
CHALLANGE	530437	CHLNCA11	YUBA	No	1001-2999 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
CHUALAR	831104	CHLRCA11	MONTEREY	No	0-1000 Lines	50%-60%	0	Bay / Central Coast	0		
CHULA VISTA THIRD AVE	619718	CHVSCA11	SAN DIEGO	Yes	10001-20000 Lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$43,000-\$54,999		
CHULA VISTA APACHE	619719	CHVSCA12	SAN DIEGO	Yes	10001-20000 Lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$88,000 +		
CHOWCHILLA	559158	CHWCCA11	MADERA	Yes	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
CALABASAS PARK SORRE	818666	CLBSCA11	LOS ANGELES	Yes	10001-20000 Lines	60%-70%	95-449 per Sq. Mile	Greater LA / Bakersfield	\$88,000 +		
CALABASAS LOS VIRGEN	818665	CLBSCA50	LOS ANGELES	No	3000-10000 Lines	60%-70%	450-1799 per Sq. Mile	Greater LA / Bakersfield	\$88,000 +		
CULVER CITY	310608	CLCYCA11	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$67,000-\$87,999		
COALINGA	559160	CLNGCA01	FRESNO	No	3000-10000 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
CLEAR LAKE OAKS	707283	CLOKCA11	LAKE	No	1001-2999 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
CALPATRIA	760713	CLPTCA11	IMPERIAL	No	1001-2999 Lines	70%-80%	0-16 per Sq. Mile	Southern CA	\$0-\$42,999		
CALISTOGA	707282	CLSTCA11	NAPA	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999		
CLOVIS	559159	CLVSCA11	FRESNO	Yes	Over 20000 lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999		
CALEXICO	760712	CLXCCA12	IMPERIAL	No	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Southern CA	\$0-\$42,999		
CAMBRIA	805364	CMBACA11	SAN LUIS OBISPO	No	3000-10000 Lines	60%-70%	0-16 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999		
CAMP NELSON	559156	CMNLCA11	TULARE	No	0-1000 Lines	<50%	0	Northern CA / Central Valley	0		
CAMP PENDLETON	760714	CMPDCA01	SAN DIEGO	No	0-1000 Lines	60%-70%	0	Southern CA	0		
CAMPTONVILLE	530436	CMPVCA11	YUBA	No	0-1000 Lines	<50%	0	Northern CA / Central Valley	0		
COMPTON	310609	CMTNCA01	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$54,999		
CONCORD	925009	CNCRCA01	CONTRA COSTA	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999		
CANOGA PARK	818610	CNPKCA01	LOS ANGELES	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Greater LA / Bakersfield	\$67,000-\$87,999		
CENTRAL VALLEY	530528	CNVYCA11	SHASTA	No	3000-10000 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
CLOVERDALE	707284	CODLCA11	SONOMA	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999		



	Table 4A.12 (page 4 of 18)											
					Wire Center Size	Pot Line Loca	Household Density	Technical Field Services	Median Household			
Wire Center Name	Nire Center	r CLLI	County	Fiber	Category	Category	Category	District	Income Category			
COLMA DALY CITY	650010	COLACA01	SAN MATEO	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999			
CORDELIA	707286	CORDCA12	SOLANO	Yes	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$88,000 +			
CORONA	951721	CORNCA11	RIVERSIDE	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$67,000-\$87,999			
COLTON	909720	COTNCA11	SAN BERNARDINO	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Southern CA	\$43,000-\$54,999			
CROCKETT	510011	CRCTCA02	CONTRA COSTA	No	1001-2999 Lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999			
CORONA DEL MAR	949722	CRDMCA11	ORANGE	Yes	10001-20000 Lines	60%-70%	450-1799 per Sq. Mile	Southern CA	\$88,000 +			
CARLSBAD HARDING	760716	CRLSCA11	SAN DIEGO	Yes	10001-20000 Lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$67,000-\$87,999			
CARLSBAD LA COSTA	760717	CRLSCA12	SAN DIEGO	Yes	10001-20000 Lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$88,000 +			
CARMEL MAIN	831105	CRMLCA11	MONTEREY	Yes	10001-20000 Lines	60%-70%	95-449 per Sq. Mile	Bay / Central Coast	\$88,000 +			
CORONADO	619723	CRNDCA11	SAN DIEGO	Yes	3000-10000 Lines	60%-70%	450-1799 per Sq. Mile	Southern CA	\$88,000 +			
CORNING	530440	CRNGCA12	TEHAMA	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999			
CARUTHERS	559157	CRTHCA11	FRESNO	No	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999			
CARMEL VALLEY	831106	CRVYCA11	MONTEREY	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Bay / Central Coast	\$88,000 +			
COSTA MESA	949725	CSMSCA11	ORANGE	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$67,000-\$87,999			
CASTAIC	661408	CSTCCA11	LOS ANGELES	Yes	10001-20000 Lines	60%-70%	17-94 per Sq. Mile	Greater LA / Bakersfield	\$88,000 +			
CASTROVILLE	831107	CSVLCA11	MONTEREY	No	3000-10000 Lines	60%-70%	95-449 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999			
COTATI	707287	CTTICA12	SONOMA	Yes	3000-10000 Lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999			
COULTERVILLE	209161	CTVLCA11	MARIPOSA	No	0-1000 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999			
COTTONWOOD	530441	CTWDCA11	TEHAMA	No	3000-10000 Lines	50%-60%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999			
CROWS LANDING	209162	CWLDCA12	STANISLAUS	No	0-1000 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999			
CAYUCOS	805366	CYCSCA11	SAN LUIS OBISPO	No	1001-2999 Lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999			
CLAYTON	925081	CYTNCA11	CONTRA COSTA	Yes	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$88,000 +			
COYOTE WELLS	760726	CYWLCA11	IMPERIAL	No	0-1000 Lines	60%-70%	0-16 per Sq. Mile	Southern CA	\$0-\$42,999			
DANVILLE MAIN 12	925012	DAVLCA12	CONTRA COSTA	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +			
DANVILLE TASSAJARA 13	925085	DAVLCA13	CONTRA COSTA	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$88,000 +			
DAVIS	530442	DAVSCA11	YOLO	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999			
DELANO	661367	DELNCA11	TULARE	Yes	10001-20000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999			
DINUBA	559164	DINBCA01	TULARE	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999			
DIXON	707443	DIXNCA11	SOLANO	Yes	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999			
DEL MAR	858727	DLMRCA12	SAN DIEGO	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$88,000 +			
DEL REY	559163	DLRYCA11	FRESNO	No	0-1000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999			
DULZURA	619728	DLZRCA11	SAN DIEGO	No	1001-2999 Lines	<50%	0-16 per Sq. Mile	Southern CA	\$67,000-\$87,999			
DUNNIGAN	530445	DNGNCA12	YOLO	No	0-1000 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999			
DUNSMUIR	530446	DNSMCA11	SISKIYOU	No	1001-2999 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999			



	Table 4A.12 (page 5 of 18)										
						Det Live Lives	Harris I. H. Nara Ver	Table 1 - I Field One from			
Wire Center Name	Vire Center	r CLLI	County	Fiber	Category	Category	Category	District	Income Category		
ALTA DUTCH FLATS	530447	DTEL CA11	PLACER	No	1001-2999 Lines	<50%	0-16 per Sa Mile	Northern CA / Central Valley	\$55,000-\$66,999		
DOWNIEVILLE	530444	DWNVCA11	SIERRA	No	0-1000 Lines	<50%	0	Northern CA / Central Valley	0		
EDWARDS	661369	EDWRCA01	KERN	No	0-1000 Lines	60%-70%	0-16 per Sa. Mile	Greater LA / Bakersfield	\$55.000-\$66.999		
ELK CREEK	530448	EKCKCA11	GLENN	No	0-1000 Lines	50%-60%	0	Northern CA / Central Valley	0		
EL CAJON	619729	ELCJCA11	SAN DIEGO	Yes	10001-20000 Lines	70%-80%	450-1799 per Sg. Mile	Southern CA	\$55,000-\$66,999		
EL CENTRO	760730	ELCNCA01	IMPERIAL	No	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Southern CA	\$43,000-\$54,999		
ELK	707288	ELK CA11	MENDOCINO	No	0-1000 Lines	<50%	0	Northern CA / Central Valley	0		
EL MONTE	626611	ELMNCA01	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	San Gabriel	\$43,000-\$54,999		
RICH APPIAN WAY EL SOF	510013	ELSBCA11	CONTRA COSTA	Yes	10001-20000 Lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999		
EL SEGUNDO DOUGLAS	310613	ELSGCA12	LOS ANGELES	Yes	10001-20000 Lines	60%-70%	450-1799 per Sq. Mile	Greater LA / Bakersfield	\$67,000-\$87,999		
EL TORO	949731	ELTRCA11	ORANGE	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$88,000 +		
ENCINITAS	760732	ENCTCA12	SAN DIEGO	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$88,000 +		
EARLIMART	661368	ERLMCA11	TULARE	No	1001-2999 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
ESCALON	209192	ESCLCA11	SAN JOAQUIN	Yes	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
ESCONDIDO	760733	ESCNCA01	SAN DIEGO	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$55,000-\$66,999		
ESPARTO	530450	ESPRCA11	YOLO	No	1001-2999 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999		
EUREKA	707289	EURKCA01	HUMBOLDT	No	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
FELTON	831108	FETNCA11	SANTA CRUZ	No	3000-10000 Lines	60%-70%	95-449 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999		
FALLBROOK	760735	FLBKCA12	SAN DIEGO	Yes	10001-20000 Lines	70%-80%	17-94 per Sq. Mile	Southern CA	\$55,000-\$66,999		
FILLMORE	805370	FLMRCA11	VENTURA	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Greater LA / Bakersfield	\$55,000-\$66,999		
FOLSOM NIMBUS	916453	FLSMCA12	SACRAMENTO	Yes	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$88,000 +		
FOLSOM EL DORADO HILI	916454	FLSMCA13	SACRAMENTO	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$88,000 +		
FOLSOM BLUE RAVINE	916536	FLSMCA14	SACRAMENTO	Yes	3000-10000 Lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$88,000 +		
FONTANA	909736	FNTACA11	SAN BERNARDINO	Yes	Over 20000 lines	>80%	95-449 per Sq. Mile	Southern CA	\$55,000-\$66,999		
FIREBAUGH	559166	FRBHCA11	FRESNO	No	1001-2999 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
FURNACE CREEK	760738	FRCKCA11	SAN BERNARDINO	No	0-1000 Lines	50%-60%	0-16 per Sq. Mile	Southern CA	\$0-\$42,999		
FAIRFIELD	707290	FRFDCA01	SOLANO	Yes	Over 20000 lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999		
FRENCH GULCH	530455	FRGLCA11	SHASTA	No	0-1000 Lines	50%-60%	0	Northern CA / Central Valley	0		
FREMONT MAIN 11	510014	FRMTCA11	ALAMEDA	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +		
FREMONT ADAMS OLIVEF	510015	FRMTCA12	ALAMEDA	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +		
FAIR OAKS	916451	FROKCA11	SACRAMENTO	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999		
FRESNO MAIN	559168	FRSNCA01	FRESNO	Yes	Over 20000 lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
FRESNO BALDWIN	559169	FRSNCA11	FRESNO	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
FRESNO CLINTON	559172	FRSNCA12	FRESNO	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		



Table 4A.12 (page 6 of 18)											
					Wire Contor Size	Pet Line Loss	Household Density	Tochnical Field Sonvices	Modian Household		
Wire Center Name	Nire Center	r CLLI	County	Fiber	Category	Category	Category	District	Income Category		
FRESNO SIERRA	559170	FRSNCA13	FRESNO	Yes	Over 20000 lines	70%-80%	1800 + per Sg. Mile	Northern CA / Central Valley	\$55,000-\$66,999		
FRESNO WEST HIGHWAY	559245	FRSNCA14	FRESNO	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999		
FRESNO WOODWARD	559247	FRSNCA15	FRESNO	Yes	3000-10000 Lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$88,000 +		
FARMERSVILLE	559165	FRVLCA11	TULARE	No	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
FORESTVILLE	707291	FSVLCA11	SONOMA	No	1001-2999 Lines	60%-70%	95-449 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999		
FORT BRAGG	707292	FTBRCA02	MENDOCINO	No	3000-10000 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
FORTUNA	707293	FTUNCA11	HUMBOLDT	No	3000-10000 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
FULLERTON	714737	FUTNCA01	ORANGE	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$67,000-\$87,999		
FIVE POINTS	559167	FVPNCA11	FRESNO	No	0-1000 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
FRAZIER PARK	661371	FZPKCA11	KERN	No	1001-2999 Lines	60%-70%	95-449 per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$54,999		
GALT	209171	GALTCA11	SACRAMENTO	Yes	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999		
GLENDALE	818614	GLDLCA11	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$55,000-\$66,999		
GREEN FIELD	831109	GNFDCA11	MONTEREY	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Bay / Central Coast	\$43,000-\$54,999		
GONZALES	831110	GNZLCA11	MONTEREY	No	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Bay / Central Coast	\$43,000-\$54,999		
GERBER	530458	GRBRCA11	TEHAMA	No	0-1000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
GRIDLEY	530461	GRDLCA11	BUTTE	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
GARDENA	310615	GRDNCA01	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$55,000-\$66,999		
EUCLID	714739	GRGVCA01	ORANGE	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$43,000-\$54,999		
GRENADA	530460	GRNDCA13	SISKIYOU	No	0-1000 Lines	70%-80%	0	Northern CA / Central Valley	0		
GEORGETOWN	530457	GRTWCA11	EL DORADO	No	1001-2999 Lines	<50%	17-94 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999		
GRASS VALLEY	530459	GRVYCA01	NEVADA	No	Over 20000 lines	60%-70%	95-449 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
LAKE OF THE PINE	530532	GRVYCA11	NEVADA	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999		
WILDWOOD	530535	GRVYCA12	NEVADA	No	3000-10000 Lines	60%-70%	95-449 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999		
GOSHEN	559246	GSHNCA11	TULARE	No	1001-2999 Lines	50%-60%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
GUALALA	707295	GULLCA11	MENDOCINO	No	1001-2999 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
GUSTINE	209174	GUSTCA11	MERCED	No	1001-2999 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
GUERNEVILLE	707296	GUVLCA11	SONOMA	No	1001-2999 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
GROVELAND	209173	GVLDCA11	TUOLUMNE	No	3000-10000 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
GEYERSVILLE	707294	GYVLCA11	SONOMA	No	0-1000 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999		
GAZELLE	530456	GZLLCA11	SISKIYOU	No	0-1000 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
HERALD	209176	HERLCA11	SACRAMENTO	No	1001-2999 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$88,000 +		
HIGHLAND	909741	HGLDCA11	SAN BERNARDINO	Yes	10001-20000 Lines	>80%	95-449 per Sq. Mile	Southern CA	\$55,000-\$66,999		
HUGHSON	209177	HGSNCA11	STANISLAUS	Yes	1001-2999 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
HEALDSBURG	707297	HLBGCA11	SONOMA	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999		



Table 4A.12 (page 7 of 18)											
					Wire Center Size	Pct Line Loss	Household Density	Technical Field Services	Median Household		
Wire Center Name	Wire Center	r CLLI	County	Fiber	Category	Category	Category	District	Income Category		
HOLLISTER	831111	HLSTCA11	SAN BENITO	Yes	10001-20000 Lines	70%-80%	0-16 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999		
HOLTVILLE	760742	HLVLCA11	IMPERIAL	No	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Southern CA	\$0-\$42,999		
HOLLYWOOD	323616	HLWDCA01	LOS ANGELES	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$54,999		
HALF MOON BAY	650016	HMBACA12	SAN MATEO	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Bay / Central Coast	\$88,000 +		
HAMILTON CITY	530462	HMCYCA11	GLENN	No	0-1000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
HOMEWOOD	530463	HMWDCA11	EL DORADO	No	3000-10000 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
HANFORD	559175	HNFRCA01	KINGS	Yes	10001-20000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
HUNTINGTON PARK	323617	HNPKCA01	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$0-\$42,999		
HOPLAND	707298	HPLDCA12	MENDOCINO	No	0-1000 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
HORNBROOK	530464	HRBKCA11	SISKIYOU	No	0-1000 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
HERCULES PINOLE	510080	HRCLCA11	CONTRA COSTA	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999		
HURON	559178	HURNCA11	FRESNO	No	1001-2999 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
HAWTHORNE	310618	HWTHCA01	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$54,999		
HYDESVILLE	707299	HYVLCA11	HUMBOLDT	No	0-1000 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
HAYWARD MAIN	510017	HYWRCA01	ALAMEDA	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999		
HAYWARD DEPOT	510018	HYWRCA11	ALAMEDA	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999		
IGNACIO	415019	IGNCCA12	MARIN	No	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999		
INGLEWOOD	310619	IGWDCA01	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$0-\$42,999		
IMPERIAL BEACH	619744	IMBHCA11	SAN DIEGO	Yes	3000-10000 Lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$43,000-\$54,999		
IMPERIAL	760743	IMPRCA11	IMPERIAL	No	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Southern CA	\$67,000-\$87,999		
INVERNESS	415020	INVRCA11	MARIN	No	0-1000 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999		
IONE	209179	IONECA11	AMADOR	No	1001-2999 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999		
IRVINE	949745	IRVNCA01	ORANGE	Yes	10001-20000 Lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$88,000 +		
IRVINE AIRPORT	949807	IRVNCA11	ORANGE	Yes	10001-20000 Lines	50%-60%	1800 + per Sq. Mile	Southern CA	\$67,000-\$87,999		
SPECTRUM IRVINE	949810	IRVNCA12	ORANGE	Yes	3000-10000 Lines	<50%	450-1799 per Sq. Mile	Southern CA	\$88,000 +		
IVANHOE	559180	IVNHCA11	TULARE	No	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		
JAMUL	619851	JAMLCA60	SAN DIEGO	No	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Southern CA	\$88,000 +		
JACUMBA	619746	JCMBCA11	SAN DIEGO	No	1001-2999 Lines	60%-70%	0	Southern CA	0		
JACKSON	209181	JCSNCA01	AMADOR	No	3000-10000 Lines	50%-60%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
JAMESTOWN	209182	JMTWCA11	TUOLUMNE	No	1001-2999 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999		
JULIAN	760748	JULNCA12	SAN DIEGO	No	1001-2999 Lines	50%-60%	17-94 per Sq. Mile	Southern CA	\$43,000-\$54,999		
KINGSBURG	559183	KGBGCA11	TULARE	No	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999		
KING CITY	831112	KGCYCA11	MONTEREY	No	3000-10000 Lines	60%-70%	0-16 per Sq. Mile	Bay / Central Coast	\$43,000-\$54,999		
KELSEYVILLE	707300	KLVLCA12	LAKE	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999		



Table 4A.12 (page 8 of 18)											
Wire Center Name	Niro Conto		County	Fiber	Wire Center Size	Pct Line Loss	Household Density	Technical Field Services	Median Household		
	200194			Fiber			0.16 por Sg. Milo	Northern CA / Control Vollov			
	209104		STANISLAUS	NO	0-1000 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$35,000-\$66,999 ¢67,000 ¢97,000		
	818620			No	0-1000 Lines	50% 60%		San Gabriel	φ07,000-φ07,999 Ω		
	010020			NO	Over 20000 lines	700/ 200/	0 450 1700 por Sa Milo	Croater I A / Pakarafiald			
	650021			No		F0% 60%	430-1799 per Sq. Mile	Boy (Control Coast	\$00,000 ' \$67,000 \$97,000		
	050021			NO	10001 20000 Lines	50%-00%	450 1700 per Sq. Mile	Southorn CA	\$07,000-\$07,999 \$00		
	610752		SAN DIEGO	Yes	Over 20000 Lines	700/ 900/	450-1799 per Sq. Mile	Southern CA	\$00,000 + \$55,000 \$66,000		
	661272			No	2000 10000 Lines	70%-00%	1000 + per Sq. Mile	Croater I A / Pakarafield	\$00,000-\$00,999 ¢0,¢42,000		
	550196			No	0 1000 Lines	70%-00%	17 04 per Sq. Mile	Northorn CA / Control Valley	\$0-\$42,999 \$0 \$42,000		
	200100			No	1001 2000 Lines	70%-00%	05 440 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999 \$42,000 \$54,000		
	203130		VEDN	No	0 1000 Lines	F0% 60%	0 16 por Sq. Milo	Croater LA / Bekersfield	\$43,000-\$54,999 \$42,000 \$54,000		
	661404			No	1001 2000 Lines	50%-00%	0-16 per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$34,999 \$0 \$43,000		
	550100			NO	2000 10000 Lines	700/ 200/	0-10 per Sq. Mile	Northorn CA / Control Valley	\$0-\$42,999 \$42,000 \$54,000		
	550100		KINGS	No	0 1000 Lines	70%-00% >900∕	17 04 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999 \$0 \$43,000		
	025022			Voc	3000 10000 Lines	200 %	450 1799 per Sq. Mile	Bay / Control Coast	\$0-\$42,999 \$88,000 ±		
	923022			Vos	10001 20000 Lines	70% 80%	1800 + por Sq. Milo	Southorn CA	\$88,000 +		
	200107			No	0 1000 Lines	70/0-00/0	0 16 per Sq. Mile	Northorn CA / Control Valley	\$42,000 \$54,000		
	209107			No	1001 2000 Lines	/0%-00%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999 \$55,000 \$66,000		
	209100		NADA	No	0 1000 Lines	<00%	0-16 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$00,999 \$55,000 \$66,000		
	661405			No	1001 2000 Lines	700/ 200/	0-16 per Sq. Mile	Croater LA / Bekersfield	\$00,000-\$00,999 ¢0,¢42,000		
	707202			No	2000 10000 Lines	70%-00%	17 04 per Sq. Mile	Northorn CA / Control Valley	\$0-\$42,999 \$42,000 \$54,000		
	610751			Voc	3000-10000 Lines	70% 80%	95 449 per Sq. Mile	Southorn CA	\$43,000-\$34,999 \$67,000 \$87,000		
	520471			No	1001 2000 Lines	70 % -00 %	0 16 por Sq. Milo	Northorn CA / Control Valley	\$07,000-\$07,999 \$0 \$42,000		
	016/67			Voc	3000 10000 Lines	<00% 70% 80%	450 1799 por Sq. Milo	Northern CA / Central Valley	90-942,999 \$55,000 \$66,000		
	661374			No	1001 2000 Lines	60% 70%	430-1799 per 3q. Mile	Groater I A / Bakersfield	\$55,000-\$00,999 \$67,000 \$87,000		
	2001014			Voc	Over 20000 lines	70% 80%	95 449 por Sq. Milo	Northorn CA / Contral Vallov	\$55,000-\$66,000		
	203131			No	0 1000 Linos	60% 70%	0 o	Northern CA / Central Valley	φ00,000-φ00,999 Ω		
	016470			Voc	3000 1000 Lines	70% 80%	0 95 119 por Sa Milo	Northern CA / Central Valley	0 + 000 882		
	210622			Ves	Over 20000 Lines	70/0-00/0	1900 ± per Sq. Mile	Croater LA / Bakarafield	\$55,000 \$66,000		
	J15022			Vos	10001 20000 Linos	60% 70%	450 1700 per Sq. Mile	Northorn CA / Contral Vallov	\$33,000-\$00,999 \$88,000 ±		
	213624			Vos	Over 20000 Lines	60% 70%	1800 + por Sq. Milo	Groater I.A. / Bakersfield	\$00,000 + ¢0 ¢12 000		
	213024			Voc	10001 20000 Linco	50% 60%	1800 + per Sq. Mile	Greater LA / Bakersfield	90-942,999 ¢0 ¢12 000		
	213023			No	Over 20000 Lines	70%-80%	1800 + per Sq. Mile	Greater I A / Bakersfield	\$0-\$42,333 \$0_\$42,000		
	213627	LSANCA06	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater I A / Bakersfield	\$0-\$42 999		



	Table 4A.12 (page 9 of 18)											
					Wire Center Size	Pct Line Loss	Household Density	Technical Field Services	Median Household			
Wire Center Name	Wire Cente	r CLLI	County	Fiber	Category	Category	Category	District	Income Category			
LSAN AIRPORT	310628	LSANCA07	LOS ANGELES	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$67,000-\$87,999			
LSAN MELROSE	323629	LSANCA08	LOS ANGELES	No	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$67,000-\$87,999			
RICHMOND	213630	LSANCA09	LOS ANGELES	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$0-\$42,999			
LSAN WEBSTER	323631	LSANCA10	LOS ANGELES	No	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$55,000-\$66,999			
RAMPART	213632	LSANCA11	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$0-\$42,999			
NORMANDY	323633	LSANCA12	LOS ANGELES	No	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$54,999			
LSAN PLYMOUTH	323634	LSANCA13	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$0-\$42,999			
LSAN ADAMS	323635	LSANCA14	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$0-\$42,999			
LSAN AXMINSTER	323636	LSANCA15	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$0-\$42,999			
LSAN CAPITOL	323638	LSANCA23	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	San Gabriel	\$43,000-\$54,999			
LSAN SUNSET	323640	LSANCA29	LOS ANGELES	Yes	10001-20000 Lines	60%-70%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$67,000-\$87,999			
LSAN ANGELES	323641	LSANCA34	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	San Gabriel	\$0-\$42,999			
LSAN MONTEBELLO	323642	LSANCA35	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	San Gabriel	\$43,000-\$54,999			
LSAN REPUBLIC	323643	LSANCA38	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$0-\$42,999			
LSAN CLINTON	323644	LSANCA56	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	San Gabriel	\$55,000-\$66,999			
LOS ALTOS	650024	LSATCA11	SANTA CLARA	Yes	10001-20000 Lines	60%-70%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +			
LOS BANOS	209193	LSBNCA12	MERCED	Yes	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999			
LOS MOLINOS	530469	LSMLCA11	TEHAMA	No	1001-2999 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999			
LEWISTON	530466	LSTNCA11	TRINITY	No	0-1000 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999			
LITTLE ROCK	661375	LTRKCA11	LOS ANGELES	No	3000-10000 Lines	70%-80%	0-16 per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$54,999			
LIVERMORE	925025	LVMRCA11	ALAMEDA	Yes	Over 20000 lines	60%-70%	95-449 per Sq. Mile	Bay / Central Coast	\$88,000 +			
LIVE OAK	530468	LVOKCA11	SUTTER	No	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999			
LOWER LAKE	707304	LWLKCA11	LAKE	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999			
MADERA MAIN	559194	MADRCA11	MADERA	Yes	10001-20000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999			
MADERA BONNADELLI	559243	MADRCA12	MADERA	Yes	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999			
MARINA	831113	MARNCA11	MONTEREY	Yes	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999			
MODESTO MAIN	209199	MDSTCA02	STANISLAUS	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999			
MODESTO KELLOG SOUT	209200	MDSTCA03	STANISLAUS	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999			
MODESTO KINGSWOOD C	209201	MDSTCA04	STANISLAUS	Yes	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999			
MODESTO TALLY	209248	MDSTCA05	STANISLAUS	Yes	3000-10000 Lines	>80%	1800 + per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999			
MODESTO DAVIS	209249	MDSTCA52	STANISLAUS	No	0-1000 Lines	<50%	0	Northern CA / Central Valley	0			
MIDDLETOWN	707306	MDTWCA11	LAKE	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999			
MOKELUMNE HILL	209202	MKHLCA12	CALAVERAS	No	0-1000 Lines	50%-60%	0	Northern CA / Central Valley	0			
MCKINLEYVILLE	707307	MKVLCA11	HUMBOLDT	No	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999			



				Table	4A.12 (page 10 of 1	8)			
					Wire Center Size	Pct Line Loss	Household Density	Technical Field Services	Median Household
Wire Center Name	Wire Center	r CLLI	County	Fiber	Category	Category	Category	District	Income Category
MILLBRAE	650026	MLBRCA11	SAN MATEO	Yes	3000-10000 Lines	60%-70%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +
MILPITAS	408114	MLPSCA11	SANTA CLARA	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +
MILL VALLEY	415027	MLVYCA01	MARIN	Yes	10001-20000 Lines	60%-70%	95-449 per Sq. Mile	Northern CA / Central Valley	\$88,000 +
MENDOCINO	707305	MNDCCA11	MENDOCINO	No	3000-10000 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
MENDOTA	559195	MNDTCA11	FRESNO	No	1001-2999 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
MENLO PARK	650028	MNPKCA11	SAN MATEO	Yes	10001-20000 Lines	60%-70%	95-449 per Sq. Mile	Bay / Central Coast	\$88,000 +
MONTE RIO	707309	MNRICA11	SONOMA	No	1001-2999 Lines	50%-60%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
MOJAVE	661376	MOJVCA01	KERN	No	1001-2999 Lines	60%-70%	0-16 per Sq. Mile	Greater LA / Bakersfield	\$0-\$42,999
MORAGA	925029	MORGCA12	CONTRA COSTA	No	3000-10000 Lines	60%-70%	95-449 per Sq. Mile	Bay / Central Coast	\$88,000 +
MORRO BAY	805378	MRBACA11	SAN LUIS OBISPO	No	3000-10000 Lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$43,000-\$54,999
MERCED	209196	MRCDCA01	MERCED	Yes	Over 20000 lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
MERIDAN	530473	MRDNCA11	SUTTER	No	0-1000 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
MIRANDA	707308	MRNDCA11	HUMBOLDT	No	0-1000 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
MURPHYS	209203	MRPHCA11	CALAVERAS	No	1001-2999 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
MOORPARK	805377	MRPKCA12	VENTURA	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Greater LA / Bakersfield	\$88,000 +
MARTINEZ	925030	MRTZCA11	CONTRA COSTA	Yes	10001-20000 Lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +
MOSS BEACH	650031	MSBHCA11	SAN MATEO	No	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$88,000 +
MISSION VIEJO	949806	MSVJCAAT	ORANGE	Yes	3000-10000 Lines	60%-70%	450-1799 per Sq. Mile	Southern CA	\$88,000 +
MONTAGUE	530529	MTAGCA11	SISKIYOU	No	1001-2999 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
MOUNTAIN PASS	760753	MTPSCA11	SAN BERNARDINO	No	0-1000 Lines	50%-60%	0	Southern CA	0
MONTEREY	831115	MTRYCA01	MONTEREY	No	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
MOUNT SHASTA	530474	MTSHCA12	SISKIYOU	No	3000-10000 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
MOUNTAIN VIEW	650032	MTVWCA11	SANTA CLARA	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +
MARYSVILLE	530472	MYVICA01	YUBA	Yes	10001-20000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
NAPA	707310	NAPACA01	NAPA	Yes	Over 20000 lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
NICOLAUS	530477	NCLSCA12	SUTTER	No	0-1000 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
EDGEWOOD N HIGHL	916478	NHLDCA11	SACRAMENTO	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
NEWHALL	661379	NHLLCA01	LOS ANGELES	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Greater LA / Bakersfield	\$88,000 +
NHWD LANKERSHIM	818646	NHWDCA01	LOS ANGELES	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$54,999
NHWD MAGNOLIA	818647	NHWDCA02	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$55,000-\$66,999
NICE	707311	NICECA11	LAKE	No	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
NICASIO	415033	NICSCA11	MARIN	No	0-1000 Lines	<50%	0	Northern CA / Central Valley	0
NILAND MAIN	760855	NILDCA11	IMPERIAL	No	0-1000 Lines	70%-80%	0-16 per Sq. Mile	Southern CA	\$0-\$42,999
NINLAND BOMBAY BEACH	760856	NILDCA12	IMPERIAL	No	0-1000 Lines	>80%	0-16 per Sq. Mile	Southern CA	\$0-\$42,999



				Table	4A.12 (page 11 of 1	8)			
Wire Center Name V	Vire Center	CLLI	County	Fiber	Wire Center Size Category	Pct Line Loss Category	Household Density Category	Technical Field Services District	Median Household Income Category
NIPOMO	805380	NIPMCA11	SAN LUIS OBISPO	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999
NORTHRIDGE	818648	NORGCA11	LOS ANGELES	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Greater LA / Bakersfield	\$67,000-\$87,999
WABASH	916479	NSCRCA11	SACRAMENTO	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
NORTH NATOMAS	916537	NSCRCA12	SACRAMENTO	Yes	10001-20000 Lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
NORTH SAN JUAN	530480	NSJNCA11	NEVADA	No	1001-2999 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
NATIONAL CITY HIGHLANI	619754	NTCYCA11	SAN DIEGO	Yes	3000-10000 Lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$0-\$42,999
NEVADA CITY	530475	NVCYCA11	NEVADA	No	3000-10000 Lines	50%-60%	17-94 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
NEWCASTLE	916476	NWCSCA11	PLACER	No	3000-10000 Lines	60%-70%	95-449 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
NEWMAN	209204	NWMNCA12	STANISLAUS	No	1001-2999 Lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
NORTH YUBA	530481	NYUBCA11	YUBA	No	1001-2999 Lines	50%-60%	0	Northern CA / Central Valley	0
OCCIDENTAL	707312	OCDNCA11	SONOMA	No	1001-2999 Lines	50%-60%	17-94 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
OCEANSIDE MISSION	760758	OCSDCA11	SAN DIEGO	Yes	Over 20000 lines	70%-80%	95-449 per Sq. Mile	Southern CA	\$55,000-\$66,999
OJAI	805382	OJAICA11	VENTURA	No	3000-10000 Lines	70%-80%	0-16 per Sq. Mile	Greater LA / Bakersfield	\$67,000-\$87,999
OAKDALE	209205	OKDLCA11	STANISLAUS	Yes	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
OAKLAND FRANKLIN	510036	OKLDCA03	ALAMEDA	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Bay / Central Coast	\$43,000-\$54,999
OAKLAND KELLOGFRUIT\	510037	OKLDCA04	ALAMEDA	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$0-\$42,999
OAKLAND 45TH OLYMPIC	510038	OKLDCA11	ALAMEDA	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
OAKLAND HOLLY	510039	OKLDCA12	ALAMEDA	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999
OAKLAND MOUNTAIN	510040	OKLDCA13	ALAMEDA	Yes	10001-20000 Lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +
OAKLEY	925041	OKLYCA11	CONTRA COSTA	Yes	3000-10000 Lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
OAKVIEW	805381	OKVWCA11	VENTURA	No	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Greater LA / Bakersfield	\$55,000-\$66,999
EXPORT OILDALE	661383	OLDLCA11	KERN	Yes	10001-20000 Lines	70%-80%	17-94 per Sq. Mile	Greater LA / Bakersfield	\$55,000-\$66,999
ORANGE COVE	559206	ORCVCA11	FRESNO	No	1001-2999 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
ORLAND	530483	ORLDCA11	GLENN	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
ORINDA	925042	ORNDCA11	CONTRA COSTA	Yes	3000-10000 Lines	60%-70%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +
ORANGE CHAPMAN	714759	ORNGCA11	ORANGE	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$67,000-\$87,999
ORANGE OLIVE	714760	ORNGCA13	ORANGE	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$88,000 +
ORANGE WEST	714761	ORNGCA14	ORANGE	Yes	10001-20000 Lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$55,000-\$66,999
OROSI	559207	ORSICA11	TULARE	No	3000-10000 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
ORANGEVALE	916482	ORVACA11	SACRAMENTO	Yes	10001-20000 Lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
OROVILLE MAIN	530484	ORVLCA11	BUTTE	No	10001-20000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
OROVILLE EAST	530485	ORVLCA12	BUTTE	No	3000-10000 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
OTAY MESA	619853	OTMSCA11	SAN DIEGO	Yes	3000-10000 Lines	60%-70%	95-449 per Sq. Mile	Southern CA	\$88,000 +
PAUMA VALLEY	760764	PALACA11	SAN DIEGO	No	1001-2999 Lines	50%-60%	17-94 per Sq. Mile	Southern CA	\$67,000-\$87,999



				Table	4A.12 (page 12 of 1	8)			
					Wire Conter Size	Det Line Less	Heuseheld Density	Technical Field Convises	Medien Heuseheld
Wire Center Name	Vire Cente	r CLLI	County	Fiber	Category	Category	Category	District	Income Category
GARNET	858762	PCBHCA01	SAN DIEGO	Yes	Over 20000 lines	70%-80%	1800 + per Sg. Mile	Southern CA	\$67,000-\$87,999
HORNBLEND	858763	PCBHCA11	SAN DIEGO	Yes	1001-2999 Lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$67,000-\$87,999
PACIFICA	650043	PCFCCA11	SAN MATEO	Yes	10001-20000 Lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +
PEDLEY	951765	PDLYCA11	RIVERSIDE	Yes	10001-20000 Lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$55,000-\$66,999
PIRU	805386	PIRUCA11	VENTURA	No	0-1000 Lines	70%-80%	0-16 per Sq. Mile	Greater LA / Bakersfield	\$0-\$42,999
PALO ALTO MAIN	650045	PLALCA02	SANTA CLARA	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +
PALO ALTO SOUTH	650046	PLALCA12	SANTA CLARA	Yes	10001-20000 Lines	60%-70%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +
PLACENTIA	714767	PLCNCA11	ORANGE	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$67,000-\$87,999
PALMDALE	661384	PLDLCA01	LOS ANGELES	Yes	Over 20000 lines	70%-80%	95-449 per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$54,999
PALMDALE EAST 47TH ST	661412	PLDLCA11	LOS ANGELES	Yes	3000-10000 Lines	>80%	450-1799 per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$54,999
PLEASANT GROVE	916491	PLGVCA12	PLACER	No	0-1000 Lines	50%-60%	0	Northern CA / Central Valley	0
PLYMOUTH	209212	PLMOCA11	AMADOR	No	3000-10000 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
PLANADA	209211	PLNDCA11	MERCED	No	1001-2999 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
PLEASANTON MAIN HOPY	925047	PLTNCA12	ALAMEDA	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$88,000 +
PLEASANTON HACIENDA	925083	PLTNCA13	ALAMEDA	No	3000-10000 Lines	60%-70%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +
PLACERVILLE MAIN	530489	PLVLCA11	EL DORADO	No	Over 20000 lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
PLACERVILLE NIAGARA	530490	PLVLCA12	EL DORADO	No	3000-10000 Lines	60%-70%	95-449 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
POINT ARENA	707315	PNARCA11	MENDOCINO	No	1001-2999 Lines	<50%	0	Northern CA / Central Valley	0
PINECREST	209209	PNCRCA11	TUOLUMNE	No	1001-2999 Lines	<50%	0	Northern CA / Central Valley	0
PINE VALLEY	619766	PNVYCA11	SAN DIEGO	No	1001-2999 Lines	70%-80%	0-16 per Sq. Mile	Southern CA	\$67,000-\$87,999
POWAY MIDLAND	858768	POWYCA11	SAN DIEGO	Yes	3000-10000 Lines	60%-70%	450-1799 per Sq. Mile	Southern CA	\$88,000 +
PEPPERWOOD	707313	PPWDCA11	HUMBOLDT	No	0-1000 Lines	<50%	0	Northern CA / Central Valley	0
PARADISE MAIN	530486	PRDSCA11	BUTTE	No	10001-20000 Lines	60%-70%	95-449 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
PARADISE PINES	530487	PRDSCA12	BUTTE	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
PARLIER	559208	PRLRCA11	FRESNO	Yes	1001-2999 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
PARAMOUNT	562649	PRMTCA01	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$54,999
POINT REYES	415048	PRSNCA11	MARIN	No	1001-2999 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
PITTSBURG MAIN	925049	PSBGCA01	CONTRA COSTA	Yes	10001-20000 Lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999
PITTSBURG BAY POINT W	925050	PSBGCA11	CONTRA COSTA	Yes	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999
PISMO BEACH	805387	PSBHCA11	SAN LUIS OBISPO	No	3000-10000 Lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
PESCADERO	650051	PSCDCA11	SAN MATEO	No	1001-2999 Lines	<50%	0	Bay / Central Coast	0
PASADENA MT WILSON G	626650	PSDNCA11	LOS ANGELES	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	San Gabriel	\$67,000-\$87,999
PASADENA LAKE	626651	PSDNCA12	LOS ANGELES	Yes	Over 20000 lines	70%-80%	95-449 per Sq. Mile	San Gabriel	\$67,000-\$87,999
PASKENTA	530488	PSKNCA11	TEHAMA	No	0-1000 Lines	<50%	0	Northern CA / Central Valley	0



				Table	e 4A.12 (page 13 of 18	3)			
					Wine Conton Size	Det Line Lane	Heurschald Density	Taskaisel Field Comisse	Medley Henreheld
Wire Center Name	Wire Center	r CLLI	County	Fiber	Category	Category	Category	District	Income Category
PASO ROBLES	805385	PSRBCA01	SAN LUIS OBISPO	No	10001-20000 Lines	60%-70%	17-94 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
PETALUMA	707314	PTLMCA01	SONOMA	Yes	Over 20000 lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
PORTOLA	530492	PTOLCA01	PLUMAS	No	1001-2999 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
PORTERVILLE	559213	PTVLCA11	TULARE	Yes	Over 20000 lines	60%-70%	95-449 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
POTTER VALLEY	707316	PTVYCA11	MENDOCINO	No	1001-2999 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
PIXLEY	559210	PXLYCA11	TULARE	No	1001-2999 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
QUINCY	530493	QNCYCA12	PLUMAS	No	3000-10000 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
RAMONA	760769	RAMNCA11	SAN DIEGO	Yes	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Southern CA	\$67,000-\$87,999
RANCHO BERNARDO	858770	RBRNCA11	SAN DIEGO	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$88,000 +
STANFORD RANCH	916541	RCKLCA01	PLACER	Yes	10001-20000 Lines	>80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
ROCKLIN	916527	RCKLCA11	PLACER	Yes	3000-10000 Lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
RICHMOND SF	510052	RCMDCA11	CONTRA COSTA	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999
RICHVALE	530496	RCVACA11	BUTTE	No	0-1000 Lines	<50%	0	Northern CA / Central Valley	0
RED BLUFF	530494	RDBLCA01	TEHAMA	No	10001-20000 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
REDWOOD CITY	650053	RDCYCA01	SAN MATEO	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +
REDDING MAIN	530495	RDNGCA02	SHASTA	Yes	Over 20000 lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
REDDING ENTERPR	530531	RDNGCA11	SHASTA	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
RESEDA	818652	RESDCA01	LOS ANGELES	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Greater LA / Bakersfield	\$55,000-\$66,999
RIO DELL	707317	RIDECA11	HUMBOLDT	No	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
RIO LINDA	916526	RILNCA12	SACRAMENTO	No	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
RIALTO	909773	RILTCA11	SAN BERNARDINO	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$43,000-\$54,999
RANCHO MURIETTA	916533	RNMRCA11	SACRAMENTO	No	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$88,000 +
RANCHO PENASQUITOS	858854	RNPSCA11	SAN DIEGO	Yes	3000-10000 Lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$88,000 +
RANCHO SAN DIEGO	619852	RNSDCA11	SAN DIEGO	Yes	3000-10000 Lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$67,000-\$87,999
ROSEMEAD	626654	ROSMCA11	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	San Gabriel	\$43,000-\$54,999
RANCHO SANTA FE	858771	RSFECA12	SAN DIEGO	Yes	3000-10000 Lines	60%-70%	95-449 per Sq. Mile	Southern CA	\$88,000 +
ROSAMOND	661388	RSMDCA11	KERN	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$54,999
R S MARGARITA	949808	RSMGCA11	ORANGE	Yes	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Southern CA	\$88,000 +
ROHNERT PARK	707337	RTPKCA11	SONOMA	Yes	3000-10000 Lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
RIVERDALE	559215	RVDLCA11	FRESNO	No	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
RIVERBANK	209214	RVRBCA11	STANISLAUS	Yes	3000-10000 Lines	>80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
RIVERSIDE ORANGE	951774	RVSDCA01	RIVERSIDE	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$55,000-\$66,999
WOODCREST	951775	RVSDCA11	RIVERSIDE	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Southern CA	\$88,000 +
SAUGUS	661407	SAGSCA11	LOS ANGELES	Yes	10001-20000 Lines	>80%	95-449 per Sq. Mile	Greater LA / Bakersfield	\$88,000 +



				Table	4A.12 (page 14 of 1	8)			
Wire Center Name	Wire Center	r CIII	County	Fiber	Wire Center Size	Pct Line Loss	Household Density	Technical Field Services	Median Household
SANTEE	619795	SANTCA01	SAN DIEGO	Yes	3000-10000 Lines	70%-80%	450-1799 per Sa Mile	Southern CA	\$67,000-\$87,999
SATICOY	805391	SATCCA12	VENTURA	Yes	3000-10000 Lines	70%-80%	95-449 per Sa Mile	Greater I A / Bakersfield	\$67,000-\$87,999
SEBASTAPOL	707321	SBSTCA11	SONOMA	No	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
SACRAMENTO MN	916497	SCRMCA01	SACRAMENTO	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Northern CA / Central Valley	\$43,000,\$54,999
	916498	SCRMCA02	SACRAMENTO	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
SCRM GARDEN	916499	SCRMCA03	SACRAMENTO	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$43,000,\$54,999
	916500	SCRMCA11	SACRAMENTO	Ves	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Northern CA / Central Valley	\$55 000-\$66 999
SCRM EMPIRE	916501	SCRMCA12	SACRAMENTO	Ves	10001-20000 lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$13,000-\$51,999
SCRM FRUITRIDGE	916502	SCRMCA13	SACRAMENTO	Yes	10001-20000 Lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$43 000-\$54 999
SCOTTS VALLEY	831116	SCVYCA01	SANTA CRUZ	Yes	3000-10000 Lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +
SODA SPRINGS	530508	SDSPCA11		No	1001_2000 Lines	50%-60%		Northern CA / Central Valley	φ00,000 · 0
SEL MA	559217	SELMCA11	FRESNO	Ves	3000-10000 Lines	70%-80%	95-119 per Sa Mile	Northern CA / Central Valley	\$43,000-\$54,999
SEASIDE	831117	SESDCA11	MONTEREV	Ves	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$55 000-\$66 999
	323655	SGATCA01		Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater I A / Bakersfield	\$0-\$42 999
SHINGLE SPRINGS	530504	SGSPCA11		Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$67 000-\$87 999
SHAFTER	661392	SHETCA11	KERN	No	3000-10000 Lines	70%-80%	17-94 per Sa Mile	Northern CA / Central Valley	\$0-\$42 999
SHASTALAKE	530503	SHI KCA01	SHASTA	No	0-1000 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0_\$42,999
SHERMAN OAKS	818656	SHOKCA01		No	Over 20000 lines	60%-70%	450-1799 per Sq. Mile	Greater I A / Bakersfield	\$88,000 +
SHOSHONE	760796	SHSHCA11		No	0-1000 Lines	<50%	1700 per oq. mile 0	Southern CA	φ00,000 · 0
SIMI	805393	SIMICA11	VENTURA	Yes	Over 20000 lines	~50 <i>%</i> 70%-80%	450-1799 per Sa Mile	Greater I A / Bakersfield	\$88,000 +
S I CAPISTRANO	949791	SICPCA12	ORANGE	Yes	10001-20000 Lines	70%-80%	95-449 per Sa Mile	Southern CA	\$67,000-\$87,999
STOCKTON MAIN	209220	SKTNCA01		Yes	Over 20000 lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$0-\$42 999
STOCKTON GRANITE	209220	SKTNCA11	SAN JOAOLIIN	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
STOCKTON ASHLEY	209227	SKTNCA12	SANJOAOUIN	No	3000-10000 Lines	60%-70%	17-94 ner Sa Mile	Northern CA / Central Valley	\$43,000,\$54,999
STOCKTON REDWOOD	209222	SKTNCA14	SANJOAOUIN	Yes	3000-10000 Lines	70%-80%	95-449 per Sa Mile	Northern CA / Central Valley	\$55 000-\$66 999
SOLEDAD	831118	SI DDCA11	MONTEREY	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Bay / Central Coast	\$43,000-\$54,999
SOLEDIND	661394	SLMNCA11		Yes	10001-20000 Lines	70%-80%	95-449 per Sa Mile	Greater I A / Bakersfield	\$67,000-\$87,999
SALINAS MAIN	831119	SLNSCA01	MONTEREY	Yes	Over 20000 lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$43,000-\$54,999
HICKORY SALINAS	831120	SLNSCA11	MONTEREY	Yes	10001-20000 Lines	70%-80%	450-1799 per Sa Mile	Bay / Central Coast	\$55,000-\$66,999
GLENVIEW	831121	SLNSCA12	MONTEREY	No	1001-2999 Lines	60%-70%	95-449 per Sa Mile	Bay / Central Coast	\$88,000 +
HUNTER	831122	SLNSCA13	MONTEREY	No	1001-2999 Lines	60%-70%	17-94 per Sa Mile	Bay / Central Coast	\$88,000 +
MORO	831123	SI NSCA14	MONTEREY	No	3000-10000 Lines	60%-70%	95-449 per Sa Mile	Bay / Central Coast	\$55,000-\$66,999
SILVERADO	714797	SLVRCA11	ORANGE	No	0-1000 Lines	50%-60%	17-94 per Sa Mile	Southern CA	\$88,000 +
SMARTSVILLE	530507	SMAVCA11	YUBA	No	0-1000 Lines	50%-60%	0	Northern CA / Central Valley	0



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Wire Center Name V	Vire Cente	r CIII	County	Fiber	Wire Center Size	Pct Line Loss	Household Density Category	Technical Field Services	Median Household
SAN ANDREAS	209216	SNADCA11	CALAVERAS	No	3000-10000 Lines	50%-60%	0-16 per Sa. Mile	Northern CA / Central Valley	\$43.000-\$54.999
BUSH	714788	SNANCA01	ORANGE	Yes	Over 20000 lines	70%-80%	1800 + per Sa. Mile	Southern CA	\$43.000-\$54.999
BRISTOL	714789	SNANCA11	ORANGE	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$67,000-\$87,999
SANTA ANA WEST SNAN E	714804	SNANCA12	ORANGE	Yes	10001-20000 Lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$55,000-\$66,999
SAN ARDO	831124	SNARCA11	MONTEREY	No	0-1000 Lines	50%-60%	0	Bay / Central Coast	0
SAN BRUNO	650055	SNBUCA02	SAN MATEO	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
SAN CLEMENTE	949776	SNCLCA12	ORANGE	No	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Southern CA	\$88,000 +
SAN CARLOS	650056	SNCRCA11	SAN MATEO	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +
SANTA CRUZ	831125	SNCZCA01	SANTA CRUZ	Yes	Over 20000 lines	60%-70%	95-449 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
SANTA CRUZ CAPITOLA	831126	SNCZCA11	SANTA CRUZ	Yes	Over 20000 lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
SNDG C STREET	619777	SNDGCA01	SAN DIEGO	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Southern CA	\$43,000-\$54,999
SNDG UNIVERSITY	619778	SNDGCA02	SAN DIEGO	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Southern CA	\$67,000-\$87,999
SNDG LINDA VISTA	858779	SNDGCA03	SAN DIEGO	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$67,000-\$87,999
SNDG SAIPAN	619780	SNDGCA05	SAN DIEGO	Yes	10001-20000 Lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$55,000-\$66,999
SNDG 37TH STREET	619781	SNDGCA06	SAN DIEGO	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$43,000-\$54,999
SNDG COLLEGE	619782	SNDGCA11	SAN DIEGO	Yes	10001-20000 Lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$55,000-\$66,999
SNDG MARKET STREET	619783	SNDGCA12	SAN DIEGO	Yes	10001-20000 Lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$43,000-\$54,999
SNDG TENNYSON	619784	SNDGCA14	SAN DIEGO	Yes	10001-20000 Lines	70%-80%	1800 + per Sq. Mile	Southern CA	\$67,000-\$87,999
SNDG REGENTS	858785	SNDGCA15	SAN DIEGO	Yes	Over 20000 lines	60%-70%	450-1799 per Sq. Mile	Southern CA	\$67,000-\$87,999
SNDG MIRA MESA	858786	SNDGCA16	SAN DIEGO	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$88,000 +
SF BUSH PINE	415058	SNFCCA01	SAN FRANCISCO	Yes	Over 20000 lines	50%-60%	1800 + per Sq. Mile	Bay / Central Coast	\$43,000-\$54,999
SF MARKET MCCOPPIN	415059	SNFCCA04	SAN FRANCISCO	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
SF MISSION 25TH ST	415060	SNFCCA05	SAN FRANCISCO	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +
SF JUNIPER ONONDAGA	415061	SNFCCA06	SAN FRANCISCO	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
SF LARKIN STEINER	415067	SNFCCA12	SAN FRANCISCO	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
SF EVERGREEN 9TH AVE	415064	SNFCCA13	SAN FRANCISCO	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
SF MONTROSE 19TH	415065	SNFCCA14	SAN FRANCISCO	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +
SF THIRD ST	415066	SNFCCA17	SAN MATEO	Yes	10001-20000 Lines	60%-70%	450-1799 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999
SF FOLSOM	415068	SNFCCA21	SAN FRANCISCO	Yes	10001-20000 Lines	50%-60%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +
SAN GABRIEL	626658	SNGBCA01	LOS ANGELES	No	Over 20000 lines	70%-80%	1800 + per Sq. Mile	San Gabriel	\$67,000-\$87,999
SAN GERONIMO	415069	SNGNCA11	MARIN	No	1001-2999 Lines	60%-70%	95-449 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
SAN JUAN BAUSTISTA	831127	SNJNCA11	SAN BENITO	No	1001-2999 Lines	60%-70%	17-94 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999
SAN JOSE MAIN	408128	SNJSCA02	SANTA CLARA	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
SAN JOSE WHITE RD	408129	SNJSCA11	SANTA CLARA	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999



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					Wire Center Size	Pot Line Loco	Household Density	Technical Field Services	Median Household
Wire Center Name V	Vire Cente	r CLLI	County	Fiber	Category	Category	Category	District	Income Category
SAN JOSE DIAL WAY	408130	SNJSCA12	SANTA CLARA	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +
SAN JOSE CHYNOWETH	408131	SNJSCA13	SANTA CLARA	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
SAN JOSE FOXWORTHY	408132	SNJSCA14	SANTA CLARA	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +
SAN JOSE EVERGREEN S	408133	SNJSCA15	SANTA CLARA	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +
SAN JOSE ALMADEN VALI	408134	SNJSCA18	SANTA CLARA	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Bay / Central Coast	\$88,000 +
SAN JOSE JUNCTION	408145	SNJSCA21	SANTA CLARA	Yes	10001-20000 Lines	60%-70%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +
SAN JOSE BAILEY	408142	SNJSCA22	SANTA CLARA	No	0-1000 Lines	50%-60%	0	Bay / Central Coast	0
SAN LUCAS	831135	SNLCCA11	MONTEREY	No	0-1000 Lines	50%-60%	0	Bay / Central Coast	0
SAN LEANDRO	510070	SNLNCA11	ALAMEDA	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999
SAN LUIS OBISPO	805389	SNLOCA01	SAN LUIS OBISPO	Yes	10001-20000 Lines	60%-70%	0-16 per Sq. Mile	Bay / Central Coast	\$43,000-\$54,999
SAN MARTIN	408136	SNMACA11	SANTA CLARA	No	1001-2999 Lines	60%-70%	17-94 per Sq. Mile	Bay / Central Coast	\$88,000 +
SAN MARCOS	760792	SNMCCAAO	SAN DIEGO	No	Over 20000 lines	70%-80%	0	Southern CA	0
SANTA MARGARITA	805390	SNMICA11	SAN LUIS OBISPO	No	1001-2999 Lines	50%-60%	0-16 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999
SAN MATEO	650071	SNMTCA11	SAN MATEO	Yes	Over 20000 lines	60%-70%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +
SAN PEDRO	310659	SNPDCA01	LOS ANGELES	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Greater LA / Bakersfield	\$67,000-\$87,999
SONORA	209218	SNRACA13	TUOLUMNE	No	10001-20000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
SAN RAFAEL MAIN	415072	SNRFCA01	MARIN	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$88,000 +
PARKWAY	415073	SNRFCA11	MARIN	Yes	10001-20000 Lines	60%-70%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$88,000 +
SAN RAMON	925074	SNRMCA11	ALAMEDA	Yes	10001-20000 Lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +
SANTA ROSA MAIN	707320	SNRSCA01	SONOMA	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
LOS ALAMOS	707319	SNRSCA11	SONOMA	No	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
SANTA CLARA SPACEPAF	408143	SNTCCA01	SANTA CLARA	Yes	10001-20000 Lines	50%-60%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +
SANTA CLARA BELLOMY	408137	SNTCCA11	SANTA CLARA	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +
CARROL SUNNYVALE	408138	SNVACA01	SANTA CLARA	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +
MATHILDA SUNNEYVALE	408139	SNVACA11	SANTA CLARA	Yes	3000-10000 Lines	70%-80%	1800 + per Sq. Mile	Bay / Central Coast	\$88,000 +
SAN YSIDRO	619794	SNYSCA12	SAN DIEGO	No	3000-10000 Lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$43,000-\$54,999
SONOMA	707323	SONMCA12	SONOMA	No	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
SOUT PASADENA MISSIO	626660	SPSDCA11	LOS ANGELES	No	10001-20000 Lines	70%-80%	1800 + per Sq. Mile	San Gabriel	\$88,000 +
SPRINGVILLE	559219	SPVLCA11	TULARE	No	1001-2999 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
SIERRA CITY	530505	SRCYCA11	SIERRA	No	0-1000 Lines	<50%	0	Northern CA / Central Valley	0
STRATFORD	559224	SRFRCA11	KINGS	No	0-1000 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
SIERRAVILLE	530506	SRVLCA11	SIERRA	No	0-1000 Lines	50%-60%	0	Northern CA / Central Valley	0
SAUSALITO LARKSPUR	415075	SSLTCA11	MARIN	Yes	3000-10000 Lines	70%-80%	1800 + per Sq. Mile	Northern CA / Central Valley	\$88,000 +
SOUTH TAHOE SUSSEX	530509	STAHCA01	EL DORADO	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999



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					Wire Center Size	Pct Line Loss	Household Density	Technical Field Services	Median Household
Wire Center Name	Vire Center	r CLLI	County	Fiber	Category	Category	Category	District	Income Category
SOUTH TAHOE TAMARAC	530511	STAHCA12	EL DORADO	No	0-1000 Lines	70%-80%	0	Northern CA / Central Valley	0
SOUTH TAHOE MEYERS A	530512	STAHCA13	EL DORADO	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
STINSON BEACH	415076	STBHCA11	MARIN	No	1001-2999 Lines	<50%	17-94 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
SUTTER CREEK	209225	STCKCA11	AMADOR	No	1001-2999 Lines	50%-60%	0	Northern CA / Central Valley	0
STONYFORD	530513	STFRCA11	COLUSA	No	0-1000 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
ST HELENA	707318	STHNCA11	NAPA	No	3000-10000 Lines	50%-60%	17-94 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
SUISUN CITY	707324	SUISCA11	SOLANO	Yes	1001-2999 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$88,000 +
SUNOL	925077	SUNLCA11	ALAMEDA	No	0-1000 Lines	50%-60%	0	Bay / Central Coast	0
TIBURON	415005	TBRNCA11	MARIN	No	3000-10000 Lines	60%-70%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$88,000 +
TECHACHAPI	661395	THCHCA01	KERN	Yes	3000-10000 Lines	70%-80%	0-16 per Sq. Mile	Greater LA / Bakersfield	\$55,000-\$66,999
TAHOE CITY	530514	THCYCA01	PLACER	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
THREE RIVERS	559228	THRRCA11	TULARE	No	1001-2999 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
THORNTON	209227	THTNCA11	SAN JOAQUIN	No	0-1000 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
TOMALES	707325	TMLSCA12	SONOMA	No	0-1000 Lines	50%-60%	0	Northern CA / Central Valley	0
TEMPLETON	805396	TMTNCA11	SAN LUIS OBISPO	No	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Bay / Central Coast	\$67,000-\$87,999
TIPTON	559229	TPTNCA11	TULARE	No	0-1000 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
TRACY	209230	TRACCA11	SAN JOAQUIN	Yes	Over 20000 lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
TERRA BELLA	559226	TRBLCA11	TULARE	No	1001-2999 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
TURLOCK	209232	TRLCCA11	STANISLAUS	Yes	Over 20000 lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
TORRANCE	310661	TRNCCA11	LOS ANGELES	Yes	10001-20000 Lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$55,000-\$66,999
TRINIDAD	707326	TRNDCA11	HUMBOLDT	No	1001-2999 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
TRES PINOS	831140	TRPSCA11	SAN BENITO	No	0-1000 Lines	<50%	0	Bay / Central Coast	0
TRUCKEE	530515	TRUCCA11	NEVADA	No	10001-20000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
NORTH STAR	530516	TRUCCA12	PLACER	No	1001-2999 Lines	50%-60%	0	Northern CA / Central Valley	0
TULARE	559231	TULRCA11	TULARE	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
TUSTIN 11	714798	TUSTCA11	ORANGE	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$88,000 +
TUSTIN 70	714805	TUSTCA70	ORANGE	Yes	1001-2999 Lines	50%-60%	0	Southern CA	0
TWAIN HARTE	209233	TWHRCA11	TUOLUMNE	No	3000-10000 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
UKIAH MAIN	707328	UKIHCA01	MENDOCINO	No	10001-20000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
CAPELLA IVANHOE	707327	UKIHCA12	MENDOCINO	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
UNION CITY	510078	UNCYCA11	ALAMEDA	No	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +
UPPER LAKE	707329	UPLKCA11	LAKE	No	1001-2999 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
VACAVILLE	707330	VCVLCA12	SOLANO	Yes	Over 20000 lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
VINA	530517	VINACA12	TEHAMA	No	0-1000 Lines	50%-60%	0	Northern CA / Central Valley	0



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					Wire Center Size	Pct Line Loss	Household Density	Technical Field Services	Median Household
Wire Center Name	Nire Cente	r CLLI	County	Fiber	Category	Category	Category	District	Income Category
VISALIA MAIN	559235	VISLCA11	TULARE	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
VISTA	760800	VISTCA12	SAN DIEGO	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$55,000-\$66,999
VALLEY CENTER	760799	VLCTCA11	SAN DIEGO	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Southern CA	\$67,000-\$87,999
VALLEJO	707331	VLLJCA01	SOLANO	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
VAN NUYS	818662	VNNYCA02	LOS ANGELES	Yes	Over 20000 lines	70%-80%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$43,000-\$54,999
VENTURA FIR	805400	VNTRCA02	VENTURA	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Greater LA / Bakersfield	\$55,000-\$66,999
VENTURA MAIN MONTAL\	805399	VNTRCA11	VENTURA	Yes	10001-20000 Lines	70%-80%	450-1799 per Sq. Mile	Greater LA / Bakersfield	\$67,000-\$87,999
VALLEY FORD	707332	VYFRCA11	SONOMA	No	0-1000 Lines	50%-60%	0	Northern CA / Central Valley	0
VALLEY SPRINGS	209234	VYSPCA11	CALAVERAS	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
WAWANA	209238	WANACA11	MARIPOSA	No	0-1000 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
WASCO	661402	WASCCA01	KERN	No	3000-10000 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
WOODLAND	530523	WDLDCA11	YOLO	Yes	Over 20000 lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
WOODLAKE	559239	WDLKCA11	TULARE	No	1001-2999 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
WEED	530518	WEEDCA01	SISKIYOU	No	3000-10000 Lines	60%-70%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
WEOTT	707333	WEOTCA11	HUMBOLDT	No	0-1000 Lines	50%-60%	0	Northern CA / Central Valley	0
CENTURY CITY	310663	WLANCA01	LOS ANGELES	Yes	10001-20000 Lines	60%-70%	1800 + per Sq. Mile	Greater LA / Bakersfield	\$88,000 +
WALKER BASIN	661401	WLBSCA11	KERN	No	0-1000 Lines	<50%	0-16 per Sq. Mile	Greater LA / Bakersfield	\$0-\$42,999
WALLACE	209236	WLLCCA11	CALAVERAS	No	0-1000 Lines	50%-60%	0	Northern CA / Central Valley	0
WILMINGTON	310664	WLMGCA01	LOS ANGELES	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Greater LA / Bakersfield	\$55,000-\$66,999
WILLITS	707334	WLTSCA12	MENDOCINO	No	3000-10000 Lines	50%-60%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
WILLOWS	530521	WLWSCA11	GLENN	No	3000-10000 Lines	70%-80%	0-16 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
WALNUT CREEK	925079	WNCKCA11	CONTRA COSTA	Yes	Over 20000 lines	70%-80%	450-1799 per Sq. Mile	Bay / Central Coast	\$88,000 +
WINDSOR	707335	WNDSCA11	SONOMA	Yes	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999
WARNER SPRINGS	760801	WNSPCA12	SAN DIEGO	No	1001-2999 Lines	50%-60%	0-16 per Sq. Mile	Southern CA	\$0-\$42,999
WINTERS	530522	WNTRCA11	YOLO	Yes	1001-2999 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
FRONTIER	916519	WSCRCA11	SACRAMENTO	Yes	10001-20000 Lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
WATERFORD	209237	WTFRCA11	STANISLAUS	No	3000-10000 Lines	70%-80%	17-94 per Sq. Mile	Northern CA / Central Valley	\$43,000-\$54,999
WHEATLAND	530520	WTLDCA12	SUTTER	Yes	1001-2999 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
WATSONVILLE	831141	WTVLCA01	SANTA CRUZ	Yes	Over 20000 lines	60%-70%	95-449 per Sq. Mile	Bay / Central Coast	\$55,000-\$66,999
YUBA CITY MARYSVILLE	530525	YBCYCA01	SUTTER	Yes	Over 20000 lines	70%-80%	95-449 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
YOUNTVILLE	707336	YNVLCA11	NAPA	No	1001-2999 Lines	60%-70%	450-1799 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
YREKA	530524	YREKCA11	SISKIYOU	No	3000-10000 Lines	60%-70%	17-94 per Sq. Mile	Northern CA / Central Valley	\$0-\$42,999
YORBA LINDA	714802	YRLNCA11	ORANGE	Yes	10001-20000 Lines	70%-80%	450-1799 per Sq. Mile	Southern CA	\$88,000 +
GYPSUM CANYON	714809	YRLNCA12	ORANGE	Yes	3000-10000 Lines	70%-80%	95-449 per Sq. Mile	Southern CA	\$88,000 +
YOSEMITE MAIN	209240	YSMTCA11	MARIPOSA	No	0-1000 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$55,000-\$66,999
EL PORTAL	209241	YSMTCA12	MARIPOSA	No	0-1000 Lines	<50%	0-16 per Sq. Mile	Northern CA / Central Valley	\$67,000-\$87,999



We have prepared a set of four (4) graphs for each of the five category dimensions that correspond to AT&T Companywide graphs provided above. Table 4A.13 below provides a summary of the figures provided for each set of attributes.

	Table 4A.13								
SUMI	SUMMARY OF AT&T ATTRIBUTE DIMENSION GRAPHS								
	Company wide	Fiber	Wire Center Size	POTS Line Loss	Density	TFS District			
OOS per 100 Access Lines	Fig. 4A.2	Fig. 4A.13	Fig. 4A.17	Fig. 4A.22	Fig. 4A.26	Fig. 4A.30			
Avg OOS>24 hrs Duration	Fig. 4A.5	Fig. 4A.14	Fig. 4A.18	Fig. 4A.23	Fig. 4A.27	Fig. 4A.31			
Pct OOS cleared in 24 hrs	Fig. 4A.9	Fig. 4A.15	Fig. 4A.19	Fig. 4A.24	Fig. 4A.28	Fig. 4A.32			
Days required to clear 90%	Fig. 4A.11	Fig. 4A.16	Fig. 4A.20	Fig. 4A.25	Fig. 4A.29	Fig. 4A.33			

## Fiber optic upgraded wire centers offering broadband services availability.

Although this study and GO 133-C/D are primarily focused upon traditional circuit-switched POTS services, the availability of fiber optic feeder and/or distribution(FTTN or FTTP) facilities capable of supporting broadband services in a particular wire center is an indication that AT&T has undertaken to invest in and to upgrade the central office and outside plant facilities therein. Such fiber upgrades support broadband services include high-speed Internet access, digital IP TV, and VoIP telephone services. These services require that the length of the copper distribution segment be relatively short, ideally less than 3,000 feet for a single twisted copper pair or 5,000 feet using two bonded pairs.<sup>84</sup> For most wire centers, the route distance between the central office building and most customers is longer than that. This limitation can be overcome by running fiber optic cables closer to customers' premises. For example, a neighborhood might be four (4) miles from the central office. To provide high-speed broadband services to that area, the ILEC might deploy fiber optic feeder cables, "FTTN" – Fiber to the Neighborhood/ Node, to a "Remote Terminal" ("RT") that is located less than a half mile from the target neighborhood. The end user is still served at the premises by copper, but by limiting the length of the copper segment to a half-mile or less, higher speed (i.e., higher data rate) services can be provided.

In Chapter 3, we noted that the overwhelming majority of the central office switches that are being used to provide POTS services are quite old, in some cases in the twenty- to thirty-year old range. Thus, the switch upgrades that have occurred in the 2010-2017 time frame were primarily aimed at providing or expanding the scope of packet-switched services such as VoIP and high-

<sup>84.</sup> AT&T presentation, "FTTn/VDSL2 Broadband Networks Capabilities and Economics," Richard N. Clarke, Assistant Vice President, AT&T - Public Policy, at "Fibre Investment and Policy Challenges OECD Workshop, Stavanger, Norway, 10-April-08, at 12.



speed Internet access in the residential/small business market or advanced high-capacity services to enterprise and government customers. Recent outside plant upgrades whose principal goal is to enhance these same services will, however, often confer a direct benefit to legacy POTS customers as these customers are migrated to the new distribution architecture. But however these new plant upgrades and acquisitions are being utilized, there is a reasonable expectation that some overall improvement in POTS service quality should result. To test this hypothesis, ETI used the availability of fiber feeder and/or distribution facilities in a given wire center as an indicator that the ILEC had upgraded its central office and/or outside plant facilities overall.

As of 2017, approximately half (338) out of the 612 AT&T California wire centers have been upgraded with the capability to support high-speed broadband services.<sup>85</sup> While none of these services fall within the scope of this study, their availability in any given wire center provides an indication that AT&T has invested in central office and/or outside plant upgrades in that location. Using fiber availability as a surrogate for specific data on capital investment in each wire center, we examined whether the presence of one or more broadband offerings in any given wire center had a beneficial impact upon POTS service quality being furnished out of that same building – specifically, on the incidence of out-of-service situations, their duration, and the extent to which the 90% cleared within 24 hours standard had been achieved.

In general, and as illustrated on Figures 4A.13, 4A.14, 4A.15 and 4A.16, wire centers with fiber performed noticeably better on all OOS metrics than those for which no broadband investment had been made. In non-fiber upgraded wire centers, the long-term trend of monthly out-of-service incidents per 100 POTS lines in service mushroomed from 1.32 in the first quarter of 2010 to 1.86 as of the fourth quarter of 2017. By contrast, in fiber equipped wire centers, monthly OOS per 100 POTS lines was consistently lower, at 1.0 in 1Q2010, rising to 1.10 in 4Q2017 (Figure 4A.13). While the upward trend (which, as discussed above, seems to have persisted throughout AT&T's California operations), is disturbing, the improvement being experienced in wire centers that have benefitted from AT&T investment is striking.

Wire centers that have been upgraded with FTTN and/or FTTP show considerably shorter trended average durations of outages than those without such investment, although such durations have been increasing in both categories. As of 4Q2017, the average duration of service outages in offices that have had such upgrades is still 5077 minutes (3.53 days) vs. 6468 minutes (4.49 days) in offices without fiber availability. For wire centers with fiber availability, the "within-24-hour" OOS clearance percentage trend has improved from 51% as of 1Q2010 to 56% as of 4Q2017; for non-fiber wire centers, the 24-hour clearance percentage trend remained unchanged at 47%. While all of these results fall far short of the 90% clearance rate standard of GO 133-C/D, it is clear that where broadband investment has been forthcoming, this service quality metric has improved.



<sup>85.</sup> AT&T response to DR-01

Finally, the number of days required to achieve the target 90% OOS clearance rate trend doubled, from 3.47 days to 6.98 days in non-broadband wire centers. It still increased in those wire centers that had seen an investment in broadband, but at a much slower rate – going from 3.80 to 4.63 days over the study period.



Wire centers upgraded with fiber to support broadband services achieve better service quality performance scores in every category – lower numbers of Trouble Reports per Hundred Access Lines ("TRPH"), higher percentages of out-of-service conditions that are being resolved within 24 hours, and where out-of-service situations arise, their average durations are in all cases decidedly shorter.



Broadband upgrades for high-speed Internet, VoIP, and IPTV video services confer a direct benefit to legacy POTS customers as they are migrated to the new distribution architecture. But however these new plant upgrades and acquisitions are being utilized, there is a reasonable expectation that some overall improvement in POTS service quality should result.





**Figure 4A.13.** Wire centers that have been upgraded with fiber optic facilities have fewer out-of-service incidents per 100 access lines (actual).



**Figure 4A.14.** Wire centers that have been upgraded with fiber optic facilities have shorter average duration for OOS over 24 hours (actual).





**Figure 4A.15.** Wire centers that have been upgraded with fiber have higher percentage of outages cleared within 24 hours (actual).



**Figure 4A.16.** It takes fewer days to clear 90% of outages (actual) in wire centers that have been upgraded with fiber optic facilities.



## Wire Center Size.

GO 133-C/D refers to three sizes of ILEC wire centers. Small (1000 or fewer POTS lines), Medium (1001-2999 lines), and Large (3000 or more lines).<sup>86</sup> As shown in Table 4A.1 above, 413 out of the total 612 AT&T wire centers would fall in the "Large" category (3000 or more POTS lines in service). The large drop-off in AT&T POTS access line demand over the 2010-2017 period would require the reclassification of individual wire centers as category thresholds were crossed. However, given that these individual wire centers were configured for the number of POTS lines in service as pre-dating January 2010, the size categorization extant as of the beginning of the study period was retained throughout the 8-year time frame.<sup>87</sup> Additionally, for analytical purposes, ETI determined that it would be useful to split the "Large" category into several more granular classifications, as we have done on Table 4A.14.

Table 4A.14							
AT&T CA	AT&T CALIFORNIA						
CLASSIFICATIONS OF WIRE CENTERS BY POTS LINES IN SERVICE AS OF JANUARY 2010							
POTS Lines range	Category	No. of WCs					
1,000 or fewer	Small	90					
1,001 - 2,999	Medium	108					
3,000 - 9,999	Large Metro	141					
10,000 - 19,999	Large Urban	105					
20,000 and above Very Large 168							
TOTAL		612					

86. GO 133-C/D, at §3.3(c).

87. Indeed, GO 133-C/D's reliance upon *current* wire center size for purposes of determining the applicable TRPH performance standard – 10, 8 or 6 for Small, Medium size, or Large, respectively, seems misplaced, in that it operates to apply successively more lenient performance standards as access line losses increase. For example, a wire center that had 3,100 POTS lines in service in 2010 would then have been required to satisfy a 6.0 TRPH standard. Once that access line count dropped below 3,000, the allowable TRPH level would have automatically increased to 8.0 and if, by the end of the study period, the wire center's access line count had dropped below 1,000, the allowable TRPH level would have increased further, to 10.0. ETI sees no obvious reason why a decrease in the number of POTS lines in service in a given wire center should justify a more lenient service quality performance standard. Indeed, if anything, the very competitive marketplace forces that had been assumed to exist as a basis for adoption of the URF should have precisely the opposite effect – confronted with persistent and growing line losses, the ILEC's incentive should be to improve service quality so as to discourage further losses, rather than simply allow conditions to deteriorate further.



There appears to be a strong relationship between the overall size of a wire center (in terms of the number of POTS lines in service as of January 2010) and the quality of service that is being provided. Figure 4A.17 highlights this relationship. While there has been an increase in the number of out-of-service conditions per 100 POTS lines in all wire center size categories, both the number and the rate of increase in OOS per 100 POTS lines have been lowest in the very largest (over 20,000 lines) wire centers, and highest in the under 1,000 line wire center category. A similar relationship is observed with respect to out-of-service duration. As shown on Figure 4A.18, while durations have been rising across all size categories, the highest rate of increase – and the longest durations prior to restorations – are occurring in the smallest wire centers. The largest wire centers also exhibit the highest percentage of all outages cleared within 24 hours (actual) (Figure 4A.19) and the fewest number of days to clear 90% of all out-of-service incidents (actual) (Figure 4A.20).

The differences in these outcomes based upon wire center size are striking. In the fourth quarter of 2017, AT&T was able to clear 57% of outages within 24 hours, and had actually improved that clearance rate from 51% in 1Q2010. But in the smallest wire center category, the 4Q2017 trend value clearance rate was 36%, actually *down* from the 38% trend value in 1Q2010. A corresponding size/service quality relationship is also evident with respect to the days required to achieve 90% clearance. That time frame increased in all five size categories, but the rate of increase – and the number of days to reach 90% – were lowest in the over-20,000 line category and highest in the under-1,000 line category.



There appears to be a strong relationship between the number of POTS lines in a wire center and the quality of service provided. The number and the rate of increase in OOS per 100 POTS lines have been lowest in the very largest (over 20,000 lines) wire centers.





**Figure 4A.17.** The largest wire centers generally experience the lowest out-of-service rate per 100 lines in service (actual).



**Figure 4A.18.** The largest wire centers generally exhibit the shortest average duration of OOS over 24 hours (actual).





**Figure 4A.19.** The largest wire centers generally exhibit the highest percentage of all OOS cleared within 24 hours (actual).



**Figure 4A.20.** The largest wire centers generally require the fewest number of days to clear 90% of all out-of-service incidents (actual).



#### Access Line Loss.

Figure 4A.21 highlights the precipitous drop in AT&T California POTS lines in service over the full 2010-2017 study period. Companywide, AT&T California experienced a net loss of 71.66% of its POTS access lines in service, going from 8,075,343 in January 2010 to only 2,288,271 as of December 2017. These POTS losses were offset to some extent by the growth in interconnected VoIP access lines, as shown in Figure 4.4 above for all wireline carriers statewide.<sup>88</sup> We don't have carrier-specific residential and business losses, but FCC state-level data covering all wireline carriers (summarized on Figures 4.2 and 4.3 above) confirms that, as a general matter, residential wireline (POTS) losses were far greater than business losses as increasing numbers of households migrated to non-ILEC providers (primarily to cable MSOs offering interconnected VoIP-based telephone services) and to wireless.



**Figure 4A.21.** Companywide, AT&T California has experienced a net loss of 71.66% of its POTS access lines in service over the 2010-2017 period.

However, the actual extent of AT&T POTS line losses varied widely among individual wire centers, from a low of 5.1% in the Sierra City wire center to a high of 85.3% in Palmdale East. In light of these large variations, we wanted to examine the potential impact that POTS line losses might have upon the overall service quality in each wire center. Large POTS line losses



<sup>88.</sup> AT&T has declined to provide data on its own VoIP access line growth over the study period.

would likely result in a reduction of maintenance personnel, which could in turn have an adverse impact upon the Company's ability to respond to OOS situations. Alternatively, a large drop in the number of working lines could have the effect of making additional spare capacity available for rapid deployment as replacements for defective loops, switch ports or other service components. On the other hand, persistent and increasing service quality problems could work to stimulate even more demand shifts away from the ILEC and over to an alternative service provider. We have grouped the AT&T wire centers into five (5) POTS Line Loss categories, as shown on Table 4A.15 below:

Table 4A.15						
AT&T CALIFORNIA						
CLASSIFICATIONS OF WIRE CENTERS BY POTS LINE LOSS PERCENTAGE JANUARY 2010 THROUGH DECEMBER 2017						
POTS Lines Loss range	No. of WCs					
Less than 50%	48					
50% - 60%	67					
60% - 70%	146					
70% - 80%	140					
80% and above	11					
τοται	612					

Notably, the wire centers that had experienced that lowest rate of POTS line losses - less than 50% over the study period –experienced the largest increase in the rate of outages per 100 POTS lines; for wire centers with successively large line loss percentages, increases in OOS per 100 POTS lines were much smaller - as too were the numbers of outages per 100 POTS lines with the group exhibiting the second largest POTS line losses – 70% to 80% – remaining almost constant over the study period (Figure 4A.22). For average duration of OOS over 24 hours, the outcome was directly inverse to line loss percentage. Here, the wire centers experiencing POTS line losses in excess of 80% shows virtually no change in average duration – going from 4,116 minutes (2.86 days) in 1Q2010 to 4,140 minutes (2.87 days) in 4Q2017. For wire centers experiencing the smallest rate of line loss (less than 50%) durations of outages over 24 hours jumped by 89%, from 3,701 minutes (2.57 days) in 1Q2010 to 6,987 minutes (4.85 days) in 4Q2017 (Figure 4A.23). Similar patterns were found for the percentage of outages restored within 24 hours and for the number of days required to reach the 90% cleared objective. The wire centers experiencing the highest loss of POTS lines performed best on both of these metrics, whereas those with the smallest losses suffered the greatest degradation in service quality (Figure 4A.24 and 4A.25).





**Figure 4A.22.** AT&T California wire centers with the largest POTS line losses are experiencing the smallest increase in OOS rates (actual).



**Figure 4A.23.** AT&T California wire centers with the largest POTS line losses have the shortest average durations of OOS over 24 hours (actual).





**Figure 4A.24.** AT&T California wire centers with the largest POTS line losses are experiencing the highest percentages of all OOS cleared within 24 hours (actual).



**Figure 4A.25.** AT&T California wire centers with the largest POTS lines losses requires the fewest number of days to clear 90% of all OOS (actual).



R<sup>P</sup>

Wire centers that had experienced the lowest rate of POTS line losses – less than 50% over the study period – saw the largest increase in service outages; for those with successively larger line loss percentages, the incidence of service outages increased more slowly or remained almost constant over the study period.

# Urban/Suburban/Rural

In CD Data Request 02-A, AT&T was asked to provide, for each of its wire centers in California, "(a) Description of the principal geographic characteristics of the area being served (urban, suburban or rural); (b) Primary customer base, i.e., residential or commercial; (c) Physical properties of the area, flat, mountainous, rivers, lakes, wetlands; (d) List of all census tracts served by the central office building; and (e) Area (in square miles) of area served by the central office." In its Response, AT&T advised that "AT&T California does not track this information and therefore has no information to provide."<sup>89</sup> Because AT&T declined to provide this information, we were able to reconstruct much of this information from public sources – principally the United States Census Bureau – and with assistance from the Geographic Information Systems ("GIS") staff of the CPUC Communications Division.

CD/GIS provided us with a mapping of the roughly 500,000 Census Blocks in AT&T California's operating areas to the AT&T wire center serving that Census Block. Included in this dataset were the 2017 population, number of households, and median household income for each Census Block. The Census Bureau does not provide Census Block-level area data, but does provide land area in square miles for each Census Tract. Census Tracts are small, relatively permanent statistical subdivisions of a county, with populations that range between 1,200 and 8,000, with an average of about 4,000.<sup>90</sup> We aggregated the individual Census Block data to the Census Tract level within each AT&T wire center serving area. Where a Census Tract was served by more than a single wire center, we assigned it to the wire center that served the majority of the Census Tract. Finally, we aggregated all Census Tracts within each wire center serving area to obtain land area and population for that wire center.

We were then able to calculate the population density for each wire center serving area by dividing its total land area by the number of households. Because wireline telephone service is typically furnished to a *household* rather than to an individual, we used total households rather



<sup>89.</sup> Responses of AT&T California to Data Request Set Number 02-A issued May 10, 2018 in re. Outside Plan Engineering Information for Network Examination Authorized by Service Quality Rulemaking No. 11-12-001 and Decision Nos. D.13-02-023/D.15-08-041, dated May 29, 2018.

<sup>90.</sup> United States Census Bureau, <u>https://www2.census.gov/geo/pdfs/education/CensusTracts.pdf</u>, accessed 9/6/18).

than total population for this purpose. Wire centers were then assigned to one of five quintiles in terms of their density – the lowest 20% were assigned to Density Group 1, the next 20% to Density Group 2, and so on.

AT&T's responses to out-of-service conditions has generally deteriorated, except in areas with the highest population density (in terms of households per square mile). The incidence of out-of-service per 100 lines in service (actual) has been increasing except in the highest density wire centers. The average duration of those out-of-service conditions that remain uncleared for more than 24 hours (actual) has increased in all areas, but with the largest increases occurring in areas with the lowest population densities. The percentage of all out-of-service conditions that are being cleared within 24 hours, for which GO 133-C/D has established a 90% objective, remains lowest in areas with the lowest population densities, and does not appear to have improved, except in the highest density wire centers, where the trend line values improved from about 50% in 2010 to 58% in 2017. Finally, the number of days required for AT&T California to achieve the 90% OOS cleared objective has gotten longer, except in the highest density areas. These results are plotted on Figures 4A.26, 4A.27, 4A.28 and 4A.29 below:



Except in areas with the highest population density, AT&T's response to out-of-service conditions has generally deteriorated over the study period.




**Figure 4A.26.** AT&T California. OOS per 100 lines in service (actual) has been increasing except in the highest density categories.



**Figure 4A.27.** AT&T California. average duration of OOS over 24 hours (actual) has increased the most in areas with the lowest population density.





**Figure 4A.28.** AT&T California. pct of all OOS cleared within 24 hours (actual) has remained stable but has improved in areas with the highest population density.



**Figure 4A.29.** The number of days required for AT&T California. to clear 90% of all OOS (actual) has increased, except in areas with the highest population density.



# ILEC Organizational Assignment

AT&T California's principal network maintenance organization is known as "Technical Field Services (TFS) West (Core)" According to AT&T, TFS "is responsible for the installation and repair of Legacy and IP voice and broadband data services (from central offices, through outside cable plant, terminals, and to the customer premises), as well as network infrastructure support and maintenance of those same central office and outside cable plant network facilities."91 AT&T has established five (5) regional maintenance organizations known as Technical Field Services ("TFS") Districts - Greater LA/Bakersfield; San Gabriel; Bay Area/Central Coast; Northern California/Central Valley, and Southern California. Of the five AT&T TFS Districts, the Los Angeles/Bakersfield and San Gabriel districts - both of which serve wire centers in the greater Los Angeles metropolitan area - have shown significant improvements in most OOS metrics - decreasing numbers of OOS per 100 POTS lines in service, shorter out-of-service durations until cleared, higher percentages of OOS cleared within 24 hours, and fewer days required to reach the 90% cleared level. The poorest performing TFS Districts are the Bay/Central Valley and the Northern California districts. The Northern California district, for example, has seen a 34% increase in the rate of OOS per 100 POTS lines in service over the 2010-2017 period, going from 1.20 at the beginning of 2010 to 1.61 by the end of 2017. By contrast, the San Gabriel district saw a 16% improvement, going from 1.12 in 1Q2010 to 0.94 in 4Q2017.

Of the five AT&T maintenance (TFS) districts, LA/Bakersfield and San Gabriel have shown significant improvements in most OOS metrics. The poorest performing districts are the Bay/Central Valley and Northern California. Northern California, for example, has seen a 34% increase in the rate of OOS per 100 POTS lines in service over the study period. By contrast, the San Gabriel district saw a 16% improvement.

The actual average duration of outages in excess of 24 hours almost doubled in the Northern California TFS district, jumping from 3,361 minutes (2.33 days) 6,290 minutes (4.37 days) over the 8-year study period. The Bay Area/Central Coast TFS District fared only slightly better, going from 3,166 (2.2 days) in 1Q2010 to 5,192 (3.6 days) in 4Q2017. Average duration for OOS over 24 hours remained essentially unchanged for the San Gabriel TFS District, and shown a slight improvement for the Los Angeles TFS District.

The San Gabriel and Los Angeles TFS Districts both showed significant improvement in the percentage of (actual) OOS cleared within 24 hours. For San Gabriel, the percentage cleared improved from 46% in 1Q2010 to 62% in 4Q2017, and for Los Angeles, the gain was from 48% to 54% over the corresponding period. Both districts also saw a large improvement in



<sup>91.</sup> AT&T California response to DR-01A, Request 1.

the number of days required to meet the 90% cleared objective – from 4.80 to 3.41 days for the Los Angeles TFS District, and from 4.83 to 3.91 for the San Gabriel District. The Northern California and Bay Area/Central Coast fared worst among the five TFS Districts in both of these metrics.

These results are plotted on Figures 4A.30, 4A.31, 4A.32 and 4A.33 below:

The stark differences in performance among the five TFS Districts may well be explained by the relative amount of broadband investment that AT&T had made in each of these areas. Table 4A.16 below summarizes, for each TFS District, the total number of wire centers for which the District is responsible together with the number of those wire centers that have been upgraded for broadband services as of the end of 2017:

Table 4A.16												
AT&T CALIFORNIA												
TECHNICAL FIELD SERVICES (TFS) DISTRICTS TOTAL WIRE CENTERS AND WIRE CENTERS UPGRADED WITH FIBER TO SUPPORT BROADBAND SERVICES AS OF DECEMBER 2017												
TFS District	Total WCs	Upgraded WCs	Percent Upgraded									
Bay / Central Coast	126	85	67.5%									
Greater LA / Bakersfield	85	64	75.3%									
Northern CA / Central Valley	286	95	33.2%									
San Gabriel	13	12	92.3%									
Southern California	105	81	77.1%									
TOTAL	615	337	54.8%									

It seems hardly surprising that the TFS District with the poorest overall performance on all of the relevant service quality metrics – Northern CA / Central Valley – also has the lowest percentage of upgraded wire centers (33.2%) and, conversely, the TFS District exhibiting the best performance and improvement overall – San Gabriel – also happens to have the highest percentage of upgraded wire centers (92.3%). However, while investment in wire center upgrades may well account for a net *gain* in service quality overall (as in the case of the Los Angeles and San Gabriel TFS Districts), it would not by itself explain why those TFS Districts with the smallest percentage of wire center upgrades have experienced so substantial a degradation in service quality over the period except to underscore the pressing need for investment and upgrades in these other wire centers as well.





**Figure 4A.30.** AT&T California. OOS per 100 lines in service (actual) vary inversely with the type of area being supported by each TFS district – lowest in the largest metro areas.



**Figure 4A.31.** The average duration of OOS over 24 hours (actual) is longest – and has been increasing – in AT&T California TFS districts covering non-metro and rural areas.







**Figure 4A.32.** The Los Angeles and San Gabriel AT&T California. TFS districts have the highest percentages of OOS to be cleared within 24 hours (actual), and shows significant gains in this metrics.



**Figure 4A.33.** The Los Angeles and San Gabriel AT&T California. TFS districts require the fewest days to clear 90% of all OOS (actual), and show significant gains in this metric.



RF

Since the bulk of AT&T's investments in its ILEC network have been aimed at upgrades that support broadband services, the TFS Districts with the smallest percentage of such upgrades have experienced substantial degradations in service quality over the period. This result underscores the pressing need for infrastructure investment irrespective of AT&T's pursuit of the broadband market.

# Summary

Overall, ETI's analysis of the 6.1-million AT&T Trouble Report records and other pertinent AT&T service quality data indicates that the Company's service quality and its response to protracted out-of-service conditions has declined, in some cases significantly, over the 8-year study period. There are some notable exceptions, however, within certain parts of the overall AT&T California network.

Wire Centers that have received broadband upgrades – and hence benefitted from an infusion of new investment – have fared a lot better than those locations where little or no such upgrades had taken place. Service quality and responses to outages in the very largest wire centers – particularly those in the Los Angeles area (the Los Angeles and San Gabriel Technical Field Services Districts) actually showed some improvements, whereas other TFS Districts exhibited deteriorating service quality conditions. AT&T out-of-service incidents declined in absolute numbers, but the decline was less than in proportion to the large decrease in the number of POTS lines in service that AT&T has experienced over the 8-year study period.





# **4F** SERVICE QUALITY ANALYSIS: VERIZON/FRONTIER

#### Principal observations and takeaways:

- From January 2010 through December 2017, total Verizon/Frontier California POTS access lines in service dropped by 73.9%, from 2,778,584 to 724,752.
- In contrast to our findings regarding AT&T, our analysis of the data provided by Frontier indicates a noticeable improvement under both ownerships in the relative number of out-of-service cases over the same 8-year period.
- The trend in average duration of all out-of-service conditions, excluding those cleared within one hour, for both Verizon and Frontier has been steadily deceasing over the full 2010-2017 study period.
- There appears to be a strong relationship between the number of POTS lines in a wire center and the quality of service provided. The number and the rate of increase in OOS per 100 POTS lines have been lowest in the very largest (over 20,000 lines) wire centers.
- The largest increases in service outages occurred in wire centers with the lowest POTS drop-off rates; the incidence of service outages increased more slowly or remained almost constant in wire centers with successively larger drop-off rates.
- In areas with the highest population density, Verizon/ Frontier's response to out-of-service conditions has generally improved over the study period, compared to more rural areas.
- Of the six Frontier maintenance Operating Areas, those serving wire centers in the largest metropolitan areas (Los Angeles and Orange Counties) continue to show the best results and significant improvements in most OOS metrics. The poorest performing Operating Areas are those primarily serving rural communities.
- The Operating Areas within which most of the Verizon and Frontier FTTP upgrades have occurred have experienced the lowest number of OOS incidents and the shortest outage durations for those that do occur.



# SERVICE QUALITY ANALYSIS: VERIZON/FRONTIER

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# A Note on the Verizon and Frontier Data Utilized in this Study

ETI encountered serious shortcomings in the service quality, financial and other data provided by Frontier California, creating many challenges to the development of a consistent assessment of the Company's performance under both Verizon and Frontier ownership over the full 2010-2017 study period. We have made every effort to overcome these difficulties to the greatest extent possible. However, inconsistencies and disparities in the two companies' data and data structures do not permit direct comparability of the pre- and post-acquisition results that are provided in this report.



# Introduction: A bifurcated approach to the analysis of Verizon/Frontier performance

Like AT&T California, Verizon/Frontier has also experienced substantial access line losses over the 2010-2017 study period. The ILEC was under Verizon ownership and management for 75 of the 96 months covered by this study – January 2010 through and including March 2016. ETI received seemingly complete raw data and consistent access line counts by wire center for most of the period during which the Company was under Verizon ownership, January 2010 through December 2015. However, wire center level access line counts for the last three months under Verizon ownership – January through March 2016 – were not provided. The corresponding access line counts for the 21 months following the transfer of ownership to Frontier were provided by Frontier, but not in a way that corresponds to the manner in which such data had been compiled by Verizon.

GO 133-C/D §3.3(b) directs that "[c]ustomer trouble reports received by the utility will be counted monthly and related to the total working lines within a reporting unit." §3.3(d) specifies as the "Reporting Unit" an "[e]xchange or wire center, whichever is smaller." Reports submitted by Verizon for the period running from the first quarter of 2010 through and including the fourth quarter of 2015 appear to have been in compliance with this "reporting unit" specification. Verizon provided monthly counts of customer trouble reports and the required calculation of "Trouble Reports Per Hundred Access Lines in Service" ("TRPH") separately for each of approximately 273 individual wire centers within its California operating areas. The TRPH calculations were made by dividing the total number of customer trouble reports for each month for each wire center by 100 times the number of access lines in service at that wire center. The last such quarterly report was submitted by Verizon on February 15, 2016 covering the period October through December 2015.

Although Verizon still owned the company during the entire first quarter of 2016, its ownership had ended by the time the 2016Q1 report was submitted on May 16, 2016. Frontier did not provide wire center trouble report counts or wire center level TRPH results for 2016Q1, but did provide the underlying customer trouble report data records, from which ETI was able to reconstruct the quantity of trouble reports received for each wire center. However, because we did not have access line counts by wire center, we could not reconstruct the TRPH calculations.

Frontier did provide companywide access line counts and companywide TRPH calculations for the first quarter of 2016 and for all subsequent months following its acquisition of the Company. However, Frontier has not been submitting the required GO 133-C/D reports at the individual wire center level since it acquired control of the ILEC in April 2016.

ETI has attempted to reconstruct Frontier TRPH counts and other wire center data for the post-acquisition time period so that this data could then be integrated with the Verizon era data so as to provide a consistent picture of the ILEC's service quality performance over the entire 2010-2017 period. We have been less than successful in accomplishing this result. For reasons that have never been fully or satisfactorily explained to us, Frontier elected to provide the



required GO 133-C/D reports and data on a different basis than Verizon had been doing. Verizon had been provided data for each of its 273 individual wire centers. However, where Verizon had been reporting trouble report data at the *wire center* level, Frontier adopted a different reporting unit that, in many cases, embraces multiple individual wire centers. Verizon had been submitting customer trouble report data for each of approximately 273 individual wire centers; Frontier has been providing data for only about 170 separate reporting units.

While both approaches appear, in aggregate, to cover the entire company's operations, the change in the method of reporting that occurred concurrently with the change of ownership has made it difficult for ETI to present a consistent set of wire center level calculations and results covering the entire 2010-2017 study period. Accordingly, we have been compelled to bifurcate our analysis between the Verizon and Frontier ownership periods. The results provided in this chapter are thus presented on that basis. In those situations where we are able to provide results that encompass the entire eight-year study period under both parent companies' ownership, we refer to the ILEC as "Verizon/Frontier California" or simply "Verizon/Frontier." Where our analysis is specific to either the pre- or post-acquisition entity, we will refer to their ownership individual – i.e., as Verizon California or Frontier California, respectively.

One problem with this bifurcated approach, and one that we have not been able to overcome, is that the relatively short period of time under Frontier ownership – covering just seven quarters of data – is not sufficient to permit the identification or quantification of long term trends. That shortcoming is further compounded by the transitional problems that Frontier encountered during the first two or three quarters under its management, causing spikes in the frequency and duration of service outages. Thus, although we have calculated trend lines for Frontier for the April 2016 through December 2017 period, the results shown represent the outcome of mathematical and statistical calculations and provide little basis for identifying trends or patterns extant during the period when the ILEC was being operating by Frontier. That said, it does appear that many of the initial transitional difficulties have settled down and that going forward continued gains in service quality can be anticipated.

#### Demand conditions affecting Verizon/Frontier POTS services

Verizon/Frontier has experienced the same types of access line losses as has AT&T over the corresponding 2010-2017 period. From January 2010 through December 2017, total Verizon/ Frontier California POTS access lines in service experienced a 73.9% decrease. As with AT&T, the drop-off in demand within individual reporting unit was highly variable, but every Verizon/ Frontier California reporting unit saw an erosion in POTS demand. For Verizon/Frontier, access line losses were 73.9% and the trend line values for OOS incidents decreased by 82% over the full 2010-2017 period. From January 2010 through March 2016, total Verizon California POTS access lines in service experienced a 53.66% decrease, dropping from 2,778,584 to 1,287,526. By the end of 2017 under Frontier ownership, POTS access lines in service had experienced a further decrease to only 724,752, representing a drop of 73.9%, relative to the January 2010



level. Across individual reporting units, the largest access line loss occurred in the Fontana wire center, at 81.8%, where the 38,464 lines in service as of January 2010 plummeted to only 6,994 by the end of 2017. Tables 4F.1 and 4F.2 present access line data separately for the Verizon and Frontier ownership periods, respectively. In both cases, the greatest demand drop-offs generally occurred in the largest wire centers:

	Table 4	F.1										
VERIZON CALIFORNIA DROP-OFF IN POTS DEMAND AT WIRE CENTERS OF VARYING SIZES JANUARY 2010 - DECEMBER 2015												
Wire Center Size	No. of Wire Centers	Total lines Jan 2010	Total lines Dec 2015	% change								
Small (<1000 lines)	63	31,875	16,816	-47.24%								
Medium (1000-3000)	42	77,180	39,315	-49.06%								
Large (>3000)	168	2,669,529	1,231,395	-53.87%								
TOTAL	273	2,778,584	1,287,526	-53.66%								



For Verizon California, the greatest demand drop-offs for legacy POTS services generally occurred in the largest wire centers.



Over the 2010-2015 Verizon ownership period, Verizon POTS access lines in service experienced a 53.7% decrease, dropping from 2,778,584 to 1,287,526.

Table	4F.2
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# FRONTIER CALIFORNIA DROP-OFF IN POTS DEMAND AT REPORTING UNITS OF VARYING SIZES APRIL 2016 - DECEMBER 2017

Reporting Unit Size	No. of Reporting Units	Total lines Apr 2016	Total lines Dec 2017	% change
Small (<1000 lines)	71	28,739	29,197	1.59%
Medium (1000-3000)	24	42,721	69,758	63.29%
Large (>3000)	74	957,745	625,797	-34.66%
TOTAL	169	1,029,205	724,752	-29.58%
NOTE: Size categorization 2016.	per GO 133-C/D size ranges and l	based upon access	lines in service as	of April 1,





For Frontier California, the greatest demand drop-offs for legacy POTS services occurred in the smallest and the largest reporting units.



Under Frontier ownership POTS access lines in service experienced an additional 29.6% decrease, dropping from 1,029,205 to 724,752.

Figure 4F.1 below provides total Verizon/Frontier POTS access lines in service over the entire 2010-2017 period.



Figure 4F.1. Total Verizon/Frontier POTS access lines service decreased by 68.2% from January 2010 through December 2017.



# Trouble Reports and POTS Lines in service - a more granular perspective

Viewed at the individual reporting unit level, the ratio of out-of-service conditions to total POTS lines has varied both from month-to-month and as a long-term trend over time. Focusing specifically upon out-of-service conditions not cleared after 24 hours, some wire centers have experienced significant increases in the incidence of this condition, while others have seen improvements. The following Tables summarize the 21 months' experience under Frontier ownership with respect to four service quality metrics. Each table provides the 20 wire centers with the worst and the 10 wire centers with the best performance with respect to each of these four metrics. Table 4F.3 presents the percentages of out-of-service conditions not cleared within 24 hours (expressed on a per 100 POTS lines per month basis). Table 4F.4 provides the average out-of-service durations. Table 4F.5 provides the percentages of out-of-service incidents cleared within 24 hours. Table 4F.6 provides the number of days to clear 90% of out-of-service conditions. Table 4F.8 provides all of these data elements for all post-acquisition Frontier reporting units.



								Table 4F.	3								
	FRONTIER CALIFORNIA OUT-OF-SERVICE OVER 24 HOURS' DURATION PER 100 POTS LINES IN SERVICE 20 POOREST PERFORMING AND 10 BEST PERFORMING REPORTING UNITS 2Q2016-4Q2017																
Wire Center Name	cu i	Access Lines (avg for Quarter)	OOS per 100 ALs per month	OOS>24 per 100 ALs per month	Pct Cleared w/in 24 hours (unadi)	Pct Cleared w/in 24 hours (adi)	# days to clear 90% QQS (unadi)	# days to clear 90% OOS (adi)	Avgerage OOS Duration (days)	Avgerage CPUC OOS Duration (days)	00S Total	00S > 1	00S > 24 Hours	00S > 1 week	CPUC OOS > C	PUC OOS > Cl	PUC OOS > 1 Week
20 POOREST PER	FORMING R	EPORTIN	G UNIT	S	(anadj)	ilouio (auj)	eee (anaaj)		(uuyo)	(44)0)		noui	liouro	nook			
BADGER DUNLAP ALDERPOINT MIRANTPHST DESERT SHORES SAGE TIVY VALLEY SUMMIT VLY SALTON CITY COVELO NEWBERRY SQUAW VALLEY DESERT HOT SPRINGS SNELLING ALPAUGH WELDON CLEMENTS KNIGHTS LANDING LAYTONVILLE DESERT CENTER <b>10 BEST PERFOR!</b>	BDGRCAXF DNLPCAXF ALPNCAXF FRVLCAXF DSSHCAXF CCMNCAXF TVVYCAXF WLDNCAXF VLCAXF VLCAXF SLCYCAXF SNNGCAXG ALPGCAXF SNNGCAXG ALPGCAXF WLDNCAXF CLEMCAXF KNLDCAXF CLEMCAXF KNLDCAXF DSCTCAXG	89 314 126 116 618 98 384 607 283 173 3,045 190 113 689 323 210 881 54 <b>RTING UN</b>	3.85 3.82 3.39 3.00 2.73 2.61 2.45 2.37 2.33 2.22 2.26 2.11 2.04 1.95 1.94 1.86 1.86 1.74 1.74 1.74	3.85 3.82 3.39 3.00 2.73 2.37 2.33 2.31 2.24 2.11 2.03 1.95 1.94 1.85 1.84 1.74 1.71	$\begin{array}{c} 33.3\%\\ 42.1\%\\ 20.0\%\\ 39.7\%\\ 45.9\%\\ 48.2\%\\ 51.0\%\\ 51.0\%\\ 56.4\%\\ 12.2\%\\ 40.3\%\\ 37.7\%\\ 45.1\%\\ 10.3\%\\ 30.4\%\\ 26.8\%\\ 30.2\%\\ 32.5\%\\ 17.7\%\\ 31.6\%\end{array}$	$\begin{array}{c} 37.5\%\\ 48.8\%\\ 33.3\%\\ 45.2\%\\ 54.1\%\\ 50.2\%\\ 55.0\%\\ 64.9\%\\ 27.1\%\\ 47.0\%\\ 47.0\%\\ 49.8\%\\ 19.2\%\\ 30.4\%\\ 40.9\%\\ 40.9\%\\ 39.7\%\\ 44.2\%\\ 32.5\%\\ 36.8\%\end{array}$	4.83 3.69 14.16 4.56 5.59 4.24 3.00 4.01 4.96 8.98 6.31 3.45 5.39 7.34 5.90 5.90 5.44 4.41 7.41 7.41	$\begin{array}{c} 3.86\\ 3.25\\ 12.55\\ 3.48\\ 4.61\\ 3.32\\ 2.20\\ 3.12\\ 3.61\\ 7.97\\ 5.31\\ 3.02\\ 4.44\\ 6.07\\ 4.74\\ 4.52\\ 3.41\\ 6.09\\ 8.76\end{array}$	2.42 2.14 4.42 1.99 1.76 1.78 1.45 1.77 4.82 2.51 1.63 2.22 4.00 2.37 2.55 2.61 1.74 3.84 3.93	$\begin{array}{c} 1.96\\ 1.79\\ 3.90\\ 1.54\\ 1.71\\ 1.51\\ 1.53\\ 1.27\\ 2.14\\ 1.36\\ 1.90\\ 3.37\\ 2.02\\ 2.13\\ 2.12\\ 1.51\\ 3.05\\ 3.39\end{array}$	72 252 90 73 74 255 318 49 188 295 134 77 1307 78 46 269 126 77 317 317	72 252 90 73 74 254 318 49 188 294 133 77 1297 78 46 267 125 77 7317 317	48 146 72 44 40 132 159 24 82 259 80 48 717 70 32 197 88 52 261 13	5 7 17 4 4 13 9 2 11 59 15 1 5 15 1 26 1 26 1 24 4 11 1 4 4	71 247 82 71 70 250 311 48 180 257 128 75 1286 71 46 234 115 70 275 18	45 129 60 40 34 127 143 23 66 215 71 44 656 63 32 159 76 43 214 12	4 3 15 1 2 7 7 9 1 5 4 3 3 9 0 6 3 3 7 1 1 9 6 0 3 9 9 8 3 3
GUADALUPE PARKFIELD SAN MIGUEL ONTARIO CHINO CAMARILLO EL RIO FORT IRWIN MURRIETA NEWBURY PARK	GDLPCAXG PRFDCAXF SNMGCAXF ONTRCAXF CHNOCAXF CMRLCAXF ELRICAXF FTIRCAXF MURTCAXF NWPKCAXF	1,231 82 695 19,536 18,522 11,360 8,331 357 10,809 8,236	0.30 0.35 0.28 0.27 0.22 0.21 0.20 0.20 0.20 0.19	0.29 0.28 0.27 0.27 0.22 0.21 0.20 0.19 0.19	71.4% 66.7% 56.8% 50.4% 44.7% 44.6% 53.3% 54.2% 46.8%	72.7% 83.3% 41.5% 60.9% 56.0% 50.2% 50.0% 73.3% 60.5% 51.7%	1.92 3.98 4.72 3.40 3.77 5.03 4.35 6.07 3.52 5.09	1.91 2.98 3.62 2.49 2.95 4.31 3.25 2.85 2.95 4.53	1.02 1.48 4.10 1.42 1.70 2.21 1.99 1.97 1.62 2.25	0.94 1.15 3.49 1.22 1.46 1.89 1.71 0.99 1.37 1.97	77 6 41 1112 1046 528 368 15 443 325	75 5 41 1100 1034 523 367 15 434 320	22 2 8 480 519 292 204 7 7 203 173	2 1 3 21 34 41 21 1 1 12 22	75 5 38 1072 1000 502 355 13 419 313	21 1 24 435 460 263 184 4 175 157	1 0 1 14 19 27 14 0 7 14



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								Table 4F	.4								
	FRONTIER CALIFORNIA AVERAGE OUT-OF-SERVICE DURATION 20 POOREST PERFORMING AND 10 BEST PERFORMING REPORTING UNITS 2Q2016-4Q2017																
Wire Center Name	CLU	Access Lines (avg for Quarter)	OOS per 100 ALs per month	OOS>24 per 100 ALs per month	Pct Cleared w/in 24 hours (unadi)	Pct Cleared w/in 24 bours (adi)	# days to clear 90% OOS (unadi)	# days to clear 90% OOS (adi)	Avgerage OOS Duration (days)	Avgerage CPUC OOS Duration (days)	-OOS Total	00S > 1	00S > 24 Hours	00S > 1	CPUC OOS > 0	CPUC OOS > ( 24 hours	CPUC OOS >
20 POOREST PERF			G UNIT	S	(unduj)	nouro (auj)			(ad) of			nout	Houro	moon	Thou	24 110410	
	Utanite			5													
COVELO	CVELCAXF	607	2.32	2.31	12.2%	27.1%	8.98	7.97	4.82	4.27	295	294	259	59	257	215	43
		405	3 30	1.21	20.0%	42.1/0 33.3%	9.19	12 55	4.00	4.20	120	124	72	20	32 82	13	5 15
SAN MIGUEI	SNMGCAXE	695	0.28	0.00	20.07%	41.5%	4.10	3.62	4.42	3.30	41	41	28	3	38	24	1
	OLNCCAXE	170	0.20	0.20	10.3%	10.3%	7 11	6 11	4.10	3.60	29	29	26	9	29	26	4
SNELLING	SNNGCAXG	190	1.95	1.95	10.3%	19.2%	7.34	6.07	4.00	3.37	78	78	70	26	71	63	7
	GI VI CAXE	449	1.56	1.56	7.5%	12.2%	7.13	6.13	3.97	3 47	147	147	136	23	140	129	16
DESERT CENTER	DSCTCAXG	54	1.66	1.66	31.6%	36.8%	10.18	8.76	3.93	3.39	19	19	13	4	18	12	3
GAVIOTA	FLWDCAXF	215	1.17	1.15	15.1%	18.9%	8.93	7.48	3.86	3.31	53	52	45	11	50	43	8
LAYTONVILLE	LYVLCAXF	881	1.71	1.71	17.7%	32.5%	7.41	6.09	3.84	3.05	317	317	261	64	275	214	39
HOOPA	HOPACAXF	685	0.80	0.80	14.8%	33.0%	7.09	5.97	3.78	3.17	115	115	98	16	94	77	9
CALIFORNIA HOT SPRINGS	3 CHSPCAXF	348	1.60	1.60	17.9%	26.5%	6.81	6.05	3.72	3.12	117	117	96	23	108	86	11
LEGGETT	LGGTCAXF	109	1.40	1.40	28.1%	43.8%	7.32	6.73	3.49	3.13	32	32	23	5	30	18	5
RANDSBURG	RNBGCAXF	86	0.89	0.89	18.8%	25.0%	5.92	4.19	3.39	2.55	16	16	13	2	15	12	0
CANTUA CREEK	CNCKCAXF	108	1.28	. 1.28	20.7%	37.9%	6.55	5.19	3.34	2.59	29	29	23	4	24	18	2
LOS GATOS	LSGTCAXA	9,112	0.95	0.94	31.6%	39.7%	6.79	5.66	3.26	2.74	1813	1806	1240	248	1694	1093	167
ARROWHEAD	ARHDCAXF	3,044	0.77	0.76	35.0%	39.9%	8.68	7.10	3.22	2.62	491	486	319	68	478	295	52
SOMIS	BELRCAXF	618	0.92	0.92	31.9%	34.5%	6.94	5.24	3.20	2.66	119	119	81	13	116	78	8
WRIGHTWOOD	WRWDCAXF	1,479	0.67	0.66	48.3%	62.3%	5.43	4.01	3.18	2.62	207	205	107	17	187	78	6
POINT MUGU	MUGUCAXF	2,906	0.36	0.36	36.5%	42.0%	5.36	4.45	3.12	2.12	219	219	139	15	212	127	10
10 BEST PERFORM	IING REPO	RTING UN	IITS														
BRSW YERM	WHTRCAXH	373	1.24	1.23	57.7%	64.9%	3.67	3.01	1.42	1.20	97	96	41	1	96	34	0
LEMON COVE	LMCVCAXF	111	1.37	1.33	53.1%	56.3%	2.54	2.21	1.42	1.19	32	31	15	0	31	14	0
MCFARLAND	MCFACAXF	994	0.74	0.74	56.1%	58.1%	3.19	2.60	1.41	1.21	155	155	68	4	152	65	2
ROBBINS	RBNSCAXG	366	0.35	0.35	29.6%	48.1%	2.50	1.71	1.35	1.10	27	27	19	0	23	14	0
SANGER	SNGRCAXF	3,170	0.93	0.92	59.7%	64.3%	2.82	2.11	1.30	1.09	616	615	248	11	600	220	3
REEDLEY	RDLYCAXF	3,316	0.89	0.89	59.1%	62.0%	2.90	2.21	1.27	1.12	619	617	253	10	611	235	9
ETIWANDA	ETWNCAXF	3,082	0.40	0.40	66.0%	69.5%	3.07	2.63	1.23	1.09	259	257	88	2	255	79	0
FOWLER	FWLRCAXF	1,720	1.09	1.09	56.5%	61.6%	2.92	2.00	1.21	1.03	393	392	171	2	384	151	1
GUADALUPE	GDLPCAXG	1,231	0.30	0.29	71.4%	72.7%	1.92	1.91	1.02	0.94	77	75	22	2	75	21	1
VTVL HSPR	HSPRCAXE	8	1.14	. 1.14	100.0%	100.0%	0.22	0.22	0.20	0.20	2	2	0	0	2	0	0



CONFIDENTIAL AND PROPRIETARY PER P.U. CODE § 583, GENERAL ORDER 66-D, & D.16-08-024

Ad	C coord Lines	)OS per	20	PE POORES		FRON JT-OF-SER MING ANI 2	ITIER CALI RVICE CLE D 10 BEST 02016-402	FORNIA ARED WIT PERFORM	HIN 24 HC							
A	C Cooper Lines - 4	OS ner		FRONTIER CALIFORNIA PERCENT OUT-OF-SERVICE CLEARED WITHIN 24 HOURS 20 POOREST PERFORMING AND 10 BEST PERFORMING REPORTING UNITS 2Q2016-4Q2017												
CLLI	(avg for Quarter)	100 ALs per month	OOS>24 per 100 ALs per month	Pct Cleared w/in 24 hours (unadi)	Pct Cleared w/in 24 hours (adi)	# days to clear 90% OOS (unadi)	# days to clear 90% OOS (adi)	Avgerage OOS Duration (davs)	Avgerage CPUC OOS Duration (davs)	OOS Total	OOS > 1 hour	OOS > 24 Hours	OOS > 1 week	CPUC OOS > 1 hour	CPUC OOS > C 24 hours	PUC OOS > 1 Week
MING RE	EPORTING		S													
LVLCAXF NNGCAXG LNCCAXF WSCAXF WELCAXF WDCAXF DRVCAXF DRVCAXF WDCAXF HSPCAXF NBGCAXF HSPCAXF NCKCAXF HTRCAXJ HTRCAXF RLNCAXF NGCAXF NGCAXF NGCAXF NGCAXF NJQCAXF JNCAXF	449 190 170 28 607 489 267 685 215 881 348 86 126 108 1,138 588 188 958 613 145	$\begin{array}{c} 1.56\\ 1.95\\ 0.81\\ 1.51\\ 2.32\\ 1.23\\ 1.18\\ 0.80\\ 1.17\\ 1.71\\ 1.60\\ 0.89\\ 1.28\\ 0.94\\ 0.92\\ 0.86\\ 0.50\\ 1.01\\ 1.12\end{array}$	$\begin{array}{c} 1.56\\ 1.95\\ 0.81\\ 1.51\\ 2.31\\ 1.21\\ 1.18\\ 0.80\\ 1.15\\ 1.71\\ 1.60\\ 0.89\\ 3.39\\ 1.28\\ 0.93\\ 0.92\\ 0.86\\ 0.49\\ 1.01\\ 1.09\end{array}$	0.07 0.10 0.11 0.12 0.13 0.14 0.15 0.15 0.15 0.18 0.19 0.20 0.21 0.21 0.21 0.21 0.24 0.25 0.25 0.26	12.2% 19.2% 10.3% 22.2% 27.1% 42.1% 33.0% 18.9% 32.5% 32.5% 33.3% 33.3% 33.3% 31.7% 25.4% 25.4% 25.4% 25.4% 29.4% 37.0% 32.3%	$\begin{array}{c} 7.13\\ 7.34\\ 7.34\\ 7.11\\ 4.40\\ 8.98\\ 9.19\\ 6.74\\ 7.09\\ 8.93\\ 7.41\\ 6.81\\ 5.92\\ 14.16\\ 6.55\\ 6.34\\ 5.17\\ 5.87\\ 6.01\\ 5.52\\ 4.06\end{array}$	$\begin{array}{c} 6.13\\ 6.07\\ 6.11\\ 3.40\\ 7.97\\ 7.43\\ 5.21\\ 7.48\\ 6.09\\ 6.05\\ 4.19\\ 12.55\\ 5.19\\ 5.24\\ 4.34\\ 4.70\\ 4.68\\ 4.19\\ 3.60\\ \end{array}$	3.97 4.00 4.09 2.25 4.82 3.78 3.86 3.84 3.72 3.39 4.42 3.34 3.00 2.43 3.04 2.85 2.75 2.07	3.47 3.37 3.60 1.85 4.27 4.25 2.30 3.17 3.31 3.05 3.12 2.55 3.90 2.59 2.46 2.07 2.31 2.22 2.33 1.79	147 78 29 9 295 126 66 115 53 317 117 16 90 29 224 114 34 100 130 34	147 78 29 9 294 124 66 115 52 317 117 16 90 29 223 114 34 98 8130 33	136 70 26 8 259 109 57 98 45 261 96 13 72 23 72 23 177 90 26 75 97 25	23 26 9 0 59 25 8 16 11 64 23 2 17 4 30 6 3 3 10 11	140 71 29 9 257 92 61 94 50 2755 108 15 82 24 203 109 32 87 7 122 31	129 63 26 7 215 73 49 214 86 12 60 18 153 85 24 63 88 88 88 88 22	16 7 4 9 43 9 4 9 8 39 11 0 15 2 13 1 1 6 7 1
G REPOR	RTING UNI	тѕ														
MVYCAXF DLYCAXF NGRCAXF RLKCAXF STRCAXF IWNCAXF RFDCAXF DLPCAXG	672 3,316 3,170 444 969 135 3,082 82 1,231	0.90 0.89 0.93 0.75 0.67 1.44 0.40 0.35 0.30	0.90 0.89 0.92 0.74 0.67 1.44 0.40 0.29 0.29	0.59 0.59 0.60 0.61 0.63 0.63 0.66 0.67 0.71	66.1% 62.0% 64.3% 65.7% 66.2% 68.3% 69.5% 83.3% 72.7%	5.45 2.90 2.82 4.23 4.30 3.87 3.07 3.98 1.92	4.10 2.21 2.11 3.23 3.48 2.91 2.63 2.98 1.91	1.73 1.27 1.30 1.55 1.60 1.46 1.23 1.48 1.02	1.41 1.12 1.09 1.32 1.37 1.20 1.09 1.15 0.94	127 619 616 70 136 41 259 6 77	127 617 615 69 136 41 257 5 75	52 253 248 27 50 15 88 2 22	9 10 11 3 5 1 2 1 2	122 611 600 68 135 40 255 5 5	43 235 220 24 46 13 79 1 21	6 9 3 2 3 1 0 0
( CREATER STORES	LLII LCAXF IGCAXG ICCAXF ISCAXF LCAXF VDCAXF VDCAXF VDCAXF IC	Access Lines  Access Lines<	Access Lines  100 ALs (avg for per month    LLI  Quarter)  month    IING REPORTING UNITS  ING REPORTING UNITS    LCAXF  449  1.56    IGCAXG  190  1.95    ICCAXF  28  1.51    ISCAXF  28  1.51    LCAXF  607  2.32    VDCAXF  267  1.18    ACAXF  685  0.80    /DCAXF  215  1.17    LCAXF  881  1.71    ICCAXF  108  1.28    YCCAXF  86  0.89    NCAXF  108  1.28    RCAXF  108  1.28    RCAXF  108  1.28    RCAXF  108  0.28    NCAXF  108  0.90    NCAXF  113  0.94    NCAXF  588  0.50    NCAXF  112  112    REPORTING UNITS  1.12    YCAXF  672  0.90	Access Lines  100 ALs  OOS>24 per 100 ALs per month    LLI  Quarter)  per month  100 ALs per month    IING REPORTING UNITS    LCAXF  449  1.56  1.56    IGCAXG  190  1.95  1.95    ICCAXF  28  1.51  1.51    LCAXF  607  2.32  2.31    DCAXF  267  1.18  1.18    NCAXF  607  2.32  2.31    VDCAXF  267  1.18  1.18    CAXF  81  1.71  1.15    LCAXF  81  1.71  1.17    VCAXF  881  1.60  1.60    IGCAXF  88  1.02  1.22    NCAXF  126  3.39  3.39    NCAXF  188  0.80  0.88    NCAXF  188  0.94  0.93    NCAXF  135  1.12  1.09    REPORTING UNITS  1.01  1.01    NCAXF	Access Lines  100 ALs  OOS>24 per month  w/in 24 hours (unadi)    LII Quarter)  per month  100 ALs per month  hours (unadi)    IING REPORTING UNITS  IING REPORTING UNITS  IING ISCAXG  190  1.56  1.56  0.07    IGCAXG  190  1.95  1.95  0.10  ISCAXG  100  1.15    LCAXF  607  2.32  2.31  0.11  ISCAXF  28  1.51  0.11    LCAXF  607  2.32  2.31  0.12  0.13    VCAXF  267  1.18  1.18  0.14    ACAXF  685  0.80  0.80  0.15    DCAXF  215  1.17  1.15  0.15    DCAXF  881  1.71  1.16  0.18    IGCAXF  881  1.71  1.16  0.18    IGCAXF  126  3.93  3.99  0.20    NCAXF  108  1.28  1.22  0.21    IRCAXF  1.138  0.94 </td <td>Access Lines  100 ÅLs  OOS&gt;24 per you ÅLs  w/in 24 hours  Pct Cleared win 24    LLI  Quarter)  per month  100 ÅLs per month  w/in 24 hours  v/in 24 hours (adj)    IING REPORTING UNITS  IING REPORTING UNITS       LCAXF  449  1.56  1.56  0.07  12.2%    IGCAXG  190  1.95  1.95  0.10  19.2%    ICCAXF  28  1.51  1.51  0.11  22.2%    LCAXF  607  2.32  2.31  0.12  27.1%    VCCAXF  267  1.18  1.18  0.14  25.8%    VCCAXF  267  1.18  1.18  0.14  25.8%    VCCAXF  267  1.18  1.18  0.14  25.8%    VCCAXF  267  1.18  1.18  0.14  25.6%    DCAXF  81  1.71  1.71  0.18  26.5%    NCAXF  160  1.82  0.26  33.3%    <td< td=""><td>Access Lines  100 ALs  OOS&gt;24 per per  win 24 hours  Pct Cleared win 24 hours  # days to clear 90% OOS (unadj)    IING REPORTING UNITS  IING REPORTING UNITS </td><td>Access Lines  100 ALs  OOS&gt;24 per per  win 24 hours  Pct Cleared win 24 hours  # days to clear 90% hours (adj)  # days to clear 90% OOS (adj)    IING REPORTING UNITS    LCAXF  449  1.56  1.56  0.07  12.2%  7.13  6.13    IGCAXG  190  1.95  1.95  0.10  19.2%  7.34  6.07    ICCAXF  28  1.51  1.51  0.11  22.2%  4.40  3.40    LCAXF  607  2.32  2.31  0.12  27.1%  8.98  7.97    VCAXF  267  1.18  1.18  0.14  25.8%  6.74  5.21    ACAXF  685  0.80  0.80  0.15  33.0%  7.09  5.97    DCAXF  215  1.17  1.15  0.16  0.18  26.5%  6.81  6.05    ICAXF  861  1.60  0.18  26.5%  6.81  6.05</td><td>Access Lines  100 ALs  OOS&gt;24 per 100 ALs per month  w/in 24 hours  Pct Cleared win 24  # days to clear 90% bours (adi)  OOS clear 90% OOS (adj)    IING REPORTING UNITS    LCAXF  449  1.56  1.56  0.07  12.2% 7.34  7.13  6.13  3.97    IGCAXG  190  1.95  1.95  0.10  19.2% 7.34  6.07  4.00    ISCAXF  28  1.51  1.51  0.11  22.2% 4.40  3.40  2.25    ICAXF  489  1.23  1.21  0.13  42.1%  9.19  7.43  4.80    VCAXF  287  1.18  1.18  0.14  25.8%  6.74  5.21  3.02    VCAXF  267  1.18  1.18  0.14  25.8%  6.81  6.05  3.72    IGAXF  248  1.60  1.60  0.18  26.5%  6.81  6.05  3.72    IGAXF  248  0.20  3.39  0.20  3.33  1.416  1.8  2.43</td><td>Access Lines  100 ALs  OCS&gt;24 per month  vwlin 24 bours  Pct Cleared win 24  # days to clear 90% OOS (and)  CPUC OOS Duration    LL  Quarter)  month  month  hours  win 24  clear 90% OOS (and)  Duration  Duration    IING REPORTING UNITS  IIING REPORTING UNITS  IIIING REPORTING UNITS  IIIII 1  IIIII 222%  Ad0  340  225  1.85    LCAXF  6607  2.32  2.31  0.12  0.13  27.11  8.18  1.02  2.30    VCAXF  265  0.80  0.80  0.15  33.09  7.09  5</td><td>Access Lines  100 ÅLs  00S&gt;24 per per  win 24 month  Pet Clear 90% (unad)  # days to clear 90% 00S (unad)  © OS clear 90% 00S (unad)  COS Duration (days)  COS Total    IING REPORTING UNITS  IING REPORTING UNITS  IING REPORTING UNITS  Vortage  7.13  6.13  3.97  3.47  147    IGGAXG  190  1.95  1.95  0.01  19.2%  7.34  6.07  4.00  3.37  78    ICGAXF  170  0.81  0.81  0.10  19.2%  7.34  6.07  4.00  3.37  78    ICGAXF  28  1.51  1.51  0.11  12.2%  4.40  3.40  2.25  1.28  9    ICAXF  607  2.32  2.31  0.12  27.1%  8.98  7.97  4.82  4.27  295    VCAXF  267  1.18  1.18  0.14  25.8%  6.74  5.21  3.02  2.30  66    VCAXF  267  1.18  1.18  0.15  3.0%</td><td>Access Lines  100 Å Ls  ood S&gt;24 per per  win 24 month  Pet Cleared  # days to win 24  # days to clear 90% OOS (mad)  OOS = 0 Duration  Duration  OOS &gt; 1 hours    LIL  Quartery  month  month  (unad)  nours  (unad)  OOS (mad)  OOS (mad)  Dots (mad)  OOS (m</td><td>Access Lines  100 ALs  OOS-24 per (avg for month  win 24 month  Per Cleared hours (unadi)  # days to place 30% COS (adj)  Dior Duration  OOS - CUC OOS (days)  Unadi OOS (adj)  OOS - CUC OOS Duration  Unadi (days)  OOS - CUC OOS (days)  Unadi OOS (adj)  OOS - CUC OOS (days)  Unadi OOS (adj)  OOS - CUC OOS (days)  OOS - CUC</td><td>Access Lines  100 ALs  OOS-24 per (avg)  ovin 24 (avg)  # days to OOS  * days to OOS  CPUIC OOS Duration  OOS &gt; 1 (days)  OOS &gt; 1 (days</td><td>Access Lines 100 ALs 003-24 per hours (unad)  win 24 (unad)  Pet Clamed #days to (unad)  # days to #days  CPUC 003 (days)  OUS  Unation (days)  OOS 1 (days)  &lt;</td><td>Access Lines: 100 ÅLS  OOS ÅLS  OOS × 1  PerUC OOS × CPUC OS × C</td></td<></td>	Access Lines  100 ÅLs  OOS>24 per you ÅLs  w/in 24 hours  Pct Cleared win 24    LLI  Quarter)  per month  100 ÅLs per month  w/in 24 hours  v/in 24 hours (adj)    IING REPORTING UNITS  IING REPORTING UNITS       LCAXF  449  1.56  1.56  0.07  12.2%    IGCAXG  190  1.95  1.95  0.10  19.2%    ICCAXF  28  1.51  1.51  0.11  22.2%    LCAXF  607  2.32  2.31  0.12  27.1%    VCCAXF  267  1.18  1.18  0.14  25.8%    VCCAXF  267  1.18  1.18  0.14  25.8%    VCCAXF  267  1.18  1.18  0.14  25.8%    VCCAXF  267  1.18  1.18  0.14  25.6%    DCAXF  81  1.71  1.71  0.18  26.5%    NCAXF  160  1.82  0.26  33.3% <td< td=""><td>Access Lines  100 ALs  OOS&gt;24 per per  win 24 hours  Pct Cleared win 24 hours  # days to clear 90% OOS (unadj)    IING REPORTING UNITS  IING REPORTING UNITS </td><td>Access Lines  100 ALs  OOS&gt;24 per per  win 24 hours  Pct Cleared win 24 hours  # days to clear 90% hours (adj)  # days to clear 90% OOS (adj)    IING REPORTING UNITS    LCAXF  449  1.56  1.56  0.07  12.2%  7.13  6.13    IGCAXG  190  1.95  1.95  0.10  19.2%  7.34  6.07    ICCAXF  28  1.51  1.51  0.11  22.2%  4.40  3.40    LCAXF  607  2.32  2.31  0.12  27.1%  8.98  7.97    VCAXF  267  1.18  1.18  0.14  25.8%  6.74  5.21    ACAXF  685  0.80  0.80  0.15  33.0%  7.09  5.97    DCAXF  215  1.17  1.15  0.16  0.18  26.5%  6.81  6.05    ICAXF  861  1.60  0.18  26.5%  6.81  6.05</td><td>Access Lines  100 ALs  OOS&gt;24 per 100 ALs per month  w/in 24 hours  Pct Cleared win 24  # days to clear 90% bours (adi)  OOS clear 90% OOS (adj)    IING REPORTING UNITS    LCAXF  449  1.56  1.56  0.07  12.2% 7.34  7.13  6.13  3.97    IGCAXG  190  1.95  1.95  0.10  19.2% 7.34  6.07  4.00    ISCAXF  28  1.51  1.51  0.11  22.2% 4.40  3.40  2.25    ICAXF  489  1.23  1.21  0.13  42.1%  9.19  7.43  4.80    VCAXF  287  1.18  1.18  0.14  25.8%  6.74  5.21  3.02    VCAXF  267  1.18  1.18  0.14  25.8%  6.81  6.05  3.72    IGAXF  248  1.60  1.60  0.18  26.5%  6.81  6.05  3.72    IGAXF  248  0.20  3.39  0.20  3.33  1.416  1.8  2.43</td><td>Access Lines  100 ALs  OCS&gt;24 per month  vwlin 24 bours  Pct Cleared win 24  # days to clear 90% OOS (and)  CPUC OOS Duration    LL  Quarter)  month  month  hours  win 24  clear 90% OOS (and)  Duration  Duration    IING REPORTING UNITS  IIING REPORTING UNITS  IIIING REPORTING UNITS  IIIII 1  IIIII 222%  Ad0  340  225  1.85    LCAXF  6607  2.32  2.31  0.12  0.13  27.11  8.18  1.02  2.30    VCAXF  265  0.80  0.80  0.15  33.09  7.09  5</td><td>Access Lines  100 ÅLs  00S&gt;24 per per  win 24 month  Pet Clear 90% (unad)  # days to clear 90% 00S (unad)  © OS clear 90% 00S (unad)  COS Duration (days)  COS Total    IING REPORTING UNITS  IING REPORTING UNITS  IING REPORTING UNITS  Vortage  7.13  6.13  3.97  3.47  147    IGGAXG  190  1.95  1.95  0.01  19.2%  7.34  6.07  4.00  3.37  78    ICGAXF  170  0.81  0.81  0.10  19.2%  7.34  6.07  4.00  3.37  78    ICGAXF  28  1.51  1.51  0.11  12.2%  4.40  3.40  2.25  1.28  9    ICAXF  607  2.32  2.31  0.12  27.1%  8.98  7.97  4.82  4.27  295    VCAXF  267  1.18  1.18  0.14  25.8%  6.74  5.21  3.02  2.30  66    VCAXF  267  1.18  1.18  0.15  3.0%</td><td>Access Lines  100 Å Ls  ood S&gt;24 per per  win 24 month  Pet Cleared  # days to win 24  # days to clear 90% OOS (mad)  OOS = 0 Duration  Duration  OOS &gt; 1 hours    LIL  Quartery  month  month  (unad)  nours  (unad)  OOS (mad)  OOS (mad)  Dots (mad)  OOS (m</td><td>Access Lines  100 ALs  OOS-24 per (avg for month  win 24 month  Per Cleared hours (unadi)  # days to place 30% COS (adj)  Dior Duration  OOS - CUC OOS (days)  Unadi OOS (adj)  OOS - CUC OOS Duration  Unadi (days)  OOS - CUC OOS (days)  Unadi OOS (adj)  OOS - CUC OOS (days)  Unadi OOS (adj)  OOS - CUC OOS (days)  OOS - CUC</td><td>Access Lines  100 ALs  OOS-24 per (avg)  ovin 24 (avg)  # days to OOS  * days to OOS  CPUIC OOS Duration  OOS &gt; 1 (days)  OOS &gt; 1 (days</td><td>Access Lines 100 ALs 003-24 per hours (unad)  win 24 (unad)  Pet Clamed #days to (unad)  # days to #days  CPUC 003 (days)  OUS  Unation (days)  OOS 1 (days)  &lt;</td><td>Access Lines: 100 ÅLS  OOS ÅLS  OOS × 1  PerUC OOS × CPUC OS × C</td></td<>	Access Lines  100 ALs  OOS>24 per per  win 24 hours  Pct Cleared win 24 hours  # days to clear 90% OOS (unadj)    IING REPORTING UNITS  IING REPORTING UNITS	Access Lines  100 ALs  OOS>24 per per  win 24 hours  Pct Cleared win 24 hours  # days to clear 90% hours (adj)  # days to clear 90% OOS (adj)    IING REPORTING UNITS    LCAXF  449  1.56  1.56  0.07  12.2%  7.13  6.13    IGCAXG  190  1.95  1.95  0.10  19.2%  7.34  6.07    ICCAXF  28  1.51  1.51  0.11  22.2%  4.40  3.40    LCAXF  607  2.32  2.31  0.12  27.1%  8.98  7.97    VCAXF  267  1.18  1.18  0.14  25.8%  6.74  5.21    ACAXF  685  0.80  0.80  0.15  33.0%  7.09  5.97    DCAXF  215  1.17  1.15  0.16  0.18  26.5%  6.81  6.05    ICAXF  861  1.60  0.18  26.5%  6.81  6.05	Access Lines  100 ALs  OOS>24 per 100 ALs per month  w/in 24 hours  Pct Cleared win 24  # days to clear 90% bours (adi)  OOS clear 90% OOS (adj)    IING REPORTING UNITS    LCAXF  449  1.56  1.56  0.07  12.2% 7.34  7.13  6.13  3.97    IGCAXG  190  1.95  1.95  0.10  19.2% 7.34  6.07  4.00    ISCAXF  28  1.51  1.51  0.11  22.2% 4.40  3.40  2.25    ICAXF  489  1.23  1.21  0.13  42.1%  9.19  7.43  4.80    VCAXF  287  1.18  1.18  0.14  25.8%  6.74  5.21  3.02    VCAXF  267  1.18  1.18  0.14  25.8%  6.81  6.05  3.72    IGAXF  248  1.60  1.60  0.18  26.5%  6.81  6.05  3.72    IGAXF  248  0.20  3.39  0.20  3.33  1.416  1.8  2.43	Access Lines  100 ALs  OCS>24 per month  vwlin 24 bours  Pct Cleared win 24  # days to clear 90% OOS (and)  CPUC OOS Duration    LL  Quarter)  month  month  hours  win 24  clear 90% OOS (and)  Duration  Duration    IING REPORTING UNITS  IIING REPORTING UNITS  IIIING REPORTING UNITS  IIIII 1  IIIII 222%  Ad0  340  225  1.85    LCAXF  6607  2.32  2.31  0.12  0.13  27.11  8.18  1.02  2.30    VCAXF  265  0.80  0.80  0.15  33.09  7.09  5	Access Lines  100 ÅLs  00S>24 per per  win 24 month  Pet Clear 90% (unad)  # days to clear 90% 00S (unad)  © OS clear 90% 00S (unad)  COS Duration (days)  COS Total    IING REPORTING UNITS  IING REPORTING UNITS  IING REPORTING UNITS  Vortage  7.13  6.13  3.97  3.47  147    IGGAXG  190  1.95  1.95  0.01  19.2%  7.34  6.07  4.00  3.37  78    ICGAXF  170  0.81  0.81  0.10  19.2%  7.34  6.07  4.00  3.37  78    ICGAXF  28  1.51  1.51  0.11  12.2%  4.40  3.40  2.25  1.28  9    ICAXF  607  2.32  2.31  0.12  27.1%  8.98  7.97  4.82  4.27  295    VCAXF  267  1.18  1.18  0.14  25.8%  6.74  5.21  3.02  2.30  66    VCAXF  267  1.18  1.18  0.15  3.0%	Access Lines  100 Å Ls  ood S>24 per per  win 24 month  Pet Cleared  # days to win 24  # days to clear 90% OOS (mad)  OOS = 0 Duration  Duration  OOS > 1 hours    LIL  Quartery  month  month  (unad)  nours  (unad)  OOS (mad)  OOS (mad)  Dots (mad)  OOS (m	Access Lines  100 ALs  OOS-24 per (avg for month  win 24 month  Per Cleared hours (unadi)  # days to place 30% COS (adj)  Dior Duration  OOS - CUC OOS (days)  Unadi OOS (adj)  OOS - CUC OOS Duration  Unadi (days)  OOS - CUC OOS (days)  Unadi OOS (adj)  OOS - CUC OOS (days)  Unadi OOS (adj)  OOS - CUC OOS (days)  OOS - CUC	Access Lines  100 ALs  OOS-24 per (avg)  ovin 24 (avg)  # days to OOS  * days to OOS  CPUIC OOS Duration  OOS > 1 (days)  OOS > 1 (days	Access Lines 100 ALs 003-24 per hours (unad)  win 24 (unad)  Pet Clamed #days to (unad)  # days to #days  CPUC 003 (days)  OUS  Unation (days)  OOS 1 (days)  <	Access Lines: 100 ÅLS  OOS ÅLS  OOS × 1  PerUC OOS × CPUC OS × C



	Table 4F.6																
	FRONTIER CALIFORNIA DAYS REQUIRED TO CLEAR 90% OF OUT-OF-SERVICE CONDITIONS 20 POOREST PERFORMING AND 10 BEST PERFORMING REPORTING UNITS 2Q2016-4Q2017																
		Access Lines	OOS per 100 ALs	OOS>24 per	Pct Cleared w/in 24	Pct Cleared	# days to	# days to	Avgerage OOS	Avgerage CPUC OOS							
Wire Center Name	CLLI	(avg for Quarter)	per month	100 ALs per month	hours (unadj)	w/in 24 hours (adj)	clear 90% OOS (unadj)	clear 90% OOS (adj)	Duration (days)	Duration (days)	OOS Total	OOS > 1 hour	OOS > 24 Hours	OOS > 1 week	CPUC OOS > 1 hour	CPUC OOS > 24 hours	CPUC OOS > 1 Week
20 POOREST PERF		REPORTIN		s													
			• • • • • •	0													I
ALDERPOINT	ALPNCAXF	126	3.39	3.39	20.0%	33.3%	14.16	12.55	4.42	3.90	90	90	72	17	82	. 60	15
DESERT CENTER	DSCTCAXG	54	1.66	1.66	31.6%	36.8%	10.18	8.76	3.93	3.39	19	19	13	4	18	12	3
KENWOOD	KNWDCAXF	489	1.23	1.21	13.5%	42.1%	9.19	7.43	4.80	4.25	126	124	109	25	92	. 73	. 9'
COVELO	CVELCAXF	607	2.32	2.31	12.2%	27.1%	8.98	7.97	4.82	4.27	295	294	259	59	257	215	43
GAVIOTA	ELWDCAXF	215	1.17	1.15	15.1%	18.9%	8.93	7.48	3.86	3.31	53	52	45	11	50	43	
ARROWHEAD	ARHDCAXE	3,044	0.77	0.76	35.0%	39.9%	8.68	7.10	3.22	2.62	491	486	319	68	4/8	295	52
PIERCY	PIRCCAXE	138	1.03	1.03	30.0%	46.7%	8.08	5.03	2.99	2.20	30	30	21	6	26	16	3
LAYTONVILLE	LYVLUAXF	881	1./1	1./1	17.7%	32.5%	7.41	6.09	3.84	3.05	317	317	201	04	2/0	214	
SNELLING	SNNGCARG	190	1.95	1.95	10.3%	19.2%	7.34	6.07	4.00	3.37	/8	/ ö	70	20	/1	03	
LEGGEII	LGGTCAXE	109	1.40	1.40	28.1%	43.8%	1.32	6.73	3.49	3.13	32	32	23	c	30	18	с ,
GARBERVILLE	GRVLCAXF	1,381	1.39	1.38	30.6%	43.5%	7.17	6.19	3.04	2.51	402	401	2/9	51	362	227	35
GLENNVILLE	GLVLCAXF	449	1.50	1.00	1.5%	12.2%	7.13	6.13	3.97	3.47	147	147	130	23	140	129	01
OLANCHA	OLNCCAXE	170	0.81	0.81	10.3%	10.3%	7.11	6.11	4.09	3.60	29	29	26	9	29	26	4
CRESTLINE	CRLNCAXF	1,864	0.94	0.94	40.8%	43.8%	7.10	6.32	2.89	2.49	368	366	218	46	361	207	- 3/
HOOPA	HOPACAXE	685	0.80	0.80	14.8%	33.0%	7.09	5.97	3.78	3.17	115	115	98	16	94		
SOMIS	BELKCAXF	618	0.92	0.92	31.9%	34.5%	6.94	5.24	3.20	2.00	119	119	81	13	110	18	ö
CALIFORNIA HOT SPRINGS	CHSPCAXE	348	1.60	1.60	17.9%	26.5%	6.81	6.05	3.72	3.12	11/	11/	96	23	108	86	11
LOS GATOS	LSGICAXA	9,112	0.95	0.94	31.6%	39.7%	6.79	5.66	3.26	2.74	1813	1806	1240	248	1694	1093	167
MAD RIVER	MDRVCAXF	267	1.18	1.18	13.6%	25.8%	6.74	5.21	3.02	2.30	66	66	57	8	61	49	4
CANTUA CREEK	CNCKCAXF	108	1.28	1.28	20.7%	37.9%	6.55	5.19	3.34	2.59	29	29	23	4	24	18	2
10 BEST PERFORM	NG REPC	ORTING UN	IITS														
ETIWANDA	ETWNCAXF	3,082	0.40	0.40	66.0%	69.5%	3.07	2.63	1.23	1.09	259	257	88	2	255	79	, c
TIVY VALLEY	TVVYCAXF	618	2.45	2.45	50.0%	55.0%	3.00	2.20	1.78	1.53	318	318	159	9	311	143	, ç
FOWLER	FWLRCAXF	1,720	1.09	1.09	56.5%	61.6%	2.92	2.00	1.21	1.03	393	392	171	2	384	, 151	1
REEDLEY	RDLYCAXF	3,316	0.89	0.89	59.1%	62.0%	2.90	2.21	1.27	1.12	619	617	253	10	611	235	, ş
SANGER	SNGRCAXF	3,170	0.93	0.92	59.7%	64.3%	2.82	2.11	1.30	1.09	616	615	248	11	600	220	) 3
LEMON COVE	LMCVCAXF	111	1.37	1.33	53.1%	56.3%	2.54	2.21	1.42	1.19	32	31	15	0	i 31	. 14	. (
ROBBINS	RBNSCAXG	366	0.35	0.35	29.6%	48.1%	2.50	1.71	1.35	1.10	27	27	19	0	23	14	, (
MCKITTRICK	MCKTCAXF	214	0.82	0.82	56.8%	62.2%	2.07	2.04	1.43	1.28	37	37	16	1	. 37	14	2 T
GUADALUPE	GDLPCAXG	1,231	0.30	0.29	71.4%	72.7%	1.92	1.91	1.02	0.94	77	75	22	2	75	21	. 1
VTVL HSPR	HSPRCAXE	. 8	1 14	1 14	100.0%	100.0%	0.22	0.22	0.20	0.20	2	2	0	0	1 2	/ 0	í C



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	FRONTIER CALIFORNIA TROUBLE REPORT AND OUT-OF-SERVICE DATA FOR 2Q2016-4Q2017																
		Access	005 per 100	00\$>24 per	Pct Cleared	Ret Cleared	# days to	# days to	Avgerage	Avgerage					CRUC	CRUC	CRUC
		Lines (avg	ALs per	100 ALs per	hours	w/in 24	clear 90%	clear 90%	Duration	Duration		00S > 1	00S > 24	00S > 1	00S > 1	00S > 24	00S > 1
Wire Center Name	CLLI	for Quarter)	month	month	(unadj)	hours (adj)	OOS (unadj)	OOS (adj)	(days)	(days)	OOS Total	hour	Hours	week	hour	hours	Week
ADELANTO	ADLNCAXF	2,779	0.44	0.44	54.3%	59.8%	4.32	3.90	1.75	1.49	256	255	117	9	248	103	6
ALAMITOS	SLBHCAXF	20,756	0.41	0.41	43.6%	49.4%	5.59	4.64	2.35	2.02	1804	1791	1018	141	1732	913	75
ALDERPOINT	ALPNCAXF	126	3 39	3 39	20.0%	33.3%	14.16	12.55	4.42	3.90	90	90	72	17	82	60	15
ALPAUGH	ALPGCAXF	113	1 94	1 94	30.4%	30.4%	5.96	4.77	2.37	2.02	46	46	32	1	46	32	1
ANZA	ANZACAXF	578	1.46	1.44	42.4%	50.3%	4.29	3.17	1.82	1.51	177	175	102	3	167	88	3
APPLE VALLEY	APVYCAXF	6,572	0 58	0 57	54.6%	61.8%	4.23	3.47	1.68	1.41	798	792	362	29	761	305	15
ARROWHEAD	ARHDCAXE	3,044	0.77	0.76	35.0%	39.9%	8.68	7.10	3.22	2.62	491	486	319	68	478	295	52
AZUSA	AZUSCAXE	10,783	057	0.56	49.9%	55.1%	3.81	3.33	1.70	1.47	1282	1268	642	38	1226	5/5	20
BADGER	BUGRCAXE	6 570	3 65	3 65	33.3%	37.5%	4.83	3.80	2.42	1.90	12	751	40	5	711	40	4
BAININING	BININGCAAF	0,072	0 00	0.54	41.0%	47.7%	5.09	4.17	2.50	2.14	/3/	101	447	52	/11	390	30
BENTON	BNTNCAXE	2,975	1 12	1 00	26.5%	35.3%	3.14 4.06	4.24	2.07	1.03	427	420	205	24	407	22	10
BERRENDA MESA	BRMSCAXE	28	1.12	1 51	11.1%	22.2%	4.00	3.40	2.07	1.75	9	9	20	0	9	7	' C
BIG BEAR CITY	BBCYCAXE	2 314	0.55	0.54	42.0%	48.3%	4.98	3.92	2.20	1.66	269	263	156	11	258	139	e e
BIG BEAR LAKE	BBI KCAXE	1 994	0.40	0.40	44.0%	50.0%	4 67	3.95	2.13	1.80	166	166	93	7	160	83	F
BIG P NE	BGPICAXE	226	0.67	0.65	37.5%	43.8%	3.15	2.73	1.58	1.38	32	31	20	. 0	29	18	Č
BISHOP	BSHPCAXG	2.937	0.47	0.46	48.4%	53.3%	4.27	3.84	1.98	1.67	289	284	149	15	277	135	7
BORON	BORNCAXF	519	0.75	0.75	48.8%	54.9%	4.92	4.01	2.12	1.77	82	82	42	4	78	37	2
BRIDGEPORT	BRPTCAXF	610	0 55	0 55	56.3%	62.0%	3.63	2.85	1.57	1.33	71	71	31	2	70	27	2
BRSW YERM	WHTRCAXH	373	1 24	1 23	57.7%	64.9%	3.67	3.01	1.42	1.20	97	96	41	1	96	34	С
BUTTONW LLOW	BTNWCAXF	407	1.46	1.46	34.4%	36.0%	3.56	2.81	2.33	2.01	125	125	82	7	125	80	7
CAL FORNIA CITY	CFCYCAXF	1,513	0 62	0 62	54.0%	62.6%	4.22	3.24	1.67	1.27	198	197	91	2	184	74	0
CAL FORNIA HOT SPR NGS	CHSPCAXF	348	1 60	1 60	17.9%	26.5%	6.81	6.05	3.72	3.12	117	117	96	23	108	86	11
CAL MESA	CLMSCAXF	6,516	0.75	0.75	43.6%	50.1%	5.14	4.24	2.44	2.09	1027	1021	579	81	988	512	58
CAMARILLO	CMRLCAXF	11,360	0 22	0.22	44.7%	50.2%	5.03	4.31	2.21	1.89	528	523	292	41	502	263	27
CANTUA CREEK	CNCKCAXF	108	1 28	1 28	20.7%	37.9%	6.55	5.19	3.34	2.59	29	29	23	4	24	18	2
CARPINTERIA	CRPRCAXF	2,696	0.46	0.46	51.9%	54.6%	5.20	4.48	2.20	1.93	260	259	125	23	256	118	13
CAZADERO	CZDRCAXG	449	1 62	1 62	41.2%	54.9%	4.73	3.73	2.54	2.04	153	153	90	9	138	69	6
CH NO	CHNOCAXF	18,522	0 27	0.27	50.4%	56.0%	3.77	2.95	1.70	1.46	1046	1034	519	34	1000	460	19
CLAREMONT	CLMTCAXF	20,859	0 38	0.38	50.7%	56.0%	3.90	3.11	1.68	1.43	1680	1649	828	47	1598	739	25
CLEMENTS	CLEMCAXF	323	1 86	1 84	30.2%	39.7%	5.44	4.52	2.61	2.12	126	125	88	11	115	76	6
COLFAX	CLFXCAXF	1,078	1.15	1.15	46.7%	57.9%	4.00	2.99	1.67	1.34	261	260	139	4	239	110	3
CONEJO	THOKCAXH	2,750	0 38	0 38	48.2%	56.4%	5.25	4.33	2.09	1.78	220	219	114	16	211	96	10
CORCORAN	CRCRCAXE	1,187	1.16	1.16	27.7%	30.8%	4.79	3.86	2.29	2.00	289	289	209	18	283	200	12
COVELO	CVELCAXE	607	2 32	2 31	12.2%	27.1%	8.98	7.97	4.82	4.27	295	294	259	59	257	215	43
		20,904	0.46	0.46	51.0%	20.1%	4.08	3.30	1.09	1.45	2815	2/04	13/8	69	2706	1235	49
		1,804	0 94	0 94	40.8%	43.8%	7.10	0.32	2.69	2.49	308	300	218	40	301	207	3/
	CHIVMCAYE	202	0.75	0.74	30.6%	32 7%	4.23	3.23	1.00	1.52	10	40	27	1	40	24	2
	DSCTCAXC	202	1.10	1.10	31.6%	36.8%	4.00	8.76	3.03	3 30	49	49	13	1	49	12	3
DESERT HOT SPRINGS	DHSPCAXE	3 0/15	2 04	2 03	45.1%	10.8%	5 30	4.44	2.00	1 90	1307	1207	717	90	1266	656	63
DESERT SHORES	DSSHCAXE	129	2 73	2 03	45.9%	54.1%	5 59	4.61	1 99	1.30	74	74	40	4	70	34	2
DIAMOND BAR	DMBRCAXE	12 183	0.33	0.32	48.0%	54.2%	4 16	3.47	2.05	1.71	834	823	434	30	791	382	27
DOS PALOS	DSPLCAXE	1,107	1 09	1.08	32.4%	39.9%	5 77	4,95	3.00	2.61	253	252	171	28	233	152	17
DOWNEY	DWNYCAXF	15,145	0.75	0.74	40.4%	46.4%	5 48	4.56	2.26	1.92	2372	2359	1414	160	2274	1271	88
DUNLAP	DNLPCAXE	314	3.82	3.82	42.1%	48.8%	3 69	3.25	2 14	1.79	252	252	146	7	247	129	
EL M RAGE	ELMGCAXF	100	0.76	0.71	56.3%	62.5%	4.36	3,67	1.52	1.30	16	15	7	0	15	0	C
EL RIO	ELRICAXE	8,331	0 21	0 21	44.6%	50.0%	4.35	3,25	1.99	1,71	368	367	204	21	355	184	14
ELSINORE	ELSNCAXG	5.687	0 34	0 34	52.6%	59.1%	4.27	3.20	1.99	1.66	411	406	195	21	390	168	14
	ETW/NICAYE	3 082	0.40	0.40	66.0%	60 5%	3.07	2.63	1.22	1.00	250	257	00	2	255	70	



						Tab	le 4F.7 (pa	ge 2 of 4)									
	0111	Access Lines (avg	OOS per 100 ( ALs per 1	DOS>24 per 100 ALs per	Pct Cleared w/in 24 hours	Pct Cleared w/in 24	# days to clear 90%	# days to clear 90%	Avgerage OOS Duration	Avgerage CPUC OOS Duration	0007.44	005>1 0	00S > 24 (	00S > 1	CPUC OOS > 1	CPUC 00S > 24	CPUC 00S > 1
	GLLI	tor Quarter)	month	month	(unadj)	nours (adj)	OOS (unadj)		(days)	(days)		nour	Hours	week	nour	nours	vveek
	EDVICAVE	2,032	0.07	0 00	52.1%	58.4% 61.0%	3.30	2.80	1.94	1.00	370	300	1/5	0	352	154	2 1
	EDTNCAVE	124	0.76	1.52	53.4%	60.20/	3.52	2.04	1.00	1.10	50	E0	20	4	109	40	1
FORT RWIN	ETIRCAXE	357	0.20	0.20	53.3%	73.3%	4.74	2.85	1.07	0.00	15	15	20	4	13	24	0
FOWLER	EWIRCAXE	1 720	1 09	1 09	56.5%	61.6%	2.92	2.00	1.37	1.03	393	392	171	2	384	151	1
GARBERVILE	GRVI CAXE	1,720	1 39	1 38	30.6%	43.5%	7 17	6.19	3.04	2.51	402	401	279	51	362	227	35
GAVIOTA	FIWDCAXE	215	1 17	1 15	15.1%	18.9%	8.93	7 48	3.86	3.31	53	52	45	11	50	43	8
GLROY	GLRYCAXE	8.352	0.62	0.61	37.6%	43.1%	4.97	4.20	2.18	1.82	1080	1074	674	82	1033	615	49
GLENNVILLE	GLVLCAXF	449	1 56	1 56	7.5%	12.2%	7.13	6.13	3.97	3.47	147	147	136	23	140	129	16
GRANADA H LLS	GRHLCAXF	8,428	0.46	0.45	43.2%	48.3%	5.66	4.70	2.49	2.14	808	800	459	68	780	418	46
GRANT GROVE	CVELCAXF	320	0 97	0 97	38.5%	46.2%	3.34	3.10	1.70	1.46	65	65	40	1	60	35	1
GUADALUPE	GDLPCAXG	1,231	0 30	0 29	71.4%	72.7%	1.92	1.91	1.02	0.94	77	75	22	2	75	21	1
HAYFORK	HYFKCAXF	744	0.71	0.70	45.0%	55.0%	4.13	3.62	1.93	1.62	111	109	61	4	100	50	2
HESPERIA	HSPRCAXF	8,532	0 59	0 58	52.6%	57.7%	4.30	3.82	1.78	1.51	1049	1039	497	39	1000	444	18
HI VISTA	LNCSCAXF	87	0 60	0 60	36.4%	36.4%	3.36	3.08	1.73	1.55	11	11	7	0	11	7	0
HOMELAND	HMLDCAXF	1,685	0 85	0 85	50.7%	55.0%	4.42	3.49	1.95	1.59	302	301	149	12	291	136	7
HOMESTEAD VALLEY	HMVYCAXF	672	0 90	0 90	59.1%	66.1%	5.45	4.10	1.73	1.41	127	127	52	9	122	43	6
HOOPA	HOPACAXE	685	0 80	0 80	14.8%	33.0%	7.09	5.97	3.78	3.17	115	115	98	16	94	77	9
HUNTINGTON BEACH	HNBHCAXG	21,575	0.65	0 64	40.1%	44.9%	5.80	4.83	2.57	2.21	2931	2909	1/5/	293	2836	1616	170
		1,500	0.80	0.80	40.0%	60.2% 50.0%	5.44	2.90	1.04	1.37	204	203	130	0 5	234	101	3
	INDICAYO	15 / 10	1 30	1 20	44.1% 56.7%	61.3%	4.80	4.04	2.33	2.09	4208	/197	1921	250	4060	1620	169
	INVKCAXE	688	1 24	1 2 9	50.8%	58.1%	4.00	4.05	1.07	1.03	4200	4107	88	230	4009	75	100
	JSTRCAXE	969	0.67	0.67	63.2%	66.2%	4.30	3 48	1.50	1.23	136	136	50	5	135	46	3
JUNE LAKE	JNLKCAXF	421	0.74	0.72	47.7%	49.2%	3.71	2.87	1.53	1.35	65	64	34	2	64	33	1
KENWOOD	KNWDCAXF	489	1 23	1 21	13.5%	42.1%	9.19	7.43	4.80	4.25	126	124	109	25	92	73	9
KERNVILLE	KRVLCAXF	1,193	1 34	1 34	37.6%	46.9%	6.15	4.97	2.57	2.15	335	335	209	38	311	178	22
KNIGHTS LANDING	KNLDCAXF	210	1.74	1.74	32.5%	44.2%	4.41	3.41	1.74	1.51	77	77	52	1	70	43	0
LA HABRA	LAHBCAXF	11,835	0 65	0 65	40.4%	46.1%	5.42	4.49	2.22	1.90	1621	1609	966	104	1556	874	54
LA PUENTE	LAPNCAXG	20,348	0 64	0 64	48.8%	55.4%	4.30	3.39	1.75	1.44	2735	2717	1400	102	2608	1221	52
LAGUNA BEACH	LGBHCAXF	3,948	0 52	0 51	38.0%	44.9%	5.56	4.75	2.29	1.95	432	426	268	37	415	238	28
LAKE HUGHES	LKHGCAXF	865	0.72	0.70	40.5%	51.1%	5.35	4.34	2.23	1.81	131	128	78	9	118	64	3
LAKE ISABELLA	LKISCAXF	1,703	0 98	0 97	38.9%	49.4%	6.01	4.84	2.53	2.09	350	348	214	41	319	177	21
	951928	1,713	0 92	0 90	51.8%	57.9%	4.13	3.37	1.77	1.51	330	325	159	13	316	139	10
	MINRVCAXG	9,078	0.35	0.35	45.5%	50.8%	5.56	4.55	2.28	1.92	673 1543	1526	307	62	641 1467	331	29
		17,945	0.41	0.41	5U.2%	20.1%	4.10	3.43	1.04	1.30	1043	1030	700	40	1407	047	20
	LVNGCAXE	215	0.71	0.69	17.770	50.0%	5.45	4.76	2 27	1.87	32	31/	18	1	275	16	39
LEGGETT	LGGTCAXE	109	1 40	1 40	28.1%	43.8%	7.32	6.73	3 49	3 13	32	32	23	5	30	18	5
LEMON COVE	LMCVCAXE	111	1 37	1 33	53.1%	56.3%	2.54	2.21	1.42	1.19	32	31	15	0	31	14	0
LENWOOD	LNWDCAXF	520	1 38	1 38	39.7%	43.7%	6.11	5.11	2.33	1.99	151	151	91	18	147	85	9
LINDEN	LNDNCAXF	792	1.44	1.43	29.7%	38.1%	5.59	4.58	2.84	2.35	239	238	168	20	223	148	10
LINDSAY	LNDSCAXF	2,735	1 01	1 01	51.0%	56.5%	3.39	2.89	1.58	1.35	582	580	285	9	566	253	6
LOMPOC	LMPCCAXF	6,380	0.45	0.44	54.9%	60.1%	4.18	3.58	1.62	1.42	597	595	269	22	578	238	9
LONE P NE	LNPNCAXF	588	0 92	0 92	21.1%	25.4%	5.17	4.34	2.43	2.07	114	114	90	6	109	85	4
LONG BEACH	LNBHCAXF	27,886	0.45	0.44	44.8%	50.6%	5.48	4.49	2.15	1.82	2628	2600	1451	175	2501	1297	78
LOS ALAMOS	LSALCAXF	575	0.41	0.41	36.7%	46.9%	4.82	3.94	2.18	1.84	49	49	31	2	46	26	1
LOS GATOS	LSGTCAXA	9,112	0 95	0 94	31.6%	39.7%	6.79	5.66	3.26	2.74	1813	1806	1240	248	1694	1093	167
	LSHLCAXF	310	0.91	0.89	35.6%	37.3%	4.33	3.67	2.83	2.47	59	58	38	4	58	37	4
		665	1.43	1.41	45.5%	52.0%	4./1	4.03	1.83	1.57	200	197	109	(	191	96	4
MALIBIL		207 6 374	1.10	1.18	13.0%	20.0%	0.74	5.∠1 / 51	3.02	∠.3U 1.04	00	00	258	0 20	10	49 225	4
MAMMOTHLAKES		2 902	0.33	0.33	41.9%	49.3%	0.20 5.10	4.01	2.27	1.94	444 220	44Z 220	200 100	29 16	420	220	11 11
MANTECA	THOKCAXE	2,503 8 13/	0.50	0.30	46.6%	52 7%	3,81	2 02	2.79	∠.33 1 <u>4</u> 1	229 Q21	229 017	492	31	223	436	13
MAR VISTA	CLCYCAXG	7.967	0 57	0.54	45.3%	50.5%	5.56	4.57	2.24	1.91	946	939	517	75	914	468	24
		.,	2.57	2.00			2.00				2.10						



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						Tab	le 4F.7 (pa	ge 3 of 4)									
					Pct Cleared				Avgerage	Avgerage							
		Access	Alsper	00S>24 per 100 Al s per	w/in 24 hours	Pct Cleared w/in 24	# days to clear 90%	# days to clear 90%	OOS Duration	CPUC OOS Duration		005 > 1 (	005 > 24 (	005 > 1	CPUC 005 > 1 (	CPUC DOS > 24 (	CPUC 00S > 1
Wire Center Name	CLLI	for Quarter)	month	month	(unadj)	hours (adj)	OOS (unadj)	OOS (adj)	(days)	(days)	OOS Total	hour	Hours	week	hour	hours	Week
MARSHALL	SNBRCAXH	7,764	0.73	0.72	45.7%	52.4%	5.11	4.14	2.29	1.93	1184	1176	643	83	1141	564	44
MCFARLAND	MCFACAXF	994	0.74	0.74	56.1%	58.1%	3.19	2.60	1.41	1.21	155	155	68	4	152	65	2
MCKITTRICK	MCKTCAXF	214	0 82	0 82	56.8%	62.2%	2.07	2.04	1.43	1.28	37	37	16	1	37	14	1
MENTONE	MENTCAXF	2,687	0 67	0 67	36.6%	46.3%	6.01	5.22	2.71	2.25	380	380	241	38	352	204	25
MIRANTPHST	FRVLCAXF	116	3 00	3 00	39.7%	45.2%	4.56	3.48	1.99	1.54	73	73	44	4	71	40	1
MONROVIA	MNRVCAXG	10,287	0 61	0 59	49.3%	55.9%	3.85	3.37	1.62	1.39	1309	1285	664	32	1232	577	16
MORENO	LNCSCAXF	12,155	0 32	0 32	51.8%	58.3%	3.89	3.05	1.75	1.49	827	819	399	33	782	345	20
MORGAN HILL	MRHLCAXF	7,069	0 61	0 61	39.6%	45.8%	5.74	4.95	2.48	2.15	907	902	548	88	874	492	65
MORONGO VALLEY	MRVYCAXF	471	1 07	1 07	50.0%	57.5%	5.91	5.08	2.13	1.82	106	106	53	12	101	45	8
MURREIA	MURICAXE	10,809	0 20	0.19	54.2%	60.5%	3.52	2.95	1.62	1.37	443	434	203	12	419	1/5	/
	TMCVCAXH	283	2 26	2 24	40.3%	47.0%	6.31	5.31	2.51	2.14	134	133	80	15	128	/1	9
NEWBURY PARK	NWPKCAXE	8,236	0.19	0.19	40.8%	51.7%	5.09	4.53	2.25	1.97	325	320	173	22	313	157	10
NORWALK		20,001	0.50	0.50	43.1%	49.5%	3.05	4.00	2.30	2.01	3030	3013	208	243	2073	1032	140
		4,930	0.47	0.40	30.3%	44.3%	3.93 7.11	5.00	2.07	1.04	403	400	290	10	402	200	12
ONTARIO	ONTRCAXE	19 536	0.01	0.01	56.8%	60.9%	3.40	2.49	4.09	1 22	1112	1100	480	21	1072	435	4 14
	ORINCAXE	188	0.86	0.86	23.5%	29.4%	5.87	4 70	3.04	2 31	34	34	26	21	32	-33	1
OXNARD	OXNRCAXE	10 449	0.00	0.00	41.2%	46.7%	5.28	4.70	2 30	1 97	818	816	481	59	787	436	44
PACIFIC PALISADES	PCPI CAXE	8 698	0.54	0.53	43.2%	49.1%	5.35	4.58	2.33	1.99	982	975	558	77	955	500	36
PACO MA	PACMCAXE	6,444	0.42	0.42	51.0%	57.2%	5.04	4.11	2.27	1.72	573	571	281	35	544	245	12
PALM DESERT	PLDSCAXF	19.476	0.87	0.86	52.0%	57.9%	5.23	4.45	2.09	1.77	3542	3518	1701	249	3410	1491	162
PALM SPR NGS	PLSPCAXG	16,474	1.11	1.10	46.7%	52.0%	5.14	4.17	2.11	1.79	3826	3795	2040	278	3688	1837	178
PARKF ELD	PRFDCAXF	82	0 35	0 29	66.7%	83.3%	3.98	2.98	1.48	1.15	6	5	2	1	5	1	0
PERRIS	PERSCAXF	5,037	0 55	0 54	53.0%	59.8%	3.72	2.88	1.70	1.45	579	571	272	18	541	233	10
PHELAN	PHLNCAXF	2,944	0 67	0 66	56.9%	64.9%	4.28	3.47	1.68	1.40	413	411	178	14	396	145	6
PICO RIVERA	WHTRCAXJ	11,365	0 62	0 61	46.5%	52.1%	4.60	3.80	1.88	1.61	1483	1466	793	61	1417	711	25
PIERCY	P RCCAXF	138	1 03	1 03	30.0%	46.7%	8.08	5.03	2.99	2.20	30	30	21	6	26	16	3
PINE CREEK	PNCKCAXF	220	0 95	0 95	34.1%	36.4%	5.11	4.36	2.17	1.80	44	44	29	4	43	28	2
PINYON	HMLDCAXF	137	1 56	1 52	48.9%	57.8%	4.42	3.35	2.11	1.73	45	44	23	3	42	19	2
PLAYA DEL REY	PDRYCAXF	10,456	0 62	0 62	45.4%	52.7%	5.11	4.20	2.09	1.77	1362	1353	744	70	1301	644	30
PO NT MUGU	MUGUCAXF	2,906	0 36	0 36	36.5%	42.0%	5.36	4.45	3.12	2.12	219	219	139	15	212	127	10
POMONA	POMNCAXF	10,077	0 31	0 31	52.0%	56.8%	4.13	3.23	1.61	1.36	666	657	320	17	632	288	8
RANDSBURG	RNBGCAXF	86	0 89	0 89	18.8%	25.0%	5.92	4.19	3.39	2.55	16	16	13	2	15	12	0
REDLANDS	RDLDCAXF	13,146	0.43	0.42	47.5%	53.9%	4.48	3.75	2.09	1.73	1178	1169	618	63	1117	543	38
REDONDO	HRBHCAXA	35,489	0 32	0 31	48.4%	54.2%	4.92	4.03	1.97	1.67	2348	2330	1211	125	2266	1075	56
REDONDO BEACH	RDBHCAXE	1,424	0.36	0 35	46.8%	52.3%	4.15	3.70	2.20	1.86	109	105	58	8	101	52	5
REEDLEY	RDLYCAXF	3,316	0.89	0 89	59.1%	62.0%	2.90	2.21	1.27	1.12	619	617	253	10	611	235	9
RIDGECREST	RUGCCAXG	5,355	0.80	0.79	46.0%	52.7%	4.42	3.61	1.81	1.52	895	889	483	24	862	423	18
	SURFCAXE	2,448	0.01	0.61	44.1%	49.2%	4.42	3.41	1.80	1.53	313	312	1/5	14	304	159	/
	RENSCANG	300	0.35	0.35	29.0%	48.1%	2.00	1.71	1.30	1.10	27	27	19	10	23	14	0
RUNNING SPRINGS	COMMONYE	010	0 95	0 94	40.0%	47.270	0.00	4.01	2.13	1.04	101	254	122	10	250	107	2
	SLOVCAVE	400	201	2 00	40.2%	50.2%	4.24	3.32	1.70	1.01	200	204	132	13	230	66	5
SALTON CITT	SNBRCAXK	11 06/	2 33	2 33	46.0%	50.8%	4.90	1 12	2.06	1.35	100	1800	1020	111	1855	00	63
SAN JAC NTO	SNJCCAXG	2 896	0.70	0.70	54.3%	62.7%	3.49	2.86	1.83	1.73	346	344	158	9	322	129	7
SAN JOAQUIN	SNJQCAXE	613	1 01	1 01	25.4%	32.3%	5.52	4 19	2 75	2.33	130	130	97	11	122	88	7
SAN MIGUEI	SNMGCAXE	695	0.28	0.28	31.7%	41.5%	4 72	3.62	4 10	3 49	41	41	28		.22	24	1
SANGER	SNGRCAXE	3.170	0.93	0.92	59.7%	64.3%	2.82	2.11	1.30	1.09	616	615	248	11	600	220	3
SANTA BARBARA	ORLNCAXE	26,290	0.60	0 59	41.6%	46.5%	5.64	4.87	2.47	2.14	3302	3277	1930	344	3188	1768	202
SANTA MARIA	SNTMCAXF	14.256	0 34	0 34	53.3%	59.1%	4.17	3.35	1.81	1.42	1023	1012	478	36	984	418	16
SANTA MONICA	SNMNCAXG	29,193	0.49	0.49	44.3%	49.0%	5.13	4.42	2.10	1.80	3007	2981	1676	173	2902	1535	81
SANTA PAULA	SNPLCAXF	3,368	0 58	0 58	37.6%	41.0%	5.54	4.57	2.39	2.09	412	411	257	31	408	243	19
SANTA YNEZ	LAPNCAXF	5,877	0 66	0 66	37.8%	44.6%	5.18	4.20	2.17	1.85	820	813	510	53	775	454	27
SEA RANCH	SERNCAXG	1,109	1 27	1 27	44.1%	50.8%	3.94	2.92	1.75	1.40	297	297	166	3	283	146	3
SEPULVEDA	SPLVCAXF	7,986	0.40	0 39	47.8%	52.6%	4.94	4.41	1.98	1.70	671	661	350	38	646	318	13



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						Tab	ole 4F.7 (pa	ge 4 of 4)									
			000 400	0000024 ====	Pct Cleared	Det Cleaned	# dave 4a	#	Avgerage	Avgerage					CDUC	CDUC	CDUC
		Access Lines (avg	ALs per	100 ALs per	w/in 24 hours	w/in 24	clear 90%	# days to clear 90%	Duration	Duration		00S > 1	00S > 24	00S > 1	00S > 1	00S > 24	00S > 1
Wire Center Name	CLLI	for Quarter)	month	month	(unadj)	hours (adj)	OOS (unadj)	OOS (adj)	(days)	(days)	OOS Total	hour	Hours	week	hour	hours	Week
SEPULVEDA 1	SPLVCAXF1	68	1 20	1 20	41.2%	47.1%	4.78	4.13	2.58	2.32	17	17	10	2	17	9	1
SEPULVEDA 2		135	1.44	1.44	63.4%	68.3%	3.87	2.91	1.46	1.20	41	41	15	1	40	13	1
SEPULVEDA 3	SPLVCAXF2	186	1 05	1 05	53.7%	63.4%	5.05	3.72	2.15	1.51	41	41	19	3	38	15	1
SIERRA MADRE	SRMDCAXF	4,215	0 64	0 63	44.3%	49.9%	4.38	3.35	1.80	1.53	567	562	316	25	545	284	8
SNELL NG	SNNGCAXG	190	1 95	1 95	10.3%	19.2%	7.34	6.07	4.00	3.37	78	78	70	26	71	63	7
SNFN SNFN	KNLDCAXF	5,607	0.46	0.45	48.6%	54.0%	4.99	4.13	1.97	1.70	541	533	278	23	517	249	13
SOMIS	BELRCAXF	618	0 92	0 92	31.9%	34.5%	6.94	5.24	3.20	2.66	119	119	81	13	116	78	8
SQUAW VALLEY	SVYFCAXF	173	2.11	2.11	37.7%	42.9%	3.45	3.02	1.63	1.36	77	77	48	1	75	44	0
SUMMIT VLY	WLDNCAXF	98	2 37	2 37	51.0%	53.1%	4.01	3.12	1.45	1.27	49	49	24	2	48	23	1
SUN CITY	SNCYCAXF	7,265	0 37	0 37	55.0%	62.5%	3.86	3.21	1.77	1.48	562	557	253	20	524	211	12
SUNLD TJNG	LNCSCAXF	4,805	0 63	0 63	42.1%	51.4%	5.34	4.46	2.06	1.73	636	634	368	43	605	309	11
SYLMAR	SYLMCAXF	5,372	0.44	0.44	48.5%	55.7%	5.33	4.56	1.95	1.67	497	491	256	35	469	220	16
TAFT	TAFTCAXF	1,731	0.72	0.72	45.4%	47.7%	3.55	3.01	1.86	1.58	262	261	143	10	259	137	6
TEMECULA	TMCLCAXG	14,148	0.42	0.41	54.6%	60.6%	3.67	2.88	1.75	1.46	1241	1233	564	56	1188	489	29
THOUSAND OAKS	THOKCAXF	13,766	0 33	0 32	48.7%	53.3%	5.95	4.95	2.36	2.01	945	926	485	94	896	441	57
T MBER COVE	TMCVCAXH	480	1.18	1.15	39.5%	47.9%	5.12	4.31	2.07	1.72	119	116	72	6	109	62	3
TIVY VALLEY	TVVYCAXF	618	2.45	2.45	50.0%	55.0%	3.00	2.20	1.78	1.53	318	318	159	9	311	143	9
TOPANGA	TPNGCAXF	958	0 50	0.49	25.0%	37.0%	6.01	4.68	2.85	2.22	100	98	75	10	87	63	6
TRONA	TRONCAXF	564	0 99	0 99	34.2%	38.5%	3.69	2.76	1.67	1.44	117	117	77	2	113	72	1
TWENTYNINE PALMS	TWPLCAXF	1,720	0 95	0 95	53.2%	57.6%	5.30	4.50	1.87	1.64	344	343	161	23	338	146	17
UPLAND	UPLDCAXF	33,451	0.45	0.45	55.9%	61.6%	3.49	2.80	1.48	1.25	3179	3133	1401	71	3024	1222	40
VICTORVILLE	VTVLCAXA	11,017	0 39	0 39	48.0%	53.6%	4.27	3.48	1.80	1.53	905	896	471	37	873	420	18
VTVL HSPR	HSPRCAXF	8	1.14	1.14	100.0%	100.0%	0.22	0.22	0.20	0.20	2	2	0	0	2	2 0	0
WEAVERVILLE	WVVLCAXG	2,158	0 61	0 60	47.7%	64.3%	4.19	2.76	1.93	1.34	277	274	145	15	235	99	4
WE MAR	WEMRCAXF	516	0 86	0 86	43.0%	51.6%	4.06	3.06	1.76	1.38	93	93	53	2	89	45	1
WELDON	WLDNCAXF	689	1 86	1 85	26.8%	40.9%	5.90	4.94	2.55	2.13	269	267	197	24	234	159	19
WEST LOS ANGELES	WLANCAXF	39,717	0.43	0.43	43.0%	47.6%	5.68	4.72	2.32	2.00	3595	3558	2050	305	3461	1883	131
WESTMINSTER	WMNSCAXF	15,926	0 53	0 53	41.4%	46.6%	5.54	4.57	2.27	1.94	1789	1774	1048	122	1725	956	56
WHITEHORN	WHTRCAXG	737	1 57	1 57	28.4%	37.9%	6.29	5.08	2.92	2.48	243	243	174	27	225	151	17
WHITT ER	WHTRCAXF	16,684	0.41	0.40	46.4%	51.4%	4.31	3.42	1.88	1.61	1439	1406	772	52	1360	700	37
W LLOW CRK	WHTRCAXJ	1,138	0 94	0 93	21.0%	31.7%	6.34	5.24	3.00	2.46	224	223	177	30	203	153	13
WRIGHTWOOD	WRWDCAXF	1,479	0 67	0 66	48.3%	62.3%	5.43	4.01	3.18	2.62	207	205	107	17	187	78	6
YUCCA VALLEY	YCVYCAXG	2 836	0 83	0 82	47.5%	52.9%	5.11	4.15	2.04	1.74	493	491	259	31	479	232	20



# Verizon/Frontier Service Quality Performance

The analysis of Frontier's service quality performance over the full 8-year study period was more challenging than AT&T's due to Frontier's takeover of the former Verizon California ILEC operations on April 1, 2016. Verizon employed relatively consistent data collection and reporting methods from January 2010 through December 2015. Although Verizon still owned the company through the first quarter of 2016, since the first quarter 2016 report was not prepared and submitted until after April 1, 2016, the submission was Frontier's, rather than Verizon's responsibility. Frontier provided the Commission with the "raw" trouble reports received during the first three months of 2016, but failed to provide the access line counts on a per-wire center basis that were necessary for the wire center level Trouble Reports per Hundred POTS lines in service ("TRPH") calculations as required by GO 133-C/D §3.3. Starting with the second quarter of 2016 and thereafter, Frontier has been submitting only single companywide reports and has not provided any wire center level reports. Frontier has continued to provide the Commission with the raw trouble reports and per-incident out-of-service records, but with significant deviations from the format of and the content in the corresponding submissions by Verizon.

Despite considerable effort at reconciling these differences, many discrepancies between the Verizon and Frontier datasets remain unresolved. We have analyzed and are describing the results separately for each of the two ownership periods. In this section, we present the companywide results in a form comparable to that provided above for AT&T.

Appendices 4V-1 and 4F-1 provides a compilation of individual wire center and reporting unit statistics during each of the Verizon and Frontier ownership periods and include, for each wire center (or reporting unit under Frontier), data and trend line calculations for several performance metrics relating to OOS conditions cleared within varying lengths of time.

#### Effect of persistent access line losses on the volume of customer trouble reports

As noted above, over the full 2010-2017 study period, Verizon/Frontier had sustained a 68.2% drop-off in demand for POTS access lines. Notably, the calculated long-term trend in total out-of-service incidents dropped from 67,211 in the first quarter of 2010 to 7,881 in the fourth quarter of 2017. Thus, while POTS lines in service saw a 68.2% decrease over the period, out-of-service incidents decreased by 88.3%. Unlike AT&T, where the relative decrease in out-of-service incidents almost exactly corresponded with the decrease in total POTS lines in service, the Verizon/Frontier experience suggests significant improvement in the relative number of out-of-service cases over the same 8-year period. The relationship between these two downward trends is also demonstrated in Figure 4F.2, which plots both the drop in access lines and in out-of-service, and shows this metric steadily decreasing from a trend-line value of 0.89 in the first quarter of 2010 to 0.50 in the fourth quarter of 2017.





**Figure 4F.2.** The number of out-of-service incidents has experienced a greater decrease than the drop-off in access lines in service over the 2010-2017 period (actual).



**Figure 4F.3.** There has been a steady downward trend in the number of out-of-service incidents per 100 access lines in service over the 2010-2017 period (actual).



# **Out-of-service conditions**

Not only has Verizon/Frontier seen a downward trend over the 8-year study period in the total number of out-of-service incidents per 100 access lines, the number of out-of-service incidents extending for more than 24 hours per 100 access lines has also decreased, as shown in Figure 4F.4.



**Figure 4F.4.** The number of out-of-service incidents exceeding 24 hours per 100 access lines has been decreasing over the full 8-year period, although it had spiked shortly after the Frontier takeover in 2016 (actual).

There have been improvements in average duration of all out-of-service conditions within both the Verizon and Frontier ownership periods. Figure 4F.5 plots the average duration of all out-of-service conditions. This had been experiencing a steady decline under Verizon's ownership, but then saw a large upward spike immediately following Frontier's takeover. However, over the next several quarters out-of-service durations have once again seen a decreasing trend. Figure 4F.6 plots the average duration of all out-of-service conditions in excess of one hour, thus eliminating those than can typically be easily resolved through telephonic interaction with the customer, such as advising the customer to make sure that the handset is plugged in or that the battery in a cordless phone has not run down. Even the most problematic out-of-service situations – those extending beyond 24 hours – have shown improvement in average duration, as shown in Figure 4F.7. Figures 4F.8 and 4F.9 present these



same metrics on an adjusted (i.e., excluding Sunday and holiday hours and OOS conditions beyond management's control) basis.

Using one hour as a cut-off, the trend in average duration of all OOS over one hour improved slightly over the study period for Verizon, from 2,452 minutes (1.70 days) in the first quarter of 2010 to 1,818 minutes (1.26 days) in the fourth quarter of 2015. Following a rough start in the immediate aftermath of its takeover, Frontier appears to have generally kept its out-of-service durations in the 40-hour range, from 3,582 minutes (2.49 days) in the second quarter of 2016 to 1,982 minutes (1.38 days) in the fourth quarter of 2017.



**Figure 4F.5.** The average actual duration of all out-of-service conditions had been improving steadily under Verizon ownership, then spiked upward following the Frontier takeover, but seems to have once again resumed its downward trend.





**Figure 4F.6.** Average actual duration of all out-of-service incidents in excess of one hour in duration.



**Figure 4F.7.** Average actual duration of all out-of-service incidents in excess of 24 hours in duration.





**Figure 4F.8.** Average duration of all out-of-service incidents adjusted for Sundays and holidays.



**Figure 4F.9.** Average duration of all out-of-service incidents in excess of 24 hours adjusted for Sundays and holidays.



In contrast to our findings regarding AT&T, our analysis of the data provided by Frontier indicates a noticeable improvement under both ownerships in the relative number of out-of-service cases over the same 8-year period.

The trend in average duration of all out-of-service conditions, excluding those cleared within one hour, for both Verizon and Frontier has been steadily deceasing over the full 2010-2017 study period.

#### Duration of out-of-service conditions

A principal focus of the Commission's concerns regarding ILEC service quality is with respect to the frequency and duration of out-of-service conditions. GO 133-C/D has placed particular emphasis upon protracted out-of-service situations, focusing specifically upon POTS lines that are not restored within the first 24 hours.

As the results show for the Verizon period, the trend in actual durations of reported OOS conditions, as reflected in the trend lines, have steadily seen a small decrease – from a trend-line value of 4,964 minutes (3.45 days) to 3,894 minutes (2.70 days). Frontier, however, has seen an increase, from 4,535 minutes (3.15 days) to 4,630 minutes (3.22 days) (Figure 4F.6).

Confining the examination to those OOS durations that exceed 24 hours, Verizon/Frontier's average duration of OOS conditions exceeding 24 hours (actual) increased slightly, from 3,695 minutes (2.57 days) to 3,729 minutes (2.59 days) for Verizon and from 3,938 minutes (2.73 days) to 4,133 minutes (2.87 days) for Frontier (Figure 4F.7).

Notably, however, a loss of telephone service that lasts for three or more days still suggests a serious problem that is not being aggressively addressed. For the "adjusted" results – i.e., where Sunday and holiday minutes were removed and where many OOS conditions were excluded altogether as falling outside of management's control, Verizon's average duration of OOS conditions the trend line average duration has increased slightly, from 1,575 minutes (1.09 days) to 1,659 minutes (1.15 days) whereas Frontier saw great improvement, decreasing from 3,078 minutes (2.14 days) to 1,609 minutes (1.12 days) for Frontier. (Figure 4F.8).

For all OOS per 100 access lines where the duration exceeds 24 hours (on a monthly basis), outage duration times actually decreased over time (Figure 4F.9). As with the various other metrics, there is considerable variation across each of the five attribute dimensions.





Over the 2010-2015 Verizon ownership period, Verizon's average OOS duration over 24 hours has decreased by roughly 33%.

# Out-of-service conditions cleared within 24 hours

The average duration of all Verizon/Frontier out-of-service conditions decreased over the 2010-2017 period, as plotted on Figure 4F.5. GO 133-C/D has placed particular emphasis upon POTS lines that are not restored within the first 24 hours. Taken over the full 8-year (2010-2017) period, Verizon data identify a total of 1.6-million trouble reports between the first quarter of 2010 and the fourth quarter of 2015, and Frontier data identify a total of 0.2-million trouble reports between the second quarter of 2016 and the fourth quarter of 2017, that involved an out of service condition of varying durations. These are summarized below in Table 4F.8 below.


# Table 4F.8

### **VERIZON/FRONTIER CALIFORNIA**

# PERCENTAGES OF ACTUAL AND ADJUSTED ("CPUC") OUT-OF-SERVICE CONDITIONS CLEARED WITHIN 24 HOURS AND DAYS REQUIRED TO CLEAR 90%

		Act	ual	Adju	usted
	Year	Pct. Cleared within 24 hours	Days Required to Clear 90%	Pct. Cleared within 24 hours	Days Required to Clear 90%
	2010q1	50.4%	6.04	82.4%	2.62
	2010q2	72.3%	2.11	78.6%	1.85
	2010q3	71.9%	2.25	77.5%	1.94
	2010q4	51.9%	5.88	68.4%	3.93
	2011q1	45.0%	13.08	75.6%	3.19
	2011q2	66.8%	2.96	73.1%	2.28
	2011q3	63.2%	2.98	69.0%	2.63
	2011q4	60.4%	3.09	67.0%	2.77
	2012q1	62.9%	2.88	69.1%	2.16
	2012q2	61.3%	3.01	67.9%	2.29
	2012q3	61.8%	2.98	68.1%	2.30
	2012q4	56.5%	4.20	61.6%	3.89
VZ	2013q1	60.6%	3.14	66.6%	2.78
	2013q2	67.2%	2.65	74.7%	1.98
	2013q3	58.4%	3.15	66.2%	2.73
	2013q4	60.5%	3.24	65.9%	2.86
	2014q1	57.1%	3.97	71.8%	2.89
	2014q2	58.6%	3.22	65.9%	2.87
	2014q3	63.5%	2.87	70.1%	2.17
	2014q4	54.0%	4.15	72.2%	2.93
	2015q1	57.4%	3.19	64.7%	2.89
	2015q2	63.2%	2.80	70.9%	2.06
	2015q3	54.8%	3.01	72.5%	2.25
	2015q4	61.5%	2.94	69.1%	2.28
	2016q1	71.4%	2.67	83.8%	1.85
	2016q2	22.8%	5.36	28.8%	4.75
	2016q3	39.2%	3.90	44.6%	3.02
	2016q4	53.9%	3.58	59.8%	2.93
FTR	2017q1	31.7%	6.22	36.3%	5.22
	2017q2	62.9%	3.03	69.4%	2.16
	2017q3	62.9%	3.08	70.4%	2.23
	2017q4	68.4%	2.76	76.7%	1.89





GO 133-C/D §3.4(c)'s "Minimum Standard Reporting Level" requires that "90% of all out of service trouble reports [be cleared] within 24 hours [as] the set minimum standard." As Table 4F.8 demonstrates, over the 8-year period, neither Verizon nor Frontier had come even remotely close to meeting this 90% requirement. Figures 4F.10 and 4F.11 plot these percentages and trends graphically for actual and adjusted OOS durations, respectively. The Verizon/Frontier companywide percentages of OOS cleared within 24 hours – actual and adjusted – are plotted, along with associated trend lines.

Verizon's and Frontier's ability to clear OOS conditions quickly – i.e., over time, a successively smaller percentage of OOS conditions were being cleared within 24 hours - varied. Verizon remained relatively constant. On an actual basis (Figure 4F.10), Verizon cleared between 60% (in 2010) to 61% (in 2015) of OOS conditions within 24 hours. This rate decreased on an adjusted basis, where Sunday and federal holiday hours were subtracted out of the outage duration and various other OOS conditions were "excluded," from 73% in 2010 to 69% in 2015 (Figure 4F.11). Frontier, on the other hand, has seen improvements in clearing OOS conditions with 24 hours. On an actual basis (Figure 4F.10), Frontier improved from 28% (in 2016) to 70% (in 2017). Similarly on an adjusted basis (Figure 4F.11) only 33% of out-of-service conditions had been cleared within 24 hours but by 2017 77% were cleared.

RP 1 54.71% of the roughly 1.5-million out-of-service conditions (48.22% on an "adjusted" basis) remained uncleared after 24 hours by Frontier in 2017. To satisfy the GO 133-C/D §3.4(c) requirement, these percentages would need to drop to less than 10%.



On an adjusted basis, the number of days required for Verizon to clear 90% of all out-of-service conditions ranged from a low of 2.83 (in 2010) to a high of 3.26 (in 2015). For Frontier following its takeover OOS conditions ranged from 3.49 (in 2016) to 4.41 (in 2017).

As with AT&T, ETI's other approach to examining this "90% cleared within 24 hours" requirement is to calculate the average length of time it took for Verizon or Frontier to reach the 90% cleared threshold. These results are also summarized on Table 4F.8 above, and are plotted on Figures 4F.12 (actual) and 4F.13 (adjusted) below. On an adjusted basis, the long-term trend in the number of days required for 90% OOS cleared slightly improved under Verizon's management, from 2.71 days in 2010 to 2.44 days in 2015. Under Frontier, this same metric, taking a greater amount of time to reach 90% cleared, greatly improved from 4.34 days in 2016 to 2.00 days in 2017. Notably, in 2010, it took Verizon 6 days to meet the 90% cleared requirement. Another spike occurred in mid-2016 following Frontier's takcover of the Company.



As we noted above (in Chapter 2), there were only two months over the entire 2010-2017 study period where Verizon California or Frontier California met the GO 133-C/D §3.4(c) "90% cleared within 24 hours" requirement. This had occurred in February and March, 2016, the final two months under Verizon ownership, as a direct result of the Commission's D.15-12-005 imposition of such pre-transaction compliance as a condition for approval of the Verizon/Frontier transfer.<sup>92</sup> And while there was some improvement over the study period in the number of days required to reach 90% when viewed with respect to all OOS conditions, when limited to those in the "adjusted" category the days-to-reach-90% actually increased. While neither ILEC has been able to come even close to satisfying the 90% cleared within 24 hours requirement (except Verizon for a brief period between February and March 2016), the number of days required for Verizon/Frontier to meet the 90% objective has generally been shorter than for AT&T.



<sup>92.</sup> D.15-12-005, Decision Granting Application Subject to Conditions and Approving Related Settlements, December 9, 2015, at 67.



**Figure 4F.10.** Percentage of all out-of-service conditions cleared within the first 24 hours (actual).



**Figure 4F.11.** Percentage of all out-of-service conditions cleared within the first 24 hours (adjusted for Sundays and holidays).





**Figure 4F.12.** Days required to clear 90% of all out-of-service conditions (actual).



**Figure 4F.13.** Days required to clear 90% of all out-of-service conditions (adjusted for Sundays and holidays).



As with AT&T, there was considerable variation across all of Verizon's 273 California wire centers and Frontier's 169 Reporting Units both in terms of percent of out-of-service trouble tickets cleared within 24 hours and the number of days required to clear 90% of all out-of-service conditions. Tables 4F.9 and 4F.10 provide the results of linear regression trend line calculations for the GO 133-C/D §3.4(c) "set minimum standard" of "90% of all out of service trouble reports within 24 hours" for the 273 Verizon California wire centers (Table 4F.9) and for the 169 Frontier California Reporting Units (Table 4F.10). These tables also provide similar trend line calculations for the number of days required to clear 90% of all out-of-service conditions, and for each on both an actual and adjusted basis.

The values shown for the trend lines are the coefficient of the independent variable in each case – i.e., percent cleared within 24 hours or days required to clear 90% – and would appear graphically as the slope of a plotted trend line. For the "percentage cleared within 24 hours" metrics, a positive value of the coefficient indicates improvement over time (i.e., an upward sloping trend line); a negative value indicates that over time the ILEC's record of meeting this standard has been deteriorating. For "days required to clear 90%," a negative value of the slope of the trend line indicates that, over time, it is taking less time for the ILEC to meet the 90% completion objective – thus, an improvement in performance. Positive values for the coefficient of "days required to clear 90%" indicates that it is taking longer for the Company to reach the target 90% cleared threshold.

There are important inconsistencies in which various out-of-service data and statistics were provided under each of the two ownerships. Verizon had been providing data for each of its 273 individual wire centers. After the transfer, Frontier modified the method of reporting to what was described as a "rate center" approach, in which two or more individual wire centers were combined for reporting purposes into a single "rate center" Reporting Unit. These were not physical consolidations of multiple wire centers; the change was only with respect to the basis of reporting. Because we were not able to obtain consistent data across the entire 2010-2017 study period, we were required to bifurcate certain of our analyses into separate "Verizon period" and "Frontier period" segments.

Table 4F.9 provides the results of regression calculations made for the period under Verizon ownership, beginning with the first quarter of 2010 and ending with the fourth quarter of 2015.

Table 4F.10 provides the corresponding results for the period under Frontier ownership, beginning with the second quarter of 2016 and ending with the fourth quarter of 2017.



Table 4F.9

#### VERIZON CALIFORNIA WIRE CENTER PERFORMANCE TRENDS OVER THE PERIOD 1Q2010-4Q2015

Unit 2 the (actual)   Days to Example 10 the state   Concert Name   Call Near Val   Concert Name   Concert Nam </th <th>lear 90% (adjus</th> <th>sted)</th>	lear 90% (adjus	sted)
Number   CLL   Marry Mar.   Cost   Lett		
MARICOPA MRCCAXF 33.74 2.108 3.7.14 9.50 2.0065 2.3732 97.4% 7.52 2.9.99 4.27 0.001 0.0911 7.4% 4.20 4.34 3.20 0.0589   ORO LOMA ORNALCAXF 3.30 0.2010 3.209 0.581 6.7.9 0.8.97 0.8.97 0.8.97 0.8.97 0.8.97 0.8.97 0.8.97 0.8.97 0.8.97 0.8.97 0.8.97 0.9.97 0.6.97 0.9.97 0.9.97 0.9.97 0.2.9.97 9.9.97 4.2.0 0.0.9.91 0.0.9.92 2.2.016 0.9.99 0.0.73 0.2.0.8.9 0.7.47 0.9.97 0.9.87 0.6.97 0.8.92 6.7.9 4.2.6 0.3.252 0.3.74 0.8.92 6.7.99 6.2.0 6.5.9 0.7.87 0.8.92 6.5.9 0.8.92 6.7.99 6.2.0 6.5.9 0.5.91 0.9.93 6.0.2 7.9.9 7.9 6.0.97 0.9.99 6.0.2 7.9 7.9 0.9.97 0.9.99 6.1.2 5.9 0.9.99 6.0.92 1.9.99 6.1.2 5.9 0.9.99 0.8.90 7.9	tat Conf.	1Q10 Val 4Q15 Val
ORO LOMA ORMACAXF 33.0 20.20 3.8971 99.9% 61.54 15.06 -1.9994 -2.701 99.9% 74.67 28.66 4.45 0.048 0.872 60.8% 3.89 5.01 3.65 0.0804 1   DSC PALOS WE DSFLACX 64.16 2.0045 99.9% 63.81 16.26 3.03 0.0024 2.2416 96.9% -2.19 3.33 0.204 2.4286 8.067% 2.219 3.33 0.204 2.4285 9.97% 5.78 7.65 2.63 0.325 2.233 9.1% 65.25 9.074 5.58 0.0471 0.504 4.58 0.027 61.55 4.23 0.137 2.480 10.017 1 1.017 1.010 1.010 1.010 1.010 1.010 1.016 1.016 1.01027 1.016 1.016	0562 69.8%	2.58 3.87
DOS PALOS WYE DSPLCAXG 45.18 -2.0004 -3.9866 99.9% 68.18 22.17 -1.939 -2.0421 98.204 36.32 3.33 0.0924 2.2416 66.7% 2.27 4.39 3.02 0.0015 1   SAN BERNARDINO 3 SNBRCAXN 68.49 -1.8812 -2.1684 +1.424 -2.2628 +1.4247 -3.283 97.1% 65.25 3.20 0.446 2.4938 98.0% -0.28 7.55 2.63 0.1071 1   CORCORAN CRCRCAXF 37.01 -1.8496 -2.2544 97.5 51.51 -0.0333 97.1% 65.25 3.01 0.6210 62.54 3.73 0.5010 62.44 4.292 5.59 0.0491 4.464 5.016 4.23 1.0417 2.13 3.44 1.0465 5.15 4.23 1.0417 2.274 5.59 0.0491 4.050 7.33 0.3101 -3.0230 97.1% 5.23 2.2465 99.9% 6.17 5.71 2.74 0.592 1.965 9.3.8% 2.13 3.44 4.0414 0.0327 1 5.33 <td>0257 68.4%</td> <td>2.72 4.57</td>	0257 68.4%	2.72 4.57
BERRENDAMESA   BRMSCAXF   30.11   1 9662   -1.738   90.4%   51.21   5.99   -2.0265   -1.2375   90.33   2.00   0.0775   0.28   7.6   1.8289   -2.169   95.97   93.31   2.00   0.0175   C   2.03   2.3255   -2.3375   93.79   96.03   42.53   3.200   0.0346   2.439   98.07   42.61   0.0171   C   2.03   0.0346   2.439   98.07   42.61   0.1071   2   2.03   0.0375   2.03   2.03   0.0346   2.439   98.07   42.61   0.1071   2   0.0441   6.04   4.51   1.036   0.03476   2.04   4.04   0.0171   C   0.046   6.077   2.10   4.03   4.16   0.044   4.81   0.0327   1.04   4.81   0.0327   1.04   0.0227   1.04   0.0227   1.04   0.0237   1.04   0.027   1.03   0.036   0.0378   0.046   6.10   0.041   0.033   0.046   0.0173	0469 69.4%	2.49 3.54
SAN BERNARDINO 3 SNRRCAXN 68.49 1.8812 -2.169 95.9% 87.50 44.24 -2.286 -2.9375 99.3% 96.03 42.53 3.20 0.3446 2.438 90.0% -0.28 7.65 2.26 0.3252 2.977 99.3% 96.03 42.53 3.20 0.0374 5.98 0.0678 5.20 6.73 4.26 0.077 4.26 0.077 4.26 0.077 4.26 0.071 1.0007 6.525 5.074 5.58 0.0491 0.0604 4.64 6.52 5.38 2.13 3.4 1.06 1.0188 0.0386 0.778 55.69 91.4% 85.17 6.70 2.74 0.750 91.8% 7.63 2.48 90.3% 6.13 2.56 0.218 4.013 99.3% 4.16 0.0327 1.239 7.72 5.15 4.02 5.25 0.218 4.013 99.3% 4.16 0.0327 1.017 7.77 7.77 5.15 4.02 5.25 0.218 4.013 99.3% 4.13 99.3% 6.10 1.017 7.77 7.78 5.59	3361 26.0%	1.87 2.27
ALPAUGH ALPCAXF 37.60 1.8289 -3.254 99.7% 57.80 15.003 -2.338 97.1% 65.25 30.74 5.84 0.0078 0.5240 39.5% 5.23 6.79 4.26 0.1011 2   TRANOULLITY TRNOCAXF 33.92 -1.3677 -2.7917 99.0% 40.64 18.19 -0.3386 -0.7789 55.6% 48.78 40.53 7.38 0.2310 0.8214 56.5% 4.21 0.0629 1.6655 3.839 2.13 1.6100 -0.3386 -0.789 5.86 6.370 2.74 0.0529 1.0655 3.839 2.13 1.6107 2.21 1.6000 -2.9966 99.4% 64.07 2.727 5.99 -0.0980 -0.806 57.1% 7.12 4.86 4.84 -0.0411 -0.0230 2.24 1.6107 -1.237 7.27 5.152 40.26 5.25 0.149 1.0133 9.338 4.10 1.0108 -1.0207 -1.239 7.27 5.152 40.26 1.0127 4.81 4.00411 -0.0130 1.1660 -0.0126 -0.0126 -0	3209 99.0%	-0.66 6.82
CORCORAN CRCRCAKP 37.71 1.4946 4.2896 10.00% 54.90 20.62 1.6487 5.164 10.00% 67.21 29.29 5.59 0.0491 0.0004 44.6% 5.02 6.15 4.23 0.1137 2   TRANQUILTY TRNQCAXF 33.2 1.337 2.2309 9.3% 60.41 1.90 0.556 48.78 40.537 7.38 0.210 0.8214 5.0% 47.87 1.044 6.0789 5.55 40.26 1.274 0.0529 1.9855 9.3.8% 2.74 0.049 5.23 2.248 1.6000 2.9966 9.9.4% 64.07 27.75 5.152 40.218 4.0133 9.9% 2.74 7.77 7.78 5.152 40.218 1.013 -4.86 1.001 1.027 1.0300 7.78 5.152 40.218 1.013 -4.86 1.001 1.027 1.0300 7.77% 5.152 40.218 1.0213 4.33 7.64 5.10 4.31 7.64 5.10 4.31 7.64 5.10 4.31 4.36 4.31 0.443 3.26	6030 87.7%	3.08 5.54
TRANQUILTY   TRNOCAXF   33.92   -1.3677   -2.797   99.0%   49.64   18.19   -0.3386   -0.7789   55.6%   48.78   40.53   7.38   0.2310   0.8214   58.0%   4.72   10.04   55.11   0.1989   C   7.12   4.60   4.72   10.04   53.11   1.96   0.0327   1     SQUAW VALLEY   SVYFCAXF   37.33   1.1103   -2.309   97.1%   52.9966   99.4%   64.07   27.27   5.99   -0.0900   -0.8046   57.1%   7.12   4.66   4.44   -0.0497   -1.2077   7.25%   65.13   25.66   5.97   0.1449   1.7239   90.2%   4.31   7.64   7.70   4.70   0.2666   2   2.57   0.219   4.112   0.0730   1   -0.0730   1   0.0730   1   0.0730   1   0.0730   1   0.0730   1   0.0730   1   0.0730   1   0.0730   1   0.0730   1   0.0730   1   0.0730	9405 99.3%	2.93 5.54
WEAVERVILLE WVVLCAXG 65.63 1.310 3.8078 99.9% 80.73 50.73 2.2485 99.1% 85.17 63.70 2.74 0.0525 91.8% 2.13 3.34 1.36 0.0327 1   SQUAV VALLEY SVYFCAXF 36.49 -1.2475 -2.8827 99.2% 50.84 22.16 -0.04897 -1.2379 77.2% 51.52 40.26 5.57 0.1449 1.723 90.9% 4.31 7.64 51.00 0.7070 3.63 2.0281 5.97 0.1449 1.7237 30.0% 3.63 2.84 0.0411 -0 0.02% 4.31 7.64 5.10 0.7070 1 0.727 1.1021 -2.9946 93.3% 67.92 4.21 4.12 0.0413 -0.413 3.63 4.68 -0.0411 -0 0.0453 5.25 0.2197 1.7237 3.63 4.88 -0.0411 -0 0.0435 3.84 5.87 0.148 3.26 6.28 3.16 -0.0135 5.84 5.818 3.84 5.373 5.373 5.373 5.373 5.33 5.99	7019 51.0%	3.85 7.76
SQUAW VALLEY SVYFCAXF 37.33 -1.3103 -2.3309 97.1% 52.32 22.26 -1.6000 -2.9966 99.4% 64.07 27.27 5.99 -0.9800 -0.8046 57.1% 7.12 4.84 -0.0416 -C   SAN JOAQUIN SMJOCAXF 28.23 -1.1627 -2.5743 98.3% 41.60 14.86 -0.4977 -1.379 77.9% 51.52 40.26 52.50 21.89 40.13 99.9% 2.74 7.77 4.79 0.266 2.24 -0.411 -0.0473 -0.413 -0.473 36.0% 3.63 2.68 2.24 -0.0411 -0 -0.0730 1 0.0730 1 0.0730 1 0.0730 1 0.0730 1 0.0725 3.16 -0.0413 -0.473 0.473 3.63 2.68 2.24 -0.0115 -0.1149 0.3245 4.84 -0.0414 -0.473 0.473 0.473 0.473 0.473 0.473 0.473 0.473 0.473 0.473 0.474 0.484 0.484 0.484 0.484 0.484 0.484 0.484 <t< td=""><td>3457 80.8%</td><td>1.59 2.34</td></t<>	3457 80.8%	1.59 2.34
SAN JOAQUIN SNJQCAXF 36.4 -1.2475 -2.8827 99.2% 50.44 22.15 -0.4897 -1.2379 77.2% 51.52 40.26 5.25 0.2189 4.0133 99.9% 2.74 7.77 4.79 0.2666 2   CAZADERO CZDRCAXG 28.23 -1.0827 -5.743 98.3% 41.60 14.86 -1.7071 -3.7169 99.9% 65.13 25.66 5.97 0.1449 1.7239 90.2% 4.31 7.64 5.10 0.0730 1   POS PALOS DSPLCAXF 34.56 1.0065 5.127 99.9% 65.13 2.9846 99.3% 67.92 44.21 0.0667 1.6210 88.1% 3.35 4.89 3.27 0.0736 1   DOS PALOS DSPLCAXF 54.39 -0.9413 -3.269 99.6% 56.22 3.117 9.95% 68.42 3.38 3.26 0.2413 -2.427 3.208 3.68 2.28 0.0665 2 2.28 0.0665 2.281 3.76 2.680 9.87% 56.48 57.9 3.76 2.6829 <td< td=""><td>4940 37.4%</td><td>5.32 4.36</td></td<>	4940 37.4%	5.32 4.36
CAZADERO CZDRCAXG 28.23 -1.1627 -2.5743 98.3% 41.60 1-1.071 -3.7169 99.9% 65.13 25.86 5.97 0.1449 1.7239 90.2% 4.31 7.64 5.10 0.0730 1   FORT IRWIN FTIRCAXF 63.60 -10.665 -12.789 78.6% 78.0% 79.6% 83.96 60.28 5.10 0.413 0.4737 36.0% 3.63 2.68 2.84 0.0411 -0.413 0.414 0.413 0.	1725 96.0%	1.72 7.86
FORT IRWIN FTIRCAXF 63.00 1.0865 -1.2789 71.080 71.080 79.6% 83.96 60.28 3.16 -0.413 -0.4737 36.0% 3.83 2.68 2.24 -0.0411 -0.0411 -0.276 3.16 -0.413 -0.4737 36.0% 3.83 2.68 2.24 -0.0411 -0.0411 -0.413 -0.4737 36.0% 3.83 2.68 2.24 -0.0411 -0.0411 -0.0413 -0.4737 36.0% 3.83 2.68 2.24 -0.0411 -0.0411 -0.4737 36.0% 3.83 2.68 2.22 0.04015 1   DOS PALOS DSPLCAXF 44.66 -0.051 -3.2169 99.6% 56.22 3.10 -1.0625 -3.1147 99.5% 68.04 3.88 0.025 3.78 -0.2157 17.2% 3.92 3.63 2.88 0.0685 2.99 0.468 50.79 3.76 6.0.44 3.75 6.4.0 2.48 57.75 4.40 0.2465 0.6057 4.9% 58.44 3.60 1.619 89.0% 3.49 50.5 3.31 0.0514	0054 67.5%	4.26 5.94
WHITE HORN   WHTNCAXF   39.59   -1.0276   -3.4168   99.8%   51.41   27.77   -1.0310   -2.9846   99.3%   67.92   44.21   4.12   0.0667   1.6210   88.1%   3.35   4.88   3.27   0.0736   1     DOS PALOS   DSPLCAXF   44.66   -1.0051   -3.2159   99.6%   65.30   -1.0625   -3.1147   99.5%   68.42   43.98   3.92   0.0315   0.8246   58.2%   3.56   4.28   2.92   0.0405   1     REDHAWK   TMCLCAXH   60.16   -0.9240   -2.6672   98.6%   70.79   49.51   -0.1489   -0.2088   16.4%   57.73   54.30   7.69   0.3464   0.7823   57.5%   4.92   3.80   3.03   0.0507   1   1.0074   -0.449   9.3%   60.09   7.56   68.44   0.0452   1.759   91.4%   2.53   3.31   0.0514   1     HOOPA   MOPACAXF   37.17   -0.8441   -2.5078   98.14   55	5670 42.4%	3.31 2.37
DOS PALOS   DSPLCAXF   44.66   -1.0051   -3.2159   99.6%   65.22   33.10   -1.0625   -3.1147   99.5%   68.42   43.98   3.22   0.0315   0.8246   58.2%   3.56   4.28   2.92   0.0405   1     HOMELAND   HMLDCAXF   60.16   -0.9240   -2.6672   98.6%   70.79   49.53   -3.2555   99.7%   80.04   58.34   0.7623   58.8%   3.73   11.70   7.65   0.1818   2.7536   99.9%   2.30   5.03   2.88   0.0665   2     LEGGETT   LGGTCAXF   42.41   -0.9207   -1.1394   73.4%   52.94   31.76   -0.1489   -0.2088   16.4%   57.73   54.30   7.69   0.3464   0.7823   58.8%   3.73   11.70   7.65   0.1818   0.0657   4.9%   62.84   57.17   4.27   0.0660   1.6619   89.0%   3.49   5.05   3.31   0.0514   1   MANTCAXG   66.83   -0.7218   69.41	9211 93.3%	2.43 4.12
HOMELAND HMLDCAXF 54.39 -0.9483 -3.2069 99.6% 65.30 43.49 -1.0995 -3.5178 99.8% 76.08 50.79 3.78 -0.0125 -0.2197 17.2% 3.92 3.63 2.88 0.0685 2   REDHAWK TMCLCAXF 60.16 -0.9400 -2.6672 98.6% 70.79 49.53 -0.9435 -3.2555 99.7% 80.04 58.34 3.66 0.1183 2.7536 98.9% 2.30 5.03 2.98 0.1067 2   WRIGHTWOOD WRWDCAXF 54.39 -0.9081 -1.8078 91.6% 64.84 43.95 -1.0103 -2.5649 98.3% 80.09 56.86 4.40 -0.0450 -0.4952 37.5% 4.92 3.89 3.03 0.0507 1   MANTECA MNTCCAXF 60.00 -0.8484 -2.4595 97.8% 69.41 50.58 -0.2465 -0.6057 44.9% 62.84 57.17 4.27 0.0680 1.619 80.0% 3.49 5.05 0.619 80.0% 3.49 5.05 0.6050 1.1093 72.1	3410 80.7%	2.46 3.39
REDHAWK TMCLCAXH 60.16 -0.9240 -2.6672 98.6% 70.79 49.53 -0.9435 -3.2555 99.7% 80.04 58.34 3.66 0.1183 2.736 99.9% 2.30 5.03 2.33 0.1067 2   LEGGETT LGGTCAXF 42.41 -0.9207 -1.1394 73.4% 52.94 31.76 -0.1489 -0.2088 16.4% 57.73 54.30 7.69 0.3464 0.7823 2.75% 4.92 3.89 3.03 0.0507 1   MOOPA HOPACAXF 37.17 -0.8441 -2.5078 98.0% 46.87 27.46 -0.2465 -0.6057 44.9% 62.84 57.17 4.27 0.0680 1.6619 89.0% 3.49 5.05 3.31 0.0514 1   MANTECA MNTCCAXG 60.00 -0.8188 -2.4595 97.8% 60.056 -0.9283 -3.2101 99.6% 3.14 0.0522 3.759 91.4% 2.53 3.75 2.60 0.0504 1 1.2090 -1.0937 7.193 7.216 3.40 2.33 -0.0283	1861 96.1%	2.09 3.67
LEGGETT LGGTCAXF 42.41 -0.9207 -1.1394 73.4% 52.94 31.76 -0.1489 -0.2088 16.4% 57.73 54.30 7.69 0.3464 0.7823 55.8% 3.73 11.70 7.65 0.1818 0.0   WRIGHTWOOD WRWDCAXF 54.39 -0.9081 1.8078 91.6% 64.84 43.95 -1.0103 -2.5649 98.3% 80.99 56.86 4.40 -0.0450 -0.4523 55.8% 3.75 4.92 3.89 3.03 0.0507 1   MANTECA MNTCCAXG 60.00 -0.8188 -0.7218 52.2% 76.99 58.21 -0.2465 -0.6057 44.9% 62.64 57.17 4.27 0.0680 1.619 89.0% 3.49 5.05 3.31 0.0514 1   PARKFIELD PRFDCAXF 61.39 -0.7218 52.2% 76.29 58.21 -1.2090 -1.1093 72.1% 91.21 63.40 2.34 -0.0283 -0.4622 34.0% 2.63 1.88 0.0299 -0 -0.2029 -2.4297 97.7% 69.20 22	7523 98.9%	1.71 4.16
WRIGHTWODD   WRWDCAXF   54.39   -0.9081   -1.8078   91.6%   64.84   43.95   -1.0103   -2.5649   98.3%   80.09   56.86   4.40   -0.0452   37.5%   4.922   3.89   3.03   0.0507   1     MANTECA   MNTCCAXG   60.00   -0.8188   -2.4595   97.8%   69.41   50.58   -0.2465   -0.6057   4.94   62.84   57.17   4.27   0.0680   1.619   89.0%   3.49   5.05   3.31   0.0514   1     MANTECA   MNTCCAXG   60.00   -0.8188   -2.4595   97.8%   69.41   50.58   -0.2465   -0.6057   4.9%   62.84   57.17   4.27   0.0680   -0.6802   2.63   1.98   1.67   -0.0299   0   0.0695   0.6658   4.5%   55.80   7.400   3.95   -0.800   -0.8762   61.0%   4.81   2.97   2.22   -0.1024   -0.7545   -0.8652   60.4%   4.135   2.000   -2.0229   -2.4297   97.7%	1293 32.8%	5.62 9.80
HOOPAC HOPACAXF 37.17 -0.8441 -2.5078 98.0% 64.87 27.46 -0.2465 -0.6057 44.9% 62.84 57.17 4.27 0.0860 1.6619 89.0% 3.49 5.05 3.31 0.0514 1   MANTECA MNTCCAXE 60.00 -0.8488 -2.4595 97.8% 69.41 50.58 -0.9836 -3.2101 99.6% 79.59 56.96 3.14 0.0532 1.7954 91.4% 2.53 3.75 2.60 0.0504 1   PARKFIELD PREDCAXF 68.39 -0.7845 52.2% 76.29 58.21 -1.2090 -1.1093 72.1% 91.21 63.40 2.34 -0.0283 -0.4462 34.0% 2.63 1.98 1.67 -0.0299 -0   CUYMAA CUYMCAXF 32.67 -0.7545 -0.8652 60.4% 41.35 24.00 -2.0229 -2.4297 97.7% 69.20 22.68 8.05 0.6360 -8.762 61.0% 48.41 2.97 3.36 0.604 3.67 0.689 1.6027 -2.3635 97.3% 70.43 </td <td>1227 72.7%</td> <td>2.45 3.61</td>	1227 72.7%	2.45 3.61
MANTECA   MNTCCAXG   60.00   -0.8188   -2.459   97.8%   69.41   50.58   -0.9836   -3.2101   99.6%   79.59   56.96   3.14   0.0532   1.7959   91.4%   2.53   3.75   2.60   0.0504   1     PARKFIELD   PREDCAXF   66.39   -0.7218   52.2%   76.29   58.21   -1.2090   -1.1093   72.1%   91.21   63.40   2.34   -0.0283   -0.4826   61.0%   4.81   2.97   2.62   -0.1029   -0     PIERCY   PIRCCAXF   41.86   -0.7646   -0.6867   41.35   24.00   -2.0229   -2.4297   97.7%   69.20   22.68   8.05   0.6360   1.8172   91.8%   0.73   15.36   6.81   0.5999   2   2.4297   97.3%   70.43   47.36   5.67   0.321   0.2184   17.1%   5.30   6.04   3.87   0.0506   0.0446   0   0.0146   0   0.0146   0   0.027   2.3635   97.3%   70.43	1788 74.9%	2.72 3.90
PARKFIELD   PRFDCAXF   68.39   -0.7858   -0.7218   52.2%   76.29   58.21   -1.2090   -1.1093   72.1%   91.21   63.40   2.34   -0.0283   -0.4462   34.0%   2.63   1.88   1.67   -0.0299   -0.0299   -0.0299   -0.0299   -0.0299   -0.0200   -0.1090   -0.1090   -0.0568   4.5%   55.80   57.40   3.95   -0.0800   -0.8762   61.0%   4.81   2.97   2.82   -0.10299   -0.0299   -0.0299   -0.0299   -0.0209   -0.0080   -0.8762   61.0%   4.81   2.97   2.82   -0.10299   -0.0299   -0.0299   -0.0299   -0.0299   -0.0299   -0.0299   -0.0299   -0.0299   -0.0299   -0.0299   -0.0280   -0.8670   0.885   -0.0800   -0.8672   61.0%   4.81   2.97   2.82   -0.1029   -0.029   -0.0214   -1.027   -0.3655   97.3%   70.43   4.33   4.36   -0.073   -0.81%   5.07   0.0321   0.218   17.1%	7772 91.1%	2.02 3.18
PIERCY   PIRCCAXF   41.86   -0.7646   -0.6367   46.9%   50.12   32.53   0.0695   0.0568   4.5%   55.80   57.40   3.95   -0.0800   -0.8762   61.0%   4.81   2.97   2.82   -0.1024   -1     CUYAMA   CUYMCAXF   32.67   -0.7545   -0.8652   60.4%   41.35   24.00   -2.0229   -2.4297   97.7%   69.20   22.68   8.05   0.6360   1.8172   58.1%   5.07   3.33   2.90   0.0146   0     TAFT   TAFTCAXF   46.12   -0.702   -1.8271   91.9%   54.25   37.98   -1.0027   -2.3635   97.3%   70.43   47.36   5.67   0.0321   0.2184   17.1%   5.30   6.04   3.87   0.0506   0     MAD RIVER   MDRVCAXF   20.05   -0.7047   -1.1786   74.9%   28.16   11.95   -0.4622   -0.6837   41.83   5.55   0.0250   1.1283   72.9%   4.83   6.17   4.66   0.	3542 27.4%	1.97 1.28
CUYMAX   CUYMCAXF   32.67   -0.7545   -0.8622   0.0.4%   41.35   24.00   -2.0229   -2.4297   97.7%   69.20   22.68   8.05   0.6360   1.8172   91.8%   0.73   15.36   6.81   0.5999   2     LENWOOD   LNWDCAXF   51.82   -0.7531   -1.3675   81.5%   60.27   43.36   -0.8789   -1.8081   91.6%   71.94   51.72   4.20   -0.0753   -0.8225   58.1%   5.07   3.33   2.90   0.0146   0     MAD RIVER   MDRVCAXF   20.05   -0.7047   -1.1276   74.9%   28.16   11.027   -2.3635   97.3%   70.43   47.36   5.67   0.0321   0.2184   17.1%   5.30   6.04   3.87   0.0506   0     MCKITTRICK   MCKTCAXF   45.59   -0.7031   -0.7696   55.1%   53.67   37.50   -1.5073   -1.6934   89.6%   76.05   41.38   5.65   -0.0240   -0.7707   55.1%   5.52   4.34	6480 88.7%	3.88 1.52
LENWOOD   LNWDCAXF   51.82   -0.7351   -1.3675   81.5%   60.27   43.36   -0.8789   -1.8081   91.6%   71.94   51.72   4.20   -0.0753   -0.8225   58.1%   5.07   3.33   2.90   0.0146   0     MAD RIVER   MDRVCAXF   20.05   -0.7047   -1.1786   74.9%   52.37.98   -1.0027   -23635   97.3%   70.43   47.36   5.67   0.0321   0.2184   17.1%   5.30   6.04   3.87   0.5056   0.0321   0.2184   17.1%   5.30   6.04   3.87   0.0506   0     MAD RIVER   MDRVCAXF   20.05   -0.7031   -0.7096   55.1%   53.67   37.50   -1.5073   -1.6934   89.6%   76.05   41.38   5.55   -0.0240   -0.1191   14.3%   6.17   5.53     KENWOOD 2   KNWDCAXF   35.04   -0.6937   -1.4321   82.5%   60.36   33.35   5.05   -0.0404   -0.777   55.1%   5.52   4.59   4.34 <td>0018 94.3%</td> <td>-0.09 13.71</td>	0018 94.3%	-0.09 13.71
IAFI   IAFI CAXF   46.12   -0.0/0/2   -1.32/1   91.9%   54.25   37.98   -1.00/2   -2.3635   97.3%   70.43   47.36   5.67   0.0321   0.2184   11.1%   5.30   6.04   3.87   0.0506   0     MAD RIVER   MDRVCAXF   20.05   -0.7047   -1.1786   74.9%   28.16   11.95   -0.4622   -0.6837   49.9%   52.46   41.83   5.50   0.0580   1.1283   72.9%   4.83   6.17   4.66   0.0911   1     MCKITTRICK   MCKCAXF   45.59   -0.7031   -0.7696   55.1%   55.17   37.50   -1.5073   -1.8934   89.6%   76.05   41.38   5.85   -0.0280   -0.1819   14.3%   6.17   5.53   4.85   0.0150   0     KENWOOD 2   KNWDCAXF   35.04   -0.6933   -1.1357   73.2%   43.02   27.07   -1.2178   -1.8924   92.9%   61.36   33.35   5.05   -0.0404   -0.7707   55.1%   5.52	2914 22.7%	2.73 3.07
MAD RIVER   MDRVCAXF   20.05   -0.7047   -1.7186   74.9%   28.16   11.95   -0.4622   -0.6837   49.9%   52.46   41.83   5.50   0.0580   1.1283   72.9%   4.83   6.17   4.66   0.0911   1     MCKITTRICK   MCKTCAXF   45.59   -0.7031   -0.7696   55.1%   53.67   37.50   -1.5073   -1.6934   89.6%   76.05   41.38   5.85   -0.0280   -0.1819   14.3%   6.17   5.53   4.85   0.0150   0     KENWOOD 2   KNWDCAXF   32.04   -0.6837   -7.3.2%   43.02   27.07   -1.2178   -1.824   92.9%   61.36   33.35   5.05   -0.0404   -0.7707   55.1%   5.52   4.59   4.34   -0.0526   -0     WILLOW CREEK   WWCKCAXF   32.05   -0.6427   -1.6151   88.0%   39.96   24.15   -0.6957   -1.4331   83.5%   60.45   44.45   5.87   0.0171   0.3195   24.8%   5.68   6.0	1318 33.0%	3.29 4.46
MCK11RICK   MCK1CAXF   45.59   -0.7031   -0.695   53.67   37.50   -1.5073   -1.6934   89.6%   76.05   41.38   5.85   -0.0280   -0.1819   14.3%   6.17   5.53   4.85   -0.0150     KENWODD 2   KNWDCAXF   35.04   -0.6957   -1.4934   89.6%   76.05   41.38   5.85   -0.0280   -0.1819   14.3%   6.17   5.53   4.85   -0.0150   0     WILLOW CREEK   WWCKCAXF   32.05   -0.6871   -1.6151   88.0%   39.96   24.15   -0.6957   -1.4331   83.5%   60.45   44.45   5.87   0.0171   0.3195   24.8%   5.68   6.07   4.81   -0.0266   -0     HAYFORK   HYFKCAXF   52.97   -0.6427   -1.5867   87.4%   60.36   45.58   -0.1487   -0.4040   31.0%   71.04   67.61   3.70   -0.0088   -0.1188   9.4%   3.80   3.60   2.77   -0.0166   -0   2.77   -0.0166   -0 <td>1037 82.6%</td> <td>3.61 5.70</td>	1037 82.6%	3.61 5.70
KENWOOD 2   KNWDCAXF   35.04   -0.6933   -1.1357   /3.2%   43.02   27.07   -1.2178   -1.8924   92.9%   61.36   33.35   5.05   -0.0404   -0.7/07   55.1%   5.52   4.59   4.34   -0.0535   -0     WILLOW CREEK   WWCKCAXF   32.05   -0.6871   -1.6151   88.0%   39.96   24.15   -0.6957   -1.4331   83.5%   60.45   44.45   5.87   0.0171   0.3195   24.8%   5.68   6.07   4.81   -0.0266   -0     HAYFORK   HYFKCAXF   52.97   -0.6427   -1.5867   87.4%   60.36   45.58   -0.1487   -0.4040   31.0%   71.04   67.61   3.70   -0.0088   -0.1188   9.4%   3.80   3.60   2.77   -0.0016   -0     EMON COVE   MOVCAXE   4.393   0.6427   -0.7867   57.8%   51.06   36.28   51.186   11.25%   61.78   52.967   73.4%   5.70   2.52   2.77   -0.016   -0	1081 8.5%	4.68 5.02
WILLOW CREEK   WWCKCAXF   32.05   -0.08/1   -1.0513   88.0%   39.96   24.15   -0.4331   83.5%   60.45   44.45   5.87   0.01/1   0.3195   24.8%   5.08   6.07   4.81   -0.0266   -0     HAYFORK   HYFKCAXF   52.97   -0.6427   -1.5867   87.4%   60.36   45.58   -0.1487   -0.4040   31.0%   71.04   67.61   3.70   -0.0088   -0.1188   9.4%   38.08   3.60   2.77   -0.0016   -0     EMON COVE   MCVCAXE   4.93   0.6427   -1.5867   87.4%   50.86   50.1487   -0.1460   11.5%   61.78   52.90   1.0148   -1.927   2.77   -0.016   -0     LEMON COVE   MCVCAXE   4.93   0.6427   0.745   52.98   51.06   36.28   -0.1267   0.1267   0.1418   4.927   71.448   57.0   2.92   0.070   0.070   0.070   0.070   0.070   0.070   0.070   0.070   0.01418 <td>9222 63.4%</td> <td>4.95 3.72</td>	9222 63.4%	4.95 3.72
HAYFURK HYFRUAXF 52.97 -0.0427 -1.5867 87.4% 00.36 45.58 0.1487 -0.4040 31.0% 71.04 0f.61 37.07 -0.0088 -0.1188 9.4% 3.80 3.60 2.77 -0.0016 -0 10 10 10 10 10 10 10 10 10 10 10 10 10	42.4%	5.12 4.50
1 = M(N(T)/E = M(N(T)/E = 1/3) = 1/315 + 5/8% + 51/16 + 36/81 + 1/27 + 1/160 + 1/8% + 61/8 + 50 + 50 + 50 + 50 + 50 + 50 + 50 + 5	J262 2.1%	2.79 2.75
	9//2 00.1%	3.08 2.05
GLEINWILLE GLVLCAAF 22.09 -0.0334 -1.2031 /8.1% 29.3/ 14.81 -0.9130 -1.14/3 90.0% 52.91 31.80 9.34 0.1029 0.9339 94.0% 8.10 10.33 9.10 0.4338 2	9961 99.4%	4.11 14.09
GARDERVILLE GRVLDAAF 40.40 -0.0200 -1.02/3 00.0% 30.01 41.19 -0.0404 -1.3020 93.6% 72.20 37.30 4.13 0.0012 0.0004 0.14% 3.43 4.03 2.03 0.1030 2 TDRANCA TRNCOAF 61.30 0.012 0.0012 10.0012 0.0012 0.0010 10.0012 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000	0474 97.2%	1.03 4.02
	0100 00.0%	2.20 3.00
	0140 94.0%	1.40 2.04
	0029 94.3 /0	202 264
	2003 10.3 /0	2 20 1 01
MINLIDD I MINLDOAKG IIII -0.0000 -2.4910 50.0% II.30 04.01 -0.2000 -1.2322 II.1% 01.23 I3.01 2.04 -0.0131 -0.4004 04.3% 2.11 2.30 2.10 -0.0100 -0 DIDNA DIDNAKE 54.70 0.5540 1.200 70.7% 61.17 49.41 0.740.0 1.740.9 1.201 50.00 1.20 2.40 0.0101 0.257 0.0404 2.20 2.00 0.00 -0.000	527 52.9%	2.29 1.91
	000 44.0%	1.25 1.00
TREDONDO TIDETICARA 13.24 -0.9412 -2.220 39.2% 01.40 03.1 -0.310 -2.300 30.4% 03.30 (2.94 -0.004 -0.122 1.0% 2.30 2.34 1.0% 2.30 2.34 1.02 0.021 2 1.0% 2.33 2.34 1.02 0.021 2 1.0% 2.33 2.34 1.02 0.021 2 1.0% 2.33 2.34 1.0% 2.34 1.0% 2.3	16/10 8/ /%	3 90 7 15
MELDON WEDNORM 53.00 10.100 1.020 00.5% 41.03 20.14 0.000 1.2212 10.0% 53.00 1.00 0.000 1.00 0.000 1.030 1.0% 0.200 1.0% 0.000 1.00 0.000 1.00 0.000 1.0% 0.000 1.0% 0.000 1.0% 0.000 1.0% 0.000 1.0% 0.0% 0	7043 04.4%	-1 60 19 95
DADIE VALEY DIVORANY 66.62 0.4682 0.102 0.001 0.101 0.210 0.212 20.30 0.0212 0.00 0.2100 0.210 0.210 0.210 0.210 0.210 0.210 0	S147 88.0%	160 207
	1258 72.8%	3 38 2 40
	0881 66.7%	3.01 4.30
THE MERCHAN 1 47.50 10400 10.200 00.00 50.200 42.50 10.000 20.00 5	1303 2.4%	276 278
	1505 2.4%	2.70 2.70
	2997 96 94	171 2.30
TOTELETO THE ONLY 00.13 0.111 01.0/0 00.00	2357 30.9% 2862 29.7%	4.57 5.36
LATHROP ITHPCXYE 64 27 0436 60 23 64 60 23 63 24 00 112	3332 88 1%	1.52 2.51
ELSINGE GRAND ELSIGAXG 50.07 0.4205 12988 6391 5423 0.5439 1.6627 8.01% 74.40 61.80 3.05 0.0001 0.404 37.4% 3.65 4.251 3.18 0.1204 1	9873 94 1%	174 462
	5515 54.170	1.74 4.02



										Table 4	F.9 (page	e 2 of 5	)											
		Sor	rted by Co	ef. Of Pet (	Cleared wit	thin 24 hou	ırs																	
			Pct cle	eared withi	n 24 hrs (ac	ctual)								Day	s to Clear	90% (actu	al)			Days	s to Clear 9	0% (adjus	ted)	
Wire Center Name	CLLI	Mean Val	Coef	t-stat	Conf.	1Q10 Val	4Q15 Val	Coef	t-stat	Conf.	1Q10 Val	4Q15 Val	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q15 Val	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q15 Val
PALOS VERDES	TRNCCAXG	67.87	-0.4192	-2.0367	94.7%	72.69	63.05	-0.4210	-2.0987	95.3%	83.12	73.44	2.79	-0.0158	-0.4366	33.4%	2.97	2.61	2.01	0.0361	2.0137	94.4%	1.59	2.42
DUNLAP BLOSSOM HILL	DNLPCAXE	39.11	-0.4154	-1.0717	70.5%	43.89	34.33	-0.6599	-1.6002	87.7%	57.76 62.42	42.58	5.70	-0.1162	-1.4947	85.1% 12.0%	7.03	4.36	4.70	-0.0850	-1.3671	81.5% 45.5%	5.68	3.72
LANCASTER 2	LNCSCAXE	54.15	-0.3817	-1.3017	79.4%	58.54	49.76	-0.4877	-1.3228	80.1%	69.87	58.65	3.74	-0.0402	-0.7290	52.7%	4.20	3.28	2.32	0.0253	0.6649	48.7%	2.43	3.01
AZUSA	AZUSCAXF	54.54	-0.3814	-1.0256	68.4%	58.93	50.15	-0.6382	-1.5450	86.4%	72.77	58.09	4.05	-0.0583	-0.7551	54.2%	4.72	3.38	2.59	0.0412	1.6597	88.9%	2.12	3.06
RANCHO CALIFORNIA	RNCACAXF	69.66	-0.3802	-2.2316	96.4%	74.03	65.29	-0.3935	-2.5865	98.3%	82.95	73.90	2.51	-0.0089	-0.3625	28.0%	2.61	2.40	1.97	0.0350	2.3524	97.2%	1.57	2.38
		57.04	-0.3731	-1.0361	68.9%	61.33	52.75	-0.8421	-2.6136	98.4%	81.30	61.93	3.85	-0.1032	-1.3007	79.4%	5.03	2.66	2.74	0.0175	0.4533	34.5%	2.53	2.94
STRATHMORE RSU	STMRCAXE	50.15	-0.3678	-1.0191	68.1%	54.38	45.92	-0.6875	-1.9106	93.1%	67.42	51.61	5.56	0.1715	1.0089	40.3 % 67.6%	3.59	2.93	4.14	0.2490	1.9488	93.6%	1.30	7.00
GILROY	GLRYCAXF	53.14	-0.3613	-1.0207	68.2%	57.29	48.98	-0.0558	-0.1603	12.6%	63.11	61.83	3.91	-0.0061	-0.1662	13.1%	3.98	3.84	3.16	-0.0287	-0.9056	62.5%	3.49	2.83
LA PUENTE	LAPNCAXG	61.04	-0.3575	-1.4560	84.1%	65.15	56.93	-0.4191	-1.4602	84.2%	76.60	66.96	3.55	-0.0741	-1.1786	74.9%	4.40	2.69	2.37	0.0139	0.6340	46.8%	2.21	2.53
OLANCHA	OLNCCAXF	20.07	-0.3488	-0.6053	44.9%	24.08	16.06	-1.3186	-1.9037	93.0%	42.36	12.04	8.35	-0.2645	-1.5824	87.3%	11.39	5.31	6.92	-0.1971	-1.3433	80.8%	9.19	4.66
		38 30	-0.3483	-0.8422	59.2% 38.5%	55.44 42.25	47.43	-0.8322	-2.1584	95.8% 27.9%	79.16	60.02 57.84	3.47	-0.0387	-0 1601	12.6%	3.03	3.92	2.60	-0.0676	-2 3019	89.7% 96.9%	2.14	3.06
CALIF HOT SPRINGS	CHSPCAXF	25.94	-0.3421	-0.7422	53.5%	29.88	22.01	-0.2964	-0.6500	47.8%	49.89	43.07	10.27	-0.1399	-0.5368	40.3%	11.88	8.66	8.44	-0.2012	-0.9506	64.8%	10.75	6.12
COVINA	COVNCAXF	58.24	-0.3267	-1.2810	78.7%	62.00	54.48	-0.5116	-1.6176	88.1%	75.27	63.50	3.82	-0.0963	-1.3281	80.3%	4.93	2.72	2.50	0.0145	0.6084	45.1%	2.33	2.67
SANTA PAULA 1	SNPLCAXF	55.75	-0.3239	-1.1151	72.4%	59.47	52.02	-0.2141	-0.7140	51.8%	68.50	63.57	3.65	-0.0822	-1.6142	88.0%	4.59	2.70	3.01	-0.0662	-1.3008	79.4%	3.77	2.24
JOSHUA TREE	JSTRCAXE	61.03	-0.3216	-0.9043	62.5%	64.72	57.33	-0.7319	-2.2724	96.7%	82.86	66.03	3.30	-0.1302	-1.8356	92.1%	4.80	1.80	2.11	0.0185	0.8885	61.7%	1.90	2.32
MORGAN HILL	MRHI CAXE	56.36	-0.3206	-0.0027	49.0%	60.02	54.24 52.70	-0.5444	0.0361	2.9%	79.33 64.39	64 68	3.93	-0.0031	-0.9549	20.3%	4.00	2.97	3.16	-0.0355	-0.5605	57.0% 41.9%	2.30	2.10
GRANT GROVE	GGVGCAXF	23.56	-0.2993	-0.6630	48.6%	27.00	20.12	-1.1740	-2.0982	95.3%	59.32	32.32	8.27	-0.0868	-0.3390	26.2%	9.27	7.27	5.10	-0.0449	-0.3864	29.7%	5.62	4.59
WESTWOOD	WLANCAXG	54.13	-0.2990	-0.8817	61.3%	57.57	50.69	-0.4313	-1.2494	77.6%	69.81	59.89	4.53	-0.0996	-0.9922	66.9%	5.68	3.39	3.08	0.0043	0.0971	7.7%	3.03	3.13
ZUMA	MALBCAXF	62.22	-0.2984	-1.0948	71.5%	65.65	58.79	-0.0870	-0.3411	26.4%	73.11	71.11	3.51	-0.0495	-1.4236	83.2%	4.08	2.94	2.64	-0.0085	-0.3312	25.7%	2.74	2.55
	SNNGCAXG	27.96	-0.2956	-0.6887	50.2%	31.36	24.56	-0.3940	-0.8347	58.8%	44.03	34.97	7.29	0.1565	3.0617	99.4%	5.49	9.09	6.07	0.0956	1.8427	92.2%	4.97	7.16
DESERT HOT SPRINGS	DHSPCAXE	49.67	-0.2948	-0.8841	61.4%	53.02	46.32	-0.8007	-2.8389	99.1%	69.87	51.45	4.10	-0.1210	-1.7454	90.6%	5.49	2.42	2.99	0.0003	0.0115	0.9%	2.09	2.00
BALDWIN PARK	BLPKCAXF	58.17	-0.2900	-0.9245	63.5%	61.51	54.84	-0.3990	-1.3757	81.8%	73.06	63.89	3.84	-0.0736	-0.9136	63.0%	4.68	2.99	2.62	0.0031	0.1401	11.0%	2.59	2.66
SAN MIGUEL	SNMGCAXF	59.01	-0.2890	-0.5927	44.1%	62.33	55.68	-0.3787	-0.9788	66.2%	78.47	69.76	3.50	0.0770	1.8236	91.9%	2.62	4.39	3.18	0.1963	3.8935	99.9%	0.93	5.44
CAMARILLO 1	CMRLCAXF	70.93	-0.2889	-1.3945	82.4%	74.25	67.61	-0.1998	-1.0787	70.8%	80.05	75.46	2.48	-0.0401	-1.2968	79.2%	2.94	2.02	2.14	-0.0332	-1.1420	73.5%	2.52	1.76
ROWLAND 2		67.18 54.67	-0.2853	-1.1171	75.2%	70.46 57.94	63.90 51.40	-0.1075	-0.6605	48.5%	78.59	76.12 59.67	2.89	-0.0367	-1.0172	68.0% 81.2%	3.31	2.47	2.07	0.0010	0.0649	5.1% 32.1%	2.06	2.08
PACIFIC PALISADES	PCPLCAXF	51.89	-0.2612	-0.7106	51.6%	54.90	48.89	-0.5433	-1.7443	90.6%	70.00	57.51	4.80	-0.1031	-1.0050	67.5%	5.99	3.62	3.17	0.0146	0.3159	24.5%	3.00	3.34
CROWLEY LAKE	CRLKCAXF	56.85	-0.2606	-0.4148	31.8%	59.85	53.86	0.2077	0.3147	24.4%	64.28	69.06	3.38	-0.0543	-1.1116	72.2%	4.00	2.75	2.85	-0.0268	-0.4623	35.2%	3.16	2.55
BEL AIR	BELRCAXF	52.31	-0.2600	-0.7923	56.4%	55.30	49.32	-0.4709	-1.6117	87.9%	70.97	60.14	4.65	-0.0823	-0.9327	63.9%	5.60	3.70	3.19	0.0201	0.6389	47.1%	2.96	3.42
BANNING	BNNGCAXF	66.72	-0.2587	-1.0872	71.2%	69.69	63.74	-0.4261	-2.1927	96.1%	81.70	71.90	3.05	-0.0402	-0.6724	49.2%	3.51	2.59	1.99	0.0022	0.1182	9.3%	1.97	2.02
SANTA MONICA 2	SNMNCAXF	63.35	-0.2574	-0.5306	54.9%	66 18	50.80 60.52	-0.0777	-2.4133	23.8%	77 11	30.32 75.32	3.88	-0.1009	-1.4011	02.3% 84.5%	7.30 5.29	2 47	2.28	-0.0725	-0.6746	49.3%	2.54	4.20 2.02
GLENDORA	GLNDCAXF	55.56	-0.2415	-0.8940	61.9%	58.34	52.78	-0.5396	-1.7473	90.6%	72.38	59.96	3.94	-0.1006	-1.3971	82.4%	5.10	2.78	2.67	0.0146	0.6317	46.6%	2.50	2.84
BARSTOW	BRSWCAXH	58.71	-0.2321	-0.5172	39.0%	61.38	56.04	-0.6634	-1.6922	89.6%	76.18	60.92	4.25	-0.0680	-0.8177	57.8%	5.03	3.47	2.78	0.0244	0.5580	41.8%	2.50	3.06
ADELANTO	ADLNCAXF	63.95	-0.2312	-0.7337	52.9%	66.61	61.29	-0.5445	-2.2308	96.4%	79.59	67.07	3.16	-0.0577	-1.0142	67.9%	3.82	2.49	2.11	0.0202	0.9048	62.5%	1.88	2.34
	QUVYCAXE	69.77	-0.2267	-1.0262	68.5%	72.38	67.16	-0.2585	-1.0315	68.7%	80.33	74.39	2.82	-0.0295	-0.6841	49.9%	3.16	2.48	2.16	0.0171	0.5071	38.3%	1.96	2.36
MONROVIA 1	MNRVCAXG	02.50 51.81	-0.2229	-0.7534	54.1%	54.35	49 27	-0.5546	-1.3014	93.0%	70.41	58.32	4 25	-0.0125	-0.3647	29.0%	5 49	3.03	2.25	0.0084	0.2043	40.4%	2.15	2.34
MANHATTAN	MNBHCAXF	71.91	-0.2193	-1.3429	80.8%	74.44	69.39	-0.1609	-0.8249	58.2%	81.19	77.49	2.45	-0.0188	-0.8799	61.2%	2.67	2.24	1.95	0.0283	1.9282	93.4%	1.62	2.27
LINDSAY	LNDSCAXF	56.92	-0.2078	-0.6568	48.2%	59.31	54.53	-0.3492	-1.0913	71.4%	68.26	60.23	4.06	-0.0522	-0.7414	53.4%	4.66	3.46	2.87	0.0209	0.7400	53.3%	2.63	3.11
DOWNEY	DWNYCAXF	51.40	-0.1881	-0.6271	46.3%	53.56	49.23	-0.4849	-1.4597	84.2%	69.54	58.39	4.47	-0.1496	-1.4075	82.7%	6.19	2.75	2.77	-0.0028	-0.1001	7.9%	2.81	2.74
		48.56	-0.1812	-0.4388	33.5%	20.52	46.47	-0.7308	-2.2133	96.3%	69.80 50.79	25.61	4.45	-0.1725	-2.1452	95.7%	6.43	2.47	3.14	-0.0319	-0.9336	64.0%	3.51	2.78
ETIWANDA	ETWNCAXE	65.15	-0.1786	-1.0702	24.3 % 70.4%	67.20	63.10	-0.2804	-1.5080	85.5%	75.98	69.53	2.87	-0.0256	-1.2115	76.2%	3.17	2.58	2.26	0.0171	1.1066	72.0%	2.06	2.39
MONTEBELLO 1	LSGTCAXF	53.42	-0.1758	-0.4156	31.8%	55.44	51.40	0.0354	0.0949	7.5%	62.31	63.12	3.93	-0.0094	-0.1912	15.0%	4.04	3.82	3.27	-0.0237	-0.5719	42.7%	3.55	3.00
SAN FERNANDO 1	SNFNCAXG	61.45	-0.1751	-0.6028	44.7%	63.46	59.43	-0.0819	-0.2969	23.1%	73.31	71.42	3.49	-0.0739	-1.5899	87.4%	4.34	2.64	2.45	-0.0222	-0.9633	65.5%	2.71	2.20
BEAUMONT	BUMTCAXF	78.82	-0.1633	-0.8154	57.7%	80.70	76.94	-0.1666	-1.5482	86.5%	88.78	84.95	1.91	-0.0528	-1.5144	85.6%	2.52	1.31	1.39	0.0125	1.1702	74.6%	1.25	1.54
RUBBINS	RENSCAXG	34.55	-0.1545	-0.3624	28.0%	36.33	32.77	-0.2859	-0.5457	40.9% 97.6%	54.11 71.20	47.53	6.09	0.3063	1.4725	84.6% 95.1%	2.57	9.61	3.92	-0.0431	-0.5370	40.4% 36.5%	4.42	3.43
WEIMAR	WEMRCAXF	59.63	-0.1543	-0.2725	21.2%	61.40	57.85	-0.3909	-2.4240	53.6%	75.92	66.93	4.05	0.0455	0.6728	49.2%	3.52	4.57	3.24	0.0383	0.6510	47.8%	2.80	3.68
LAKE ISABELLA	LKISCAXF	42.68	-0.1490	-0.5049	38.2%	44.39	40.97	-0.4795	-1.1763	74.9%	61.18	50.16	5.23	-0.1090	-1.3995	82.5%	6.48	3.98	3.78	0.0163	0.3898	30.0%	3.59	3.97
ARROWHEAD	ARHDCAXF	50.63	-0.1487	-0.3604	27.8%	52.34	48.92	-0.5868	-1.7151	90.0%	71.35	57.85	5.12	-0.0810	-0.8054	57.1%	6.05	4.19	3.75	0.0349	0.6537	48.0%	3.35	4.15



									-	Table 4	F.9 (page	e 3 of 5	)											
		Sor	ted by Coe	ef. Of Pet 0	Cleared wit	hin 24 hou	irs																	
			Pct cle	eared within	n 24 hrs (ad	ctual)								Day	s to Clear	90% (actua	al)			Days	s to Clear 9	0% (adjust	ed)	
Wire Center Name	CLLI	Mean Val	Coef	t-stat	Conf.	1Q10 Val	4Q15 Val	Coef	t-stat	Conf.	1Q10 Val 4	4Q15 Val	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q15 Val	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q15 Val
VICTORVILLE	VTVLCAXA	64.61	-0.1479	-0.5484	41.1%	66.32	62.91	-0.4181	-2.1103	95.4%	78.65	69.03	3.23	-0.0710	-1.0950	71.5%	4.05	2.42	2.28	0.0269	1.2446	77.4%	1.97	2.59
LOS SERRANOS		74.42	-0.1479	-0.8104	57.4% 21.0%	76.12	72.72	-0.2003	-1.7672	91.0%	83.46	78.86	2.17	-0.0504	-2.2452	96.5%	2.75	1.59	1.79	-0.0114	-0.8651	60.4%	1.92	1.66
ONTARIO SO	ONTRCAXG	72.97	-0.1361	-0.6740	49.3%	74.53	71.40	-0.3350	-0.9263	64.1%	81.47	78.78	2.33	-0.0338	-1.2995	79.3%	2.72	2.03	1.93	-0.0008	-0.0618	4.9%	1.94	1.92
PICO CO	WHTRCAXJ	58.22	-0.1335	-0.4426	33.8%	59.76	56.69	-0.4850	-1.9889	94.1%	76.71	65.55	4.14	-0.1770	-1.7191	90.1%	6.17	2.10	2.40	0.0089	0.4459	34.0%	2.29	2.50
TWENTYNINE PALMS	TWPLCAXF	58.87	-0.1310	-0.3865	29.7%	60.38	57.36	-0.4118	-1.4256	83.3%	75.51	66.03	3.78	-0.0984	-1.4263	83.3%	4.91	2.65	2.54	0.0288	0.8890	61.7%	2.21	2.87
CA2004	FLONGAVE	87.51	-0.1245	-0.1886	14.8%	89.11	86.24	-0.4233	-0.9846	66.5%	99.18	89.44	1.56	0.0804	0.9739	66.0%	0.53	2.38	0.79	0.0436	1.1468	73.7%	0.23	1.23
SIERRA MADRE 1	SPMDCAXE	/2.38	-0.1240	-0.5845	43.5%	73.80	70.95	-0.1432	-1.0421	69.2% 0/ 1%	82.17	78.88	2.58	-0.0397	-0.8994	62.2% 70.5%	3.04	2.12	1.83	0.0130	1.0739	70.6%	1.68	1.98
LAGUNA BEACH	LGBHCAXE	55.42	-0.1168	-0.3970	30.5%	56.77	54.08	-0.5950	-2.0376	94.7%	72.37	58.69	4.62	0.0184	0.1857	14.6%	4.41	4.83	3.21	0.1268	2.0079	94.3%	1.76	4.67
LAYTONVILLE	LYVLCAXF	34.71	-0.1091	-0.2581	20.1%	35.96	33.45	-0.1113	-0.2771	21.6%	52.35	49.79	6.60	0.0066	0.0418	3.3%	6.53	6.68	5.43	0.0258	0.1861	14.6%	5.13	5.72
CARPINTERIA 1	CRPRCAXF	58.01	-0.1071	-0.2669	20.8%	59.24	56.77	-0.6322	-1.7236	90.2%	73.53	58.99	3.46	-0.0857	-1.7388	90.5%	4.45	2.48	2.75	-0.0410	-1.0301	68.6%	3.23	2.28
MANTILLA	OXNRCAXG	59.34	-0.1058	-0.4163	31.9%	60.56	58.13	-0.2114	-1.0162	68.0%	68.23	63.37	3.57	-0.0837	-1.9468	93.6%	4.53	2.61	2.86	-0.0517	-1.5064	85.4%	3.46	2.27
CHINA LAKE 2	CHLKCAXF	47.63	-0.1057	-0.2676	20.9%	48.85	46.42	-0.4734	-1.2162	76.4%	60.34 70.70	49.46	4.59	-0.0816	-1.1225	72.7%	5.53	3.66	3.32	-0.0016	-0.0438	3.5%	3.34	3.31
	MRVYCAXE	57.04 60.04	-0.1037	-0.2007	22.3% 15.8%	50.25 61.22	58.86	-0.2962	-0.0437	47.4% 65.6%	70.70	67.98	4.37	-0.1904	-1.0017	09.4% 95.6%	5 59	2.10	2.52	-0.0066	-0.2466 0.4092	31.4%	2.00	2.44
KERNVILLE	KRVLCAXF	39.85	-0.0987	-0.3073	23.9%	40.98	38.71	-0.4190	-1.0786	70.8%	65.04	55.41	6.54	-0.1179	-1.0232	68.3%	7.89	5.18	4.46	-0.0802	-1.3412	80.7%	5.38	3.54
THERMAL	THRMCAXF	44.53	-0.0984	-0.2308	18.1%	45.67	43.40	-0.3332	-0.8570	60.0%	59.55	51.89	4.58	-0.1171	-1.7264	90.2%	5.93	3.24	3.37	-0.0076	-0.1956	15.3%	3.46	3.28
HOMESTEAD VALLEY	HMVYCAXF	55.37	-0.0937	-0.2224	17.4%	56.44	54.29	-0.4638	-1.3676	81.5%	79.13	68.46	3.77	-0.1831	-1.9927	94.2%	5.87	1.66	2.29	-0.0029	-0.1175	9.3%	2.33	2.26
UNIVERSITY 2	WLANCAXJ	68.72	-0.0932	-0.2217	17.4%	69.79	67.64	-0.6389	-2.0450	94.8%	83.40	68.70	3.03	0.0023	0.0512	4.0%	3.01	3.06	2.06	0.0079	0.2827	22.0%	1.97	2.16
EL RIO 1	ELRICAXE	68.31	-0.0877	-0.4335	33.1%	69.32	67.30	-0.0494	-0.2658	20.7%	74.96	73.83	2.78	-0.0551	-1.8635	92.5%	3.41	2.15	2.29	-0.0376	-1.6267	88.3%	2.72	1.86
HESPERIA	HSPRCAXE	67.68	-0.0843	-0.2289	17.9%	68.65	66.71	-0.4845	-1.6978	89.7%	84.27	73.13	3.23	-0.0984	-1.1435	73.5%	4.36	2.10	2.17	0.0009	0.4985	36.3%	1.95	2.38
TIMBER COVE	TMCVCAXH	33.62	-0.0738	-0.1696	13.3%	34.47	32.77	-0.2381	-0.5979	44.4%	46.69	41.22	5.14	-0.0575	-1.0584	69.9%	5.80	4.48	3.97	-0.0020	-0.0517	4.1%	3.99	3.95
MENTONE	MENTCAXF	66.51	-0.0705	-0.2742	21.4%	67.32	65.69	-0.4209	-2.4137	97.6%	82.34	72.66	3.07	-0.0326	-0.5989	44.5%	3.45	2.70	2.00	0.0093	0.7089	51.4%	1.89	2.10
DIAMOND BAR	DMBRCAXF	61.21	-0.0695	-0.2273	17.8%	62.01	60.41	-0.1125	-0.4893	37.1%	72.27	69.68	3.53	-0.1243	-1.8598	92.4%	4.95	2.10	2.42	-0.0003	-0.0118	0.9%	2.43	2.42
	ELMGCAXF	41.48	-0.0637	-0.0950	7.5%	42.21	40.75	-1.7010	-2.5776	98.3%	74.93	35.81	9.06	-0.1721	-0.3828	29.5%	11.04	7.08	6.93	0.0291	0.0694	5.5%	6.59	7.26
ARTESIA MARVISTA	CLOYCAXC	60.18	-0.0584	-0.2329	18.2%	60.70	59.57	-0.3060	-1.0199	88.1% 78.3%	81.02 74.50	73.99	3.41	-0.1646	-1.0210	88.1% 75.8%	5.30	1.52	2.04	-0.0135	-0.7198	52.1% 32.7%	2.20	1.89
BUNDY 1	WLANCAXH	57.90	-0.0515	-0.1524	12.0%	58.49	57.30	-0.3243	-1.0298	68.6%	72.61	65.15	4.10	-0.1217	-1.2899	79.0%	5.62	2.92	2.04	-0.0123	-0.2966	23.1%	2.00	2.61
LA VERNE	LVRNCAXF	65.34	-0.0477	-0.1643	12.9%	65.89	64.79	-0.2030	-1.0358	68.9%	77.21	72.54	3.02	-0.1101	-1.5431	86.4%	4.29	1.76	2.11	-0.0188	-1.0721	70.5%	2.32	1.89
CHINO 1	CHNOCAXF	74.06	-0.0399	-0.2349	18.4%	74.51	73.60	-0.1628	-1.2781	78.6%	82.80	79.06	2.37	-0.0618	-1.8495	92.3%	3.08	1.66	1.80	-0.0069	-0.6756	49.4%	1.88	1.72
CUCAMONGA 1	CCMNCAXF	62.99	-0.0395	-0.1877	14.7%	63.44	62.54	-0.4588	-3.8963	99.9%	76.59	66.04	3.13	-0.0618	-1.3287	80.3%	3.85	2.42	2.23	0.0033	0.2874	22.4%	2.20	2.27
SAN BERNARDINO 1	SNBRCAXK	69.04 50.22	-0.0387	-0.1384	10.9%	69.49 50.56	68.60 50.11	-0.4701	-2.4483	97.8%	82.68	/1.8/	2.80	-0.0838	-1.4/33	84.6%	3.76	1.84	1.86	0.0096	0.6901	50.3%	1.75	1.97
BADGER	BDGRCAXE	27 10	-0.0198	-0.0039	2.4%	27 29	26.90	0.3687	0.6513	47.9%	36.65	45 13	8.58	-0.1237	-0.5140	38.8%	9.76	7 40	6.96	-0.0079	-0.0391	23.4 %	7.04	6.88
DESERT KNOLLS	DSKNCAXF	70.89	-0.0057	-0.0177	1.4%	70.95	70.82	-0.3839	-1.9303	93.4%	84.45	75.62	2.97	-0.1206	-1.6156	88.0%	4.36	1.58	1.87	0.0280	0.9881	66.7%	1.54	2.19
FLORENCE	BLGRCAXF	50.97	0.0017	0.0062	0.5%	50.95	50.99	-0.2664	-0.7353	53.0%	65.36	59.23	4.42	-0.1580	-1.7015	89.8%	6.24	2.60	2.82	-0.0106	-0.3958	30.4%	2.95	2.70
LA HABRA	LAHBCAXF	51.23	0.0107	0.0342	2.7%	51.11	51.35	-0.6571	-2.1477	95.7%	70.66	55.54	4.72	-0.1858	-1.7239	90.2%	6.86	2.58	3.06	0.0081	0.2710	21.1%	2.97	3.15
THOUSAND OAKS 2	THOKCAXF	67.48	0.0125	0.0537	4.2%	67.33	67.62	-0.2646	-1.1197	72.6%	77.25	71.16	2.83	-0.0357	-1.5567	86.7%	3.24	2.42	2.17	-0.0139	-0.6896	50.3%	2.33	2.01
	OVNECAXE	52.50	0.0183	0.0566	4.5%	52.37	52.75	-0.3589	-1.1121	72.2%	09.59 74.80	01.34 71.76	4.55	-0.1764	-1.6073	87.8% 01.0%	0.58	2.52	2.89	-0.0288	-0.8780	61.1% 80.6%	3.22	2.50
MCFARLAND	MCFACAXE	44.16	0.0205	0.0341	2.7%	43.92	44.40	-0.3501	-0.6616	48.5%	59.03	50.98	4.59	-0.0370	-0.4007	30.8%	5.01	4.16	3.51	0.0354	1.1887	75.3%	3.10	3.91
SOUTH BARSTOW	BRSWCAXJ	56.80	0.0237	0.0623	4.9%	56.53	57.07	-0.6463	-2.0099	94.4%	73.33	58.46	4.76	-0.0888	-0.9481	64.7%	5.78	3.74	3.21	0.0237	0.4466	34.1%	2.94	3.48
MUGU CO 1	MUGUCAXF	54.57	0.0249	0.0758	6.0%	54.29	54.86	0.2129	0.7515	54.0%	60.51	65.41	3.60	-0.0944	-1.9139	93.2%	4.68	2.51	3.00	-0.0833	-1.8742	92.6%	3.96	2.04
UPTOWN 2	LNBHCAXG	67.48	0.0288	0.0922	7.3%	67.15	67.82	-0.2090	-1.0725	70.5%	80.44	75.63	3.29	-0.1396	-1.4131	82.9%	4.89	1.68	2.03	-0.0143	-0.7205	52.2%	2.20	1.87
GUADALUPE 1	GDLPCAXG	68.24	0.0302	0.0858	6.8%	67.89	68.58	0.3352	1.3924	82.3%	75.60	83.31	2.96	-0.1148	-2.9909	99.3%	4.28	1.64	2.11	-0.0759	-4.0541	100.0%	2.99	1.24
		28.66	0.0308	0.0808	6.4% 8.6%	52.70 28.26	29.05	-0.4388	-1.3155	79.9% 40.8%	43 35	58.02 47.28	4.12	-0.0970	-1.2369	77.1%	5.24	3.01	2.84	-0.0240	-0.5631	42.1%	3.1Z 4.43	2.57
ELLWOOD	ELWDCAXF	49.51	0.0354	0.0953	7.5%	49.10	49.91	-0.1897	-0.5452	40.9%	61.46	57.10	4.15	-0.1429	-2.0288	94.6%	5.79	2.50	3.04	-0.0632	-1.5816	87.3%	3.76	2.31
CLAREMONT 1	CLMTCAXF	60.01	0.0363	0.1741	13.7%	59.59	60.42	-0.1748	-0.8362	58.8%	73.06	69.04	3.33	-0.1019	-1.7942	91.4%	4.50	2.16	2.37	-0.0198	-1.2016	75.8%	2.60	2.15
CLEMENTS	CLEMCAXF	35.50	0.0364	0.1134	8.9%	35.08	35.92	-0.0557	-0.1650	13.0%	46.76	45.48	5.37	0.0969	0.8289	58.4%	4.25	6.48	4.69	0.0778	0.7060	51.3%	3.79	5.58
GRANADA HILLS 1	GRHLCAXF	61.19	0.0394	0.1314	10.3%	60.74	61.64	-0.0672	-0.2720	21.2%	72.74	71.20	3.65	-0.0858	-1.7523	90.7%	4.64	2.66	2.54	-0.0119	-0.5669	42.4%	2.67	2.40
BUITONWILLOW	BINWCAXF	44.62	0.0398	0.0787	6.2%	44.16	45.08	-1.2115	-1.9675	93.9%	74.20	46.33	4.41	0.0381	0.4937	37.4%	3.97	4.85	3.47	0.0848	1.5471	86.5%	2.49	4.44
LONG BEACH MAIN 2	LNBHCAXE	64.71	0.0455	0.1533	12.1%	64.18	65.24	-0.2527	-0.6173	45.7%	77.70	74.39	3.00	-0.0793	-1.0933	00.9% 71.4%	4.76	2.09	2.15	0.0023	0.1198	9.4%	2.12	2.12
QUARTZ HILL 1	QZHLCAXF	59.86	0.0471	0.2105	16.5%	59.32	60.40	-0.1491	-0.4836	36.7%	71.11	67.68	3.32	-0.0561	-1.4463	83.8%	3.97	2.68	2.41	-0.0069	-0.2230	17.5%	2.49	2.34



CONFIDENTIAL AND PROPRIETARY PER P.U. CODE § 583, GENERAL ORDER 66-D, & D.16-08-024

									-	Table 4	9 (page	e 4 of 5	)											
		Sor	ted by Coe	ef. Of Pet 0	Cleared wit	hin 24 hou	irs																	
			Pct cle	ared within	n 24 hrs (ac	tual)								Day	ys to Clear	90% (actua	ıl)			Days	s to Clear 9	0% (adjust	ed)	
Wire Center Name	CLLI	Mean Val	Coef	t-stat	Conf.	1Q10 Val	4Q15 Val	Coef	t-stat	Conf.	1Q10 Val	4Q15 Val	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q15 Val	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q15 Val
MONTECITO	MNTTCAXF	57.78	0.0556	0.1430	11.2%	57.14	58.42	-0.4986	-1.5311	86.1%	72.45	60.98	3.73	-0.0732	-1.2918	79.1%	4.58	2.89	2.93	-0.0207	-0.5784	43.1%	3.17	2.69
REDLANDS	RDLDCAXF	74.26	0.0661	0.3760	29.0%	73.49	75.02	-0.0791	-0.7437	53.5%	83.70	81.88	2.46	-0.0908	-2.0970	95.3%	3.50	1.41	1.73	-0.0121	-1.3398	80.7%	1.86	1.59
SUN CITY	SNCYCAXE	77 37	0.0725	0.1249	9.0% 24.2%	30.59 76.47	32.20 78.27	-0 1504	-1 0008	55.9% 67.3%	50.51 87.43	83.98	2.07	-0.0029	-0.0061	95.8%	2.85	1.91	0.35	0.0362	0.1195	9.4% 34.0%	5.93 1.40	0.77
MARKET	LNBHCAXH	62.15	0.0821	0.2783	24.2%	61.21	63.10	-0.1148	-0.5510	41.3%	74.39	71.75	3.82	-0.1576	-1.3921	82.3%	5.63	2.00	2.37	-0.0140	-0.5250	39.5%	2.53	2.21
PALM DESERT 1	PLDSCAXF	53.78	0.0843	0.2688	20.9%	52.81	54.75	-0.2310	-0.6786	49.6%	63.83	58.52	3.48	-0.1061	-2.9998	99.4%	4.70	2.26	2.75	-0.0372	-1.3607	81.3%	3.18	2.32
DEL AMO	TRNCCAXF	73.61	0.0858	0.3530	27.3%	72.63	74.60	0.0130	0.0822	6.5%	82.97	83.27	2.54	-0.0550	-1.2911	79.1%	3.18	1.91	1.87	0.0312	1.5559	86.7%	1.51	2.23
VALLE VISTA	VLVSCAXF	66.63	0.0862	0.3275	25.4%	65.64	67.62	-0.3725	-1.8011	91.5%	80.90	72.33	2.95	-0.1022	-2.0276	94.6%	4.13	1.78	2.05	-0.0089	-0.3668	28.3%	2.15	1.95
MARINE PALMS	TWPLCAXG	64.88	0.0978	0.1034	8.1%	63.79	66.04	-0.8052	-1.3461	80.9%	90.81	72.29	3.06	0.0157	0.1201	9.5%	2.89	3.25	1.72	-0.0195	-0.4994	37.8%	1.94	1.49
		65.59	0.0999	0.3539	27.3%	64.44 51.46	66.74 52.92	-0.1428	-0.6867	50.1%	77.36	74.07	3.58	-0.1404	-1.3006	79.4%	5.19	1.96	2.26	-0.0265	-1.1332	/3.1%	2.56	1.95
BELLELOWER	BLELCAXE	59.59	0.1029	0.3273	25.4%	58.35	60.82	-0.3392	-0.9952	87.7%	74.97	67.66	3.97	-0.1403	-1.4117	82.5%	5.90	2.04	2.73	-0.0222	-0.3749	28.9%	2.55	2.40
RIDGECREST	RDGCCAXG	47.73	0.1108	0.3386	26.2%	46.46	49.00	-0.1047	-0.3149	24.4%	57.14	54.73	5.10	-0.0828	-1.0842	71.1%	6.06	4.15	3.76	-0.0066	-0.1530	12.0%	3.84	3.69
ALONDRA NORWLK	NRWLCAXG	66.42	0.1134	0.4590	34.9%	65.11	67.72	-0.2270	-1.0678	70.3%	78.50	73.28	3.56	-0.1800	-1.8799	92.7%	5.63	1.49	2.14	-0.0159	-1.0210	68.2%	2.32	1.96
CONEJO 2	THOKCAXH	66.74	0.1210	0.4005	30.8%	65.35	68.13	0.1029	0.4167	31.9%	73.41	75.78	2.93	-0.0753	-1.8818	92.7%	3.80	2.06	2.45	-0.0438	-1.3925	82.3%	2.95	1.94
SUNSET	SNMNCAXJ	63.41	0.1250	0.3626	28.0%	61.97	64.85	-0.1478	-0.6276	46.4%	75.63	72.23	3.86	-0.1138	-1.2639	78.1%	5.17	2.55	2.58	-0.0090	-0.2564	20.0%	2.68	2.47
PACOIMA 2	PACMCAXE	65.40	0.1283	0.4369	33.4%	63.92	66.87	0.0971	0.4365	33.3%	73.51	75.74	3.19	-0.0595	-1.5282	86.0%	3.88	2.51	2.34	-0.0390	-1.7053	89.8%	2.79	1.89
POMONA 1	POMNCAXE	59.40 69.72	0.1344	0.5659	42.3%	57.65 68.08	71 36	-0.2769	1 3696	00.9% 81.6%	72.09	81 12	2 78	-0.0657	-1.4037	87.2%	4.40	2.49	2.44	-0.0010	-1 3868	4.0%	2.43	2.45
INYOKERN	INYKCAXF	42.57	0.1434	0.3865	29.7%	40.92	44.22	-0.2708	-0.6315	46.6%	54.04	47.81	5.54	-0.1083	-1.2380	77.2%	6.78	4.29	4.10	-0.0206	-0.4227	32.4%	4.34	3.87
YUCCA VALLEY 1	YCVYCAXG	61.34	0.1516	0.4254	32.6%	59.60	63.09	-0.6278	-2.7935	99.0%	81.53	67.09	3.45	-0.1631	-2.0473	94.8%	5.32	1.57	2.16	-0.0066	-0.3016	23.4%	2.24	2.09
IDYLLWILD	IDYLCAXF	49.25	0.1519	0.4856	36.8%	47.50	51.00	-0.0772	-0.2792	21.7%	69.77	68.00	3.86	-0.0907	-2.3610	97.3%	4.90	2.82	2.87	0.0019	0.0727	5.7%	2.85	2.89
YERMO	YERMCAXF	53.81	0.1530	0.3155	24.5%	52.05	55.57	-0.5929	-1.3611	81.3%	72.16	58.52	5.08	-0.0868	-0.8945	62.0%	6.08	4.08	3.26	0.0754	1.1948	75.6%	2.39	4.13
VALLEY VIEW	WHTRCAXH	68.57	0.1599	0.6423	47.3%	66.73	70.41	-0.1267	-0.5617	42.0%	79.23	76.31	3.25	-0.1456	-1.5622	86.8%	4.93	1.58	1.89	0.0037	0.3625	28.0%	1.85	1.93
SAN DIMAS	SNDMCAXE	69.23	0.1668	0.6985	50.8%	67.31	/1.15	-0.0004	-0.0024	0.2%	18.22	78.21	2.69	-0.1246	-2.0922	95.2% 72.5%	4.12	1.26	1.89	-0.0367	-2.2991	96.9%	2.32	1.47
BIG BEAR LAKE	BBI KCAXE	57 71	0.1779	0.4521	34.5%	55.67	59.76	-0.4803	-1 9026	93.0%	76.83	49.00	5.04	-0.2495	-2 1802	96.0%	7.88	2 15	3 25	-0.0969	-2 2181	96.3%	4.37	2 14
MOUNTAIN	LSGTCAXG	39.82	0.1791	0.5035	38.1%	37.76	41.88	0.4856	1.3896	82.2%	45.15	56.32	5.33	-0.0852	-1.4826	84.8%	6.31	4.35	4.26	-0.0831	-1.8523	92.3%	5.22	3.31
SANTA YNEZ 1	SLVNCAXG	52.50	0.1827	0.6087	45.1%	50.40	54.60	-0.2709	-0.9543	65.0%	65.85	59.61	4.13	-0.1080	-1.5873	87.4%	5.37	2.88	2.98	-0.0489	-1.4956	85.2%	3.54	2.42
CLARK	LNBHCAXM	68.24	0.1876	0.7016	51.0%	66.08	70.40	-0.1683	-0.9967	67.1%	79.83	75.95	3.16	-0.1285	-1.5730	87.1%	4.64	1.68	2.11	-0.0117	-0.6380	47.0%	2.24	1.97
CRESTLINE	CRLNCAXF	53.48	0.1927	0.3873	29.8%	51.26	55.70	-0.5386	-1.3145	79.8%	72.34	59.95	4.54	-0.0458	-0.5160	38.9%	5.06	4.01	3.33	0.0283	0.5183	39.1%	3.00	3.65
	LMPCCAXE	60.59	0.1941	0.6778	49.5%	58.36	62.82	-0.1777	-0.6761	49.4%	70.52	66.44	3.45	-0.1189	-1.9428	93.6%	4.81	2.08	2.42	-0.0370	-1.6482	88.7%	2.85	2.00
LAS PUSITAS		52.15	0.1965	0.5228	39.4% 46.6%	49.89	54.41	-0.4110	-1.2001	78.2% 53.1%	05.48 74.04	56.03 70.00	4.23	-0.1353	-1.8725	92.6%	5.78	2.67	3.07	-0.0573	-1.3973	82.4% 45.4%	3.73	2.41
SANTA BARBARA 1	SNBBCAXE	62.13	0.2015	0.5507	41.3%	59.81	64.44	-0.2160	-0.7340	53.0%	72.62	67.66	3.75	-0.1235	-1.8545	92.3%	5.17	2.33	2.64	-0.0458	-1.1417	73.5%	3.17	2.11
LAKE HUGHES 1	LKHGCAXF	52.37	0.2294	0.5810	43.3%	49.73	55.01	-0.2904	-0.7596	54.5%	72.03	65.35	4.36	0.0915	1.1421	73.5%	3.31	5.42	3.06	0.0841	1.3096	79.7%	2.09	4.02
SUNLAND/TUJUNGA	SNLDCAXF	57.71	0.2311	0.7988	56.7%	55.05	60.36	0.0907	0.3624	28.0%	67.81	69.90	3.78	-0.1080	-1.9453	93.6%	5.02	2.54	2.58	-0.0508	-1.7678	91.0%	3.16	1.99
NORWALK	NRWLCAXF	65.99	0.2434	0.9877	66.6%	63.19	68.79	-0.0127	-0.0590	4.7%	76.17	75.88	3.59	-0.2121	-1.8993	93.0%	6.03	1.15	2.11	-0.0146	-0.6901	50.3%	2.28	1.94
CALIMESA	CLMSCAXF	71.45	0.2466	0.8567	60.0%	68.61	74.29	-0.0419	-0.2549	19.9%	80.82	79.86	2.87	-0.1384	-2.1524	95.8%	4.46	1.28	1.94	-0.0155	-0.8592	60.1%	2.12	1.77
BIG BEAR CITY	BBCYCAXE	57.85	0.2500	0.7585	54.4%	42 90	60.73	-0.3823	-1.2738	78.5%	75.80	67.01	4.69	-0.2494	-2.2416	96.5%	7.56	1.82	2.86	-0.0542	-1.4/11	84.5%	3.49	2.24
ALAMITOS	SUBHCAXE	60.44	0.2558	1 0469	69.4%	43.69	63.38	0.0452	0 1709	9.4 %	69.21	70.25	3.95	-0.1505	-1.3320	93.4%	5.81	2 09	2 64	-0.0395	-1 4967	85.2%	3.09	2 18
NORTH SHORE	NSHSCAXE	36.79	0.2588	0.9427	64.4%	33.82	39.77	-0.3829	-1.1486	73.7%	50.72	41.91	5.75	-0.1514	-2.1221	95.5%	7.49	4.01	4.37	-0.0353	-0.6789	49.6%	4.77	3.96
WESTMINSTER 1	WMNSCAXF	59.55	0.2593	1.0936	71.5%	56.57	62.53	-0.2595	-1.0584	69.9%	71.27	65.30	3.96	-0.1496	-1.6145	88.0%	5.69	2.24	2.62	-0.0266	-1.1155	72.4%	2.92	2.31
EXETER	EXTRCAXF	56.46	0.2635	0.9701	65.8%	53.43	59.49	0.1131	0.3805	29.3%	62.37	64.97	4.05	-0.0466	-0.8813	61.3%	4.59	3.51	3.09	0.0224	0.6436	47.4%	2.83	3.34
LOMA LINDA	LMLNCAXF	65.27	0.2722	1.0492	69.5%	62.14	68.40	-0.0187	-0.1080	8.5%	75.62	75.19	3.22	-0.0729	-1.2493	77.6%	4.06	2.38	2.16	0.0121	0.7521	54.0%	2.02	2.30
PERRIS 1	PERSCAXF	65.26	0.2758	1.0741	70.6%	62.08	68.43	-0.0829	-0.4219	32.3%	76.13	74.22	3.20	-0.1020	-2.1575	95.8%	4.37	2.03	2.14	-0.0075	-0.5573	41.7%	2.23	2.06
HUNTINGTON BOH 1		59.70	0.2783	0.5229	39.4% 66.2%	55.50 61.80	68.32	-0.2006	-0.4378	33.4%	73.73	73 00	3.41	-0.0194	-0.4128	31.6%	3.03 5.45	3.19	2.85	0.0369	0.9537	05.0% 13.1%	2.43	3.27
LOST HILLS	LSHLCAXF	30.69	0.2960	0.4202	32.2%	27.28	34.09	-0.6317	-0.9586	65.2%	48.44	33.91	7.37	0.0973	0.6732	49.2%	6.25	8.49	6.52	0.1861	1.5252	85.9%	4.38	8.66
GOLETA	GOLTCAXF	55.05	0.2983	0.8907	61.8%	51.62	58.48	-0.2194	-0.7828	55.8%	67.59	62.55	3.87	-0.1411	-2.0836	95.1%	5.49	2.24	2.92	-0.0586	-1.5204	85.8%	3.60	2.25
SAN JACINTO	SNJCCAXG	72.96	0.2996	1.2917	79.1%	69.51	76.41	0.0733	0.3481	26.9%	79.62	81.30	2.50	-0.0943	-2.0929	95.2%	3.59	1.42	1.74	-0.0148	-1.0636	70.1%	1.91	1.57
SANTA MARIA	SNTMCAXF	68.63	0.3085	1.4349	83.5%	65.09	72.18	0.0521	0.2741	21.4%	74.65	75.85	2.85	-0.0888	-2.5140	98.1%	3.87	1.82	2.13	-0.0364	-2.1849	96.1%	2.55	1.71
REEDLEY 1	RDLYCAXF	55.20	0.3099	0.9267	63.6%	51.64	58.76	0.2196	0.6772	49.5%	58.71	63.76	4.04	-0.0900	-1.6287	88.3%	5.07	3.00	3.13	-0.0275	-1.1220	72.7%	3.45	2.81
YUCAIPA 1	YUCPCAXE	69.37	0.3123	1.2170	76.4%	65.78	72.97	-0.0636	-0.3968	30.5%	80.22	78.76	2.75	-0.0887	-2.0464	94.8%	3.77	1.72	1.90	-0.0054	-0.4315	33.0%	1.96	1.84
		35 71	0.3146	0.7830	04.3% 55.8%	32.02	39.40	0.12/3	1 7353	42.9% 90.4%	38.86	70.09 57.86	3.60	-0.0136	-1.9290 -0.3133	93.4% 24.3%	5.78 4 70	4.39	2.49	-0.0373	-1.7565	90.0% 18.0%	2.92	2.00
		30.71	0.0200	0000	00.070	52.02	55.40	0.0201	000	00.470	00.00	07.00	4.04	0.0100	0.0100	2		1.00	0.00	0.0000	0.2200	//	0.00	5.75



									•	Table 4F	.9 (page	e 5 of 5												
		Sor	ted by Coe	ef. Of Pet 0	Cleared wit	hin 24 hour	'S																	
			Pct cle	ared within	n 24 hrs (ac	tual)								Day	s to Clear	90% (actua	I)			Days	to Clear 9	0% (adjust	ed)	
Wire Center Name	CLLI	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q15 Val	Coef	t-stat	Conf.	1Q10 Val	4Q15 Val	Mean Val	Coef	t-stat	Conf.	IQ10 Val 4	Q15 Val	Mean Val	Coef	t-stat	Conf.	1Q10 Val 4	Q15 Val
WARNER 2	HNBHCAXL	59.18	0.3302	1.4282	83.3%	55.38	62.98	-0.1030	-0.4236	32.4%	68.49	66.12	4.28	-0.1494	-1.8756	92.7%	5.99	2.56	2.98	-0.0367	-1.2963	79.2%	3.41	2.56
BISHOP	BSHPCAXG	57.81	0.3438	1.1717	74.7%	53.85	61.76	0.0962	0.3355	26.0%	63.99	66.20	3.88	-0.1302	-2.0390	94.7%	5.38	2.38	2.60	-0.0583	-3.5427	99.8%	3.27	1.93
SYLMAR	SYLMCAXF	57.11	0.3466	1.3604	81.3%	53.13	61.10	0.2933	1.0036	67.4%	63.83	70.57	3.92	-0.1056	-1.9412	93.5%	5.13	2.70	2.72	-0.0553	-1.9933	94.2%	3.36	2.08
SUNNEYMEAD	SNYMCAXF	77.34	0.3534	2.0412	94.7%	73.28	81.41	0.0454	0.4056	31.1%	83.92	84.97	2.20	-0.0759	-2.5007	98.0%	3.07	1.32	1.51	-0.0149	-1.0364	68.9%	1.68	1.34
STADIUM 1	LNBHCAXS	68.36	0.3640	1.1275	72.9%	64.17	72.54	-0.0446	-0.2391	18.7%	79.49	78.46	3.53	-0.1644	-1.5304	86.0%	5.42	1.64	2.13	-0.0177	-0.7608	54.6%	2.33	1.92
TIVY VALLEY	TVVYCAXF	41.58	0.3642	1.0567	69.8%	37.39	45.77	-0.1437	-0.3449	26.7%	55.75	52.45	4.50	-0.0342	-0.9003	62.3%	4.89	4.10	3.84	-0.0015	-0.0493	3.9%	3.86	3.83
SEA RANCH	SERNCAXG	37.44	0.3674	1.1651	74.4%	33.22	41.67	0.5937	1.4322	83.4%	37.31	50.97	5.38	0.0771	0.8155	57.7%	4.50	6.27	4.31	0.0444	0.5384	40.5%	3.80	4.82
ALISO	SLGBCAXF	51.42	0.3701	0.8509	59.6%	47.16	55.67	-0.1112	-0.2173	17.0%	61.85	59.30	5.60	-0.0472	-0.3937	30.3%	6.14	5.05	4.00	0.0490	0.5392	40.5%	3.43	4.56
PINYON	PNYNCAXF	31.11	0.3861	0.6046	44.9%	26.67	35.55	-0.4971	-0.7208	52.2%	46.61	35.17	6.70	-0.0134	-0.2106	16.5%	6.86	6.55	5.57	-0.0165	-0.2685	20.9%	5.76	5.38
WASHINGTON STREET	BRDNCAXF	70.26	0.3873	2.0198	94.5%	65.81	74.72	0.1423	0.7746	55.4%	75.91	79.18	2.58	-0.0842	-2.9403	99.3%	3.54	1.61	2.05	-0.0221	-1.1407	73.4%	2.30	1.79
NEWBURY PARK 1	NWPKCAXF	65.86	0.3906	1.2908	79.0%	61.37	70.35	0.1535	0.6617	48.5%	72.78	76.31	2.81	-0.0630	-1.9736	93.9%	3.54	2.09	2.32	-0.0529	-2.2071	96.2%	2.93	1.71
TEMECULA	TMCLCAXG	82.93	0.4129	1.6040	87.8%	78.18	87.68	0.1292	0.6005	44.6%	87.12	90.09	1.58	-0.0564	-2.2718	96.7%	2.23	0.93	1.25	-0.0365	-2.1804	96.0%	1.67	0.83
NORTH EDWARDS	NEDWCAXF	35.90	0.4183	0.7102	51.5%	31.09	40.71	0.4525	0.6904	50.3%	47.25	57.66	4.77	-0.0318	-0.3839	29.5%	5.13	4.40	3.52	-0.0964	-1.8858	92.8%	4.63	2.41
COACHELLA	CCHLCAXF	52.58	0.4281	1.1180	72.5%	47.65	57.50	0.1230	0.2959	23.0%	57.88	60.70	3.73	-0.1284	-2.3053	96.9%	5.21	2.25	2.86	-0.0462	-1.2968	79.2%	3.39	2.33
SEPULVEDA 1	SPLVCAXF	66.87	0.4286	1.8351	92.1%	61.94	71.80	0.2957	1.4996	85.3%	72.23	79.03	3.26	-0.0858	-2.1551	95.8%	4.25	2.27	2.34	-0.0486	-1.9860	94.1%	2.90	1.79
MESA	LMPCCAXG	58.45	0.4318	1.1398	73.4%	53.48	63.41	0.0729	0.2014	15.8%	65.05	66.73	3.40	-0.1364	-2.5346	98.1%	4.97	1.83	2.51	-0.0748	-2.9115	99.2%	3.37	1.65
CALIFORNIA CITY	CFCYCAXF	48.16	0.4563	1.4914	85.1%	42.91	53.40	0.2749	0.7453	53.6%	55.06	61.38	4.48	-0.0925	-2.2425	96.5%	5.55	3.42	3.34	-0.0643	-2.0785	95.1%	4.08	2.60
MUSCOY	MSCYCAXF	64.72	0.4714	1.4704	84.5%	59.30	70.14	0.0405	0.1882	14.8%	79.68	80.61	3.11	-0.0825	-1.3226	80.1%	4.06	2.16	2.00	-0.0085	-0.5166	39.0%	2.10	1.90
LOS ALAMOS	LSALCAXF	61.52	0.4750	1.1579	74.1%	56.05	66.98	0.5124	1.2515	77.7%	62.59	74.37	3.26	-0.1138	-3.0367	99.4%	4.57	1.95	2.70	-0.0688	-2.1550	95.8%	3.49	1.91
SANGER	SNGRCAXF	47.90	0.4794	1.3368	80.6%	42.38	53.41	-0.0274	-0.0712	5.6%	56.56	55.93	4.33	-0.1637	-2.3260	97.1%	6.21	2.45	3.42	-0.0827	-2.3526	97.2%	4.38	2.47
BUSHARD	HNBHCAXH	50.37	0.5079	1.9788	94.0%	44.53	56.21	-0.0440	-0.1409	11.1%	60.39	59.38	4.44	-0.1684	-1.9393	93.5%	6.38	2.51	3.22	-0.0416	-1.5257	85.9%	3.70	2.74
ONTARIO	ONTRCAXF	67.78	0.5211	2.8288	99.0%	61.79	73.77	0.2995	2.1577	95.8%	72.65	79.53	2.87	-0.1015	-1.9402	93.5%	4.04	1.71	2.07	-0.0311	-3.2787	99.7%	2.43	1.71
EDGEMONT	EDMTCAXF	76.93	0.5489	2.5750	98.3%	70.61	83.24	0.0657	0.6000	44.6%	83.26	84.77	2.11	-0.0986	-3.1621	99.6%	3.25	0.98	1.49	-0.0201	-1.7561	90.8%	1.72	1.26
INDIO	INDICAXG	63.18	0.5747	2.0602	94.9%	56.57	69.79	0.1529	0.6088	45.1%	68.64	72.15	3.19	-0.1127	-2.5438	98.2%	4.49	1.90	2.47	-0.0370	-1.4751	84.6%	2.90	2.05
FOWLER	FWLRCAXF	52.02	0.5857	2.1530	95.8%	45.29	58.76	0.3548	1.0762	70.7%	59.52	67.68	3.70	-0.0873	-3.5186	99.8%	4.70	2.70	3.07	-0.0635	-2.6129	98.4%	3.80	2.34
LAQUINTA	LAQNCAXG	60.64	0.5937	2.1924	96.1%	53.81	67.47	0.1558	0.6337	46.7%	66.61	70.19	3.61	-0.1308	-2.6736	98.6%	5.11	2.10	2.73	-0.0435	-1.4490	83.9%	3.23	2.23
OASIS	OASSCAXF	42.81	0.6099	1.7947	91.4%	35.79	49.82	0.4127	1.0748	70.6%	49.02	58.51	5.32	-0.0834	-0.8531	59.8%	6.28	4.37	3.55	-0.0702	-1.4496	83.9%	4.36	2.75
BENTON	BNTNCAXF	27.40	0.6267	1.2214	76.6%	20.19	34.61	1.4114	2.2757	96.7%	26.14	58.60	5.13	-0.2255	-2.5113	98.0%	7.72	2.54	4.14	-0.1533	-2.0031	94.3%	5.90	2.37
BORON	BORNCAXE	42.51	0.6412	1.3694	81.6%	35.14	49.89	0.3698	0.6644	48.7%	49.21	57.72	5.04	-0.1236	-1.5566	86.7%	6.46	3.61	3.87	-0.0451	-0.8042	57.1%	4.39	3.35
TRONA	TRONCAXF	30.29	0.6422	1.6172	88.1%	22.90	37.68	-0.3843	-0.7649	54.8%	53.18	44.34	5.84	-0.1500	-1.6764	89.3%	7.57	4.12	4.56	-0.0792	-1.5400	86.3%	5.47	3.65
BRADLEY	ORCTCAXG	61.19	0.6514	2.2444	96.5%	53.70	68.68	0.2789	1.2218	76.6%	66.80	73.22	3,45	-0.1354	-2.1618	95.9%	5.00	1.89	2.45	-0.0588	-2.6779	98.7%	3.13	1.77
SURF	SURFCAXF	72.23	0.6557	0.9424	64.4%	64.69	79.77	0.2243	0.3203	24.8%	73.95	79.11	2.09	-0.0850	-2.2004	96.2%	3.07	1.12	2.06	-0.1182	-2.1252	95.5%	3.42	0.70
DESERT SHORES	DSSHCAXF	47.87	0.7669	1.1233	72.7%	39.05	56.69	0.0018	0.0025	0.2%	55.25	55.29	4.61	-0.2297	-2.7925	99.0%	7.25	1.97	3.54	-0.1225	-1.8028	91.5%	4.94	2.13
SALTON CITY	SLCYCAXE	48.71	0.7887	1,4850	84.9%	39.64	57.78	0.1432	0.2760	21.5%	56.72	60.02	4.61	-0.1539	-2.2422	96.5%	6.38	2.84	3.49	-0.0796	-1.4555	84.1%	4.40	2.57
RUNNING SPRINGS	RNSPCAXE	51.52	0.7940	1.9054	93.1%	42.39	60.65	0.3032	0.8395	59.0%	61.91	68.89	4.82	-0.2454	-2.5479	98.2%	7.65	2.00	3.56	-0.1499	-2.3603	97.3%	5.29	1.84
JUNE LAKE	JNLKCAXE	53.88	0.8404	0.9590	65.2%	44.22	63.55	0.5512	0.7666	54.9%	59.76	72.43	3.69	-0.1673	-1.6142	88.0%	5.61	1.76	2.69	-0.1000	-1.9196	93.3%	3.80	1.50
DESERT HEIGHTS	DSHGCAXE	54.22	0.9292	2.2060	96.2%	43.53	64.90	0.4816	1.3754	81.8%	61.74	72.81	4.06	-0.1879	-2.5180	98.1%	6.22	1.90	2.75	-0.0555	-1.5484	86.5%	3.39	2.11
RANDSBURG	RNBGCAXE	28 72	0.9824	1 0855	71.1%	17.92	40.51	0 8874	0.8315	58.6%	34 99	55 40	8.04	-0 2052	-1 1042	71.9%	10.30	5.58	6.41	-0 1980	-1 1684	74.5%	8 59	4 03
MAMMOTH LAKES	MMLKCAXF	55.76	1.1664	4.0879	100.0%	42.35	69.17	0.4990	1.6588	88.9%	61.62	73.10	4.30	-0.1467	-1.6974	89.7%	5.98	2.61	2.91	-0.0770	-2.1508	95.8%	3.80	2.03
LONE PINE	LNPNCAXF	33,78	1.1972	2.8168	99.0%	20.01	47.55	0.6187	1.1935	75.5%	38.86	53.09	5.39	-0.1647	-2.4491	97.8%	7.29	3.50	4.28	-0.1334	-3.1882	99.6%	5.81	2.75
LEE VINING	LVNGCAXF	55.24	1.4076	1.4754	84.6%	38.86	71.23	-0.5362	-0.5678	42.4%	81.18	68.84	2.68	-0.0183	-0.2478	19.4%	2.90	2.48	1.59	-0.0278	-0.7776	55.5%	1.92	1.28
INDEPENDENCE	INDPCAXE	38.69	1.4942	2,1622	95.9%	21.51	55.87	1.2188	1.4511	84.0%	34.50	62.53	5.44	-0.2345	-2.1505	95.8%	8.14	2.74	4.43	-0.2230	-2.3643	97.3%	6.99	1.86
BIG PINE	BGPICAXE	52.15	1.5158	2.4868	97.9%	34.72	69.58	1.1866	2.2645	96.7%	45.84	73.13	3.68	-0.2024	-2.5081	98.0%	6.01	1.35	2.67	-0.1261	-3.7433	99.9%	4.12	1.22
PINE CREEK	PNCKCAXF	45.62	1.7782	3.0577	99.4%	25.17	66.07	2.0279	3.6198	99.9%	33.33	79.97	4.78	-0.0053	-0.0419	3.3%	4.85	4.72	2.99	-0.0503	-1.9548	93.7%	3.56	2.41



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		Sor	rted by Coe	f. Of Pet C	leared with	nin 24 hour	s																		
			Pct cle	ared within	a 24 hrs (ac	tual)			Pct clea	ared within :	24 hrs (adju	isted)			Day	ys to Clear	90% (actual				Days	s to Clear 9	0% (adjuste	d)	
Wire Center Name	CLU	Mean Val	Coef	t_etat	Conf	2016 Val 7	1017 Val	Mean Val	Coef	t-stat	Conf 1	016 Val	4017 Val	Mean Val	Coef	t_etat	Conf 2	016 Val	4017 Val	Mean Val	Coef	t-stat	Conf 2	016 Val	4017 Val
LEMON COVE	LMCVCAXE	54.40	-24.3254	-5.8816	99.9%	115.21	-30.74	55,4398	-24,1468	-590.6%	1.00	115.81	-29.07	1.8003	0.3269	125.8%	0.74	0.98	2.94	1.6187	0.3175	188.2%	0.89	0.83	2,72986
LEGGETT	LGGTCAXF	29.52	-14.7619	-3.7456	99.0%	73.81	-14.76	41.4286	-14.4643	-343.8%	0.99	84.82	-1.96	5.7870	2.0594	223.8%	0.93	-0.39	11.97	4.9512	1.6719	208.8%	0.92	-0.06	9.96689
BENTON	BNTNCAXF	33.35	-8.8605	-2.7814	96.8%	59.93	6.77	41.1054	-6.4116	-122.4%	0.73	60.34	21.87	4.0100	-0.1677	-37.9%	0.28	4.51	3.51	3.3426	-0.1202	-29.6%	0.22	3.70	2.98185
BADGER	BDGRCAXF	34.23	-8.1297	-2.1496	92.5%	58.62	9.84	50.8966	-5.1535	-90.2%	0.60	66.36	35.44	4.1048	0.3658	78.0%	0.53	3.01	5.20	2.7447	-0.0999	-25.7%	0.19	3.04	2.44497
BERRENDA MESA	BRMSCAXF	10.00	-7.4324	-1.4402	80.0%	26.35	-18.24	30.0000	-2.0270	-15.2%	0.12	34.46	22.30	2.8367	-0.2103	-44.5%	0.33	3.30	2.04	2.1182	-0.2018	-54.4%	0.39	2.56	1.35145
LOST HILLS	LSHLCAXF	33.99	-6.1905	-1.2809	75.2%	52.56	15.42	34.5421	-6.1905	-127.7%	0.75	53.11	15.97	9.3888	4.7803	-177.5%	0.87	23.73	-4.95	8.0963	-4.0983	-180.3%	0.88	20.39	4.1986
SEPULVEDA 1	SPLVCAXF1	47.22	-4.5238	-0.4425	32.6%	59.29	32.14	52.7778	0.2381	2.3%	0.02	52.14	53.57	3.6304	0.7774	103.2%	0.66	1.56	6.22	3.2971	0.6203	92.9%	0.61	1.64	5.36473
ROBBINS	RBNSCAXG	26.19	-4.2857	-0.8577	57.6%	39.05	13.33	51.0007	-13.6905	-485.5%	1.00	92.74	10.60	2.2075	0.1007	126.3%	0.75	1.77	2.11	1.7154	0.2350	400.5%	0.99	0.89	2.30284
		23 37	-3.0920	-1.1044	71.2% 54.3%	04.00 33.73	43.30	35 6/10	-3.3094	-79.3%	0.54	12.22	52.00 24.21	3.1439	3 1000	45.5%	0.33	2.70	20.68	2.3075	2 6870	39.0% 215.6%	0.29	2.07	2.00043
GRANT GROVE	CVELCAXE	40.02	-2 9928	-0.8129	55.3%	48.99	31.04	45 5948	-3 1434	-87.5%	0.58	55.03	36.16	3 4720	-0 2031	-133.9%	0.32	4.08	2 86	2 8047	-0 1712	-110.1%	0.69	3.32	2 29112
PARKFIELD	PREDCAXE	75.00	-2.8571	-0.2425	18.4%	81.43	64.29	87.5000	-4.2857	-43.3%	0.32	97.14	71.43	2,1901	0.5763	54.0%	0.39	0.89	4.35	1.6901	0.5191	57.3%	0.41	0.52	3.6369
COVELO	CVELCAXF	13.43	-2.7788	-1.9856	90.6%	21.77	5.10	28.0541	-0.0367	-1.4%	0.01	28.16	27.94	7.5115	0.9797	155.3%	0.83	4.57	10.45	6.4121	0.8911	169.4%	0.86	3.74	9.08539
LOS ALAMOS	LSALCAXF	39.29	-2.2024	-0.7955	54.3%	45.90	32.68	48.6935	0.1190	2.8%	0.02	48.34	49.05	4.8670	0.2456	58.6%	0.42	4.13	5.60	3.5948	0.0333	7.3%	0.06	3.49	3.69469
WHITEHORN	WHTRCAXG	32.15	-2.1275	-0.7455	51.6%	38.53	25.77	40.8231	-3.5037	-114.7%	0.71	51.33	30.31	5.5795	0.4645	73.4%	0.51	4.19	6.97	4.7766	0.5392	92.2%	0.61	3.16	6.39407
LAYTONVILLE	LYVLCAXF	20.58	-1.7938	-0.7829	53.7%	25.96	15.19	35.8353	-1.6882	-56.2%	0.41	40.90	30.77	6.7841	0.9021	229.3%	0.94	4.08	9.49	5.5167	0.8946	246.8%	0.95	2.83	8.20059
JUNE LAKE	JNLKCAXF	64.71	-1.7367	-0.2599	19.6%	69.92	59.50	65.4662	-2.3006	-34.1%	0.26	72.37	58.56	3.0042	0.5173	107.8%	0.68	1.45	4.56	2.5564	0.5078	126.3%	0.75	1.03	4.07989
MAMMOTH LAKES	MMLKCAXF	55.69	-1.6508	-0.4655	34.2%	60.64	50.74	60.2697	-0.8539	-24.9%	0.19	62.83	57.71	14.1742	8.0569	193.2%	0.90	-10.00	38.34	11.8043	7.0755	194.9%	0.90	-9.42	33.0308
WILLOW CRK	WHIRCAXJ	20.98	-1.6161	-0.9469	62.0%	25.83	16.13	32.3409	-0.3815	-16.5%	0.13	33.49	31.20	6.0032	0.4674	204.6%	0.91	4.60	7.41	4.8488	0.2379	112.1%	0.70	4.14	5.56241
	CIVICAXE	66.30	-1.5724	-0.2919	22.0%	10.47	01.58	11 2450	-2.2681	-42.4%	0.31	20.04	03.78	3.1532	0.2422	55.7% 19.0%	0.40	2.43	3.88	2.5101	0.3197	80.9%	0.58	1.55	3.46927
SNELLING	SNNGCAXG	11 42	-1.3008	-0.8736	58.4%	15.33	2.03	20 3587	0 3224	24.0%	0.09	19 39	21.00	6 9147	0.0035	105.4%	0.14	6.45	7.05	5 8130	-0.2203	125.0%	0.40	5 35	6 2775
WEAVERVILLE	WVVLCAXG	50.30	-1.2608	-0.4058	30.1%	54.08	46.51	65,2902	2.9717	118.2%	0.72	56.38	74.21	4.1274	0.3691	103.0%	0.66	3.02	5.23	2.6453	-0.0401	-29.8%	0.22	2.77	2.52486
HAYFORK	HYFKCAXF	48.12	-1.2542	-0.3322	24.9%	51.88	44.35	57.7172	-1.3888	-38.9%	0.29	61.88	53.55	3.9112	0.0356	13.9%	0.11	3.80	4.02	3.3161	-0.0250	-13.7%	0.10	3.39	3.24092
GAVIOTA	805567	18.21	-0.7937	-0.3596	26.9%	20.59	15.83	20.5514	-1.1905	-52.3%	0.38	24.12	16.98	8.4067	1.6722	374.3%	0.99	3.39	13.42	7.0424	1.3829	373.8%	0.99	2.89	11.1909
BISHOP	BSHPCAXG	54.00	-0.6671	-0.1514	11.5%	56.01	52.00	58.6344	-0.0561	-1.3%	0.01	58.80	58.47	3.4537	-0.0806	-27.8%	0.21	3.70	3.21	2.5577	-0.0833	-30.7%	0.23	2.81	2.30789
TRONA	TRONCAXF	37.10	-0.3401	-0.1716	13.1%	38.12	36.08	41.2520	-1.0332	-43.6%	0.32	44.35	38.15	2.7848	-0.1045	-38.9%	0.29	3.10	2.47	2.4247	-0.1346	-70.0%	0.49	2.83	2.02098
REEDLEY	RDLYCAXF	61.44	-0.3099	-0.1743	13.3%	62.37	60.51	64.2639	0.0608	3.6%	0.03	64.08	64.45	2.7984	-0.0188	-11.7%	0.09	2.85	2.74	2.1563	-0.0946	-85.3%	0.57	2.44	1.87257
LEE VINING	LVNGCAXF	36.90	-0.2976	-0.0486	3.7%	37.80	36.01	45.8333	-3.4226	-42.0%	0.31	56.10	35.57	3.9212	0.6067	192.0%	0.90	2.10	5.74	3.1113	0.5330	167.5%	0.86	1.51	4.71019
	KNWDCAXF	12.65	-0.1311	-0.0908	6.9%	13.04	12.25	31.4432	3.1772	75.4%	0.52	21.91	40.97	16.3508	2.7482	73.6%	0.51	8.11	24.60	13.9444	2.6140	81.0%	0.55	6.10	21.7864
	PNBCCAYE	04.00 12.86	-0.1079	-0.0406	3.1% 1.1%	04.07 13.22	04.22 12.64	10 5238	-6.4028	-118 2%	0.40	13 85	5.44	5 7500	-0.0613	-50.5%	0.37	5.80	5.17	2.3090	-0.1979	-100.4%	0.04	2.90	5 58270
PINE CREEK	PNCKCAXE	36.80	-0.0303	-0.0205	1.1%	37.06	36.55	37 7551	-0.0850	-110.2 %	0.02	38.01	37.50	4 6990	0.3854	61.8%	0.03	3.54	5.86	3 8491	0.3140	69.1%	0.33	2.91	4 791
VTVL HSPR	760995	100.00	0.0000	0.0200	1.070	100.00	100.00	100.0000	0.0000	2.170	0.02	100.00	100.00	0.2042	0.0375	01.070	0.11	0.19	0.41	0.2042	0.0375	00.170	0.10	0.19	0.41042
EXETER	EXTRCAXF	53.05	0.0502	0.0189	1.4%	52.90	53.20	58.1174	1.2765	52.2%	0.38	54.29	61.95	3.4857	0.0179	16.3%	0.12	3.43	3.54	2.6891	0.0391	34.6%	0.26	2.57	2.8064
CALIFORNIA HOT SPF	RINGCHSPCAXF	18.17	0.0803	0.0467	3.6%	17.93	18.41	27.4050	-1.2894	-48.8%	0.36	31.27	23.54	7.1904	0.0319	15.7%	0.12	7.09	7.29	6.1679	0.0207	9.9%	0.08	6.11	6.22991
MORGAN HILL	MRHLCAXF	42.64	0.3032	0.1195	9.1%	41.73	43.55	48.9590	0.0568	2.1%	0.02	48.79	49.13	4.2348	0.1093	22.6%	0.17	3.91	4.56	3.7945	0.0891	20.6%	0.16	3.53	4.06195
INDEPENDENCE	INDPCAXF	59.39	0.3571	0.0527	4.0%	58.32	60.47	65.9416	-2.3214	-31.7%	0.24	72.91	58.98	2.8424	0.2306	49.0%	0.36	2.15	3.53	2.2523	0.1732	43.3%	0.32	1.73	2.77178
TIMBER COVE	TMCVCAXH	43.48	0.7575	0.3129	23.5%	41.21	45.76	55.0794	-1.5930	-37.2%	0.28	59.86	50.30	4.7967	-0.3533	-152.7%	0.82	5.86	3.74	3.4986	0.0131	5.8%	0.04	3.46	3.53797
DUNLAP	DNLPCAXF	47.44	0.9198	0.3049	22.9%	44.68	50.20	55.9483	1.3040	38.6%	0.29	52.04	59.86	3.0888	0.0715	32.9%	0.25	2.87	3.30	2.7594	-0.0536	-24.6%	0.19	2.92	2.5987
GARBERVILLE	GRVLCAXE	31.88	0.9646	0.3796	28.3%	28.99	34.78	45.6345	0.7140	22.5%	0.17	43.49	47.78	6.2997	1.0112	259.9%	0.96	3.27	9.33	5.3555	0.9189	234.8%	0.94	2.60	8.11215
		52.67	1.0755	0.6569	33 3%	49.04	17 78	28 12/1	2 8077	00.3% 112.5%	0.56	10 70	36 55	3.3300 6 30/8	1 3503	-137.0%	0.76	2.74	2.93	5 2562	-0.0630	-97.0%	0.03	2.94	2.44201
SAN JOAQUIN	SNJOCAXE	26.38	1 2920	2 1042	92.0%	22 50	30.26	34 3574	3 3939	196.2%	0.70	24 18	44 54	5 6109	-0 2872	-117.9%	0.30	6.47	4 75	4 3060	-0 2472	-81.1%	0.57	5.05	3 56436
SANGER	SNGRCAXE	61.52	1.5085	1.1469	70.5%	57.00	66.05	66.1950	1.0698	65.3%	0.46	62.99	69.40	2.6453	-0.2012	-346.7%	0.99	3.25	2.04	1.9285	-0.1786	-312.0%	0.98	2.46	1.39276
FOWLER	FWLRCAXF	57.83	1.5143	1.1414	70.3%	53.29	62.38	62.5779	0.5326	48.4%	0.35	60.98	64.18	2.5004	-0.1115	-71.2%	0.50	2.83	2.17	1.8568	-0.0757	-80.4%	0.55	2.08	1.6296
HOOPA	HOPACAXF	14.93	1.5192	0.7601	52.4%	10.38	19.49	32.7974	1.9482	79.3%	0.54	26.95	38.64	15.4864	4.6149	108.2%	0.68	1.64	29.33	12.6658	4.1871	112.6%	0.70	0.10	25.2272
SQUAW VALLEY	SVYFCAXF	42.56	1.7347	0.2622	19.8%	37.36	47.76	52.5455	-3.1463	-40.0%	0.30	61.98	43.11	2.7705	-0.0193	-7.7%	0.06	2.83	2.71	2.1017	0.0733	29.7%	0.22	1.88	2.32148
CORCORAN	CRCRCAXF	27.66	1.8533	1.0444	66.3%	22.10	33.22	31.4920	2.9794	205.0%	0.91	22.55	40.43	5.0038	-0.2724	-105.2%	0.67	5.82	4.19	4.1439	-0.2052	-84.2%	0.57	4.76	3.52831
PIERCY	PIRCCAXF	33.81	1.9048	0.2215	16.8%	28.10	39.52	48.0952	-0.2381	-2.8%	0.02	48.81	47.38	4.8504	0.1273	20.1%	0.15	4.47	5.23	3.4930	0.3349	59.8%	0.43	2.49	4.49757
MCFARLAND	MCFACAXF	56.46	1.9425	0.6253	44.5%	50.64	62.29	58.5735	2.3167	97.3%	0.63	51.62	65.52	2.9046	0.0744	27.8%	0.21	2.68	3.13	2.2713	-0.0392	-26.9%	0.20	2.39	2.15372
		39.21	2.0578	0.6933	48.6%	33.04 26.72	45.39	45.4739	2.7264	103.9%	0.66	37.29	53.65	4.2309	0.1785	6.6%	0.48	3.70	4.//	3.2782	0.1184	45.2%	0.33	2.92	3.03331
LICIO EALUIO		36.37	6.019	1.3744	0.2.4 /0	20.13	J77.4	+ + L U434	0.2002	142.02/0	0.00		JU 274	0.0010	1.0402	0.070	0.05	0.44	0.00	+ 0U34	0.0000	0.070	U.U4	4.12	+.02230/



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										Table	4F.10 (	page 2	of 4)												
		Sor	ted by Coe	f. Of Pet C	leared with	in 24 hours	5																		
		00.1	Pct cle	ared within	24 hrs (act	tual)	5		Pct clea	red within 2	24 hrs (adju	ısted)			Day	s to Clear	90% (actual	)			Days	to Clear 90	% (adjuste	d)	
Wire Center Name	CLLI	Mean Val	Coef	t-stat	Conf 2	Q16 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf 2	2Q16 Val	4Q17 Val	Mean Val	Coef	t-stat	Conf 2	O16 Val	4Q17 Val	Mean Val	Coef	t-stat	Conf 2	Q16 Val	4017 Val
GUADALUPE	GDLPCAXG	68.77	2.1597	0.5606	40.5%	62.29	75.25	70.0694	2.1597	61.5%	0.44	63.59	76.55	2.5374	0.2568	53.9%	0.39	1.77	3.31	2.3837	0.1933	47.6%	0.35	1.80	2.96364
GUADALUPE	GDLPCAXG	68.77	2.1597	0.5606	40.5%	62.29	75.25	70.0694	2.1597	61.5%	0.44	63.59	76.55	2.5374	0.2568	53.9%	0.39	1.77	3.31	2.3837	0.1933	47.6%	0.35	1.80	2.96364
OLANCHA	OLNCCAXF	14.29	2.3810	0.4472	33.0%	7.14	21.43	14.2857	2.3810	44.7%	0.33	7.14	21.43	5.8871	-0.2442	-70.5%	0.49	6.62	5.15	5.0300	-0.1371	-44.8%	0.33	5.44	4.6188
DESERT CENTER	DSCTCAXG	25.00	2.4224	0.5360	38.9%	18.14	32.67	28.3333	4.7826	95.9%	0.63	14.78	43.48	7.6648	1.5032	138.1%	0.78	3.41	12.43	6.4867	1.3939	145.1%	0.80	2.54	10.9007
		46.93	2.4496	0.3078	23.1%	39.58	54.28	49.1300	0.8013	10.6%	0.08	46.73	51.53	3.9364	-0.0230	-4.2%	0.03	4.01	3.87	3.1764	-0.0245	-5.4%	0.04	3.25	3.10303
RIPON	SURECAXE	45.85	2.4073	1 0074	49.3% 64.7%	38.43	53 28	20.0000	3 3057	133.5%	0.12	40.58	60.41	4.9531	-0.1002	-105.8%	0.42	4 79	3.64	3 1156	-0.2534	-132.8%	0.19	3.88	2 35523
FARMINGTON	FRTNCAXF	58.08	2.5255	0.3711	27.7%	50.50	65.65	66.4683	1.0516	16.3%	0.12	63.31	69.62	4.8879	0.3382	36.8%	0.27	3.87	5.90	3.4443	0.4782	66.5%	0.47	2.01	4.87901
HI VISTA		21.67	2.5641	0.3487	26.1%	13.97	29.36	21.6667	2.5641	34.9%	0.26	13.97	29.36	2.4938	-0.1783	-89.5%	0.59	3.03	1.96	2.2938	-0.0629	-40.8%	0.30	2.48	2.10513
GILROY	GLRYCAXF	41.14	2.6725	1.1014	68.7%	33.12	49.16	46.4821	2.0448	79.7%	0.54	40.35	52.62	4.0693	0.0780	25.0%	0.19	3.84	4.30	3.5410	0.0656	25.6%	0.19	3.34	3.7377
COLFAX	CLFXCAXF	51.69	2.9549	1.1307	69.9%	42.83	60.55	62.3625	2.9108	97.3%	0.63	53.63	71.09	3.6585	-0.1461	-113.0%	0.70	4.10	3.22	2.7057	-0.2485	-181.4%	0.88	3.45	1.96027
BUTTONWILLOW	GTORCAXE	38.08	3.0727	1.2993	/5.8%	28.86	47.30	39.7342	3.9656	1/4.3%	0.87	27.84	51.63	4.7129	0.1304	13.6%	0.10	4.32	5.10	3.9274	0.2677	32.1%	0.24	3.12	4.73058
TAFT	TAFTCAXE	45.92	3.0762	0.0330	50.3% 64.3%	30.09 42.07	61 73	53 4621	2 9422	94.5%	0.65	42.01	62 29	3 4 1 0 2	-0.3120	32.2% -241.4%	0.24	4.45	5.47 2.47	2 8727	-0.3141	-00.1%	0.39	4.50	2.70032
MANTECA	THOKCAXE	48.44	3.2779	1.6008	83.9%	38.60	58.27	54.1707	4.4889	212.0%	0.92	40.70	67.64	3.5371	0.0383	39.7%	0.29	3.42	3.65	2.7021	-0.1492	-130.2%	0.76	3.15	2.25454
LOS GATOS	LSGTCAXA	35.94	3.3485	1.4030	79.0%	25.89	45.98	45.0646	3.9147	155.2%	0.83	33.32	56.81	5.5687	0.1324	24.1%	0.18	5.17	5.97	4.3781	0.0882	18.3%	0.14	4.11	4.64278
CANTUA CREEK	CNCKCAXF	17.02	3.4694	1.0363	66.0%	5.46	26.28	46.9048	1.4286	18.6%	0.14	42.14	50.71	7.4110	0.3948	32.5%	0.24	6.09	8.46	5.1869	-0.3426	-28.1%	0.21	6.42	4.36473
FORT IRWIN	FTIRCAXF	59.52	3.5714	0.4321	31.9%	48.81	70.24	72.6190	5.3571	76.9%	0.53	56.55	88.69	2.8745	-1.0656	-128.9%	0.76	6.07	-0.32	1.2969	-0.0610	-26.3%	0.20	1.48	1.11381
ALPAUGH	ALPGCAXF	28.36	3.8690	1.1751	71.6%	16.75	39.97	28.3613	3.8690	117.5%	0.72	16.75	39.97	5.2848	-0.4170	-80.9%	0.55	6.54	4.03	4.2848	-0.4527	-112.9%	0.70	5.64	2.92679
SANTA YNEZ		42.44	4.1774	2 1577	83.5%	29.91	54.97	49.8963	4.4781	151.8%	0.82	36.46	63.33 55.60	3.7585	-0.1090	-38.7%	0.29	4.09	3.43	3.2380	-0.1053	-42.4%	0.31	3.55	2.922
SANTA MARIA	SNTMCAXE	56.90	4.3200	1 5123	81.9%	43 65	70.16	63 5138	4 4562	151.0%	0.82	50.55	76.88	3 2473	-0.1022	-38.3%	0.11	3.55	2.94	2 5156	-0.1562	-66.7%	0.14	2.98	2 04714
SEA RANCH	SERNCAXG	46.47	4.7189	2.7512	96.7%	32.31	60.62	53.0299	4.0572	177.7%	0.87	40.86	65.20	3.9454	0.0010	5.0%	0.04	3.94	3.95	2.9464	0.0219	97.2%	0.63	2.88	3.01213
LAKE HUGHES	LKHGCAXF	45.28	4.9062	1.2397	73.9%	30.56	60.00	57.4907	7.7362	226.4%	0.94	34.28	80.70	5.0669	0.0627	15.7%	0.12	4.88	5.26	3.7579	-0.0114	-3.2%	0.02	3.79	3.72371
CUYAMA	CUYMCAXF	29.00	4.9745	1.6155	84.3%	14.07	43.92	31.8547	7.1173	226.3%	0.94	10.50	53.21	3.7914	-0.1610	-92.4%	0.61	4.27	3.31	3.1407	-0.1656	-125.5%	0.74	3.64	2.6438
LAKE ISABELLA	LKISCAXF	48.63	5.0913	1.5629	83.1%	33.35	63.90	59.3411	2.9370	83.8%	0.57	50.53	68.15	4.1153	0.0721	20.8%	0.16	3.90	4.33	3.0974	-0.1169	-36.3%	0.27	3.45	2.7466
TOPANGA SEDULVEDA 2	TPNGCAXE	25.73	5.1410	2.3145	94.0%	10.31	41.15	38.3527	5.5882	164.8%	0.85	21.59	55.12	6.3973	-0.0021	-0.4%	0.00	6.40	6.39	4.8/13	-0.2135	-61.8%	0.44	5.51	4.2308
EL RIO	EL RICAXE	46.18	5 2743	2 6665	96.3%	30.36	62.01	51 3527	5 0164	250.7%	0.07	36.30	66 40	4 6551	-0.2692	-231.5%	0.27	7.61	2.42	3 7873	-0.9135	-241.6%	0.08	6.53	1 04675
DESERT SHORES	DSSHCAXF	48.80	5.2879	1.6648	85.3%	33.81	65.54	53.8385	5.7863	206.5%	0.92	37.44	72.16	4.4083	-0.3954	-111.2%	0.69	5.53	3.16	3.5931	-0.2888	-86.1%	0.58	4.41	2.67846
KERNVILLE	KRVLCAXF	41.41	5.3823	2.3454	94.3%	25.27	57.56	51.4276	4.6861	160.6%	0.84	37.37	65.49	4.5446	-0.1757	-49.4%	0.36	5.07	4.02	3.5821	-0.1763	-55.0%	0.40	4.11	3.05335
TIVY VALLEY	TVVYCAXF	53.58	5.4930	2.6279	96.1%	37.11	70.06	59.3652	5.3220	234.3%	0.94	43.40	75.33	2.7026	-0.0633	-41.2%	0.31	2.89	2.51	2.1601	-0.0568	-40.2%	0.30	2.33	1.98976
SAN MIGUEL	SNMGCAXF	31.18	5.5790	1.2561	74.4%	14.44	47.91	39.3001	5.0162	112.4%	0.70	24.25	54.35	16.1272	8.3325	162.6%	0.84	-8.87	41.12	13.2611	7.4622	171.2%	0.86	-9.13	35.6476
DIAMOND BAR	DMBRCAXF	50.76	5.6292	2.1273	92.3%	33.88	67.65	57.8936	6.9076	295.9%	0.97	37.17	78.62	3.4293	-0.3167	-134.3%	0.77	4.38	2.48	2.7656	-0.3239	-174.1%	0.87	3.74	1.794
HUNTINGTON BEACH	HNBHCAXG	49.10	5.7003 6.0058	2 7409	96.5%	25 57	61.60	35.6297 48.4655	5.3307 6.4903	239.3%	0.95	28.92	67.94	3.5690	-0.2046	-95.7%	0.62	4.20	2.97	2.0970	-0.1591	-70.2%	0.54	3.17	2.21902
CRESTLINE	CRLNCAXF	45.41	6.0804	1.9625	90.3%	27.17	63.65	49.0737	6.0399	188.4%	0.89	30.95	67.19	4.8020	-0.2155	-36.2%	0.00	5.45	4.16	3.9122	-0.2236	-45.7%	0.34	4.58	3.24137
INYOKERN	INYKCAXF	53.28	6.1611	1.7786	87.4%	34.80	71.77	61.6506	6.8179	159.4%	0.84	41.20	82.10	3.0845	-0.3709	-169.4%	0.86	4.20	1.97	2.3384	-0.2963	-191.3%	0.90	3.23	1.44963
WEIMAR	WEMRCAXF	41.77	6.2468	1.8295	88.3%	23.03	60.51	52.0292	7.3336	222.6%	0.93	30.03	74.03	3.5614	-0.2010	-95.2%	0.62	4.16	2.96	2.3675	0.0170	10.1%	0.08	2.32	2.4184
SYLMAR	SYLMCAXF	51.29	6.2799	2.5266	95.5%	32.45	70.13	59.4958	6.4099	240.4%	0.95	40.27	78.73	4.0669	-0.2786	-103.2%	0.66	4.90	3.23	3.0486	-0.3438	-136.4%	0.78	4.08	2.01729
ADELANTO	ADLNCAXF	55.55	6.3935	3.3696	98.5%	36.37	74.73	61.0945	7.4157	366.3%	0.99	38.85	83.34	3.7653	-0.5280	-245.6%	0.95	5.35	2.18	3.0269	-0.5330	-266.4%	0.96	4.63	1.42805
		48.42	6.5084	2.2937	93.8%	28.89	60.45	53.9039	7.1437	233.0%	0.94	32.47	75.33	3.9910	-0.1349	-32.6%	0.24	4.40	3.59	3.2809	-0.1351	-35.7%	0.27	3.69	2.8/55/
SEPULVEDA	SPLVCAXE	53.83	6.5713	2.7686	96.8%	34.11	73.54	60.0417	7.9777	297.3%	0.98	36.11	83.97	3.5158	-0.6786	-268.7%	0.96	5.55	1.48	2,7965	-0.5593	-241.3%	0.95	4.33	1.11855
LAKEVIEWNU	951928	52.37	6.5791	2.6858	96.4%	32.63	72.11	58.7457	7.5049	303.7%	0.98	36.23	81.26	3.8457	-0.3354	-174.3%	0.87	4.85	2.84	2.8791	-0.3873	-225.8%	0.94	4.04	1.71731
ANZA	ANZACAXF	43.87	6.5915	7.1738	100.0%	24.10	63.65	51.2007	4.3824	218.3%	0.93	38.05	64.35	4.0239	0.0063	2.0%	0.02	4.01	4.04	3.1431	0.0251	9.4%	0.07	3.07	3.21837
LA PUENTE	LAPNCAXG	50.27	6.8268	2.6120	96.0%	29.79	70.75	57.1449	7.9913	283.0%	0.97	33.17	81.12	3.5336	-0.4499	-206.1%	0.92	4.88	2.18	2.7347	-0.4715	-254.2%	0.96	4.15	1.32029
WEST LOS ANGELES	WLANCAXF	46.94	6.8734	2.3394	94.2%	26.32	67.56	51.7311	7.5007	242.8%	0.95	29.23	74.23	4.3588	-0.3852	-143.6%	0.80	5.51	3.20	3.4550	-0.3933	-163.3%	0.85	4.63	2.27512
REDONDO BEACH	RDBHCAXF	51.04	6.8889	1.7677	87.2%	30.38	71.71	56.1731	5.3779	136.8%	0.78	40.04	72.31	4.2012	-0.7570	-315.4%	0.98	6.47	1.93	3.5211	-0.5184	-260.5%	0.96	5.08	1.96598
MARSHALL	SNBRCAXH	45 78	6 9018	2.6913	97.2%	25.08	66.49	53 1203	7.1745	290.9%	0.97	29 19	03.40 77.05	4.0270	-0.3903	-104.0%	0.65	5.20	2.00	3,1000	-0.2972	-120.1%	0.75	4.00	2.29300
MALIBU	MALBCAXG	45.98	7.0777	2.8056	96.9%	24.75	67.21	54,1426	8.0267	269.5%	0.96	30.06	78.22	4.3295	-0.5151	-222.0%	0.93	5.87	2.78	3.6217	-0.4527	-242.9%	0.95	4,98	2.26376
BIG PINE	BGPICAXF	35.95	7.0833	2.0845	91.8%	14.70	57.20	41.3095	8.4226	220.4%	0.93	16.04	66.58	2.5645	0.0575	15.1%	0.12	2.39	2.74	2.1789	0.0967	33.7%	0.25	1.89	2.46905
COVINA	COVNCAXF	53.08	7.1156	2.6059	96.0%	31.74	74.43	58.3772	7.4553	292.8%	0.97	36.01	80.74	3.4463	-0.3793	-174.8%	0.87	4.58	2.31	2.8307	-0.3504	-207.0%	0.92	3.88	1.77963
SAN JACINTO	SNJCCAXG	55.86	7.1607	2.7630	96.7%	34.38	77.34	64.0953	5.5065	249.5%	0.95	47.58	80.61	3.3527	-0.3165	-196.2%	0.90	4.30	2.40	2.5750	-0.2309	-144.5%	0.80	3.27	1.88237
CHINO	CHNOCAXF	50.04	7.2138	2.8939	97.2%	28.40	71.68	55.8922	7.9203	307.3%	0.98	32.13	79.65	3.8103	-0.8431	-280.4%	0.97	6.34	1.28	3.1197	-0.6722	-251.6%	0.95	5.14	1.10315
	UFCYCAXF	55.90	7.2170	4.1035	99.4% 73.0%	34.25	73 34	64.8019 58.2350	5.6245 6.0281	4/1.3%	1.00	47.93	81.68	3.7779	-0.2591	-148.8%	0.81	4.56	3.00	2.8390	-0.2581	-140.8%	0.79	3.61	2.064/3
PACIFIC PALISADES	PCPLCAXF	46.13	7.2399	2.1949	92.9%	24.41	67.85	52.8860	9.4692	266.3%	0.96	24.48	81.29	3.8263	-0.4163	-133.0%	0.77	5.08	2.58	2.9359	-0.4324	-153.1%	0.82	4.23	1.63881



										Table	e 4F.10 (j	page 3	of 4)												
		Sor	ted by Coe	f. Of Pet C	leared with	nin 24 hours	5																		
		00.	Pct cle	ared within	24 hrs (act	tual)	, 		Pct clea	red within 2	24 hrs (adju	ısted)			Da	ys to Clear	90% (actua	I)			Days	s to Clear 9	0% (adjuste	d)	
Wire Center Name	CULI	Mean Val	Coef	t-stat	Conf 2	2016 Val 4	Q17 Val	Mean Val	Coef	t-stat	Conf	2Q16 Val	4Q17 Val	Mean Val	Coef	t-stat	Conf	2016 Val	4017 Val	Mean Val	Coef	t-stat	Conf 2	Q16 Val	4017 Val
AZUSA	AZUSCAXF	51.69	7.3069	2.7676	96.7%	29.77	73.61	57.0146	7.7035	318.1%	0.98	33.90	80.13	3.2621	-0.3639	-159.7%	0.84	4.35	2.17	2.7510	-0.3714	-176.5%	0.87	3.87	1.63671
WELDON	WLDNCAXF	37.84	7.3096	2.3261	94.1%	15.91	59.77	50.3188	3.8523	115.8%	0.71	38.76	61.88	4.0630	-0.1879	-47.2%	0.35	4.63	3.50	3.3336	-0.1347	-38.2%	0.28	3.74	2.92954
MONROVIA	MNRVCAXG	52.37	7.3164	3.2504	98.3%	30.42	74.32	59.1787	8.9199	430.4%	0.99	32.42	85.94	3.1614	-0.3537	-198.1%	0.91	4.22	2.10	2.4875	-0.3669	-239.3%	0.95	3.59	1.3869
NORWALK	NRWLCAXF	49.03	7.3629	2.2968	93.9%	26.94	71.11	55.8623	7.7919	234.2%	0.94	32.49	79.24	4.1473	-0.6420	-185.3%	0.89	6.07	2.22	3.2952	-0.5980	-193.6%	0.90	5.09	1.50133
GRANADA HILLS	GRHLCAXF	47.91	7.3645	3.2917	98.3%	25.82	70.01	53.5035	7.5173	309.1%	0.98	30.95	76.06	4.3166	-0.7136	-257.5%	0.96	6.46	2.18	3.6404	-0.6576	-245.2%	0.95	5.61	1.66773
		21.67	7.4382	3.2972	98.4%	30.70	81.38	64.4317	7.8045	317.4%	0.98	41.02	87.85	3.0525	-0.3312	-120.9%	0.73	4.05	2.06	2.4330	-0.3415	-139.6%	0.79	3.40	1.40923
	LNCSCAXE	46.82	7.5126	2 9248	90.0%	23.04	69.69	57 3997	8 2235	256.5%	0.83	32 73	82.07	3 8690	-0.0950	-33.0%	0.25	4.00	4.20	2 9514	-0.1207	-40.1%	0.35	4.23	1 64893
MENTONE	MENTCAXE	38.14	7.7810	4.8718	99.7%	14.79	61.48	48,7963	8.8155	417.2%	0.99	22.35	75.24	5.3400	-0.4226	-107.8%	0.68	6.61	4.07	4.5904	-0.3751	-102.4%	0.65	5.72	3.46524
BANNING	BNNGCAXF	41.49	7.7863	2.9143	97.3%	18.13	64.85	48.3929	8.5327	360.3%	0.99	22.79	73.99	4.8408	-0.2821	-100.1%	0.64	5.69	3.99	3.9881	-0.2807	-109.2%	0.68	4.83	3.14591
SANTA PAULA	SNPLCAXF	40.52	7.8520	3.1986	98.1%	16.96	64.07	44.3299	7.6006	271.1%	0.96	21.53	67.13	4.6705	-0.4435	-140.4%	0.79	6.00	3.34	3.8006	-0.4261	-143.8%	0.80	5.08	2.5223
VICTORVILLE	VTVLCAXA	49.08	7.8557	5.0974	99.8%	25.51	72.64	54.7364	8.0347	482.8%	1.00	30.63	78.84	3.7327	-0.4744	-245.1%	0.95	5.16	2.31	2.8361	-0.4228	-238.1%	0.95	4.10	1.5678
POINT MUGU	MUGUCAXF	38.23	7.8988	4.8410	99.7%	14.53	61.92	45.3131	10.4530	518.6%	1.00	13.95	76.67	4.1646	-0.2508	-55.9%	0.40	4.92	3.41	3.4917	-0.2632	-65.1%	0.46	4.28	2.70216
ONTARIO	ONTRCAXF	58.32	7.9295	3.1707	98.1%	34.53	82.10	62.5086	8.8602	345.5%	0.99	35.93	89.09	2.9818	-0.4594	-318.8%	0.98	4.36	1.60	2.3708	-0.4331	-311.8%	0.98	3.67	1.07142
WESTMINSTER	WMNSCAXE	46.00	7.9488	3.2884	98.3%	22.15	69.84	51.1696	8.1436	322.1%	0.98	26.74	75.60	4.0302	-0.4073	-150.6%	0.82	5.25	2.81	3.2879	-0.3513	-159.2%	0.84	4.34	2.2341
	BBLKCAXE	45.30	8.0673	2.7913	90.0%	21.31	74 33	57.0985	8 9907	310.5%	0.96	25.40	84.07	3.9304	-0.3647	-200.9%	0.91	0.02	2.24	2 8187	-0.4949	-190.5%	0.90	4.70	1.70000
RUNNING SPRINGS	RNSPCAXE	54.90	8 2403	1 7019	86.0%	30.18	79.62	56 1707	7 7232	162.4%	0.84	33.00	79.34	3 6521	-0.4500	-206.7%	0.73	5.61	1.69	3 0562	-0.6125	-239.8%	0.95	4.20	1 21858
SAGE	CCMNCAXF	50.03	8.2409	2.9347	97.4%	25.31	74.75	52.3755	7.8302	301.6%	0.98	28.88	75.87	3.8228	-0.2412	-77.2%	0.53	4.55	3.10	3.0079	-0.3206	-156.4%	0.83	3.97	2.04603
IDYLLWILD	IDYLCAXF	49.65	8.3092	4.2612	99.5%	24.72	74.57	61.6354	9.0410	343.1%	0.99	34.51	88.76	3.0311	-0.5226	-289.6%	0.97	4.60	1.46	2.1788	-0.3640	-240.6%	0.95	3.27	1.08666
CLAREMONT	CLMTCAXF	51.84	8.3187	4.2834	99.5%	26.88	76.79	57.1418	8.3907	439.4%	1.00	31.97	82.31	3.6391	-0.4165	-205.7%	0.91	4.89	2.39	2.8586	-0.3993	-234.6%	0.94	4.06	1.66064
PERRIS	PERSCAXF	55.00	8.3682	2.5644	95.7%	29.90	80.10	61.6147	8.5843	294.3%	0.97	35.86	87.37	3.1277	-0.4500	-232.8%	0.94	4.48	1.78	2.6913	-0.5037	-364.4%	0.99	4.20	1.18026
SANTA MONICA	SNMNCAXG	47.70	8.4287	3.3979	98.5%	22.42	72.99	52.7306	9.1094	366.6%	0.99	25.40	80.06	3.6417	-0.5908	-232.4%	0.94	5.41	1.87	3.0023	-0.5040	-234.5%	0.94	4.51	1.49015
HESPERIA	HSPRCAXF	53.34	8.4615	3.7708	99.1%	27.95	78.72	58.8726	8.5288	400.6%	0.99	33.29	84.46	3.7405	-0.5854	-325.8%	0.98	5.50	1.98	2.8807	-0.5816	-303.2%	0.98	4.63	1.13597
PICO RIVERA	WHTRCAXJ	50.45	8.4643	2.9271	97.4%	25.05	75.84	56.4280	8.9813	286.2%	0.97	29.48	83.37	3.3459	-0.5658	-198.8%	0.91	5.04	1.65	2.7214	-0.4727	-200.2%	0.91	4.14	1.30342
SAN BERNARDINO	SNBRCAXK	49.36	0.4072 8.5160	2.9455	97.4%	23.83	70.44	54 0021	9.2690	295.9%	0.97	29.92	80.36	3.7007	-0.4007	-103.0%	0.00	5.11	2.29	2.0007	-0.4032	-100.1%	0.60	4.02	1.59696
CALIMESA	CLMSCAXE	44.89	8.5447	3.3486	98.5%	19.26	70.53	51,7964	9.3339	350.7%	0.99	23.79	79.80	4.6071	-0.5838	-237.4%	0.94	6.36	2.86	3.7643	-0.4414	-181.4%	0.88	5.09	2.44003
REDLANDS	RDLDCAXF	48.63	8.6258	3.5582	98.8%	22.75	74.51	55.1778	8.8623	381.6%	0.99	28.59	81.76	3.9841	-0.5624	-211.7%	0.92	5.67	2.30	3.1750	-0.5928	-255.1%	0.96	4.95	1.3965
SIERRA MADRE	SRMDCAXF	48.33	8.6473	3.5525	98.8%	22.39	74.28	54.7715	9.9527	426.3%	0.99	24.91	84.63	3.7573	-0.3680	-137.0%	0.78	4.86	2.65	3.0406	-0.4156	-232.9%	0.94	4.29	1.79371
ARROWHEAD	ARHDCAXF	42.89	8.6492	2.9010	97.3%	16.95	68.84	48.6455	9.7332	323.4%	0.98	19.45	77.85	5.3952	-0.6825	-99.0%	0.64	7.44	3.35	4.1669	-0.6120	-94.3%	0.62	6.00	2.33083
THOUSAND OAKS	THOKCAXF	51.06	8.6950	3.2416	98.2%	24.97	77.14	55.7307	8.6113	315.7%	0.98	29.90	81.56	4.6137	-0.7729	-203.9%	0.91	6.93	2.29	3.8315	-0.6606	-185.5%	0.89	5.81	1.84965
CAMARILLO	CMRLCAXF	48.61	8.7685	4.0927	99.4%	22.30	74.91	54.4228	9.0023	343.1%	0.99	27.42	81.43	4.6471	-0.9246	-303.2%	0.98	7.42	1.87	3.6843	-0.7993	-328.1%	0.98	6.08	1.28648
CONFIO	HKBHCAXA	51.47	8.7732	4.0587	99.3%	25.15	72.75	57.5200	9.3994	444.2%	1.00	29.32	85.72	3.8357	-0.5837	-253.6%	0.96	5.59	2.08	3.0581	-0.5395	-260.5%	0.96	4.68	1.43953
PALM SPRINGS	PI SPCAXG	47.20	8 8925	4 9890	99.0%	20.00	73.75	52 2250	9.2020	548.8%	1.00	20.00	80.81	4.1219	-0.1240	-207 5%	0.24	6.18	2.62	3.6555	-0.1402	-206.5%	0.29	5.75	2.91203
NEWBURY PARK	NWPKCAXE	50.79	8.9073	2.9736	97.5%	24.07	77.51	56.1610	9.6556	301.5%	0.98	27.19	85.13	4.5834	-0.9723	-192.9%	0.90	7.50	1.67	3.8984	-0.7365	-181.2%	0.88	6.11	1.68876
POMONA	POMNCAXF	52.56	8.9328	6.0027	99.9%	25.76	79.35	57.3734	8.5818	543.3%	1.00	31.63	83.12	3.5109	-0.6072	-274.3%	0.97	5.33	1.69	2.9366	-0.4361	-205.1%	0.91	4.24	1.62835
WHITTIER	WHTRCAXF	51.85	8.9627	2.5218	95.5%	24.96	78.73	56.8013	8.9885	260.8%	0.96	29.84	83.77	3.6707	-0.5292	-194.2%	0.90	5.26	2.08	2.9778	-0.5279	-260.6%	0.96	4.56	1.39422
LAKEWOOD	MNRVCAXG	53.67	8.9637	2.2375	93.3%	26.78	80.56	59.4006	9.1151	232.1%	0.94	32.06	86.75	3.5473	-0.6488	-165.5%	0.85	5.49	1.60	2.9371	-0.5126	-161.1%	0.84	4.47	1.39934
LA HABRA	LAHBCAXF	48.21	9.0285	2.6217	96.1%	21.12	75.29	54.5375	10.5557	296.5%	0.97	22.87	86.20	3.6925	-0.5552	-200.8%	0.91	5.36	2.03	3.0054	-0.5411	-234.0%	0.94	4.63	1.38207
TWENTYNINE PALMS	TWPLCAXF	57.44	9.0817	2.8348	97.0%	30.19	84.68	61.7666	9.0278	288.9%	0.97	34.68	88.85	3.5336	-0.5239	-116.1%	0.71	5.11	1.96	2.8994	-0.4159	-103.2%	0.66	4.15	1.65171
BIG BEAR CITY	BBCYCAXE	45.72	9.0860	3.0223	97.7%	18.46	72.97	51.5991	9.3683	333.9%	0.98	23.49	79.70	3.7651	-0.4667	-200.3%	0.91	5.17	2.37	2.8348	-0.3522	-156.8%	0.83	3.89	1.77813
		57.17	9.1130	5.5093	99.0%	29.02	04.01	50.0780	0.2440	372.8%	0.00	22 35	97.07	3.4007	-0.0019	-300.0%	0.99	5.63	2.02	2.7234	-0.0110	-322.2%	0.96	4.56	2 52051
PALM DESERT	PLDSCAXE	53.53	9 2275	4 7977	99.7%	25.85	81.22	59 5398	9 7466	481.8%	1 00	30.30	88 78	3 7295	-0.4488	-137.6%	0.33	5.03	2.32	2 9925	-0.4241	-141.9%	0.43	4.30	1 72014
ETIWANDA	ETWNCAXF	65.08	9.2449	2.2277	93.3%	37.34	92.81	68.4417	9.6646	220.9%	0.93	39.45	97.44	2.6988	-0.2944	-101.7%	0.65	3.58	1.82	2.2049	-0.3053	-138.7%	0.79	3.12	1.28895
MORENO	LNCSCAXF	54.50	9.3025	3.3433	98.4%	26.59	82.41	61.5773	10.9033	454.4%	1.00	28.87	94.29	3.4958	-0.5783	-352.3%	0.99	5.23	1.76	2.6031	-0.5786	415.4%	0.99	4.34	0.86736
LANCASTER	LNCSCAXG	52.25	9.3051	5.0869	99.8%	24.33	80.16	60.4607	10.4721	552.1%	1.00	29.04	91.88	3.3590	-0.4163	-165.6%	0.85	4.61	2.11	2.5578	-0.4115	-180.2%	0.88	3.79	1.32324
MAR VISTA	CLCYCAXG	52.11	9.3442	2.9719	97.5%	24.07	80.14	57.3828	10.0838	318.1%	0.98	27.13	87.63	3.6164	-0.5380	-193.4%	0.90	5.23	2.00	2.8754	-0.5166	-209.2%	0.92	4.43	1.32563
SNFN SNFN	KNLDCAXF	57.14	9.4250	4.1852	99.4%	28.86	85.41	62.3173	9.0107	400.3%	0.99	35.29	89.35	3.2517	-0.4500	-159.2%	0.84	4.60	1.90	2.6670	-0.4843	-212.6%	0.92	4.12	1.21414
PLAYA DEL REY	PDRYCAXF	50.34	9.5055	3.0757	97.8%	21.82	78.86	58.2814	9.3964	273.4%	0.97	30.09	86.47	3.6698	-0.4363	-177.8%	0.87	4.98	2.36	2.8568	-0.4220	-193.5%	0.90	4.12	1.59091
BURUN SUN CITY	BURNUAXE	50.77	9.5152	2.1247	92.2%	22.22	79.32	59.2380	10 / 302	158.5%	0.84	35.91	82.57	3.3133	-0.5019	-141.2%	0.79	4.82	1.81	2.5950	-0.4116	-127.0%	0.75	3.83	1.36014
	INDICAXG	57.16	9 5446	4 6240	99.6%	28.52	85 79	61 7604	9 7310	480.8%	1.00	32.50	90.95	3 5204	-0.5431	-162.2%	0.84	5.00	1.02	2.0702	-0.4606	-158.3%	0.89	4.32	1 56054
HOMELAND	HMLDCAXF	50.94	9.7129	4.6038	99.6%	21.80	80.08	55.7339	9.9561	581.8%	1.00	25.87	85.60	4.8211	-1.0548	-210.7%	0.92	7.99	1.66	3.2979	-0.6877	-350.4%	0.99	5.36	1.23473
KNIGHTS LANDING	KNLDCAXF	36.78	9.7619	2.0672	91.6%	7.49	66.06	46.9231	10.3571	225.1%	0.93	15.85	77.99	3.0772	-0.3994	-138.1%	0.78	4.28	1.88	2.7214	-0.3178	-159.1%	0.84	3.67	1.76801
UPLAND	UPLDCAXF	55.82	9.8017	4.4288	99.6%	26.42	85.23	61.8491	10.0694	473.2%	1.00	31.64	92.06	3.1708	-0.5692	-284.2%	0.97	4.88	1.46	2.5512	-0.5053	-345.6%	0.99	4.07	1.03547
JOSHUA TREE	JSTRCAXF	64.44	9.8243	2.5967	95.9%	34.96	93.91	67.1349	10.0656	261.6%	0.96	36.94	97.33	3.6032	-0.6948	-196.0%	0.90	5.69	1.52	2.8082	-0.5607	-199.2%	0.91	4.49	1.12619



#### CONFIDENTIAL AND PROPRIETARY PER P.U. CODE § 583, GENERAL ORDER 66-D, & D.16-08-024

										Tabl	e 4F.10 (	page 4	of 4)												
		Sor	rted by Coe	ef. Of Pet C	Cleared wit	hin 24 hou	rs																		
			Pct cle	eared within	n 24 hrs (ac	tual)			Pct clea	red within	24 hrs (adj	usted)			Da	ys to Clear	90% (actu	al)			Day	s to Clear 9	0% (adjust	ed)	
Wire Center Name	CLLI	Mean Val	Coef	t-stat	Conf.	2Q16 Val	4Q17 Val	Mean Val	Coef	t-stat	Conf.	2Q16 Val	4Q17 Val	Mean Val	Coef	t-stat	Conf.	2Q16 Val	4Q17 Val	Mean Val	Coef	t-stat	Conf.	2Q16 Val	4Q17 Val
NEWBERRY	TMCVCAXH	42.19	9.9701	3.8861	99.2%	12.28	72.10	50.7599	12.7280	515.3%	1.00	12.58	88.94	4.9865	-0.7446	-220.5%	0.93	7.22	2.75	4.0698	-0.7046	-219.4%	0.93	6.18	1.956
PHELAN	PHLNCAXF	56.77	10.0250	3.9850	99.3%	26.69	86.84	64.3439	9.8275	419.3%	0.99	34.86	93.83	3.5662	-0.7967	-371.8%	0.99	5.96	1.18	2.9896	-0.7286	404.3%	0.99	5.18	0.80373
SOMIS	BELRCAXF	33.59	10.1041	4.8012	99.7%	3.28	63.90	36.0377	10.8995	472.8%	1.00	3.34	68.74	7.1203	-0.3784	-45.2%	0.33	8.26	5.98	5.8054	-0.3394	-44.2%	0.33	6.82	4.78721
DESERT HOT SPRINGS	DHSPCAXF	46.57	10.2490	6.4478	99.9%	15.82	77.31	51.4131	10.3192	603.4%	1.00	20.46	82.37	4.6272	-0.6092	-215.3%	0.93	6.45	2.80	3.8214	-0.5733	-232.3%	0.94	5.54	2.10149
CARPINTERIA	CRPRCAXF	56.75	10.3314	2.3598	94.4%	25.75	87.74	59.4599	11.0392	261.0%	0.96	26.34	92.58	3.8475	-0.5681	-111.5%	0.69	5.55	2.14	3.3033	-0.4942	-114.1%	0.70	4.79	1.82073
LUCERNE VALLEY	LCVYCAXF	48.63	10.4324	7.6423	100.0%	17.33	79.93	55.4375	9.6731	556.0%	1.00	26.42	84.46	3.5662	-0.4377	-160.2%	0.84	4.88	2.25	2.9429	-0.2399	-100.7%	0.65	3.66	2.22321
ELSINORE	ELSNCAXG	53.86	10.6282	5.9020	99.9%	21.98	85.75	60.3201	10.4140	610.7%	1.00	29.08	91.56	4.2150	-1.1057	-339.6%	0.99	7.53	0.90	3.2776	-0.9772	-288.9%	0.97	6.21	0.34603
BARSTOW	BRSWCAXH	56.73	10.6676	5.7753	99.9%	24.73	88.73	61.8970	9.6921	474.7%	1.00	32.82	90.97	3.6291	-0.6432	-233.0%	0.94	5.56	1.70	3.1027	-0.4914	-211.0%	0.92	4.58	1.6284
EL MIRAGE	ELMGCAXF	64.29	10.7143	1.7321	86.6%	32.14	96.43	71.4286	7.1429	158.1%	0.84	50.00	92.86	2.3278	-0.6895	-173.1%	0.87	4.40	0.26	1.8992	-0.5466	-176.5%	0.87	3.54	0.2594
CLEMENTS	CLEMCAXF	30.81	10.7394	4.7404	99.7%	-1.41	63.02	43.8312	8.7814	180.8%	0.88	17.49	70.18	5.6970	-0.0780	-14.2%	0.11	5.93	5.46	3.2277	-0.0568	-22.3%	0.17	3.40	3.05729
SALTON CITY	SLCYCAXF	56.31	10.8789	5.0738	99.8%	23.68	88.95	64.8117	8.8120	417.5%	0.99	38.38	91.25	3.9181	-0.6137	-191.6%	0.90	5.76	2.08	3.0051	-0.4698	-155.7%	0.83	4.41	1.59561
WRIGHTWOOD	WRWDCAXF	51.36	10.9325	4.9611	99.7%	18.57	84.16	64.6693	12.0254	363.8%	0.99	28.59	100.75	4.1709	-0.7842	-290.3%	0.97	6.52	1.82	2.9675	-0.6486	-251.2%	0.95	4.91	1.02178
TEMECULA	TMCLCAXG	53.72	11.0532	6.8567	100.0%	20.56	86.88	60.0827	11.1591	745.7%	1.00	26.61	93.56	3.3979	-0.7842	422.3%	0.99	5.75	1.05	2.7852	-0.7482	-507.3%	1.00	5.03	0.54045
BRSW YERM	WHTRCAXH	58.75	11.4222	2.6945	96.4%	24.48	93.02	65.9504	12.1514	361.5%	0.99	29.50	102.40	3.0176	-0.3777	-143.3%	0.80	4.15	1.88	2.2913	-0.3182	-154.1%	0.83	3.25	1.33677
YUCCA VALLEY	YCVYCAXG	55.20	11.5728	3.8911	99.2%	20.48	89.92	61.3204	11.0575	330.0%	0.98	28.15	94.49	3.6657	-0.7695	-221.6%	0.93	5.97	1.36	2.9599	-0.6255	-195.0%	0.90	4.84	1.08336
MURRIETA	MURTCAXF	55.27	11.8326	5.6244	99.9%	19.77	90.77	61.9178	11.9225	571.2%	1.00	26.15	97.69	3.1630	-0.6995	-314.5%	0.98	5.26	1.06	2.3736	-0.4891	-346.7%	0.99	3.84	0.9062
SUMMIT VLY	WLDNCAXF	59.44	12.0437	1.9697	90.4%	23.31	95.58	60.2381	11.6468	189.4%	0.89	25.30	95.18	2.9206	-0.9026	-233.1%	0.94	5.63	0.21	2.4676	-0.7401	-221.4%	0.93	4.69	0.24717
HOMESTEAD VALLEY	HMVYCAXF	59.81	12.0792	3.2020	98.1%	23.57	96.05	66.9778	9.6044	235.2%	0.94	38.16	95.79	3.1150	-0.6072	-123.9%	0.74	4.94	1.29	2.7418	-0.4979	-115.5%	0.71	4.24	1.24794
SEPULVEDA 3	SPLVCAXF2	52.86	12.2321	4.3008	99.5%	16.16	89.55	64.1667	8.6607	192.7%	0.90	38.18	90.15	4.8118	-0.7412	-101.1%	0.65	7.04	2.59	3.1000	-0.2093	-44.1%	0.33	3.73	2.47202
MIRANTPHST	FRVLCAXF	50.80	12.4053	3.3769	98.5%	13.58	88.01	55.5643	13.0682	357.5%	0.99	16.36	94.77	4.1779	-0.8048	-99.6%	0.64	6.59	1.76	3.4422	-0.6875	-101.0%	0.65	5.50	1.3796
PINYON	HMLDCAXF	52.45	12.8571	4.7263	99.7%	13.88	91.02	59.5011	12.7778	434.8%	1.00	21.17	97.83	4.2531	-0.4566	-64.8%	0.46	5.62	2.88	3.5707	-0.3734	-65.5%	0.46	4.69	2.4505
LENWOOD	LNWDCAXF	47.95	13.0550	3.8600	99.2%	8.79	87.12	51.7394	13.2867	375.2%	0.99	11.88	91.60	3.6524	-0.9310	-255.0%	0.96	6.45	0.86	3.0204	-0.7640	-237.0%	0.94	5.31	0.72835
MORONGO VALLEY	MRVYCAXF	52.84	14.0207	3.2658	98.3%	10.78	94.90	61.1593	13.0121	353.8%	0.99	22.12	100.20	3.6793	-0.5479	-111.3%	0.69	5.32	2.04	3.0412	-0.5506	-134.7%	0.77	4.69	1.38924



There is a three-month gap in the time periods included within each of these two sets of regression calculations, covering the first quarter of 2015. We determined that this period should be excluded for several reasons:

- (1) First, the data covering the first quarter of 2016 was incomplete. While the ILEC was still owned by Verizon during this period, the GO 133-C/D reports and data were submitted by *Frontier* during the second quarter, under its, not Verizon's, ownership. Frontier did not provide access line counts at the individual wire center level for this period, and we could not be certain that the data that had been submitted by Frontier for that first quarter of 2016 was prepared in a manner that was consistent with the Verizon data formats and compilations.
- (2) As we have discussed, in its December 2015 Order approving the transfer of the company from Verizon to Frontier, the CPUC, having determined that Verizon had never achieved the GO 133-C/D 90% cleared within 24 hours requirement, directed that this be accomplished prior to the transaction's closing data as a condition for approval. As noted, Verizon achieved the 90% cleared standard during each of the last two months prior to the closing (February and March 2016), perhaps by temporarily deploying forces from elsewhere in the country. Immediately upon assuming ownership of the California ILEC, Frontier reverted to the prior pattern of failing to meet the 90% cleared requirement. Including these last three months of Verizon ownership in any regression analysis would serve only to distort the results and portray a fictitious improvement that was in no sense characteristic of the ILEC's performance either before or after its transfer to Frontier.

The regression calculations were prepared using quarterly time-series data. The tables provide the starting and ending values for the variable being examined (e.g., the starting and ending values for the percentage of out-of-service tickets cleared within 24 hours) and the mean value over the period. The regression coefficient represents the change, up or down, in the trend on a per-quarter basis. For example, the following values are shown for Verizon's Squaw Valley wire center (SVYFCAXF) with respect to the percent cleared within 24 hours.

	Squaw Valle	ey – Percent ou	t-of-service clea	red within 24 hours	
Mean Value (Mean Val)	Regression Coefficient (Coef)	<i>t</i> -statistic ( <i>t</i> -stat)	Confidence Interval (Conf.)	Starting value - 1st Quarter 2010 (1Q10 Val)	Ending value - 4th Quarter 2015 (4Q15 Val)
37.33	-1.3103	-2.3309	97.1%	52.39	22.26

From this, we learn that the mean (average) percentage of out-of-service conditions cleared by Verizon within 24 hours was 37.33%. At the beginning of the period (first quarter 2010), Verizon was clearing 52.39% within 24 hours; by the end of the period (fourth quarter of 2015), only 22.26% were being cleared within 24 hours. The "regression coefficient" of -1.3103 is interpreted as the change in the predicted trend per quarter – *i.e.*, as each quarter went by, the



percent cleared within 24 hours was *decreasing* by approximately 1.31%. The *t*-statistic is a measure of the statistical significance of the estimated coefficient. In general, a *t*-value with an absolute value in excess of roughly 2.0 denotes statistical significance at the 95% confidence level. The confidence level corresponding with the *t*-value is also provided on the tables.

The tables have been sorted by the coefficient of percentage cleared within 24 hours based upon the actual duration of the service outage, from worst to best performing over the study period.

### Effects of geographic and other wire center attributes upon performance results

While examinations of individual wire centers is essential to isolating specific problem areas and sources of concern, it is also instructive to create groups of individual wire centers having similar geographic or other attributes. In that regard, ETI has constructed five different attribute dimensions – (1) the presence of *FiOS* broadband availability; (2) wire center size (number of access lines); (3) the percentage decrease (loss) in the number of access lines in service to competing providers and/or to competing services over the study period; (4) the Frontier Operating Area to which the wire center has been assigned; and (5) the population density of the area served by the wire center (population per square mile). For each of these five attribute dimensions, ETI has defined a set of categories whose potential effect upon service quality was then individually examined. These are summarized in Table 4F.11 below. As we did with respect to AT&T, ETI applied five similar attribute dimensions to the Verizon/Frontier data and, for each, we developed summary tabulations of pertinent performance data. In Table 4F.12, we show, for each of these five attribute dimensions, the category in which each individual Verizon/Frontier wire center has been classified.

For example, the Apple Valley wire center in San Bernardino County (APVYCAXF) has been assigned to the "Yes" category with respect to *FiOS* availability under both the Verizon and Frontier ownership, to the "Large Urban" category with respect to Wire Center Size; to the 60%-80% category with respect to Access Line Loss (Frontier), to the "54-380 per Square Mile" Density category, and to the Desert Operating Area.



Т	able 4F.11							
VERIZON/FRONTIER CALIFORNIA WIRE CENTER ATTRIBUTE DIMENSIONS AND CATEGORIES								
Attribute Dimension	Categories							
<i>FiOS</i> Broadband Availability	<i>FiOS</i> services available <i>FiOS</i> services not available							
Wire Center Size	Fewer than 1000 lines 1,000-2,999 lines 3,000-10,000 lines 10,001-20,000 lines Over 20,000 lines							
Access Line Loss	Lowest 20% 21%-40% 48%-60% 61%-80% Highest 20%							
Operating Areas	Beach Cities Costal Desert Inland Northern							
Density (Households per square mile)	0-16 per Sq. Mile 6-54 per Sq. Mile 54-380 per Sq. Mile 380-1700 per Sq. Mile 1700 + per Sq. Mile							



						Table 4F.12							
					VERIZON/I WIRE CENTER A	FRONTIER CALIF	ORNIA SIFICATIONS						
				Density		2010-15 2 Access Line	2016-17	2010-17 / Access Line I	Access Line Loss	FT	R	Verizon Line Loss	Frontier Line Loss
CLLI Code	Reporting Unit	County	Operating Area	Category	Wire Center Size	Loss I	_OSS	Loss (	Category	VZ FTTP FT	TP	Category	Category
ADLNCAXE	ADELANIO	SAN BERNARDINO	Desert	6<54	Large Metro	-51.01%	-29.63%	-69.12%	60%-70%	Y	Y	80%-100%	80%-100%
	ALAMITOS	ORANGE	Beach Cities	380<1700	Very Large	-59.05%	-32.99%	-44.37%	<50%	Ŷ	N	40%-60%	-
ALPNCAXE	ALDERPOINT	HUMBOLDI	Northern	0<6	Small	-27.72%	-21.92%	-38.04%	<50%	N	N	0%-20%	20%-40%
SLGBCAXF	ALISO	ORANGE	Beach Cities	380<1700	Medium	-49.79%		-100.00%	-	N	Y	60%-80%	-
NRWLCAXG	ALONDRA	LOS ANGELES	Coastal	>1700	Large Urban	-56.62%		-100.00%	-	N	N	60%-80%	-
ALPGCAXE	ALPAUGH	TULARE	Northern	0<6	Small	-50.00%	-20.16%	-58.13%	50%-60%	N	N	40%-60%	20%-40%
NCSCAXE	ANTELOPE	LOS ANGELES	Gateway	6<54	Very Large	-49.47%	04.040/	-100.00%	-	N	Y	-	-
ANZACAXE	ANZA	RIVERSIDE	Inland	6<54	Medium	-57.88%	-34.24%	-73.52%	70%-80%	N	N	40%-60%	-
APVYCAXE	APPLE VALLEY	SAN BERNARDINO	Desert	54<380	Large Urban	-65.56%	-34.14%	-68.66%	60%-70%	Y	Y	40%-60%	60%-80%
ARHDCAXF	ARROWHEAD	SAN BERNARDINO	Desert	54<380	Large Metro	-53.83%	-32.71%	-70.39%	70%-80%	N	N	60%-80%	40%-60%
ARISCAXE	ARTESIA	LOS ANGELES	Coastal	>1700	Very Large	-56.96%	04.040/	-100.00%		N	Y	40%-60%	60%-80%
AZUSCAXE	AZUSA	LOS ANGELES	Coastal	>1700	Large Urban	-53.00%	-31.64%	-32.18%	<50%	Y	Y	40%-60%	0%-20%
BUGRCAXE	BADGER	TULARE	Northern	0<6	Small	-53.37%	-23.23%	-63.46%	60%-70%	N	N	0%-20%	0%-20%
BLPKCAXF	BALDWIN PARK	LOS ANGELES	Coastal	>1700	Very Large	-53.31%	8.00%	-99.92%	-	N	N	80%-100%	80%-100%
SNNGCAXE	BANNING	RIVERSIDE	Desert	54<380	Large Metro	-63.53%	-30.49%	-37.30%	<50%	Y	Y	80%-100%	-
BRSWCAXH	BARSTOW	SAN BERNARDINO	Desert	54<380	Large Metro	-54.59%	-28.12%	-51.25%	50%-60%	N	N	60%-80%	80%-100%
BUMICAXE	BEAUMONI	RIVERSIDE	Desert	380<1700	Large Urban	-63.12%		-100.00%	-	N	Y	80%-100%	60%-80%
BELRCAXE	BEL AIR	LOS ANGELES	Beach Cities	380<1700	Very Large	-39.10%		-100.00%	-	N	Y	20%-40%	20%-40%
BLFLCAXF	BELLFLOWER	LOS ANGELES	Coastal	>1700	Very Large	-59.17%	-34.62%	-99.93%	-	N	Y	40%-60%	40%-60%
SNINCAXE	BENION	MONO	Gateway	0<6	Small	-31.10%	-17.09%	-37.32%	<50%	N	N	0%-20%	20%-40%
BRINSCAXE	BERRENDA MESA	KERN	Northern	0<6		50 1701	~~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~			N	N	40%-60%	0%-20%
BBCYCAXF	BIG BEAR CITY	SAN BERNARDINO	Desert	54<380	Large Metro	-56.47%	-33.41%	-72.21%	70%-80%	N	N	40%-60%	40%-60%
BELKCAXF	BIG BEAR LAKE	SAN BERNARDINO	Desert	54<380	Large Metro	-52.89%	-26.73%	-67.56%	60%-70%	N	N	40%-60%	80%-100%
BGPICAXF	BIG PINE	INYO	Gateway	6<54	Small	-56.10%	-24.35%	-66.67%	60%-70%	N	N	20%-40%	20%-40%
SHPCAXG	BISHOP	INYO	Gateway	6<54	Large Metro	-44.20%	-21.58%	-62.49%	60%-70%	N	N	0%-20%	0%-20%
SGICAXA	BLOSSOM HILL	SANTA CLARA	Northern	380<1700	Large Metro	-51.92%	~~~~	-100.00%	-	N	N	20%-40%	40%-60%
BORNCAXE	BORON	KERN	Gateway	6<54	Small	-54.28%	-22.81%	-50.00%	50%-60%	N	N	20%-40%	80%-100%
DRCTCAXG	BRADLEY	SANTA BARBARA	Gateway	6<54	Large Urban	-50.92%	04.440/	-100.00%	N/A	N	Y	40%-60%	60%-80%
BRPICAXE	BRIDGEPORT	MONO	Gateway	0<6	Small	-31.08%	-24.44%	-44.68%	<50%	N	N	0%-20%	20%-40%
VLANCAXH	BUNDY WLA	LOS ANGELES	Beach Cities	>1700	Very Large	-44.94%	-22.99%	-98.94%	-	N	N	-	-
INBHCAXH	BUSHARD	ORANGE	Beach Cities	>1700	Very Large	-57.23%	10.070	-100.00%	-	N	Y	80%-100%	80%-100%
BINWCAXE	BUITONWILLOW	KERN	Northern	6<54	Small	-50.76%	-12.67%	-54.64%	50%-60%	N	N	0%-20%	20%-40%
CHSPCAXE	CALIF HOT SPRINGS	IULARE	Northern	0<6	Small	-6.93%	-18.72%	-21.53%	<50%	N	N	0%-20%	20%-40%
CFCYCAXF	CALIFORNIA CITY	KERN	Gateway	6<54	Large Metro	-48.73%	-33.28%	-68.15%	60%-70%	N	N	0%-20%	0%-20%
CLMSCAXE	CALIMESA	RIVERSIDE	Desert	54<380	Large Metro	-60.09%	-32.19%	-21.25%	<50%	Y	Y	20%-40%	-
CMRLCAXE	CAMARILLO	VENTURA	Gateway	380<1700	Very Large	-54.84%	-25.45%	-69.03%	60%-70%	Y	Y	80%-100%	80%-100%
CNCKCAXF	CANTUA CREEK	FRESNO	Northern	0<6	Small	-54.03%	-3.48%	-55.24%	50%-60%	N	N	80%-100%	80%-100%
CRPRCAXE	CARPINIERIA	SANTA BARBARA	Gateway	54<380	Large Metro	-50.96%	-28.52%	-64.90%	60%-70%	N	N	80%-100%	80%-100%
CZDRCAXG	CAZADERO	SONOMA	Northern	6<54	Small	-35.30%	-21.35%	-43.82%	<50%	N	N	60%-80%	80%-100%
CHLKCAXF	CHINA LAKE	KERN	Gateway	6<54	Large Metro	-40.62%	0.00%	-99.75%	-	N	N	40%-60%	20%-40%
CHNOCAXF	CHINO	SAN BERNARDINO	Gateway	380<1700	Very Large	-56.30%	-27.69%	-53.91%	50%-60%	Y	Y	80%-100%	80%-100%
CLMTCAXF	CLAREMONT	LOS ANGELES	Coastal	>1700	Very Large	-51.38%	-28.42%	-25.86%	<50%	Y	Y	40%-60%	60%-80%
NBHCAXM	CLARK	LOS ANGELES	Beach Cities	>1700						N	Y	-	-
CLEMCAXF	CLEMENTS	SAN JOAQUIN	Northern	0<6	Small	-31.30%	-21.16%	-41.34%	<50%	N	Ν	40%-60%	-
CHLCAXF	COACHELLA	RIVERSIDE	Desert	6<54	Large Metro	-43.26%		-100.00%	-	N	Y	80%-100%	80%-100%
CLFXCAXF	COLFAX	PLACER	Northern	6<54	Medium	-56.79%	-23.79%	-65.93%	60%-70%	N	N	80%-100%	40%-60%
HOKCAXH	CONEJO	VENTURA	Gateway	380<1700	Large Urban	-68.22%	-36.63%	-78.65%	70%-80%	Y	Y	40%-60%	20%-40%
CRCRCAXF	CORCORAN	KINGS	Northern	6<54	Large Metro	-53.34%	-18.89%	-65.21%	60%-70%	N	Ν	60%-80%	80%-100%
CVELCAXF	COVELO	MENDOCINO	Northern	0<6	Small	-35.47%	-8.57%	-38.21%	<50%	N	Ν	0%-20%	0%-20%



					Table	e 4F.12 (page 2 of	6)						
						2010-15	2016-17	2010-17	Access Line				
				Density		Access Line	Access Line	Access Line	Loss		FTR	Verizon Line Loss	Frontier Line Loss
CLLI Code	Reporting Unit	County	Operating Area	Category	Wire Center Size	Loss I	Loss	Loss (	Category	VZ FTT	P FTTP	Category	Category
COVNCAXE	COVINA	LOS ANGELES	Coastal	>1700	Very Large	-51.42%	-29.27%	-30.29%	<50%	Y	Y	60%-80%	40%-60%
CRENCAXE	CRESTLINE	SAN BERNARDINO	Desert	380<1700	Large Metro	-50.06%	-35.05%	-68.49%	60%-70%	N	N N	80%-100%	-
			Gateway	b<54 ≥1700	Small	-35.57%	-23.05%	-45.57%	<50%	IN N	IN V	20%-40%	60%-80% 80% 100%
	CUXAMA		Northorp	>1700	Small	-43.49%	12 0.00/	-100.00%	500/ 600/	IN N	T N	00%-100%	00%-100%
			Northern Roach Cition	>1700	Siliali	-44.30%	-13.00%	-52.31%	50%-60%	IN N		400/ 600/	900/ 1000/
			Beach Cities	>1700	Vorul orgo	-57.04 %	22 570/	-100.00 %	600/ 700/	IN NI	I N	40 /0-00 /0	60% 90%
DECTCAVE			Desort	6-54	Small	100.02%	-33.37 /0	-00.10%	60% 70%	N	N	60% 90%	80% 100%
DSHGCAXE	DESERT HEIGHTS		Desert	6<54	Small	-63 11%	-33.02 /0	-100.01%	00/8-70/8	N	N	80%-100%	-
DHSPCAXE	DESERT HOT SPRINGS		Desert	54<380	Large Metro	-56.45%	-34 43%	-73 74%	70%-80%	Y	Y	20%-40%	- 80%-100%
	DESERT KNOLLS		Desert	380<1700	Large Metro	-64.08%	-04.4070	-100.00%	1070-0070	N	v	20%-40%	0%-20%
DSSHCAXE	DESERT SHORES	IMPERIAL	Desert	54<380	Small	-62.84%	-29 94%	-73 11%	70%-80%	N	N	80%-100%	0%-20%
DMBRCAXE	DIAMOND BAR	LOS ANGELES	Coastal	380<1700	Large Urban	-55 74%	-28 22%	-24 80%	<50%	Y	Y	20%-40%	60%-80%
DSPI CAXE	DOS PALOS	MERCED	Northern	6<54	Medium	-52 64%	-25.00%	-53 62%	50%-60%	N.	N	0%-20%	60%-80%
DWNYCAXF	DOWNEY	LOS ANGELES	Coastal	>1700	Very Large	-47.70%	-31.72%	-40.83%	<50%	N	N	40%-60%	0%-20%
DNLPCAXF	DUNLAP	FRESNO	Northern	6<54	Small	-59.12%	-33.85%	-73.38%	70%-80%	N	N	20%-40%	0%-20%
EDMTCAXF	EDGEMONT	RIVERSIDE	Inland	380<1700	Large Urban	-52.13%		-100.00%	-	Ν	Ν	80%-100%	-
ELMGCAXF	EL MIRAGE	SAN BERNARDINO	Desert	0<6	Small	-45.98%	-16.96%	-64.37%	60%-70%	N	N	80%-100%	20%-40%
RDBHCAXF	EL NIDO	LOS ANGELES	Beach Cities	>1700	Verv Large	-60.95%	-30.89%	-0.48%	<50%	Ν	Y	20%-40%	60%-80%
ELRICAXF	EL RIO	VENTURA	Gateway	380<1700	Large Urban	-52.03%	-21.97%	-62.70%	60%-70%	Y	Y	-	-
ELWDCAXF	ELLWOOD	SANTA BARBARA	Gateway	6<54	Large Metro	-49.57%		-100.00%	-	Ν	Ν	40%-60%	· -
ELSNCAXG	ELSINORE GRAND	RIVERSIDE	Inland	54<380	Large Metro	-69.85%		-100.00%	-	Y	Y	80%-100%	60%-80%
ELSNCAXF	ELSINORE MAIN	RIVERSIDE	Inland	380<1700	Large Urban	-64.67%	-30.72%	-66.34%	60%-70%	Ν	Y	80%-100%	60%-80%
ETWNCAXF	ETIWANDA	SAN BERNARDINO	Inland	380<1700	Large Urban	-64.48%	-37.68%	-79.02%	70%-80%	Y	Y	20%-40%	-
EXTRCAXF	EXETER	TULARE	Northern	54<380	Large Metro	-34.74%	-23.67%	-60.65%	60%-70%	Ν	N	-	-
FRVLCAXF	FARMERSVILLE	TULARE	Northern	54<380						Ν	N	-	-
FRTNCAXF	FARMINGTON	STANISLAUS	Northern	6<54	Small	-46.33%	-27.56%	73.73%	<50%	Ν	N	20%-40%	0%-20%
FLWSCAXF	FELLOWS	KERN	Northern	0<6	Small	-18.75%	-20.38%	-58.00%	50%-60%	Ν	N	0%-20%	0%-20%
BLGRCAXF	FLORENCE	LOS ANGELES	Coastal	>1700	Large Urban	-49.42%	5.16%	-97.17%	-	Ν	N	60%-80%	60%-80%
FTIRCAXF	FORT IRWIN	SAN BERNARDINO	Desert	0<6	Medium	-80.20%	-22.94%	-6.97%	<50%	Y	N	80%-100%	80%-100%
FWLRCAXF	FOWLER	FRESNO	Northern	54<380	Large Metro	-45.70%	-16.78%	-66.29%	60%-70%	N	N	0%-20%	40%-60%
GRVLCAXF	GARBERVILLE	HUMBOLDT	Northern	6<54	Medium	-34.35%	-24.61%	-91.35%	-	N	N	0%-20%	0%-20%
GLRYCAXF	GILROY	SANTA CLARA	Northern	54<380	Very Large	-48.33%	-26.96%	-64.27%	60%-70%	Ν	N	20%-40%	-
GLNDCAXF	GLENDORA	LOS ANGELES	Coastal	380<1700	Large Urban	-55.77%	-31.25%	-99.94%	-	Ν	Y	20%-40%	-
GLVLCAXF	GLENNVILLE	KERN	Northern	0<6	Small	-24.12%	-18.27%	-34.98%	<50%	Ν	N	0%-20%	0%-20%
GOLTCAXF	GOLETA	SANTA BARBARA	Gateway	54<380	Large Urban	-50.30%		-100.00%	-	N	N	20%-40%	60%-80%
GRHLCAXF	GRANADA HILLS	LOS ANGELES	Gateway	380<1700	Very Large	-56.84%	-34.18%	-71.36%	70%-80%	Y	Y	20%-40%	20%-40%
GGVGCAXF	GRANT GROVE	FRESNO	Northern	0<6	Small	-25.19%	-26.78%	-33.17%	<50%	N	N	60%-80%	60%-80%
GDLPCAXG	GUADALUPE	SANTA BARBARA	Gateway	6<54	Medium	-43.41%	-30.01%	-62.29%	60%-70%	Y	Y	60%-80%	-
HYFKCAXF	HAYFORK	TRINITY	Northern	0<6	Medium	-35.76%	-20.21%	-50.15%	50%-60%	N	N	0%-20%	20%-40%
HEMTCAXF	HEMET	RIVERSIDE	Inland	54<380	Very Large	-61.10%	-31.16%	-72.25%	70%-80%	N	N	80%-100%	40%-60%
HSPRCAXF	HESPERIA	SAN BERNARDINO	Desert	380<1700	Very Large	-59.14%	-35.66%	-75.87%	70%-80%	Y	Y	60%-80%	20%-40%
HMLDCAXF	HOMELAND	RIVERSIDE	Inland	54<380	Large Metro	-70.17%	-24.94%	-79.68%	70%-80%	Y	Y	20%-40%	40%-60%
HMVYCAXF	HOMESTEAD VALLEY	SAN BERNARDINO	Desert	0<6	Medium	-54.33%	-20.71%	-64.31%	60%-70%	N	N	40%-60%	40%-60%
HOPACAXF	HOOPA	HUMBOLDT	Northern	6<54	Medium	-32.52%	-14.04%	-45.69%	<50%	N	N	0%-20%	40%-60%
HNBHCAXG	HUNTINGTON BEACH	ORANGE	Beach Cities	>1700	Large Urban	-59.81%	-32.72%	38.74%	<50%	Y	Y	40%-60%	60%-80%
IDYLCAXF	IDYLLWILD	RIVERSIDE	Inland	6<54	Large Metro	-47.45%	-26.48%	-62.23%	60%-70%	N	N	80%-100%	20%-40%
DWNYCAXG	IMPERIAL	LOS ANGELES	Coastal	>1700	Large Metro	-48.16%		-100.00%		N	N	40%-60%	80%-100%
INDPCAXF	INDEPENDENCE	INYO	Gateway	0<6	Small	-23.00%	-19.21%	-72.01%	/0%-80%	N	N	0%-20%	0%-20%
INDICAXG	INDIO	RIVERSIDE	Desert	380<1700	Large Urban	-48.74%	-32.76%	-21.36%	<50%	Y	Y	40%-60%	60%-80%
INYKCAXF	INYOKERN	KERN	Gateway	<u></u> 6<54	Medium	-50.26%	-23.20%	-60.91%	60%-70%	N	N	20%-40%	20%-40%





					Table	e 4F.12 (page 3 of 6	5)						
						2010-15 20	016-17	2010-17	Access Line				
				Density		Access Line A	ccess Line	Access Line	Loss		FTR	Verizon Line Loss	Frontier Line Loss
CLLI Code	Reporting Unit	County	Operating Area	a Category	Wire Center Size	Loss L	oss	Loss	Category	VZ FT	IP FTTP	Category	Category
JSTRCAXF	JOSHUA TREE	SAN BERNARDINO	Desert	6<54	Large Metro	-53.89%	-27.48%	-72.01%	70%-80%	N	N	80%-100%	20%-40%
JNLKCAXF	JUNE LAKE	MONO	Gateway	0<6	Small	-43.62%	-29.62%	-55.25%	50%-60%	N	N	0%-20%	20%-40%
KNWDCAXF	KENWOOD	SONOMA	Northern	54<380	Medium	-55.36%	-32.85%	-64.27%	60%-70%	N	N	0%-20%	80%-100%
KRVLCAXF	KERNVILLE	KERN	Gateway	6<54	Medium	-48.87%	-20.65%	-60.38%	60%-70%	N	N	20%-40%	20%-40%
KNLDCAXF	KNIGHTS LANDING	YOLO	Northern	0<6	Small	-50.91%	-20.25%	-57.05%	50%-60%	N	N	-	-
LAHBCAXF	LA HABRA	LOS ANGELES	Coastal	380<1700	Large Urban	-49.41%	-34.39%	-45.84%	<50%	N	N	60%-80%	40%-60%
LAPNCAXG	LA PUENTE	LOS ANGELES	Coastal	>1700	Very Large	-56.29%	-28.37%	-39.97%	<50%	Y	Y	40%-60%	-
LAQNCAXG	LA QUINTA	RIVERSIDE	Desert	380<1700	Large Urban	-52.94%	-31.16%	24.74%	<50%	N	Y	0%-20%	-
LVRNCAXF	LA VERNE	LOS ANGELES	Coastal	>1700	Large Urban	-52.68%		-100.00%	-	· N	Y	20%-40%	80%-100%
LGBHCAXF	LAGUNA BEACH	ORANGE	Beach Cities	380<1700	Large Metro	-51.69%	-33.14%	-54.51%	50%-60%	N	N	-	-
LKHGCAXF	LAKE HUGHES	LOS ANGELES	Gateway	6<54	Medium	-33.24%	-22.84%	-44.94%	<50%	N	N	60%-80%	-
LKISCAXF	LAKE ISABELLA	KERN	Gateway	6<54	Large Metro	-46.98%	-24.38%	-61.56%	60%-70%	N	N	0%-20%	20%-40%
LNCSCAXG	LANCASTER	LOS ANGELES	Gateway	380<1700	Large Metro	-57.42%		-100.00%	-	. Y	Y	60%-80%	80%-100%
SNBBCAXG	LAS POSITAS	SANTA BARBARA	Gateway	380<1700	Large Urban	-54.55%		-100.00%	-	N	N	40%-60%	60%-80%
LTHPCAXF	LATHROP	SAN JOAQUIN	Northern	380<1700	Medium	-51.88%		-100.00%	-	. N	N	0%-20%	40%-60%
LYVLCAXE	LAYTONVILLE	MENDOCINO	Northern	0<6	Medium	-36.29%	-14.45%	-41.09%	<50%	N	N	40%-60%	0%-20%
LVNGCAXE		MONO	Gateway	0<6	Small	-33.33%	-20 99%	-41 82%	<50%	N	N	60%-80%	60%-80%
LCGTCAXE		MENDOCINO	Northern	0<0	Small	-52 31%	-13 / 5%	-52 31%	50%-60%	N	N	80%-100%	00 /0-00 /0
			Northern	6<54	Small	-47.84%	-18 /0%	-56.03%	50%-60%	N	N	0%-20%	20%-40%
			Deport	6<54	Modium	-47.04 /0	-10.40 %	-30.03 //	700/ 900/	IN N	IN N	0/0-20/0	20 /0-40 /8
			Desert	0~04	Medium	-03.04 /0	-22.90 %	-12.93/0	/0 /0-00 /0	IN N	IN N	20%-40%	-
		SAN JOAQUIN	Northern	654	Medium	-33.44%	-25.26%	-45.15%	<50%	IN	IN N	20%-40%	40%-60%
LNDSCAXF		TULARE	Northern	54<380	Large Metro	-38.65%	-23.89%	-45.70%	<50%	IN	IN N	20%-40%	-
LMENCAXE	LOMA LINDA	SAN BERNARDINO	Desert	>1700	Large Metro	-45.49%	o	-100.00%		· N	Ŷ	80%-100%	20%-40%
LMPCCAXF	LOMPOC	SANTA BARBARA	Gateway	54<380	Large Urban	-50.14%	-31.43%	-54.11%	50%-60%	N	N	0%-20%	40%-60%
LNPNCAXF	LONE PINE	INYO	Gateway	0<6	Medium	-35.52%	-17.62%	-52.14%	50%-60%	N	N	0%-20%	80%-100%
LNBHCAXF	LONG BEACH MAIN	LOS ANGELES	Beach Cities	>1700	Very Large	-44.83%	-28.90%	-7.46%	<50%	Y	Y	80%-100%	-
LSALCAXF	LOS ALAMOS	SANTA BARBARA	Gateway	0<6	Small	-24.13%	-25.23%	-38.74%	<50%	N	Y	20%-40%	-
LSSRCAXF	LOS SERRANOS	SAN BERNARDINO	Gateway	54<380	Large Urban	-62.47%	-32.87%	-61.37%	60%-70%	N	Y	0%-20%	0%-20%
LSHLCAXF	LOST HILLS	KERN	Northern	0<6	Small	-32.53%	-12.16%	-56.48%	50%-60%	N	N	20%-40%	-
LCVYCAXF	LUCERNE VALLEY	SAN BERNARDINO	Desert	6<54	Medium	-61.20%	-23.77%	-71.81%	70%-80%	N	N	0%-20%	-
MDRVCAXF	MAD RIVER	TRINITY	Northern	0<6	Small	-40.95%	-22.01%	-52.76%	50%-60%	N	N	0%-20%	0%-20%
MALBCAXG	MALIBU	LOS ANGELES	Coastal	54<380	Large Metro	-48.29%	-32.81%	-14.81%	<50%	Y	Y	40%-60%	-
MMLKCAXF	MAMMOTH LAKES	MONO	Gateway	0<6	Large Metro	-55.02%	-31.94%	-71.42%	70%-80%	N	N	-	-
MNBHCAXE	MANHATTAN	LOS ANGELES	Beach Cities	>1700	Large Urban	-64.04%		-100.00%		. N	Y	60%-80%	60%-80%
MNTCCAXG	MANTECA	SAN JOAQUIN	Northern	380<1700	Large Urban	-45 62%	-26 37%	-56.36%	50%-60%	N	N	20%-40%	60%-80%
OXNRCAXG		VENTURA	Gateway	380<1700	Large Urban	-50 34%	20.01.70	-100.00%		. N	N	20%-40%	60%-80%
			Coastal	>1700	Large Urban	-52 62%		-100.00%		. N	×	20%-40%	-
			Beach Cities	>1700	Venularge	-54 61%	-30.20%	-68.85%	60% 70%		v v	80%-100%	
MPCPCAVE	MARICORA	KEDN	Northorn	- 1700	Small	-04.01%	-30.2078	100.00%	00 /0-7 0 /0	I N	I NI	20% 40%	20% 40%
			Deport	0<0	Small	-40.10%		-100.00 %	-	· IN N	IN N	20 /0-40 /0	20 /0-40 /0
			Desen Basch Citics	>1700	Siliali	-41.00%		-100.00%	-	· IN	IN X	00%-100%	80%-100%
	MARKEI		Beach Cities	>1700	Large Urban	-05.00%	22.000/	-100.00%	-	· N	Ŷ	80%-100%	-
SNBRCAXH	MARSHALL	SAN BERNARDINO	Desert	380<1700	Large Urban	-60.14%	-33.99%	-01.00%	60%-70%	Ý	N N	60%-80%	60%-80%
LINBHCAXL		LUS ANGELES	Beach Cities	>1/00	Large Metro	-59.90%	00.400	-100.00%	-	· N	Y	0%-20%	-
MCFACAXF	MCFARLAND	KERN	Northern	b<54	Medium	-48.82%	-22.10%	-62.86%	60%-70%	N	N	0%-20%	0%-20%
MCKTCAXF	MCKITTRICK	KERN	Northern	0<6	Small	-32.18%	-18.45%	-56.32%	50%-60%	N	N	60%-80%	0%-20%
MECCCAXF	MECCA	RIVERSIDE	Desert	6<54	Medium	-38.91%		-100.00%	-	N	Y	-	-
MENTCAXF	MENTONE	SAN BERNARDINO	Desert	54<380	Large Metro	-56.58%	-29.88%	-69.59%	60%-70%	Y	Y	40%-60%	40%-60%
LMPCCAXG	MESA	SANTA BARBARA	Gateway	54<380	Large Metro	-47.39%		-100.00%	-	· N	N	20%-40%	-
MRMNCAXF	MIRAMONTE	FRESNO	Northern	6<54	Small	-55.59%	-29.79%	-67.43%	60%-70%	N	N	0%-20%	60%-80%
MNRVCAXG	MONROVIA	LOS ANGELES	Coastal	380<1700	Very Large	-46.40%	-29.76%	-64.08%	60%-70%	N	Ν	60%-80%	60%-80%
LSGTCAXF	MONTEBELLO	SANTA CLARA	Northern	54<380	Large Urban	-48.45%		-100.00%	-	· N	Ν	20%-40%	60%-80%
MNTTCAXF	MONTECITO	SANTA BARBARA	Gateway	54<380	Large Metro	-47.82%		-100.00%	-	N	Ν	60%-80%	40%-60%
						277							



					Table	e 4F.12 (page 4 of 6)							
						2010-15 201	6-17 2	010-17	Access Line				
				Density		Access Line Acc	ess Line A	ccess Line	Loss		FTR	Verizon Line Loss	Frontier Line Loss
CLLI Code	Reporting Unit	County	Operating Area	Category	Wire Center Size	Loss Los	s L	.oss (	Category	VZ FTT	P FTTP	Category	Category
MRHLCAXF	MORGAN HILL	SANTA CLARA	Northern	54<380	Large Urban	-49.39%	-32.14%	-66.05%	60%-70%	Ν	N	20%-40%	60%-80%
MRVYCAXF	MORONGO VALLEY	SAN BERNARDINO	Desert	6<54	Medium	-50.54%	-28.09%	-64.11%	60%-70%	N	N	80%-100%	40%-60%
LSGTCAXG	MOUNTAIN	SANTA CLARA	Northern	54<380	Medium	-42.96%	-29.71%	226.32%	<50%	N	N	0%-20%	20%-40%
MUGUCAXF	MUGU	VENTURA	Gateway	54<380	Large Metro	-48.34%	-31.70%	-96.97%	-	Y	Y	60%-80%	0%-20%
MURTCAXF	MURRIETA	RIVERSIDE	Inland	380<1700	Very Large	-63.58%	-21.39%	-79.27%	70%-80%	Y	Y	60%-80%	-
MSCYCAXF	MUSCOY	SAN BERNARDINO	Desert	54<380	Large Metro	-60.37%	-28.30%	160.41%	<50%	N	N	80%-100%	40%-60%
NWBRCAXF	NEWBERRY	SAN BERNARDINO	Desert	0<6	Small	-58.99%	-27.69%	440.00%	<50%	N	N	-	-
NWPKCAXF	NEWBURY PARK	VENTURA	Gateway	380<1700	Very Large	-54.30%	67.15%	-98.86%	-	Y	Y	40%-60%	0%-20%
NEDWCAXF	NORTH EDWARDS	KERN	Gateway	0<6	Small	-39.30%	-22.80%	4482.62%	<50%	N	N	80%-100%	-
NSHRCAXF	NORTH SHORE	RIVERSIDE	Desert	6<54						N	Y	-	-
SNBRCAXN	NORTON	SAN BERNARDINO	Desert	6<54	Small	-21.82%		-100.00%	-	N	N	40%-60%	-
NRWLCAXF	NORWALK	LOS ANGELES	Coastal	>1700	Very Large	-56.31%	-29.15%	-62.68%	60%-70%	Y	Y	0%-20%	0%-20%
NOVTCAXF	NOVATO	MARIN	Northern	54<380	Large Urban	-54.33%	-40.29%	-45.47%	<50%	N	N	-	-
OASSCAXF	OASIS	RIVERSIDE	Desert	6<54	Medium	-54.07%	-33.24%	406.04%	<50%	N	Y	40%-60%	-
OLNCCAXE	OLANCHA	INYO	Gateway	0<6	Small	-42.35%	-34.04%	5080.13%	<50%	N	N	0%-20%	60%-80%
ONTRCAXM	ONTARIO AIRPORT	SAN BERNARDINO	Inland	54<380	Large Metro	-45.79%		-100.00%	N/A	N	Y	80%-100%	80%-100%
ONTRCAXF	ONTARIO MAIN	SAN BERNARDINO	Inland	>1700	Very Large	-59.73%	-34.91%	-43.79%	<50%	Y	Y	40%-60%	40%-60%
ONTRCAXG	ONTARIO SOUTH	SAN BERNARDINO	Inland	380<1700	Large Urban	-50.30%	-28.34%	-74.37%	70%-80%	N	Y	20%-40%	40%-60%
ORLNCAXF	ORLEANS	HUMBOLDT	Northern	0<6	Small	-11.76%	-26.16%	682.97%	<50%	N	N	0%-20%	0%-20%
ORMACAXF	ORO LOMA	FRESNO	Northern	0<6	Small	-29.43%	-30.83%	3496.23%	<50%	N	N	20%-40%	20%-40%
OXNRCAXF	OXNARD	VENTURA	Gateway	>1700	Large Urban	-53.68%	107.92%	-98.82%	-	Y	Y	20%-40%	40%-60%
PCPLCAXF	PACIFIC PALISADES	LOS ANGELES	Beach Cities	380<1700	Large Urban	-42.20%		-100.00%	-	N	N	60%-80%	-
PACMCAXF	PACOIMA	LOS ANGELES	Gateway	54<380	Very Large	-57.37%		-100.00%	-	Ŷ	Y	60%-80%	-
PLDSCAXF	PALM DESERT	RIVERSIDE	Desert	380<1700	Very Large	-50.75%		-100.00%	-	N	N	60%-80%	-
PLSPCAXG	PALM SPRINGS EAST	RIVERSIDE	Desert	54<380	Very Large	-54.29%		-100.00%	-	Y	Y	0%-20%	80%-100%
TRNCCAXG	PALOS VERDES	LOS ANGELES	Beach Cities	>1700	Large Urban	-55.19%		-100.00%	-	N	Y	-	-
PRFDCAXF	PARKFIELD		Gateway	0<0		F7 700/		400.000/		IN X	IN	20%-40%	20%-40%
PERSCARE	PERRIS	RIVERSIDE	Inland	54<380	very Large	-57.72%		-100.00%	-	Y N	Y	80%-100%	-
PHLNCAXF	PHELAN	SAN BERNARDINO	Desert	54<380	Large Metro	-41.57%		-100.00%	-	N	N	40%-60%	40%-60%
WHIRCARJ	PICO	LUS ANGELES	Coastal	380<1700	Large Urban	-52.76%		-100.00%	-	Y N	Y NI	60%-80%	40%-60%
PIRCCAXE		MENDOCINO	Northern	0<0	Small	-100.00%	28.00%	-100.00%	-	IN N	IN N	40%-60%	40%-60%
	PINECREEK		Gateway	0<6	Small	-40.23%	-28.90%	-57.01%	50%-60%	IN N	IN N	60%-80%	20%-40%
	PINTON		Coostol	>1700	Vonulargo	-30.92%	-99.59%	-99.71%	-			00%-00%	-
			Loastai	290~1700	Very Large	-35.54%	-27.40%	-07.70%	00%-70%	T N	r V	20%-40%	- 90% 100%
			Gotowov	280<1700	Large Urban	-70.14%		-100.00%	-	IN N	I V	200/ 400/	60% 90%
			Inland	54<200	Von Lorgo	-55.05%	22 0.0%	-100.00 %	-	IN N	I V	20 /0-40 /0	00 /0-00 /0
			Decort	290~1700	Very Large	-00.77 /0	-32.90 %	-38.30 %	00 /0-7 0 /0	IN N	I V	40% 60%	-
			Cotowov	0~6	Small	-04.10%		-100.00%	-	IN N	I N	40 /0-00 /0	-
	REDHAWK		Inland	54<380	Large Urban	-60.13%		-100.00%		N	V	20 /0-40 /0	60%-80%
			Desert	380<1700	Very Large	-53 24%	-25 1/1%	-55 53%	50%-60%		v	60%-80%	80%-100%
	REDONDO		Beach Cities	>1700	very Large	-33.2470	-20.1470	-33.33 //	50 /0-00 /0	v	v	40%-60%	00 /8-100 /8
	REEDLEY	FRESNO	Northern	54<380	Large Metro	-47 13%	-22 79%	-61 22%	60%-70%	N	N	60%-80%	0%-20%
RDGCCAXG	RIDGECREST	KERN	Gateway	6<54	Large Metro	-44 97%	-25.41%	-45.67%	<50%	N	N	20%-40%	40%-60%
PCRVCAXE	RIO HONDO	LOS ANGELES	Coastal	>1700	Large Urban	-45 22%	-20.4170	-100.00%	-0070	N	Y	2070-4070	-
RIPNCAXE	RIPON	SAN JOAQUIN	Northern	54<380	Large Metro	-43 37%	-28 92%	-60 50%	60%-70%	N	N	20%-40%	0%-20%
RBNSCAXG	ROBBINS	SUTTER	Northern	0<6	Small	-45 30%	623 08%	315 47%	<50%	N	N	0%-20%	0%-20%
RI HI CAXE	ROLLING HILLS	LOS ANGELES	Reach Cities	380<1700	Large Urban	-50 74%	520.0070	-100.00%	-0070	N	Y	20%-40%	40%-60%
LAPNCAXE	ROWIAND	LOS ANGELES	Coastal	>1700	Very Large	-49 88%		-100.00%	-	N	Ý	60%-80%	
RNSPCAXE	RUNNING SPRINGS	SAN BERNARDINO	Desert	54<380	Medium	-58 50%	-58 67%	-82 83%	>80%	N	N	20%-40%	20%-40%
SLCYCAXE	SALTON CITY	IMPERIAL	Desert	6<54	Small	-61 26%	82.52%	-30 20%	<50%	N	N	80%-100%	60%-80%
SNBRCAXK	SAN BERNARDINO	SAN BERNARDINO	Desert	>1700	Very Large	-48.09%	-23,88%	-63.58%	60%-70%	N	N	60%-80%	-
							/						





					Table	e 4F.12 (page 5 of 6)							
						2010-15 2016	6-17	2010-17	Access Line				
				Density		Access Line Acc	ess Line	Access Line	Loss		FTR	Verizon Line Loss	Frontier Line Loss
CLLI Code	Reporting Unit	County	Operating Area	Category	Wire Center Size	Loss Los	s l	Loss	Category	VZ FTT	P FTTP	Category	Category
SNDMCAXF	SAN DIMAS	LOS ANGELES	Coastal	380<1700	Large Urban	-55.77%		-100.00%	-	N	Y	20%-40%	80%-100%
SNFNCAXG	SAN FERNANDO	LOS ANGELES	Gateway	>1700	Large Urban	-47.60%	-29.67%	-66.26%	60%-70%	N	N	60%-80%	40%-60%
SNJCCAXG	SAN JACINTO	RIVERSIDE	Inland	54<380	Large Urban	-62.21%	-29.75%	-75.95%	70%-80%	Y	Y	80%-100%	80%-100%
SNJQCAXF	SAN JOAQUIN	FRESNO	Northern	6<54	Small	-55.59%	-15.19%	-34.95%	<50%	N	N	20%-40%	40%-60%
SNMGCAXF	SAN MIGUEL	MONTEREY	Gateway	0<6	Medium	-42.68%	-22.64%	-55.38%	50%-60%	N	N	60%-80%	40%-60%
SNGRCAXF	SANGER	FRESNO	Northern	54<380	Large Metro	-47.38%	-26.82%	-62.19%	60%-70%	N	N	80%-100%	20%-40%
SNBBCAXF	SANTA BARBARA	SANTA BARBARA	Gateway	>1700	Very Large	-54.10%	-28.24%	4.28%	<50%	N	N	40%-60%	60%-80%
SNTMCAXF	SANTA MARIA	SANTA BARBARA	Gateway	380<1700	Very Large	-50.55%	-29.87%	-53.20%	50%-60%	Y	Y	0%-20%	40%-60%
SNMNCAXG	SANTA MONICA	LOS ANGELES	Beach Cities	>1700	Very Large	-47.89%	-27.78%	-13.60%	<50%	Y	Y	80%-100%	-
SNPLCAXF	SANTA PAULA	VENTURA	Gateway	54<380	Large Metro	-45.89%	-27.41%	-63.77%	60%-70%	Ν	Ν	40%-60%	20%-40%
SLVNCAXG	SANTA YNEZ	SANTA BARBARA	Gateway	6<54	Large Urban	-40.36%	-28.47%	-56.90%	50%-60%	Ν	Ν	0%-20%	-
SERNCAXG	SEA RANCH	SONOMA	Northern	54<380	Medium	-27.82%	-54.44%	-65.14%	60%-70%	Ν	Ν	0%-20%	0%-20%
SPLVCAXF	SEPULVEDA	LOS ANGELES	Gateway	>1700	Very Large	-56.79%	-27.59%	-71.46%	70%-80%	Y	Ν	40%-60%	80%-100%
SRMDCAXF	SIERRA MADRE	LOS ANGELES	Coastal	>1700	Large Metro	-43.96%	-34.12%	-47.00%	<50%	Ν	Ν	-	-
PSDNCAXF	SIERRA MADRE HASTIN	NLOS ANGELES	Coastal	>1700	Medium	-40.77%		-100.00%	-	Ν	Ν	-	-
HNDLCAXF	SILVER LAKES	SAN BERNARDINO	Desert	380<1700	Medium	-58.53%		-100.00%	-	Ν	Y	-	-
HNBHCAXF	SLATER	ORANGE	Beach Cities	>1700	Large Urban	-54.95%		-100.00%	-	Ν	Y	80%-100%	-
SNNGCAXG	SNELLING	MERCED	Northern	0<6	Small	-41.95%	-31.33%	-54.02%	50%-60%	Ν	Ν	60%-80%	20%-40%
BRSWCAXJ	SOUTH BARSTOW	SAN BERNARDINO	Desert	6<54	Large Metro	-50.07%		-100.00%		N	N	0%-20%	0%-20%
SVYFCAXF	SQUAW VALLEY	FRESNO	Northern	6<54	Small	-61.04%	-23.76%	-69.08%	60%-70%	N	N	20%-40%	0%-20%
INBHCAXS	STADIUM	LOS ANGELES	Beach Cities	>1700	Very Large	-59.50%	2011 0 /0	-100.00%		N	Ŷ	60%-80%	-
STMRCAXE	STRATHMORE	TULARE	Northern	6<54	Medium	-44 86%		-100.00%	-	N	N.	40%-60%	20%-40%
SMVYCAXE		SAN BERNARDINO	Desert	0<6	Small	-28.37%	-12 50%	-35 46%	<50%	N	N	-	-
SNCYCAXE	SUNCITY	RIVERSIDE	Inland	380<1700	Very Large	-66 10%	-35 10%	-73 04%	70%-80%	Y	Y	80%-100%	-
SNIDCAXE			Gateway	380<1700	Large Lirban	_49.89%	-35.00%	-68 85%	60%-70%	N	N	40%-60%	80%-100%
SNYMCAXE		RIVERSIDE	Inland	380<1700	Very Large	-62.49%	-00.0070	-100.00%	0070-7070	N	N	-0%-20%	20%-40%
SNMNCAXI	SUNSET		Reach Cities	>1700	Very Large	-54 16%		-100.00%	_	N	×	80%-100%	20,0 40,0
SURECAXE	SURF	SANTA BARBARA	Gateway	6<54	Medium	-26 34%		-100.00%		N	N	60%-80%	40%-60%
SVIMCAXE	SVIMAR		Gateway	380<1700	l arge Lirban	-20.04%	-33 70%	-70 57%	70%-80%	N	N	80%-100%	80%-100%
TAETCAYE	TAET	KEDN	Northern	6<54	Large Metro	-55.61%	-17 03%	-60.30%	60%-70%	N	N	40%-60%	0%-20%
	TEMECIIIA		Inland	380<1700	Large Metro	-13 21%	-73.45%	154 70%	<50%	V	V	40 %-00 % 80%-100%	078-2078
	TERMINO		Roach Citica	>1700	Large Urban	-13.21%	-23.4370	100.00%	-30 %	I NI	v	00/0-100/0	-
			Desort	21700	Large Orban	-02.74 /0		-100.00%	-	IN N	I V	0 /0-20 /0	-
			Cetevrev	0504		-33.00%	24 100/	-100.00%	- 	IN V	T V	00%-00%	-
	THOUSAND DALMS		Galeway	50051700	Very Large	-51.54%	-24.10%	-00.04%	00%-70%	T NI	T NI	00%-00%	80%-100%
THPLCAAF		RIVERSIDE	Desert	54<500		-30.02%	0.000/	-100.00%	-	IN	IN N	40%-60%	-
TWEVEAXH		SUNUMA	Northern	0<0	Small	-12.13%	-8.69%	-13.05%	<50%	IN	IN	20%-40%	40%-60%
TOVYCAXE			Northern	6<54	Madium	-45.08%	-17.15%	-53.96%	50%-60%	IN	IN	0%-20%	-
TPNGCAXE		LUS ANGELES	Gateway	54<380	Medium	-01.50%	-30.08%	-72.34%	70%-80%	Y NI	IN	0%-20%	0%-20%
TRNQCAXE	TRANQUILITY	FRESNU	Northern	0<6	Small	-36.17%	10.000/	-100.00%	- 500/	N	N	0%-20%	20%-40%
TRONCAXE		SAN BERNARDINO	Gateway	0<6	Small	-33.26%	-12.89%	-44.00%	<50%	N	N	40%-60%	-
TWPLCAXF	IWENTYNINE PALMS	SAN BERNARDINO	Desert	6<54	Large Metro	-56.89%	-26.79%	-62.56%	60%-70%	N	N	80%-100%	60%-80%
WLANCAXJ	UNIVERSITY	LOS ANGELES	Beach Cities	>1700	Large Metro	-38.45%		-100.00%		N	Y	60%-80%	-
UPLDCAXF	UPLAND	SAN BERNARDINO	Inland	380<1700	Very Large	-49.20%	-28.15%	-12.13%	<50%	Y	Y	60%-80%	0%-20%
LNBHCAXG	UPTOWN	LOS ANGELES	Beach Cities	>1700	Very Large	-57.56%		-100.00%	-	N	Y	-	-
VLVSCAXF	VALLE VISTA	RIVERSIDE	Inland	54<380	Large Metro	-66.86%		-100.00%	-	N	N	20%-40%	-
WHTRCAXH	VALLEY VIEW	LOS ANGELES	Coastal	>1700	Very Large	-50.83%		-100.00%		N	Y	60%-80%	0%-20%
VTVLCAXA	VICTORVILLE	SAN BERNARDINO	Desert	54<380	Very Large	-59.29%	-29.89%	-68.96%	60%-70%	Y	Y	-	-
WLNTCAXF	WALNUT	LOS ANGELES	Coastal	380<1700	Very Large	-54.41%	0.00%	-99.94%	-	N	Y	60%-80%	40%-60%
HNBHCAXL	WARNER	ORANGE	Beach Cities	>1700	Large Urban	-61.49%		-100.00%	-	N	Y	40%-60%	40%-60%
BRDNCAXF	WASHINGTON STREET	RIVERSIDE	Desert	380<1700	Large Urban	-52.56%		-100.00%	-	N	N	40%-60%	60%-80%
SNBRCAXL	WATERMAN	SAN BERNARDINO	Desert	380<1700						N	N	-	-
WVVLCAXG	WEAVERVILLE	TRINITY	Northern	6<54	Large Metro	-32.18%	-13.20%	-43.46%	<50%	Ν	N	40%-60%	0%-20%
1						270							





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					Table	4F.12 (page 6 o	f 6)						
						2010-15	2016-17	2010-17	Access Line				
				Density		Access Line	Access Line	Access Line	Loss		FTR	Verizon Line Loss	Frontier Line Loss
CLLI Code	Reporting Unit	County	<b>Operating Area</b>	Category	Wire Center Size	Loss	Loss	Loss	Category	VZ FTTF	P FTTP	Category	Category
WEMRCAXF	WEIMAR	PLACER	Northern	54<380	Medium	-59.10%	-26.81%	-67.45%	60%-70%	Ν	Ν	0%-20%	20%-40%
WLDNCAXF	WELDON	KERN	Gateway	0<6	Medium	-46.16%	-24.75%	-60.56%	60%-70%	N	N	40%-60%	-
WLANCAXF	WEST LOS ANGELES	LOS ANGELES	Beach Cities	>1700						N	Ν	-	-
WMNSCAXF	WESTMINSTER	ORANGE	Beach Cities	>1700	Very Large	-54.00%	-27.12%	-68.73%	60%-70%	Y	Y	60%-80%	-
WLANCAXG	WESTWOOD	LOS ANGELES	Beach Cities	>1700						N	Y	80%-100%	80%-100%
WHTNCAXF	WHITEHORN	HUMBOLDT	Northern	0<6	Medium	-30.52%	-19.66%	-39.15%	<50%	N	Ν	0%-20%	0%-20%
WHTRCAXF	WHITTIER SOUTH	LOS ANGELES	Coastal	>1700	Very Large	-55.14%	-24.86%	-37.29%	<50%	Y	Y	40%-60%	-
WHTRCAXG	WHITWOOD	LOS ANGELES	Coastal	>1700	Large Urban	-53.54%		-100.00%	0	N	Y	60%-80%	-
WWCKCAXF	WILLOW CREEK	HUMBOLDT	Northern	0<6	Medium	-28.23%	-15.18%	-36.98%	<50%	N	Ν	-	-
WRWDCAXF	WRIGHTWOOD	SAN BERNARDINO	Desert	6<54	Medium	-31.65%	-41.09%	-58.38%	50%-60%	N	Ν	20%-40%	-
YERMCAXF	YERMO	SAN BERNARDINO	Desert	0<6	Small	-47.37%		-100.00%	0	N	Ν	40%-60%	-
YUCPCAXF	YUCAIPA	SAN BERNARDINO	Desert	54<380	Large Urban	-51.11%		-100.00%	0	N	Y	60%-80%	60%-80%
YCVYCAXG	YUCCA VALLEY	SAN BERNARDINO	Desert	54<380	Large Metro	-55.98%	-29.63%	-70.11%	70%-80%	N	Ν	60%-80%	20%-40%
MALBCAXF	ZUMA	LOS ANGELES	Coastal	54<380	Large Metro	-54.79%		-100.00%	0	N	Y	80%-100%	60%-80%



We have prepared a set of four (4) graphs for each of the five category dimensions that correspond to Verizon/ Frontier Companywide graphs provided above. Table 4F.13 below provides a summary of the figures provided for each set of attributes.

		Table 4	F.13			
SUMMARY O	F VERIZON/	FRONTIER	ATTRIBU	<b>FE DIMENSI</b>	ON GRAPH	IS
	Company wide	Broadband	Wire Center Size	POTS Line Loss	Density	ΟΡΑ
OOS per 100 Access Lines	Fig. 4F.3	Fig. 4F.14	Fig. 4F.18	Fig. 4F.22	Fig. 4F.26	Fig. 4F.30
Avg OOS>24 hrs Duration	Fig. 4F.7, 9	Fig. 4F.15	Fig. 4F.19	Fig. 4F.23	Fig. 4F.27	Fig. 4F.31
Pct OOS cleared in 24 hrs	Fig. 4F.10, 11	Fig. 4F.16	Fig. 4F.20	Fig. 4F.24	Fig. 4F.28	Fig. 4F.32
Days required to clear 90%	Fig. 4F.12, 13	Fig. 4F.17	Fig. 4F.21	Fig. 4F.25	Fig. 4F.29	Fig. 4F.33

ETI applied the same five attribute dimensions to the Verizon/ Frontier data, and for each we have developed summary tabulations of pertinent performance data. The absolute number of OOS conditions in all OOS categories has declined over the study period, which is to be expected given the 73.9% drop in POTS lines overall. Table 4F.12 summarizes the attribute categories associated with each of the Verizon wire centers and Frontier reporting units.



#### Wire Centers that had been upgraded to FTTP

Although this study and GO-133-C/D are primarily focused upon traditional circuitswitched POTS services, the fact that a particular wire center has been upgraded with a Fiberto-the-Premises ("FTTP") distribution infrastructure enabling it to support *FiOS* services is an indication that Verizon/Frontier has undertaken to invest in and to upgrade the central office and outside plant facilities therein. *FiOS* branded services include high-speed Internet access, digital IPTV, and VoIP telephone services. These services replace the copper loop and drop segments with fiber.<sup>93</sup>

In Chapter 3, we noted that the overwhelming majority of the central office switches that provide POTS services are quite old, in some cases twenty to thirty years old. Thus, the switch upgrades that have occurred in the 2010-2017 time frame were primarily aimed at providing or expanding the scope of packet-switched services such as VoIP and high-speed Internet access in the residential/small business market or advanced high-capacity services to enterprise and government customers. Recent outside plant upgrades for advanced services will often confer a direct benefit to legacy POTS customers as these customers are migrated to the new distribution architecture. But however these new plant upgrades and acquisitions are being utilized, there is a reasonable expectation that some overall improvement in POTS service quality should result. To test this hypothesis, ETI deemed the presence of FTTP in a given wire center as an indicator that the ILEC had upgraded its central office and/or outside plant facilities overall.

As of 2015, approximately half of Verizon's customers were served out of wire centers that were upgraded to offer *FiOS*.<sup>94</sup> Using FTTP availability as a surrogate for specific data on capital investment in each wire center, we determined that, as with AT&T, the presence of *FiOS* availability in any given wire center has had a positive impact upon POTS service quality being furnished out of that same building – specifically, on the incidence of OOS situations, their duration, and the extent to which the 90% cleared within 24 hours standard had been achieved. The results of this examination are shown in Figures 4F.14, 4F.15, 4F.16 and 4F.17 below. In general, wire centers that were upgraded to FTTP performed noticeably better on all OOS metrics than those for which no such upgrade investment had been made. In upgraded wire centers, the number of POTS out-of-service incidents per 100 lines in service was lower; their average duration was decidedly shorter, and the percentage of outages cleared within 24 hours was decidedly higher than in offices without broadband.

Under Verizon ownership from 2010 - 2015, in non-FTTP wire centers, the long-term trend of monthly out-of-service incidents per 100 POTS lines in service went from 0.91 in the first quarter of 2010 down to 0.63 as of the fourth quarter of 2015. *FiOS* equipped wire centers,

<sup>94.</sup> Frontier response to DR-01



<sup>93.</sup> See, e.g., Verizon, "Verizon FiOS – See the Light," available at

http://thevillagecondos.com/Projects/VerizonFIOS/MDUPortfolio.pdf (accessed 1/24/19).

however decreased at a greater rate from 0.88 in 1Q2010 to 0.54 in 4Q2015 (Figure 4F.14). Similar trends are shown throughout Figures 4F.15, 4F.16 and 4F.17.

Under Frontier ownership from 2015 - 2016, mixed results are shown. In Figures 4F.14, 4F.15 and 4F.17, although OOS conditions are decreasing or staying relatively constant for reporting units with broadband available, OOS conditions are actually increasing for reporting units without broadband. However in Figure 4F.16, the percent cleared within 24 hours increased for broadband enabled reporting units from 28% in 2016 to 71% in 2017 and decreased for non equipped reporting units from 31% to 29%.



Wire centers upgraded with Fiber-to-the-Premises ("FTTP") capable of providing *FiOS* broadband services achieve better service quality performance scores in virtually every category – lower numbers of Trouble Reports per Hundred Access Lines ("TRPH"), higher percentages of out-of-service conditions that are being resolved within 24 hours, and where out-of-service situations arise, their average durations are in all cases decidedly shorter.



Broadband upgrades for high-speed Internet, VoIP, and IPTV video services confer a direct benefit to legacy POTS customers as they are migrated to the new distribution architecture. But however these new plant upgrades and acquisitions are being utilized, there is a reasonable expectation that some overall improvement in POTS service quality should result.





**Figure 4F.14.** There have been fewer out-of-service conditions per 100 access lines in wire centers with FTTP upgrades.



**Figure 4F.15.** Service outages are shorter in wire centers that have received FTTP upgrades.





**Figure 4F.16.** FTTP-upgraded wire centers clear a higher percentage of out-of-service conditions cleared within 24 hours.



**Figure 4F.17.** The number of days needed to clear 90% of service outages in shorter in FTTP-upgraded wire centers.



### Wire Center Size.

As with our analysis of the AT&T data, we expanded the list of wire center size categories from the three specified in GO 133-C/D (Small (1000 or fewer POTS lines), Medium (1001-2999 lines), and Large (3000 or more lines)<sup>95</sup>) to the same five categories that we used for AT&T, splitting Large into Large Metro, Large Urban, and Very Large. Table 4F.14 below indicates the number of Verizon wire centers and Frontier reporting units falling in each of these five size categories. Similar to the AT&T analysis, we assigned wire centers and reporting units to size categories based upon the number of access lines in service as of January 1, 2010 for Verizon and the number of access lines in service as of April, 2016 for Frontier.

	Table	4F.14								
Ň	ERIZON/FRONT	IER CALIFORNIA	<i>C</i>							
CLAS REPOR	SIFICATIONS OF	WIRE CENTERS OTS LINES IN SE	AND							
POTS Line range	Category	No. of Verizon WCs	No. of Frontier Reporting Units							
1,000 or fewer	Small	56	62							
1,001 - 2,999	Medium	40	40							
3,000 - 9,999	Large Metro	55	56							
10,000 - 19,999 Large Urban 50 52										
20,000 and above Very Large 53 52										
TOTAL	•	254	262							

With the exception of the very largest (over 20,000 lines), wire centers and reporting units in the other four smaller size categories exhibited degraded performance over the study period – increases in the number of OOS conditions (per 100 POTS lines in service) overall, the number of OOS over 24 hours, the average duration before cleared, and the number of days to reach 90% cleared. The largest over-20,000 line category remained at roughly the same level over the full study period or, by some metrics, showed some improvement.



There appears to be a strong relationship between the number of POTS lines in a wire center and the quality of service provided. The number and the rate of increase in OOS per 100 POTS lines have been lowest in the very largest (over 20,000 lines) wire centers.

95. GO 133-C/D, at §3.3(c).





**Figure 4F.18.** The largest wire centers exhibit the fewest number of out-of-service conditions per 100 access lines.



**Figure 4F.19.** Service outages tended to be shorter in larger wire centers during the period of Verizon ownership; results under Frontier are indeterminate.





**Figure 4F.20.** The largest wire centers tend to clear a higher percentage of out-of-service conditions within 24 hours.



**Figure 4F.21.** The number of days needed to clear 90% of service outages is shortest in the largest wire centers.



#### Access Line Loss.

Tables 4F.1 and 4F.2, and Figure 4F.1, above trace Verizon/Frontier POTS lines in service over the full 2010-2017 period. Companywide, Verizon California experienced a net loss of 53.66% of its POTS access line, going from 2,778,584 in January 2010 to only 1,287,526 as of December 2015. This pattern of ongoing losses persisted after the Frontier takeover. By the end of 2017, Frontier California POTS lines in service dropped from 1,029,205 in April 2016 to only 724,752 as of December 2017. Combined, Verizon/Frontier access lines in service decreased by 73.9% over the full 8-year study period. These POTS losses were offset to some extent by the growth in interconnected VoIP access lines. We do not have data on VoIP service units being provided by Verizon or Frontier. However, as shown in Chapter 4 Figure 4.4 for all wireline carriers statewide, the gain in VoIP lines, while offsetting to some extent the ILECs' POTS losses, certainly did not come even close to fully replace the drop in POTS demand.

We also don't have carrier-specific residential and business losses. However, FCC statelevel data covering all wireline carriers (summarized on Figures 4.2 and 4.3 above) confirms that, as a general matter, residential wireline (POTS) losses were far greater than business losses as increasing numbers of households migrated to non-ILEC providers (primarily to cable MSOs offering interconnected VoIP-based telephone services) and to wireless.

In Table 4F.15 below, we have assigned each Verizon wire center and post-acquisition Frontier reporting unit into one of five (5) Access Line Loss categories, for Verizon (as of January 2010) and for Frontier (as of April 2016) respectfully. Because the ownership periods for Verizon and Frontier spanned shorter amounts of time compared to AT&T, ETI broke the POTS Loss ranges into quintiles for better balance: Lowest 20%, 21% - 40%, 41% - 60%, 61% - 80%, and Highest 20%.



		Table 4F.15		
	VERIZO	N/FRONTIER CALI	FORNIA	
	CLASSIFIC/ POTS	ATIONS OF WIRE C LINE LOSS PERCE	ENTERS BY NTAGE	
	Veri	zon	Fr	ontier
Quintile	POTS Loss range	No. of Verizon WCs	POTS Loss range	No. of Frontier Reporting Units
< 20%	< 42%	50	< 20%	36
21%-40%	42% - 48%	49	20% - 25%	36
41%-60%	48% - 54%	50	25% - 29%	36
61%-80%	54% - 59%	48	29% - 33%	36
> 80%	> 59%	49	> 33%	35
	TOTAL	246		179

Those wire centers and reporting units exhibiting the greatest percentage loss of POTS lines over the study period – exceeding 59% for Verizon and exceeding 33% for Frontier – experienced some improvement both in the number of OOS incidents and in their duration until cleared. Wire centers and reporting units experiencing the smallest losses fared far worse in terms of most metrics. One might infer that these low-loss wire centers and reporting units serve areas with the fewest competitive alternatives (hence explaining the relatively small losses), suggesting that Verizon has devoted more of its resources and efforts to those communities most impacted by competition for traditional POTS services.

ETI has prepared a set of analyses of the various service quality performance metrics organized by wire centers and reporting units falling into each of the various categories associated with each of these five sets of classifications. Perhaps ironically, those wire centers that had experienced the largest percentage drop-off in POTS demand generally exhibited superior performance on nearly all of the service quality metrics under examination, as shown in Figures 4F.22 through 4F.25 below:



The largest increases in service outages occurred in wire centers with the lowest POTS drop-off rates; the incidence of service outages increased more slowly or remained almost constant in wire centers with successively larger drop-off rates.





**Figure 4F.22.** During the Verizon ownership period, wire centers that had experienced the greatest drop-off in demand for POTS services exhibited the fewest number of out-of-service conditions per 100 access lines.



**Figure 4F.23.** During the Verizon ownership period, service outages tended to be shortest in wire centers that had experienced the greatest drop-off in demand for POTS services.









**Figure 4F.25.** During the Verizon ownership period, the number of days needed to clear 90% of service outages is shortest for wire centers that had experienced the greatest drop-off in demand for POTS services.


# Urban/Suburban/Rural

In CD Data Request 02-F, Frontier was asked to provide, for each of its wire centers in California:

a. Description of the principal geographic characteristics of the area being served (urban, suburban or rural)

- b. Primary customer base, i.e., residential or commercial
- c. Physical properties of the area, flat, mountainous, rivers, lakes, wetlands
- d. List of all census tracts served by the central office building
- e. Area (in square miles) of area served by the central office

In response to Data Request 02F, Frontier provided detailed geographic and other information about each of its reporting units. From this, we were able to construct a set of Frontier-specific density categories.<sup>96</sup>

As a general matter, out-of-service conditions occur less frequently and are cleared more quickly in the largest urban wire centers. Additionally, wire centers serving the smaller markets have exhibited the largest increases both in out-of-service incidents and in the time required to clear them over the 8-year study period. Over the 2010-2015 period under Verizon management, overall the number of out-of-service incidents per 100 access lines, as well as the average duration of such outages, improved. The greatest gains occurred in the most densely populated urban wire centers. For example, the number of days needed to clear 90% of service outages is shortest for wire centers serving more densely populated areas, from 6.09 days in the least dense area compared to 2.41 days in the most dense. Due to the relatively small number of periods available for study following Frontier's takeover, the results for the Frontier period are inconclusive. These results are plotted on Figures 4F.26, 4F.27, 4F.28 and 4F.29 below.

RP 1 In areas with the highest population density, Verizon/ Frontier's response to out-of-service conditions has generally improved over the study period, compared to more rural areas.

<sup>96.</sup> Frontier Response to DR-02F, Attachment B.xlsx



**Figure 4F.26.** Wire centers serving areas with the highest population density exhibit the fewest number of out-of-service conditions per 100 access lines and, under Verizon management, improved over the period.



**Figure 4F.27.** Service outages tend to be shorter in wire centers serving the more densely populated areas.





**Figure 4F.28.** Wire centers serving the more densely populated areas tend to clear a higher percentage of out-of-service conditions within 24 hours.



**Figure 4F.29.** The number of days needed to clear 90% of service outages is shortest for wire centers serving more densely populated areas.



# **ILEC Organizational Assignment**

Frontier has established six (6) "Operating Areas" ("OPAs") that it has designated as Beach Cities, Costal, Desert, Gateway, Inland, and Northern.<sup>97</sup> We do not have corresponding information regarding the manner in which Verizon had organized its operating areas prior to the transfer of ownership.

As is evident from the results presented on Figures 4F.30, 4F.31, 4F.32 and 4F.33 below, there is considerable variation in out-of-service performance across the six operating areas. However, the explanation for this may relate more to the nature of the wire centers falling within each OPA than to any inherent differences in their respective management. Table 4F.16 summarizes the principal geographic areas falling within the responsibility of each of the six OPAs.

Table 4F.16							
FRONTIER CALIFORNIA OPERATING AREAS							
Operating Area	Counties (or portions)	Sample wire centers					
Beach Cities	Los Angeles, Orange	Santa Monica, West Los Angeles, Long Beach, Huntington Beach					
Coastal	Los Angeles	Downey, Malibu, Pomona					
Gateway	Inyo, Kern, Los Angeles, Mono, Monterey, San Bernardino, Santa Barbara, Ventura	San Fernando, Sepulveda, Chino, Los Serranos					
Desert	Imperial, Riverside, San Bernardino	San Bernardino, Barstow, Big Bear Lake					
Inland	Riverside, San Bernardino	Cucamonga, Ontario South					
Northern	Humboldt, Kern, Kings, Marin, Mendocino, Merced, Placer, San Joaquin, Santa Barbara, Santa Clara, Sonoma, Stanislaus, Sutter, Trinity, Tulare, Yolo	China Lake, Randsburg					
Source: Frontier	response to DR-02F.	•					

There appears to be a strong correlation between the overall size and population density associated with each wire center and the Operating Area to which it has been assigned. Thus, the densest portion of Los Angeles County is assigned to the "Beach Cities" OPA. Less dense portions of Los Angeles County fall within the Coastal OPA, while more rural areas are

<sup>97.</sup> Frontier Response to DR-02F.



assigned to other OPAs. Thus, the results for Operating Area, WC Size, and WC Density are similar.



Of the six Frontier maintenance Operating Areas, those serving wire centers in the largest metropolitan areas (Los Angeles and Orange Counties) continue to show the best results and significant improvements in most OOS metrics. The poorest performing OPAs are those serving primarily rural communities.



Since the bulk of Verizon' and Frontier's investments in the California ILEC network have been in FTTP upgrades, the Operating Areas where these upgrades have occurred exhibit the lowest number of OOS incidents and the shortest outage durations for those that do occur.





**Figure 4F.30.** Operating Areas responsible for wire centers serving the more densely populated area exhibit the fewest number of out-of-service conditions per 100 access lines.



**Figure 4F.31.** Service outages tend to be shorter in those Operating Areas serving more densely populated areas.









**Figure 4F.33.** The number of days needed to clear 90% of service outages is shortest for those Operating Areas serving the largest and most densely populated areas.



## Summary

Overall, ETI's analysis of the 1.5-million Verizon Trouble Report records and other pertinent Verizon service quality data indicates that Verizon's service quality and its response to protracted out-of-service conditions had improved over the 6-year period spanned by the Verizon data. There are some notable exceptions, however, within certain parts of the overall Verizon California network.

As with AT&T, those Verizon wire centers that have received broadband upgrades in the form of *FiOS*-capable fiber-to-the-premises ("FTTP") distribution facilities – and hence have benefitted from an infusion of new investment – fared a lot better than those locations where little or no such upgrades had taken place. Service quality and responses to outages in the very largest wire centers – particularly those in the Los Angeles area (the "Beach Cities Operating Areas) actually showed significant improvements both with respect to the frequency of out-of-service incidents as well as the duration of those outages that did occur. Verizon out-of-service incidents declined in absolute numbers, and more closely tracked the large decrease in the number of POTS lines in service that Verizon had experienced over the 6-year period.

Our analysis of Frontier's service quality record over the seven quarters (from 2Q2016 through 4Q2017) following the April 1, 2016 transfer was necessarily more problematic. First, Frontier had modified the basis of reporting from the individual wire center to a new reporting unit that in many instances consisted of several wire centers. Frontier offered no explanation or justification for its decision to collapse the number of wire centers for reporting purposes. As a consequence of this change, we were not able to develop statistically meaningful trends within the period of Frontier ownership, nor were we able to integrate the Verizon and Frontier ownership periods to provide trends over the entire 8-year study period. Anecdotally, however, it appears that, following a problematic transition that persisted for a number of months, Frontier's operations appear to have stabilized and improved as the study period drew to a close.



# 5 INFRASTRUCTURE POLICIES AND PROCEDURES: AT&T

#### Principal observations and takeaways

- Over the full 2010-2017 period, less than 1% of all AT&T capital spending on network plant additions, just under \$47-million, was for outside plant rehabilitation projects.
- Extraordinarily small portions of AT&T California's Plant Additions and Maintenance expenditures have been directed at legacy POTS services over the 2013-2017 period.
- Despite the clear service quality objectives as set out at GO 133-C/D, the only areas where AT&T California has maintained POTS service quality in its network were in those wire centers where the company has invested in revenue-driven advanced broadband services.



# INFRASTRUCTURE POLICIES AND PROCEDURES: AT&T

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#### Introduction

AT&T California has provided a number of internal "Practices" documents that describe the company's objective policies and procedures. This material covers a variety of infrastructure maintenance and construction/enhancement activities including, among other things, long range outside plant ("OSP") planning, feeder and distribution plant design and administration, distribution area ("DA") design and planning, subscriber line carrier planning and deployment, routine inspections, and disaster recovery. In this chapter, we review and summarize the practices and policies described in these documents. It must be emphasized that these "official" enumerations of AT&T policies and practices mainly apply across all AT&T ILEC operating territories nationwide. As a result, they provide only *normative* and general descriptions of objective practices, priorities and performance, and thus may not apply specifically to AT&T California.

It is also important to understand that the various policies and practices described in these materials deal generally with all services that are furnished using the common OSP infrastructure. These include legacy circuit-switched POTS voice services, but also include a variety of (nonregulated) broadband services that appear to be the principal driver for the vast majority of OSP capital investment. While POTS customers located in areas where such network upgrades have occurred may benefit in terms of improved service quality, such gains appear to be ancillary to the primary driver of the capital investment upgrades.

The scope of ETI's undertaking with respect to this study does not include any on-site physical inspections of the two ILECs' plant. Accordingly, our assessments as to the relative effectiveness of the nominal AT&T practices in bringing service quality for POTS services to the levels contemplated in GO-133-C/D over the study period are largely based upon operations and financial data that are analyzed in detail in Chapters 6 and 7, respectively. At the outset here, however, it is instructive to begin this discussion by examining the relative portion of AT&T California's total operating expenses and capital outlays that the Company has identified as POTS-related. As it turns out, POTS maintenance and plant investments each represent extremely small fractions of AT&T California's total infrastructure-related outlays.

#### Network operation, maintenance and construction

Ongoing operation, maintenance, planning and construction of AT&T California local network infrastructure falls within the scope of the AT&T Technology and Operations Organization.<sup>98</sup> As summarized by AT&T:

<sup>98.</sup> AT&T Response to DR-01A, Request 1.



The following departments in the AT&T Technology and Operations organization support legacy voice services which are subject to the California Public Utilities Commission's General Order 133-D service quality metrics and reporting obligations:

# **Field Operations**

**Technical Field Services ("TFS") West (Core)** is responsible for the installation and repair of Legacy and IP voice and broadband data services (from central offices, through outside cable plant, terminals, and to the customer premises), as well as network infrastructure support and maintenance of those same central office and outside cable plant network facilities.

**Dispatch Optimization Center** is responsible for the forecasting / prioritization / and dispatching of installation and repair Legacy, IP, and broadband data services (inclusive of central office and field dispatch), as well setting customer appointment intervals.

# **Construction & Engineering**

**Outside Plant Engineering (Feeder, Distribution)** is made up of experienced and skilled personnel who design the appropriate electronics, structures (e.g., conduit or poles), and copper or fiber cables in order to provide services, including POTS, to customers in AT&T's service territory. In the event of large damages, such as wild fires and 3rd party damages, Outside Plant Engineering will design replacement or reinforcement facilities and structures. These designs are sent to Outside Plant Construction for deployment.

**Outside Plant Construction (Line, Splice for Copper and Fiber)** uses specialized skills and equipment to construct new structures (primarily conduit and poles), and place electronics and copper or fiber cables in order to provide services to AT&T customers. During major outages or periods of excessive troubles, such as wild fires or significant storms, Outside Plant Construction will loan qualified technicians in support of AT&T's Outside Plant Maintenance and Repair and Installation and Repair groups.<sup>99</sup>

As a general rule, projects undertaken by the Technical Field Services organization are relatively small, generally in the \$5,000 to \$10,000 range, and are considered as Maintenance Expenses



<sup>99.</sup> Id., emphasis in original.

(USOA Accounts 6200-6441) for accounting purposes. Larger projects are assigned to the Construction & Engineering ("C&E") organization. C&E projects are generally capital projects that are treated as Plant Additions for accounting purposes, and are assigned to the various Telecommunications Plant in Service ("TPIS") accounts.

# Plant maintenance and capital investment

AT&T was requested to "[p]rovide specific data on annual outside plant relief undertakings from 2010-2017" in the form of two spreadsheets, (a), "with financial data for C&E projects investment by wire center," and (b) "with financial data for TFS expenses by wire center."<sup>100</sup> In its "Further Response" to DR-04A dated July 10, 2018, AT&T provided a spreadsheet containing "financial information about proactive rehabilitation projects" for both C&E and TFS, but noted that "[f]inancial data for TFS projects is only available from 2013 and forward."<sup>101</sup>

Over the full 2010-2017 eight-year period, the C&E OSP Rehabilitation Projects identified by AT&T involved plant additions totaling just under \$47-million.<sup>102</sup> However, total AT&T California Gross Plant Additions (covering all TPIS categories) over that same period amounted to \$10.16-*billion*.<sup>103</sup> Thus, taken together over the full eight-year study period, AT&T California devoted only 0.46% of its network capital investments to POTS-related outside plant. Table 5.1 below provides this data on an annual basis:



Over the full 2010-2017 period, less than 1% of all AT&T capital spending on network plant additions, just under \$47-million, was for outside plant rehabilitation projects.

<sup>103.</sup> AT&T California Forms 43-02 for 2010-2017.



<sup>100.</sup> DR-04A, Request 3.

<sup>101.</sup> AT&T Further Response to DR-04A, dated July 10, 2018, Request 3.

<sup>102.</sup> Id., "Copy of 03 - DR 04-A Attachment 2 - Questions 3 and 4 TFS and CE Rehab Projects.xlsx"

	Table 5.1									
AT&T CALIFORNIA 2010-2017 OUTSIDE PLANT REHABILITATION INVESTMENT IN RELATION TO TOTAL GROSS PLANT ADDITIONS (\$000)										
	2010	2011	2012	2013	2014	2015	2016	2017	Total	
C&E OSP Rehab Projects	5,680	7,583	10,355	8,528	4,106	4,654	5,047	2,036	46,988	
Gross Plant Additions	1,294,281	2,823,661	1,026,656	1,349,988	1,003,950	692,124	840,929	1,126,575	10,158,164	
C&E OSP Rehab as pct of Gross Add'ns	0.44%	0.27%	1.01%	0.63%	0.31%	0.67%	0.60%	0.18%	0.46%	
Source: AT&T CA Fu	urther Respo	onse to DR-	04A; AT&T	CA ARMIS F	orms 43-02	for 2010-20	17, as filed w	ith the CPU	<b>)</b> .	

Even if this comparison were limited to only the portion of Gross TPIS Additions that are associated with outside plant – these are designated as "Cable and Wire Facilities" on the ARMIS Forms 43-02 – the amounts identified by AT&T California as being spent on "outside plant rehabilitation" are still a minuscule fraction of total outside plant additions, as shown on Table 5.2 below:

Table 5.2										
AT&T CALIFORNIA 2010-2017 OUTSIDE PLANT REHABILITATION INVESTMENT IN RELATION TO TOTAL OUTSIDE PLANT GROSS ADDITIONS (\$000)										
	2010	2011	2012	2013	2014	2015	2016	2017	Total	
C&E OSP Rehab Projects	5,680	7,583	10,355	8,528	4,106	4,654	5,047	2,036	46,988	
Gross Outside Plant Additions per Forms 43-02	445,120	433,135	352,228	483,337	485,825	411,973	537,118	772,574	3,921,310	
C&E OSP Rehab as pct of Gross Add'ns	1.75%	2.94%	1.76%	0.64%	1.13%	0.94%	0.94%	1.20%	1.20%	
Source: AT&T CA Further Response to DR-04A; AT&T CA ARMIS Forms 43-02 for 2010-2017, as filed with the CPUC.										

In an attempt to gain an understanding of the nature and extent of infrastructure investment over the full 2010-2017 study period, ETI drafted several data requests to AT&T California seeking various investment and maintenance expense data by Uniform System of Accounts ("USOA") account and by wire center. These included the follow specific request:

DR-03A, Request 1: Please provide the dollar amount of Gross Plant Additions as recorded on each of the following 47 CFR Part 32 Uniform System of Accounts ("USOA") Telecommunications Plant in Service ("TPIS") accounts separately for each central office



building and its associated wire center serving area for the period June 30, 2010 through December 31, 2017, in six-month intervals ...

Included within this request were data for eight outside plant ("Wire and Cable") accounts:

Account 2411: Poles Account 2421: Aerial cable Account 2422: Underground cable Account 2423: Buried cable Account 2424: Submarine & deep sea cable Account 2426: Intra-building network cable Account 2431: Aerial wire Account 2441: Conduit systems

AT&T provided a spreadsheet in response to this request on May 17, 2018 and advised that "AT&T California ('AT&T') provides in the spreadsheet named "Attachment 1\_Data Request Number 03-A" the dollar amount of gross plant additions as recorded for the 47 CFR Part 32 Uniform System of Accounts ("USOA") Telecommunications Plant in Service ("TPIS") accounts for each central office building and associated wire center service area." On August 6, 2018, AT&T provided a "Corrected" response to several of the original responses to DR-03A. With respect to Request 1, dealing with Gross Plant Additions, AT&T offered the following explanation for this "correction:"

In the course of investigating the differences in CLLI codes provided in response to DR 01-A, Attachment 1 and the original response provided to this DR (DR 03-A, Attachment 1), it was discovered that some of the information provided in the latter was in error, and should be replaced. ... The number of CLLI codes provided in this Corrected response may not exactly match those provided in response to DR 01-A, ....

That explanation notwithstanding, the "corrected" response provided material – and entirely unexplained–revisions to the original spreadsheet. Table 5.3 below summarizes the principal changes in aggregate Gross Plant Additions figures:



Table 5.3							
AT&T CALIFORNIA TOTAL 2010-2017 GROSS PLANT ADDITIONS FROM VARIOUS DATA SOURCES							
Gross Plant Gross Plant Additions Additions per per AT&T August 6 AT&T May 17 DR-03A "Corrected" Gross Plant Additions DR-03A Response Response Forms 43-02							
All Plant Accounts	11,739,053,969	8,947,340,053	10,158,164,000				
All OSP Accounts	3,850,934,047	52,055,334	3,921,310,000				
Source: AT&T CA Further R	esponse to DR-04A; AT&T C	A ARMIS Forms 43-02 for 2010-	2017, as filed with the CPUC.				

The figures contained in the original (May 17) response are relatively close, in aggregate, to the data provided by AT&T California to the CPUC in its annual Form 43-02 filings. However, the "corrected" response is not even close to the Form 43-02 submissions, making it impossible to identify which (if any) of the three sets of figures is actually correct. Table 5.4 below contains the year-by-year total gross plant additions for each of these eight OSP accounts as provided in AT&T's May 17 and August 6, 2018 responses, together with the corresponding Form 43-02 figures:

	Table 5.4									
AT&T CALIFORNIA GROSS ANNUAL OUTSIDE PLANT ADDITIONS 2010-2017 (\$000)										
	2010	2011	2012	2013	2014	2015	2016	2017	Total	
Gross OSP Plant Additions per AT&T May 17 DR-03A Response	445,130	433,135	352,229	(520,603)	(520,603)	1,419,377	411,973	537,119	772,573	
Gross OSP Plant Additions per AT&T August 6 DR-03 "corrected" response	5,680	7,583	10,355	8,528	4,106	4,654	5,047	2,036	46,988	
Gross Outside Plant Additions per Forms 43-02	445,120	433,135	352,228	483,337	485,825	411,973	537,118	772,574	3,921,310	
C&E OSP Rehab Projects	5,680	7,583	10,355	8,528	4,106	4,654	5,047	2,036	46,988	
Source: AT&T CA Ma filed with the CPUC; A	Source: AT&T CA May 17, 2018 and August 6, 2018 Responses to DR-03A; AT&T CA ARMIS Forms 43-02 for 2010-2017, as filed with the CPUC; AT&T CA Further Response to DR-04A.									

Note also that the "corrected" OSP plant additions are similar in overall magnitude to the totals provided for C&E OSP Rehabilitation Projects. Table 5.5 provides a similar comparison for each plant account.



	Table 5.5							
AT&T CALIFORNIA GROSS 2010-2017 PLANT ADDITIONS BY PLANT CATEGORY								
Accoun t	Account name	AT&T DR-03A "Original"	AT&T DR-03A "Corrected"	AT&T Forms 43-02				
2003	Telecommunications plant under construction	(1,640,085,396)	(8,066,786,096)	52,598,000				
2111	Land	(10,146,351)	(9,977,959)	171,000				
2112	Motor vehicles.	240,731,001	214,515,947	240,745,000				
2114	Tools and other work equipment.	148,164,920	98,120,967	93,597,000				
2121	Buildings	501,723,814	429,300,823	614,211,000				
2122	Furniture	442,729	16,832	443,000				
2123	Office Equipment	1,745,160	65,169	1,743,000				
2124	General purpose computers	54,087,005	37,922,921	43,434,000				
2211	Non-digital switching	3,590,255	605,095	214,000				
2212	Digital electronic switching	2,415,318,703	5,595,666,673	1,484,010,000				
2215	Radio Systems	(1,124,993)						
2220	Operator systems	(892)	8,279,498	1,000				
2231	Radio systems	31,558,133	97,567,584	29,549,000				
2232	Circuit equipment	5,054,179,704	9,723,463,826	2,696,678,000				
2341	Large private branch exchanges	9,405,683	7,234,433	9,406,000				
2351	Public Telephone Terminal Equipment	53,736						
2362	Other terminal equipment.	915,333,552	686,522,316	893,336,000				
2411	Poles	433,301,150	8,964,750	493,031,000				
2421	Aerial cable	889,616,086	6,264,904	840,574,000				
2422	Underground cable	1,572,181,402	3,587,848	1,552,375,000				
2423	Buried cable	364,196,673	10,352,429	364,234,000				
2424	Submarine & deep sea cable	14,598	14,598	14,000				
2426	Intra-building network	17,394,592	3,640,192	17,395,000				
2431	Aerial wire	(57,557,314)	3,303	11,000				
2441	Conduit systems	631,786,861	12,705,740	631,574,000				
2682	Leasehold improvements	55,393,201	50,109,763	52,339,000				
2690	Intangibles	107,749,962	67,479,475	94,707,000				
TOTALS -	- ALL ACCOUNTS	11,739,053,969	8,985,641,032	10,158,164,000				
TOTALS – OSP ACCOUNTS 3,850,934,047 52,055,334 3,921,310,000								
Source: A	Source: AT&T Response to DR-03A, as corrected 8/6/18; AT&T CA ARMIS Forms 43-02 for 2010-2017,							

AT&T also provided data on maintenance costs incurred by TFS for OSP rehabilitation projects but only for five years – 2013 through 2017. According to AT&T, aggregate TFS spending on OSP rehabilitation over the five-year period was \$30.9-million.<sup>104</sup> However, over

104. Op. cit., fn 5.



that same five-year period, total AT&T California maintenance expenses for outside plant (Accounts 6411 through 6441, aggregated to Account 6410) totaled \$3.57-*billion*.<sup>105</sup> The TFS Rehabilitation projects that AT&T has described as POTS-related thus amounted to only 0.86% of total outside plant maintenance costs over the 2013-17 period. Table 5.6 below summarizes these amounts for the five years for which AT&T has made TFS expense data available:

		Table	5.6						
AT&T CALIFORNIA 2013-2017 TFS OUTSIDE PLANT REHABILITATION EXPENSES IN RELATION TO TOTAL OUTSIDE PLANT MAINTENANCE COSTS (\$000)									
	2013	2014	2015	2016	2017	Total			
TFS. OSP Rehab Maintenance Projects	5,060	3,147	2,576	13,821	6,281	30,894			
Total Account 6410 Cable & Wire Maintenance Expense	678,737	790,714	746,968	673,524	683,751	3,573,694			
C&E OSP Rehab as pct of Gross Add'ns	0.75%	0.40%	0.34%	2.05%	0.92%	0.86%			
Source: AT&T CA Further Res	ponse to DR-04A;	AT&T CA ARMI	S Forms 43-03 1	for 2013-2017, as	filed with the CF	PUC.			



A correspondingly minuscule portion of total AT&T California maintenance expenses over the 2010-2017 period were directed toward outside plant rehabilitation.

Recognizing that POTS-related plant additions and maintenance represent little more than a *de minimis* fraction of total AT&T California capital and maintenance spending, it is instructive to look at how these funds are being directed. ARMIS Forms 43-02 and 43-03 provide this information at the USOA Account level for AT&T California companywide. In addition, AT&T California provided this data at the individual wire center level.<sup>106</sup> In aggregate over the entire AT&T California entity, the wire center data for the entire company should, in principle, equal the gross additions and maintenance expenses as reported on ARMIS Forms 43-02 and 43-03, respectively. As shown on Tables 5.2 through 5.6, however, this is not the case. ETI requested that AT&T provide either an explanation for the discrepancies or a reconciliation of the two data sources.<sup>107</sup> However, AT&T did not responded to this request.

<sup>105.</sup> AT&T CA ARMIS Forms 43-03 for 2010-2017, as filed with the CPUC;

<sup>106.</sup> AT&T CA Response to DR-03A.

<sup>107.</sup> DR 04-A Supplementary Request dated September 26, 2018.

The persistent redirection of AT&T California capital resources away from legacy circuit-switched services and over to (nonregulated) broadband can also be seen by comparing the relative mix of telecommunications plant in service (TPIS) as of January 1, 2010 against the cumulative gross plant additions that AT&T California made over the full eight-year 2010-2017 period. Table 5.7 below summarizes this both in dollars and in percentages of total TPIS for each of the major plant categories:

Table 5.7								
AT&T CALIFORNIA CHANGES IN THE MIX OF GROSS TELECOMMUNICATIONS PLANT IN SERVICE (\$000)								
Acct	Account name	TPIS as of 1/1/10	Pct of total TPIS	Gross Additions 2010-17	Pct of Total Gross Adds			
2001	Telecommunications Plant In Service (TPIS)	38,012,545	100%	10,158,164	100%			
2110	Land and Support Assets	4,401,971	11.60%	974,346	9.73%			
2211	Non-digital switching	0	0%	214				
2212.1	Digital switchingCircuit	5,192,369	13.68%	148,894	1.49%			
2212.2	Digital switchingPacket	501,701	1.32%	1,335,116	13.34%			
2220	Operator systems	22,064	0.06%	1	0.00%			
2231	Radio systems	146,498	0.39%	29,549	0.30%			
2232.1	Circuit equipmentelectronic & electronic-optical	9,102,360	23.98%	2,695,654	26.93%			
2232.2	Circuit Equipment optical-optical	0	0.00%	1,024	0.01%			
2310	Information Origination/Termination	1,319,289	3.48%	902,795	9.02%			
2411	Poles	889,619	2.34%	493,031	4.92%			
2421	Aerial cable	3,269,093	8.61%	840,574	8.40%			
2422	Underground cable	6,445,615	16.98%	1,552,375	15.51%			
2423	Buried cable	3,044,173	8.02%	364,234	3.64%			
2424	Submarine & deep sea cable	8,426	0.02%	14	0.00%			
2426	Intra-building network	4,300	0.01%	17,395	0.17%			
2431	Aerial wire	49,055	0.13%	11	0.00%			
2441	Conduit systems	3,564,250	9.39%	631,574	6.31%			
TOTAL				10,158,164				
Source: AT&T CA ARMIS Forms 43-02 for 2010-2017, as filed with the CPUC.								

Nearly 56% of all gross additions made during the 2010-2017 period were in three plant categories – Account 2212.2 Packet Switching, Account 2232.1 Optical/Electronic Circuit Equipment, and Account 2422 Underground Cable. Virtually all new central office investments from 2010 forward have been directed at acquiring increased packet switching capacity. Account 2232, which accounted for more than a quarter of all gross plant additions, includes two



categories of Circuit Equipment – Electronic (2232.1) and Optical (2232.2). However, "Circuit equipment that converts electronic signals to optical signals or optical signals to electronic signals shall be categorized as electronic" – i.e., shall be carried in Account 2232.1.<sup>108</sup> While it is not possible from the raw accounting data to identify "electronic" vs. "electronic/optical" circuit equipment, it is highly likely that the overwhelming majority of newly purchased Account 2232.1 Circuit Equipment is of the type that "converts electronic signals to optical signals to electronic signals."

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Extraordinarily small portions of AT&T California's Plant Additions and Maintenance expenditures were directed at legacy POTS services over 2013-2017 period.

It is also instructive to examine the pattern of gross additions at the individual wire center level. Tables 5.8 and 5.9 summarize the total company Gross Plant Additions and Annual Maintenance Expenses for TPIS-related network assets for the 2010-2017 period as reported in Forms 43-02 and 43-03, respectively. Table 5.10 provides the 50 wire centers with the largest total gross additions for the 2013-2017 period, and Table 5.11 provides the 50 wire centers with the largest amounts of Cable & Wire maintenance expenses for the same 2013-2017 period. Notably, only five (5) wire centers appear on both lists. Clearly, wire centers that have benefitted from large capital outlays do not require the level of maintenance costs that AT&T has incurred for locations that have not seen major physical upgrades.

108. 47 CFR § 32.2232(d).



Table	5.8
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#### AT&T CALIFORNIA TOTAL CABLE & WIRE GROSS ADDITIONS (ACCT 2410) AND C&E OSP REHAB EXPENDITURES BY WIRE CENTER 2013-2017

		Total Account 2410	Total Account 2410		C&E Spending as
		Cable & Wire Gross	Cable & Wire Gross	C&E Outside Plant	Percent of total OSP
		Plant Additions May	Plant Additions	Rehabilitation Project	Gross Adds - May 17
CLLI	Wire Center Name	17 Response	August 6 Response	Costs	Response
FLSMCA14	SF MONTROSE 1911	7,792,703	(100,453)	7,210	0.09%
SNFCCA05	251H ST	30,850,842	(64,497)	101,160	0.33%
BSRNCA70	2600 CAMINO RAMU	51,709,701	42,896	-	0.00%
SLNSCA11	33SAN JUAN GRADE	9,381,526	45,959	19,972	0.21%
SNDGCA06	3/11 51	43,258,233	(439,336)	273,884	0.63%
SNFCCA17	3RD ST	25,956,500	258,490	//,6/6	0.30%
OKLDCA11	451H	41,591,180	88,999	151,040	0.36%
PLDLCA11	4/1H SI	5,566,487	66,540	-	0.00%
SNDGCA16	608COMPTONBLVD	28,757,361	37,357	53,707	0.19%
SNFCCA21	611 FOLSOM ST.	55,820,407	304,708	9,306	0.02%
SNFCCA13	91HAVE.	20,122,324	52,918	11,565	0.06%
ACTNCA11	ACTON	2,268,199	8,541	-	0.00%
LSANCA14	ADAMS	15,830,937	8,693	254,320	1.61%
AGORCA11	AGUURA	20,325,774	(58,323)	34,301	0.17%
AGDLCATT		1,544,155	(4,943)	-	0.00%
	AIRPORT	87,903,445	(282,325)	34,088	0.04%
ALUDCAN		24,004,074	200,201	187,912	0.70%
		10,001,098	203,457	384,399	3.03%
		101,010	1,270	126 022	0.00%
SNJSCA 10		01 514 760	47,327	130,923	2.32%
		21,014,702	251,400	10,210	0.33%
		2,401,109	11,199	-	0.00%
		2 250 772	11 970	- 20 542	0.00%
		1 920 642	(7 749)	50,542	0.91%
		1,039,042	(7,740)	0,140	0.33%
		17 576 1/5	240,904	00 890	0.00%
ANTCCATT		0 038 083	1 120 386	90,000 40,723	0.52%
AP I SCA12		9,930,003 17 276 578	1,129,300	223 568	1 29%
		5 653 420	11 105	220,000	0.53%
		32 302 424	136 827	283 /02	0.33%
	AROMAS	2 272 225	3 80/	203,402	0.06%
ARGRCA12		8 441 524	48 275	60 520	0.00%
		3 / 28 275	1 0.80	27 280	0.72%
ATSCCA11		7 363 357	82 434	27,200	0.00%
ATWRCA12		9 743 556	405 367	2, 77	0.00%
AUBNCA01		16 682 198	(770 225)	21,070	0.22 /0
AVNI CA12	AVENAI	3 019 562	6 782		0.00%
AVBHCA11	AVILA BEACH	1.270.936	224.370	-	0.00%



Table 5.8 (page 2 of 14)					
CLU	Wire Center Name	Total Account 2410 Cable & Wire Gross Plant Additions May 17 Response	Total Account 2410 Cable & Wire Gross Plant Additions	C&E Outside Plant Rehabilitation Project	C&E Spending as Percent of total OSP Gross Adds - May 17 Response
		50 717 328	(222.263)	332 647	0.66%
CLVSCATT		1 900 075	(222,203)	552,047	0.00%
		6.246.902	1 295 425	-	0.00%
DALROADI		0,240,003	1,200,420	-	0.00%
BALBCAUT	BALBUA	10,178,888	220,419	24,740	0.24%
FRSNCATT	BALDWIN	39,756,653	205,178	590,179	1.48%
BNGRCA11	BANGOR	516,146	1,725	6,301	1.22%
BYPKCA11	BAYWOOD PARK	1,343,366	22,818	13,839	1.03%
BVLYCA11	BEAR VALLEY	765,535	25,274	-	0.00%
BELLCA11	BELL	8,735,769	65,692	47,807	0.55%
SNTCCA11	BELLOMY	34,242,663	234,087	328,579	0.96%
BNLMCA11	BEN LOMOND	1,479,573	(1,427)	4,852	0.33%
BNCICA11	BENICIA	12,070,183	92,522	36,269	0.30%
BKLYCA01	BERKELEY	34,946,529	78,920	65,209	0.19%
BTISCA11	BETHEL ISLAND	1,698,168	8,232	1,693	0.10%
BVHLCA01	BEVERLY HILLS	24,171,129	(197,233)	45,783	0.19%
BGSRCA11	BIG SUR	15,908,356	137,607	23,764	0.15%
BGGSCA11	BIGGS	718,723	14,800	84	0.01%
BLRSCA12	BLAIRSDEN	282,882	3,844	84	0.03%
BLLKCA11	BLUE LAKE	1.926.460	47.645	84	0.00%
BDBACA11	BODEGA BAY	708.801	3,491	1	0.00%
SNANCA12	BOLSA	7.661.536	47.777	-	0.00%
NILDCA12	BOMBAY BEACH	1 052 997	3 052	-	0.00%
BNVI CA11	BOONVILLE	2 651 204	75 796	87 605	3 30%
BRSPCA11	BORREGO SPRINGS	1 328 831	(927)	-	0.00%
BI CKCA11	BOUILDER CREEK	5 298 866	8 611	5 545	0.00%
	BRADIEV	351 476	3 375	0,0+0	0.10%
BRULCASO		7 /3/ 100	28 170	- 26 126	0.00%
		11 060 727	(21,701)	20,120	1.07%
		16,303,737	(31,701)	121,011	0.00%
DRVDCA12		10,239,205	190,290	-	0.00%
BGVLCATT	BRIDGEVILLE	760,704	10,394	84 554 070	0.01%
SNANCATT	BRISTOL	46,789,194	254,190	551,873	1.18%
ESCNCA01	BROADWAY	44,165,482	(952)	243,041	0.55%
BNPKCA11	BUENA PARK	54,364,981	811,612	257,732	0.47%
BRBNCA11	BURBANK	23,582,194	201,990	197,055	0.84%
BRLNCA01	BURLINGAME	19,384,866	35,123	147,009	0.76%
BURLCA11	BURREL MAIN	1,091,018	(10,776)	-	0.00%
FVPNCA11	BURREL TUXEDO	1,455,956	8,045	8,370	0.57%
SNANCA01	BUSH	66,106,508	164,775	247,362	0.37%
SNFCCA01	BUSH/PINE	92,771,157	387,117	89,681	0.10%
BTCYCA11	BUTTE CITY	588,669	(2,413)	84	0.01%
SNDGCA01	C ST	51,153,799	(328,601)	71,251	0.14%
CLXCCA12	CALEXICO	8,830,547	91,357	167,169	1.89%
CLPTCA11	CALIPATRIA	3,238,400	7,530	-	0.00%
CLSTCA11	CALISTOGA	5,933,274	93,671	61,794	1.04%
CMBACA11	CAMBRIA	3,967,203	26,075	61,296	1.55%



Table 5.8 (page 3 of 14)					
CLLI Wire Center Name	Total Account 2410 Cable & Wire Gross Plant Additions May 17 Response	Total Account 2410 Cable & Wire Gross Plant Additions August 6 Response	C&E Outside Plant Rehabilitation Project Costs	C&E Spending as Percent of total OSP Gross Adds - May 17 Response	
CMNLCA11 CAMP NELSON	432,921	400	-	0.00%	
CAMPCA11 CAMPO	5.690.069	47.660	16.510	0.29%	
CMPVCA11 CAMPTONVILLE	663.914	8.446	-	0.00%	
LSANCA23 CAPITOL	24.077.748	51.054	79.120	0.33%	
CRMLCA11 CARMEL	13.104.366	102.261	56.228	0.43%	
CRVYCA11 CARMEL VALLEY	1.886.438	2,229	5,481	0.29%	
SNVACA01 CARROLI	36,825,052	249,265	83,685	0.23%	
CRTHCA11 CARUTHERS	1,242,357	42,709	937	0.08%	
CSTCCA11 CASTAIC	17.301.529	(119,277)	-	0.00%	
CSVI CA11 CASTROVILLE	3,729,611	(1.567)	34	0.00%	
CYCSCA11 CAYUCOS	981.661	9.234	10.546	1.07%	
ALMDCA11 CENTRAL	29.839.762	261.052	106.784	0.36%	
CNVYCA11 CENTRAL VALLEY	3.843.550	117.977	464	0.01%	
WLANCA01 CENTURY CITY	17.603.398	234.200	82.795	0.47%	
CHLNCA11 CHALLENGE	1,170,561	1.317	84	0.01%	
ORNGCA11 CHAPMAN	32.161.301	119.419	148.860	0.46%	
CHICCA01 CHICO	30.833.237	221.028	51.637	0.17%	
CHWCCA11CHOWCHILLA	5.315.176	(36.081)	8.480	0.16%	
CHLRCA11 CHUALAR	543.013	(43)	19,728	3.63%	
CHVSCA12 CHULA VISTA EAS	T 26.535.041	(23.952)	-	0.00%	
CYTNCA11 CLAYTON	3,216,249	118,025	-	0.00%	
CLOKCA11 CLEARLAKE OAKS	1.646.832	16.690	-	0.00%	
FRSNCA12 CLINTON	42,476,157	205,916	423,909	1.00%	
CODLCA11 CLOVERDALE	3.055.595	50.691	63,400	2.07%	
CLNGCA01 COALINGA	4,791,606	10,714	6,608	0.14%	
CBMTCA11 COBB MOUNTAIN	6.231.643	16.736	6.559	0.11%	
SNDGCA11 COLLEGE	14,322,581	(134,920)	166,647	1.16%	
COTNCA11 COLTON	22,892,095	136,584	165,760	0.72%	
BKFDCA13 COLUMBUS	15.151.946	38,413	226,240	1.49%	
CMTNCA01 COMPTON	69,951,289	368,852	539,538	0.77%	
CNCRCA01 CONCORD	76,425,990	39,123	69,941	0.09%	
ANHMCA17 CONVERSION	2,275,573	15,630	-	0.00%	
CORDCA12 CORDELIA	7,840,577	45,984	-	0.00%	
CRNGCA12 CORNING	3,930,216	79,817	84	0.00%	
CORNCA11 CORONA	67,585,650	13,271	207,114	0.31%	
CRDMCA11 CORONA DEL MAR	13,668,510	64,882	69,071	0.51%	
CRNDCA11 CORONADO	4,951,740	(9,877)	62,257	1.26%	
CSMSCA11 COSTA MESA	19,128,034	191,437	303,110	1.58%	
CTWDCA11 COTTONWOOD	3,346,170	47,526	84	0.00%	
CTVLCA11 COULTERVILLE	4,177,291	483,275	28,161	0.67%	
CYWLCA11 COYOTE WELLS	1,851,691	1,307	-	0.00%	
CRCTCA02 CROCKETT	1,249.828	6.288	14,026	1.12%	
CWLDCA12 CROWS LANDING	1,409,614	432	-	0.00%	
CLCYCA11 CULVER CITY	22,161,105	28,899	90,464	0.41%	
SNJSCA12 CUPERTINO DIAL \	N 56,650,918	627,238	189,223	0.33%	



	Table 5.8 (page 4 of 14)					
CLLI	Wire Center Name	Total Account 2410 Cable & Wire Gross Plant Additions May 17 Response	Total Account 2410 Cable & Wire Gross Plant Additions August 6 Response	C&E Outside Plant Rehabilitation Project Costs	C&E Spending as Percent of total OSP Gross Adds - May 17 Response	
ANHMCA11	CYPRESS	37,863,360	328,259	636,701	1.68%	
DAVLCA12	DANVILLE	14,562,207	79,782	8,549	0.06%	
DAVSCA11	DAVIS	16,210,994	509,776	254,817	1.57%	
DLMRCA12	DEL MAR	22,937,508	155,680	22,338	0.10%	
DLRYCA11	DEL REY	926,217	22	4,711	0.51%	
DELNCA11	DELANO	8,504,605	50,638	172,635	2.03%	
HYWRCA11	DEPOT COURT	45,175,688	125,574	20,371	0.05%	
ORSICA11	DINUBA LAWRENCE	1.585.142	3.616	71.310	4.50%	
DINBCA01	DINUBA MAIN	8.256.141	11.587	145.814	1.77%	
DIXNCA11	DIXON	7.841.041	50,168	136,637	1.74%	
ELSGCA12	DOUGLAS	22,946,993	3.756	40.078	0.17%	
DWNVCA11		686.395	59,375	-	0.00%	
SRCYCA11	DOWNV SIERR CITY	446 447	5	-	0.00%	
DI ZRCA11	DUIZURA	1 521 681	6 626	6 952	0.46%	
DNGNCA12		5 001 011	(1 390)	-	0.40%	
DNSMCA11	DUNSMUIR	2 671 425	38 575	84	0.00%	
		3 710 818	60,028	-	0.00%	
ERI MCA11		1 708 581	1 992	15 832	0.88%	
		18 007 294	55 018	160 3//	2.61%	
		1 100 246	3 000	+03,3++	0.00%	
		20 151 667	35 563	164 884	0.00%	
		20,131,007	5 808	70 608	0.02 /0	
ELCINCAUT		20,774,090	244,866	70,000	0.34%	
		20 154 095	244,000	20,000	0.23%	
VSMTCA12		29,104,900	442,032	10,122	0.27%	
FISHICAT2		1,342,332	204 109	-	0.00%	
ELSBCATT	EL SUDRAINTE	15,045,500	394,190	-	0.00%	
		32,303,130	204,994	90,428	0.30%	
ELKCATT	ELK 2001 S HIGHWA	1,082,469	1,739	1,604	0.15%	
EKCKCATT		012,922	10,730	04 00.007	0.01%	
BKFDCATT	EMPIRE	10,897,513	61,825	89,687	0.82%	
ENCICATZ	ENCINITAS	16,896,688	146,302	20,521	0.12%	
RDNGCATT	ENTERPRISE	11,143,736	96,882	22,226	0.20%	
ESCLCATI	ESCALON	4,026,885	720	10,657	0.26%	
ESPRCA11	ESPARIO	1,161,072	(3,325)	19,287	1.66%	
GRGVCA01	EUCLID	32,927,374	82,746	154,080	0.47%	
EURKCA01		17,031,020	45,854	77,130	0.45%	
OLDLCA11	EXPORT	15,302,517	88,703	166,710	1.09%	
FROKCA11	FAIR OAKS WHITEH	56,030,078	276,983	491,689	0.88%	
FRFDCA01	FAIRFIELD	57,555,395	24,047	8,637	0.02%	
BKFDCA12	FAIRVIEW/MAIN	59,625,877	65,106	402,912	0.68%	
FLBKCA12	FALLBROOK	13,151,541	(157,526)	875,639	6.66%	
FETNCA11	FELTON	2,363,238	16,831	8,034	0.34%	
FLMRCA11	FILLMORE	3,292,841	(51,544)	21,920	0.67%	
VNTRCA02	FIR	12,720,573	(112,780)	21,367	0.17%	
FRBHCA11	FIREBAUGH	1,860,891	6,488	-	0.00%	





	Table 5.8 (page 5 of 14)					
CLLI	Wire Center Name	Total Account 2410 Cable & Wire Gross Plant Additions May 17 Response	Total Account 2410 Cable & Wire Gross Plant Additions August 6 Response	C&E Outside Plant Rehabilitation Project Costs	C&E Spending as Percent of total OSP Gross Adds - May 17 Response	
FLSMCA14	FLSM BLUE RAVINE	7,792,703	3,768	7,210	0.09%	
FNTACA11	FONTANA	58,996,675	279,542	346,871	0.59%	
FSVLCA11	FORESTVILLE	1,998,614	1,844	76,921	3.85%	
FTBRCA02	FORT BRAGG	5,196,378	103,756	68,963	1.33%	
FTUNCA11	FORTUNA	2,419,993	34,417	84	0.00%	
SNJSCA14	FOX CAMPBELL	46,059,045	91,089	318,886	0.69%	
OKLDCA03	FRANKLIN	74.803.757	296.099	41.186	0.06%	
FRMTCA12	FREMONT ADAMS	59 618 183	157 985	337,902	0.57%	
FRMTCA11	FREMONT MAIN	37 825 288	211 465	235 039	0.62%	
FRGI CA11	FRENCH GUI CH	922 990	2 133	200,000	0.01%	
FRSNCA01	FRESNO MAIN	48 920 256	236 840	610.397	1 25%	
WSCRCA11	FRONTIER	29 579 520	(33 855)	209.366	0.71%	
SCRMCA13	FRUITRIDGE	13 508 739	3 927	347 618	2 57%	
	FRUITVALE	30,056,039	33 158	96 757	0.32%	
FUTNCA01	FULLERTON	49 216 883	106 669	587,460	1 19%	
GALTCA11	GALT	6 484 739	105,607	12 968	0.20%	
SCRMCA03	GARDEN	31 2/18 678	(120,101)	9/2 990	3.02%	
GRDNCA01	GARDENA	85 329 194	(123,101)	356 099	0.42%	
	GARNET	21 035 007	(187 865)	356 953	1 63%	
GZLL CA11	GAZELLE	5/5 093	(107,000)	84	0.02%	
GRTWCA11	GEORGETOWN	2 300 523	(2,307)	04 10 //3	0.02 %	
CPBPCA11	GEDRED	2,309,323	(103,403)	10,445	0.43%	
GVVI CA11		1,202,505	25 483	13 360	0.01%	
		5 7/6 857	23,403	24,402	0.33%	
SCBMCA11		20 821 822	13 018	24,402	0.42 %	
		29,021,022	43,910	116.069	1.90%	
GLDLCATT		44,495,109	(12,004)	110,000	0.20%	
GNZI CA11		1 338 676	(13,300)	4 044	0.00%	
GNZLCATI	COSHEN	0 61/ 701	59,700	4,344	0.37 %	
GSHNCATT		0,014,701	30,710	23,010	0.30%	
GRVTCAUT		0.525 157	(12 707)	40 6 402	0.00%	
SNC7CA11	GREENFIELD	2,000,107	(12,797)	0,492	0.20%	
CRNDCA12	GREENWOOD	1 /00 220	21,002	109,432	0.90%	
GRINDCATS		1,499,320	107,302	04 10 459	0.01%	
GRULCATI		2,100,707	13,243	10,456	0.40%	
GVLDCATT		4,000,097	(2, 225)	01,140	1.20%	
GULLCATT		3,300,177	(2,323)	107,041	5.00%	
GUVECATI	GUERINEVILLE	1,319,700	(20,000)	6,520	0.49%	
GUSTCATT	GUSTINE CVDCLIM CANIVON	1,000,399	2,211	6,109	0.38%	
TRENCAT2		1,492,095	10,440	-	0.00%	
PLINCAT3		34,793,330	590	6,758	0.02%	
		4,318,445	27,189	-	0.00%	
		1,145,914	5,875	84	0.01%	
		22,663,987	166,822	52,437	0.23%	
ALPICA12		10,776,789	73,114	36,046	0.33%	
CRLSCA11	HARDING	9,149,190	15,620	22,017	0.24%	



Table 5.8 (page 6 of 14)					
CLLI	Wire Center Name	Total Account 2410 Cable & Wire Gross Plant Additions May 17 Response	Total Account 2410 Cable & Wire Gross Plant Additions August 6 Response	C&E Outside Plant Rehabilitation Project Costs	C&E Spending as Percent of total OSP Gross Adds - May 17 Response
HWTHCA01	HAWTHORNE	10,306,323	294,426	99,779	0.97%
SNLNCA11	HAYWARD HESPER	34,334,644	166,241	98,360	0.29%
HYWRCA01	HAYWARD MAIN	53,027,648	128,352	74,080	0.14%
HLBGCA11	HEALDSBURG	8,907,540	71,541	58,150	0.65%
HERLCA11	HERALD	1.124.122	9.997	-	0.00%
HRCLCA11	HERCULES	9.612.500	282.717	583	0.01%
HGLDCA11	HIGHLAND	7,965,486	80.757	180,194	2.26%
HI STCA11	HOLLISTER	11,730,707	508,065	8.887	0.08%
OKI DCA12	HOLLY	48,942,241	175.025	143,266	0.29%
HI WDCA01	HOLLYWOOD	38 780 516	69,998	160,107	0.41%
HI VI CA11	HOLTVILLE	2 352 361	7 352	24 379	1.04%
HMWDCA1		1 673 352	99,195	-	0.00%
		2 362 055	32 394		0.00%
PCBHCA11		2,002,000	(78 199)	147 535	5.45%
HRBKCA11	HORNBROOK	776 758	(70,100)	84	0.10%
	HUGHSON	3 066 846	16 381	5 304	0.01%
SI NSCA13	HUNTER	1 001 457	16,001	0,004	0.00%
		37 751 536	92.846	538 100	1 / 3%
		3 000 505	92,040 800	82 200	2 65%
		300.016	5 062	02,290	0.03%
		4 118 507	(11 338)	27 820	0.68%
		4,110,507	(11,550)	21,029	0.00%
		4,150,510	7,595	156 206	1 90%
		0,001,739 505,000	(200)	150,200	0.00%
		2 602 677	(022)	- 25 244	0.00%
		2,002,077	42,211	23,244	0.97%
		35,204,371	398,150	13,491	0.04%
		1,309,211	195,151	38,080	2.78%
JCSNCAUT	JACKSON	4,881,175	80,662	29,658	0.61%
JCMBCA11	JACUMBA	2,688,392	31,267	7,701	0.29%
JMTWCATT	JAMESTOWN	2,706,187	(12,173)	15,034	0.56%
JAMLCA60	JAMUL	1,719,248	26,189	4,011	0.23%
JULINCA12		3,399,991	4,884	67,152	1.98%
SNJSCA21	JUNCTION AVE	56,843,067	(95,600)	38,981	0.07%
KLVLCA12	KELSEYVILLE	2,338,332	48,220	32,446	1.39%
KGCYCA11	KING CITY	3,980,607	53,849	31,643	0.79%
KGBGCA11	KINGSBURG	4,419,894	11,785	63,156	1.43%
KYBRCA11	KYBURZ	512,421	4,793	-	0.00%
IGWDCA01		12,394,182	89,027	121,916	0.98%
CRLSCA12	LACOSTA	21,018,795	88,961	6,588	0.03%
LAHNCA11		688,644	3,833	-	0.00%
LAMSCA01	LAMESA	30,518,232	95,023	235,333	0.77%
ANHMCA12		20,148,483	(17,276)	24,311	0.12%
LFYTCA11	LAFAYETTE	4,938,159	52,585	22,437	0.45%
LGNGCA12	LAGUNA NIGUEL	12,404,678	102,160	42,859	0.35%
PSDNCA12	LAKE	26,520,849	80,172	236,022	0.89%



	Table 5.8 (page 7 of 14)					
CLLI	Wire Center Name	Total Account 2410 Cable & Wire Gross Plant Additions May 17 Response	Total Account 2410 Cable & Wire Gross Plant Additions August 6 Response	C&E Outside Plant Rehabilitation Project Costs	C&E Spending as Percent of total OSP Gross Adds - May 17 Response	
LKBRCA11	LAKE BERRYESSA	1,084,908	1,231	-	0.00%	
LKLACA11	LAKE LOS ANGELES	1,079,713	10,737	939	0.09%	
GRVYCA11	LAKE OF THE PINES	4,153,664	(38,481)	27,125	0.65%	
GRVYCA12	LAKE WILDWOOD	2,317,362	45,301	-	0.00%	
LKPTCA02	LAKEPORT	4,651,500	95,821	28,445	0.61%	
LKSDCA12	LAKESIDE	21,199,135	95,740	57.682	0.27%	
NHWDCA01	LANKERSHIM	18.915.827	137.308	245.329	1.30%	
I RKSCA11	I ARKSPUR KING	13,155,074	80,785	63,552	0.48%	
LATNCA11	LATON	910,664	6,139	13,292	1.46%	
LGRDCA11		357 851	(2.028)	-	0.00%	
I GRNCA12	LE GRANGE	718 137	63 361	-	0.00%	
EZPKCA11	LEBEC CHESTNUT	1 934 243	394 177	-	0.00%	
I FBCCA11	LEBEC MAIN	2 744 562	(5 441)	14 214	0.52%	
ANHMCA01	LEBEO	62 476 858	654 308	162 824	0.26%	
I FMRCA11		5 247 727	215 934	6 549	0.12%	
LEMRCA12	LEMOORE WYMAN	487 160	1 021	-	0.00%	
		1 040 687	(20 383)	_	0.00%	
LSTNCA11		686 880	(20,500)	84	0.00%	
		11 597 090	37 991	159	0.01%	
SNDGCA03		42 327 737	179.078	232 342	0.55%	
I TRKCA11		4 481 089	(367 294)	202,042	0.00%	
		1 267 3/3	(307,234)	-	0.00%	
		23 170 475	105 505	2/ 151	0.00%	
		1 //2 088	103,505	24,101	0.10%	
		26 183 560	125 228	213 027	0.00%	
		1 101 /33	5 642	210,027	0.02 /0	
		12 212 782	123 / 20	17 731	0.01%	
		13,012,700	04 725	201 007	1 55%	
		0.525.079	56,725	201,997	0.52%	
		9,000,970	11 211	50,291	0.03%	
		1,001,090	12 006	04 9 004	0.01%	
		0,040,092	7 192	0,904	0.13%	
		240,147	1,102	21 024	0.05 %	
		1,490,232	(167.441)	21,024	0.51%	
		20,521,594	(107,441)	104,044	0.01%	
		05,790,057	1 675 000	94,003	0.11%	
		20,000,170	(12.264)	44,314	0.17%	
		1,221,013	(12,304)	23,044	0.32%	
SINDGCA12		17,027,070	07,402	03,202	0.47%	
		25,056,750	14,004	55,597	0.22%	
		17,347,954	132,016	54,772	0.32%	
SINVACATT		31,320,544	525,957	21,574	0.07%	
SNFCCA04		44,952,597	382,462	9,726	0.02%	
		4,244,842	17,092	84	0.00%	
LSANCA08	MELRUSE	26,926,652	103,832	264,166	0.98%	
MNDCCA11	MENDOCINO	3,291,800	7,316	27,768	0.84%	



	Table 5.8 (page 8 of 14)					
CLLI	Wire Center Name	Total Account 2410 Cable & Wire Gross Plant Additions May 17 Response	Total Account 2410 Cable & Wire Gross Plant Additions August 6 Response	C&E Outside Plant Rehabilitation Project Costs	C&E Spending as Percent of total OSP Gross Adds - May 17 Response	
MNDTCA11	MENDOTA	1,462,355	(20,868)	14,200	0.97%	
MNPKCA11	MENLO PARK	11,467,944	13,082	58,331	0.51%	
MRCDCA01	MERCED	30,888,611	51,146	12,441	0.04%	
MRDNCA11	MERIDIAN	1,227,512	2,718	508	0.04%	
BKFDCA15	METTLER	3.239.539	(24,381)	35.013	1.08%	
MDTWCA11	MIDDLETOWN	8,961,846	22.554	61.491	0.69%	
MLVYCA01	MILL VALLEY	8.144.204	39.244	35.240	0.43%	
MI BRCA11	MILLBRAF	13.324.719	45,392	61,645	0.46%	
MIPSCA11	MIL PITAS ABEI	19 912 975	264 204	184 850	0.93%	
MRNDCA11	MIRANDA	2 600 177	4 565	25 674	0.00%	
OCSDCA11	MISSION	27,396,452	117 413	150 115	0.55%	
MDSTCA03	MODESTO KELLOG	12 098 867	14 119	60 484	0.50%	
MDSTCA04	MODESTO KINGSW(	9 870 073	(94,670)	-	0.00%	
MDSTCA02		55 659 325	(34,070)	69 988	0.00%	
MDSTCA52		68 052	(2.616)	-	0.10%	
MDSTCA05		1 93/ 925	(2,010)		0.00%	
		9,004,020	5 007	6 017	0.00%	
		1 101 061	158 515	0,017	0.07 %	
MTAGCA11		1,101,001	100,010	- 01	0.00%	
		070 540	12,413	2 709	0.01%	
		970,049 17 122 161	13,900	2,790	0.29%	
LOANCA35		47,133,101	125,670	231,900	0.49%	
MORCA 12		12,340,070	15,770	-	0.00%	
	MORAGA	2,057,179	05,037	9,917	0.40%	
SLINSCA14	MORO	3,464,128	(1,194)	94,642	2.73%	
MRBACATT	MORRO BAY	1,864,927	11,180	23,030	1.23%	
MSBHCA11	MOSS BEACH	956,543	3,913	25,353	2.65%	
OKLDCA13		25,284,189	33,659	147,114	0.58%	
MTPSCA11	MOUNTAIN PASS	1,059,988	(4,288)	-	0.00%	
MIVWCA11	MOUNTAIN VIEW	40,669,322	529,771	269,603	0.66%	
YBCYCA01	MSVL FRANKLIN	25,690,985	110,416	80,483	0.31%	
MTSHCA12	MT SHASTA	3,959,557	16,567	84	0.00%	
BCWYCA11	N TAHOE BROCKWA	3,304,697	28,811	-	0.00%	
NAPACA01	NAPA	49,038,042	11,338	175,341	0.36%	
NVCYCA11	NEVADA CITY	4,753,519	16,368	-	0.00%	
NHLLCA01	NEWHALL	21,246,956	11,869	66,293	0.31%	
NWMNCA12	NEWMAN	1,893,944	11,263	-	0.00%	
NICSCA11	NICASIO	1,173,997	1,994	43,378	3.69%	
NICECA11	NICE	3,111,493	(19,743)	-	0.00%	
NCLSCA12	NICOLAUS	294,277	10,825	-	0.00%	
FLSMCA12	NIMBUS	14,794,122	(59,708)	25,615	0.17%	
NIPMCA11	NIPOMO	4,755,475	(132)	-	0.00%	
BKFDCA19	NOMAD	10,638,137	129,140	-	0.00%	
LSANCA12	NORMANDY	20,549,880	39,598	173,800	0.85%	
ANNPCA11	NORTH ANNAPOLIS	2,177,262	(529)	3,040	0.14%	
NSCRCA12	NORTH NATOMAS	11,125,529	40,057	-	0.00%	

Table 5.8 (page 9 of 14)					
CLLI	Wire Center Name	Total Account 2410 Cable & Wire Gross Plant Additions May 17 Response	Total Account 2410 Cable & Wire Gross Plant Additions August 6 Response	C&E Outside Plant Rehabilitation Project Costs	C&E Spending as Percent of total OSP Gross Adds - May 17 Response
NSJNCA11	NORTH SAN JUAN	582.866	716	-	0.00%
THCYCA01	NORTH TAHOF MAIN	5,771,983	(14,938)	-	0.00%
NYUBCA11	NORTH YUBA	1,417,852	27,394	-	0.00%
NORGCA11	NORTHRIDGE	27.009.170	353,932	115,899	0.43%
OKDI CA11		6.971.157	33,158	94,889	1.36%
LACNCA11	OAKGROVE	2 748 720	(154)	-	0.00%
OKI YCA11		7 796 466	8 598	-	0.00%
		2 384 633	(3.059)	39 425	1.65%
		1 372 000	(0,000) 19 184	360	0.03%
	OIAI	5 270 599	85 726	-	0.00%
		27 528 131	67 802	23 005	0.00%
SNECCA06		26 135 238	209 761	20,000	0.00%
ORNGCA11	ORANGE CHAPMAN	20,100,200	138 816	1/18 860	0.00%
ORCVCA11		1 / 71 878	1 20/	2 723	0.40%
		1,471,070	1,204	2,720	0.10%
		3 0/2 108	40,240	23 315	0.50%
		1,005,695	42,120	23,313	0.39%
ORVLCA12		0,815,720	138 884	7,437	0.39%
OTMSCA11		9,015,729	130,004	62.246	0.32 %
DCECCA11		0,707,430	129,740	02,340	0.71%
		13,320,073	07,409	10,007	0.57%
PLDLCAUT		20,775,979	(107,004)	1,922	0.01%
PLALCAU2		40,296,729	(127,024)	201,730	0.02%
PLALCA 12		15,765,527	(40,967)	115,072	0.73%
PRDSCATT		4,737,962	63,822	/9,6/8	1.68%
PRUSCATZ	PARADISE PINES	4,100,967	17,536	19,781	0.48%
PRMTCAU1	PARAMOUNT	23,383,139	532,210	96,200	0.41%
CLESCATT	PARK SURRENTU	7,487,295	51,145	18,286	0.24%
PRERCA11	PARLIER	3,459,438	10,218	30,059	0.87%
LACRCA11	PASADENA FOOTHI	15,291,085	97,956	186,075	1.22%
PSDNCA11	PASADENA GREEN	61,930,069	157,741	51,426	0.08%
PSKNCA11	PASKENTA	1,479,013	2,922	84	0.01%
PSRBCA01	PASO ROBLES MAIN	17,551,807	749,831	34,513	0.20%
PALACA11	PAUMA VALLEY	3,136,026	(4,756)	102,543	3.27%
PDLYCA11	PEDLEY	17,995,714	148,548	7,482	0.04%
PPWDCA11	PEPPERWOOD	484,666	3,582	2,162	0.45%
PSCDCA11	PESCADERO	1,027,702	3,436	53,809	5.24%
PTLMCA01	PETALUMA MAIN	22,193,531	54,762	14,679	0.07%
CTTICA12	PETALUMA SWIFT	5,354,133	99,964	40,486	0.76%
LEBCCA12	PINE MOUNTAIN	756,123	121,319	-	0.00%
PNVYCA11	PINE VALLEY	2,080,788	2,367	5,616	0.27%
PIRUCA11	PIRU	575,367	1,575	-	0.00%
PSBHCA11	PISMO BEACH	2,093,003	58,489	12,477	0.60%
PSBGCA01	PITTSBURG MAIN	15,639,239	35,816	13,250	0.08%
PSBGCA11	PITTSBURG WILLOV	3,992,553	116,578	37,891	0.95%
PXLYCA11	PIXLEY	2,130,483	2,650	-	0.00%



Table 5.8 (page 10 of 14)					
CLLI	Wire Center Name	Total Account 2410 Cable & Wire Gross Plant Additions May 17 Response	Total Account 2410 Cable & Wire Gross Plant Additions August 6 Response	C&E Outside Plant Rehabilitation Project Costs	C&E Spending as Percent of total OSP Gross Adds - May 17 Response
PLCNCA11	PLACENTIA	26,259,678	81,472	81,290	0.31%
AUBNCA11	PLACER HILL	3.777.829	18.045	77	0.00%
PLVLCA11	PLACERVILLE MAIN	15,410,233	127.047	117.893	0.77%
PLVLCA12	PLACERVL NIAGAR/	3.727.621	66.213	37.859	1.02%
PLNDCA11	PLANADA	548,194	3.748	25.072	4.57%
I SANCA05	PLEASANT	48.096.407	22,522	489.832	1.02%
PI GVCA12	PLEASANT GROVE	1,263,107	13,352	-	0.00%
PI TNCA12	PLEASANTON	15,836,570	(45,942)	10.902	0.07%
I SANCA13		14,100,308	133,141	104,293	0.74%
PNARCA11	POINT ARENA	2,618,479	(40)	58,020	2.22%
PRSNCA11	POINT REYES	1,739,470	20.503	76,492	4.40%
PTVI CA11	PORTERVILLE	16,162,049	62,578	70,579	0.44%
PTOL CA01		2 154 347	17 551	84	0.00%
PTVYCA11	POTTER VALLEY	1,237,799	1,228	4.886	0.39%
POWYCA11		13 133 972	21 246	69 212	0.53%
ONCYCA12		2,762,455	94,486	84	0.00%
RAMNCA11	RAMONA	11 673 464	364 294	34 283	0.29%
I SANCA11	RAMPART	22,992,310	106,959	8,736	0.04%
RBRNCA11	RANCHO BERNARD	15.019.825	90,881	84,636	0.56%
RNMRCA11	RANCHO MURIFTTA	1,236,691	5.051	,	0.00%
RNPSCA11	RANCHO PENASQU	4,294,980	14,974	-	0.00%
RNSDCA11	RANCHO SAN DIEG	6,288,756	15,130	10,188	0.16%
RSFFCA12	RANCHO SANTA FF	11,308,543	221,471	65,227	0.58%
RDBI CA01	RED BI UEE	11,587,596	(25,528)	21,509	0.19%
RDNGCA02	REDDING MAIN	24.045.438	176.059	19.212	0.08%
TUSTCA70	REDHILL	14,942,468	62.589	34.522	0.23%
RDCYCA01	REDWOOD CITY	40,703,383	467,196	190.844	0.47%
SNDGCA15	REGENTS	43.600.985	2.086.316	38.685	0.09%
LSANCA38	REPUBLIC	17,186,592	44.186	243.295	1.42%
RESDCA01	RESEDA	21.602.847	157.380	267.867	1.24%
RILTCA11	RIALTO RIVERSIDE	11.712.715	94,634	189.753	1.62%
LSANCA09	RICHMOND	19,987,033	424,362	32.258	0.16%
RCMDCA11	RICHMOND MAIN	33.981.516	178,439	-	0.00%
RCVACA11	RICHVALE	921.495	3.003	7.787	0.85%
RIDECA11	RIO DELL	1.320.834	6,943	84	0.01%
RILNCA12	RIO LINDA	2,597,329	(26.084)	40.100	1.54%
RVRBCA11	RIVERBANK	4.457.850	24,446	9,478	0.21%
RVDLCA11	RIVERDALE	520,122	1.092	12.040	2.31%
RVSDCA01	RIVERSIDE ORANGE	57.137.127	604.119	274.205	0.48%
RCKLCA01	ROCKLIN	18.522.553	533.417	-	0.00%
RTPKCA11	ROHNERT PARK	7.169.117	40.221	30.357	0.42%
RSMDCA11	ROSAMOND	6.521.600	98.362	-	0.00%
ROSMCA11	ROSEMEAD	10,728.811	45.598	78.306	0.73%
RCKLCA11	S PLACER ROCKLIN	10,652,909	127,101	-	0.00%
SNBUCA02	S SAN FRANCISCO	42,329,961	105,563	326,977	0.77%



Table 5.8 (page 11 of 14)					
CLLI	Wire Center Name	Total Account 2410 Cable & Wire Gross Plant Additions May 17 Response	Total Account 2410 Cable & Wire Gross Plant Additions August 6 Response	C&E Outside Plant Rehabilitation Project Costs	C&E Spending as Percent of total OSP Gross Adds - May 17 Response
SNDGCA05	SAIPAN	13,924,136	(347,365)	107,655	0.77%
SNADCA11	SAN ANDREAS	8,874,044	284,703	29,827	0.34%
SNARCA11	SAN ARDO	916,463	664	-	0.00%
SNCRCA11	SAN CARLOS	29,060,115	114,063	95,115	0.33%
SNCLCA12	SAN CLEMENTE	10,553,178	166,214	45,293	0.43%
SNJSCA15	SAN FELIPE RD	10.345.050	41.347	58.971	0.57%
SNGBCA01	SAN GABRIEL	14.596.827	73,433	209.277	1.43%
SNGNCA11	SAN GERONIMO	1.033.397	2,265	35.381	3.42%
SNJSCA02	SAN JOSE MAIN	97.778.638	322,746	275.980	0.28%
SJCPCA12	SAN JUAN	20 436 258	163 451	27 727	0.14%
SNI CCA11	SANTUCAS	728 947	850		0.00%
SNL OCA01	SAN LUIS OBISPO	20 737 327	251 778	49 702	0.24%
SNMACA11	SAN MARTIN	6 523 741	75 493	-	0.00%
SNMTCA11	SAN MATEO	38 609 814	4 010	101 169	0.00%
	SAN PEDRO 5TH ST	23 020 632	187 193	31 932	0.20%
SNRECA01	SAN RAFAFI MAIN	25,020,002	106,100	130 382	0.14%
SNRMCA11	SAN RAMON	17 685 314	238 674	50	0.00%
		6 18/ 638	230,074	107 689	1 74%
SNC7CA01	SANTA CRUZ MAIN	18 5/13 600	23,203 13,151	62 551	0.34%
		1 466 044	3 950	6 806	0.04 %
DSMGCA11		8 505 750	31 211	0,000	0.40%
		64 060 120	129.069	102 701	0.00%
SINKSCAUT		16 124 256	244 192	123,701	0.19%
SANTCAUT	SANTEE	10, 134,330 5 310 377	Z44,10Z (5.000)	00,040 74	0.04%
SATCCATZ	SALICUS	5,510,277	(3,220)	74	0.00%
SAGSCATT	SAUGUS	9,709,740	0,119	-	0.00%
SSLICATI	SAUSALITU	4,100,304	20,340	32,801	0.79%
SCVICAUI	SCOTTS VALLET	0, 123,87 1 10,021,691	41,478	-	0.00%
SESDCATI	SEASIDE	10,931,081	(171,832)	45,109	0.41%
SBSTCATT	SEBASTOPOL	8,407,098	96,867	96,674	1.15%
SELMCATT	SELMA	5,298,476	33,830	228,537	4.31%
ASMICATI	SEQUUIA	1,209,399	1,046	-	0.00%
SHFICA11	SHAFTER	4,037,347	4,052	118,682	2.94%
SHLKCAUI	SHASTA LAKE	3,741,037	24,635	84	0.00%
SHOKCAUI	SHERMAN OAKS	13,217,989	114,238	86,766	0.66%
SGSPCA11	SHINGLE SPRINGS	7,832,920	(3,367)	94,170	1.20%
SHSHCA11	SHOSHONE	260,892	1,480	-	0.00%
FRSNCA13	SIERRA	20,547,392	48,922	214,647	1.04%
SRVLCA11	SIERRAVILLE	536,998	2,071	84	0.02%
SLVRCA11	SILVERADO	986,321	18,348	7,285	0.74%
SIMICA11	SIMI VALLEY	23,532,664	113,126	51,110	0.22%
SMAVCA11	SMARTVILLE	1,098,742	8,064	-	0.00%
SNRSCA11	SNRS LOS ALAMOS	7,823,682	13,031	17,036	0.22%
LOMSCA11	SO PLACER LOOMIS	7,198,265	(37,347)	-	0.00%
NWCSCA11	SO PLACER NWCAS	2,308,807	189,480	-	0.00%
STAHCA13	SO TAHOE MEYERS	871,388	2,116	-	0.00%



CONFIDENTIAL AND PROPRIETARY PER P.U. CODE § 583, GENERAL ORDER 66-D, & D.16-08-024

Table 5.8 (page 12 of 14)						
CLLI	Wire Center Name	Total Account 2410 Cable & Wire Gross Plant Additions May 17 Response	Total Account 2410 Cable & Wire Gross Plant Additions August 6 Response	C&E Outside Plant Rehabilitation Project Costs	C&E Spending as Percent of total OSP Gross Adds - May 17 Response	
STAHCA01	SO TAHOE SUSSEX	7,653,799	68,444	12,732	0.17%	
SDSPCA11	SODA SPRINGS	2,134,379	87,767	-	0.00%	
SLMNCA11	SOLAMINT	15,794,833	70,523	7,042	0.04%	
SLDDCA11	SOLEDAD	3,615,179	20,688	-	0.00%	
SONMCA12	SONOMA	15,605,491	387,338	62,055	0.40%	
TWHRCA11	SONORA JUNO	1.923.019	12.468	8.585	0.45%	
SNRACA13	SONORA MAIN	11.001.639	(34,690)	-	0.00%	
SGATCA01	SOUTH GATE	20.658.364	157.586	202.462	0.98%	
MSVJCAAT	SOUTH MISSION VIE	10.873.394	88.475	274	0.00%	
SNJSCA11	SOUTH WHITE RD	27,405,046	464,343	300.665	1.10%	
SNTCCA01	SPACE PARK	63 306 239	101,082	25 693	0.04%	
IRVNCA12	SPECTRUM	15 928 485	281,307	-	0.00%	
SPVI CA11	SPRINGVILLE	1 886 628	14 267	6 755	0.36%	
MDSTCA05		4 934 925	7 534	-	0.00%	
		1 97/ 662	1,004		0.00%	
STHNCA11	ST HELENA ANOVIN	15 283 250	1/2/56	28 967	0.00%	
SNECCA12		18 731 760	142,430	54 401	0.19%	
BEALCA11	STEDI INC/REALE AL	1 473 206	(62)	54,491	0.29%	
STRUCA11		1,473,200	(02)	-	0.00%	
SIBHCAT		2 204 540	(0,070) E 102	-	0.00%	
SKINCA12		2,294,049	20,193	402 226	2.90%	
SKINCAIL		20,409,279	30,009	402,320	1.41%	
SKINCAUL		00,200,009 45 545 544	378,498	801,042	1.42%	
SKINCA14		10,010,044	211,047	48,422	0.31%	
STERCATT	STUNYFURD	708,953	6,455	84	0.01%	
SRFRCA11	STRATFORD	481,252	1,888	3,486	0.72%	
SUISCA11	SUISUN	5,227,739	37,977	-	0.00%	
SUNLCA11	SUNOL	1,181,829	(7,024)	-	0.00%	
LSANCA29	SUNSEI	10,359,201	102,782	61,338	0.59%	
STCKCA11	SUTTER CREEK	1,102,279	17,438	28,760	2.61%	
STAHCA12	TAMARACK	1,240,425	(6,201)	12,700	1.02%	
DAVLCA13	TASSAJARA	5,651,564	48,017	-	0.00%	
THCHCA01	TEHACHAPI	9,236,932	20,656	21,132	0.23%	
BKFDCA14	TEMPLE	35,112,839	199,622	407,596	1.16%	
TMTNCA11	TEMPLETON	2,323,587	47,893	-	0.00%	
SNDGCA14	TENNYSON	22,127,284	(138,783)	49,527	0.22%	
TRBLCA11	TERRA BELLA	1,350,787	28,441	34,047	2.52%	
CHVSCA11	THIRD AVE	14,694,381	149,748	170,276	1.16%	
BRBNCA13	THORNTON	1,900,752	25,550	3,333	0.18%	
LAMTCA11	THORNWALL	2,554,239	(35,388)	5,998	0.23%	
THRRCA11	THREE RIVERS	1,777,962	6,016	69,465	3.91%	
TBRNCA11	TIBURON	2,309,779	(109)	-	0.00%	
TPTNCA11	TIPTON	1,452,778	(6,010)	-	0.00%	
TMLSCA12	TOMALES	565,583	87,728	-	0.00%	
TRNCCA11	TORRANCE	13,898,105	89,021	13,237	0.10%	
TRACCA11	TRACY	25,740,854	219,915	245,831	0.96%	



Table 5.8 (page 13 of 14)					
CLLI Wire Center Name	Total Account 2410 Cable & Wire Gross Plant Additions May 17 Response	Total Account 2410 Cable & Wire Gross Plant Additions August 6 Response	C&E Outside Plant Rehabilitation Project Costs	C&E Spending as Percent of total OSP Gross Adds - May 17 Response	
TRPSCA11 TRES PINOS	1,008,923	205,742	-	0.00%	
TRNDCA11 TRINIDAD	1,792,334	1,365	84	0.00%	
TRUCCA11 TRUCKEE MAIN	11,499,941	59,134	-	0.00%	
TRUCCA12 TRUCKEE N STAR	1.441.084	(58,950)	-	0.00%	
TULRCA11 TULARE	20,222,908	84,218	203,120	1.00%	
TRLCCA11 TURLOCK	20.004.880	32.808	34.338	0.17%	
TUSTCA11 TUSTIN	20,799,021	237.802	175.693	0.84%	
SNFCCA64 UC MED CENTER	730.071	(9.066)	-	0.00%	
UKIHCA12 UKIAH CALPELLA	2.782.676	4.969	31.669	1.14%	
UKIHCA01 UKIAH MAIN	16.862.973	153.048	85.203	0.51%	
LSANCA06 UNION	22,489,192	11.322	24.270	0.11%	
UNCYCA11 UNION CITY GREENLEA	AF 8.250.114	45.503	256,795	3.11%	
SNDGCA02 UNIVERSITY	56,444,190	(2.766.333)	30.335	0.05%	
UPLKCA11 UPPER LAKE	1.666.535	12.146	32.443	1.95%	
VCVLCA12 VACAVILLE	24.433.711	122.146	118.547	0.49%	
VLLJCA01 VALLEJO	39.393.562	242.334	161.867	0.41%	
VLCTCA11 VALLEY CENTER	13.016.127	204.437	394,124	3.03%	
VYFRCA11 VALLEY FORD	606,462	35,231	-	0.00%	
VYSPCA11 VALLEY SPRINGS	1,406,783	24,326	6,173	0.44%	
VNNYCA02 VAN NUYS	57,301,547	165,340	107,225	0.19%	
CNPKCA01 VANOWEN	44,649,064	154,171	20,900	0.05%	
VINACA12 VINA	610,116	1,132	84	0.01%	
VISLCA11 VISALIA MAIN	39,034,754	137,241	392,687	1.01%	
FRVLCA11 VISALIA SHERWOO	DE 1,565,490	4,077	-	0.00%	
IVNHCA11 VISALIA SYCAMOR	E 1,369,211	3,836	38,086	2.78%	
VISTCA12 VISTA INDIANA	25,943,674	174,344	268,782	1.04%	
SNJSCA13 W. CHYNOWETH	25,688,711	773,783	142,857	0.56%	
NSCRCA11 WABASH	49,229,852	40,439	214,461	0.44%	
WLBSCA11 WALKER BASIN	727,251	8,318	-	0.00%	
WNCKCA11 WALNUT CREEK	30,986,081	95,393	48,096	0.16%	
WNSPCA12 WARNER SPRINGS	3,500,214	38,743	7,883	0.23%	
WASCCA01 WASCO	3,856,761	20,149	7,593	0.20%	
COLACA01 WASHINGTON	16,586,404	70,724	336,291	2.03%	
WTFRCA11 WATERFORD MAIN	1,743,575	15,676	-	0.00%	
WTVLCA01 WATSONVILLE MAI	N 22,496,416	96,684	235,945	1.05%	
LSANCA10 WEBSTER	36,216,940	263,459	555,451	1.53%	
WEEDCA01 WEED	3,469,733	100,605	84	0.00%	
BKFDCA17 WEST	21,042,658	239,487	12,695	0.06%	
WTLDCA12 WHEATLAND	2,164,137	4,527	0	0.00%	
WLTSCA12 WILLITS	6.056.835	66.396	-	0.00%	
WLWSCA11 WILLOWS	3,772,744	309,225	7,819	0.21%	
WLMGCA01 WILMINGTON	22,378,724	156,760	30,265	0.14%	
WNDSCA11 WINDSOR	12,765,853	2,286	45,400	0.36%	
WNTRCA11 WINTERS	4,312,541	17,549	7,613	0.18%	
RVSDCA11 WOODCREST	9,451,147	117,414	-	0.00%	



Table 5.8 (page 14 of 14)								
CLLI	Wire Center Name	Total Account 2410 Cable & Wire Gross Plant Additions May 17 Response	Total Account 2410 Cable & Wire Gross Plant Additions August 6 Response	C&E Outside Plant Rehabilitation Project Costs	C&E Spending as Percent of total OSP Gross Adds - May 17 Response			
WDLKCA11	WOODLAKE	2,282,082	(19)	18,554	0.81%			
WDLDCA11	WOODLAND	21,676,619	63,089	335,522	1.55%			
FRSNCA15	WOODWARD	4,897,270	85,772	7,895	0.16%			
YRLNCA11	YORBA LINDA	11,257,640	142,444	36,364	0.32%			
YNVLCA11	YOUNTVILLE	3,871,405	(66,331)	49,214	1.27%			
YREKCA11	YREKA	3,899,767	28,886	10,904	0.28%			
ORVACA11	YUKON	8,052,189	26,484	171,142	2.13%			
	TOTALS	8,357,020,564	44,933,091	43,796,276	0.52%			



Table 5.	9
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# AT&T CALIFORNIA TOTAL CABLE & WIRE MAINTENANCE EXPENSES (ACCT 6410) AND TECHNICAL FIELD SERVICES OSP REHAB EXPENDITURES BY WIRE CENTER 2013-2017

				TFS Spending as
		Total Account 6410	TFS Outside Plant	Percent of total OSP
CLU	Wire Conter Name	Cable & Wire Maintenance Expense	Rehabilitation Project	Maintenance
SNECCA1/		3 202 223	0	
	25TH ST	3 152 316	6 /69	0.00%
BSBNCA70		1 041 262	2 778	0.21%
SUNSCA11	33SAN IIJAN GRADERD	748 128	176 958	23.65%
SNDGCA06	37TH ST	2 647 717	69 559	2 63%
SNECCA17	SE THIRD ST	1 806 551	39 713	2.00%
L SANCA03	420 S GRAND	3 455	8 188	237 01%
LSANCA02	434 S GRAND	5 579	21,385	383.31%
	45TH	4 882 582	57 525	1 18%
PI DI CA11	47TH ST	331 142	1 916	0.58%
SNDGCA16	608COMPTONBLVD	3.253.500	112,555	3.46%
SNFCCA21	611 FOLSOM ST.	8,986,116	22.545	0.25%
SNFCCA13	9TH AVE.	1.947.866	15.120	0.78%
ACTNCA11	ACTON	397,980	10,476	2.63%
LSANCA14	ADAMS	4,408,804	15,171	0.34%
AGORCA11	AGOURA	11,216,003	94,367	0.84%
AGDLCA11	AGUA DULCE	291,513	7,938	2.72%
IRVNCA11	AIRPORT	6,025,726	17,898	0.30%
ALBYCA11	ALBANY	1,510,304	26,795	1.77%
ALHBCA01	ALHAMBRA	3,220,742	302,618	9.40%
ALGHCA11	ALLEGHANY	20,561	0	0.00%
SNJSCA18	ALMADEN	1,931,550	67,600	3.50%
ARSNCA11	ANDERSON	-333,259	13,092	-3.93%
ARNLCA11	ANGELS CAMP ARNL	555,344	49,860	8.98%
BVLYCA11	ANGELS CAMP BVLY	112,570	5,392	4.79%
ANCMCA01	ANGELS CAMP MAIN	1,084,013	22,546	2.08%
MRPHCA11	ANGELS CAMP MRPH	329,406	2,451	0.74%
LSANCA34	ANGELUS	28,805,704	2,723	0.01%
ANTCCA11	ANTIOCH	2,932,381	80,136	2.73%
APTSCA12	APTOS	-693,968	110,956	-15.99%
ARCDCA11	ARCADIA	11,436,171	59,202	0.52%
ARCTCA11	ARCATA MAIN	1,216,575	15,265	1.25%



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Table 5.9 (page 2 of 16)				
		Total Account 6410	TES Outsido Plant	TFS Spending as
		Cable & Wire	Rehabilitation Project	Maintenance
CLLI	Wire Center Name	Maintenance Expense	Costs	Spending
ARTNCA11	ARLINGTON	4,373,227	162,428	3.71%
ARMSCA11	AROMAS	321,804	894	0.28%
ARGRCA12	ARROYO GRANDE	1,462,783	124,116	8.48%
ARVNCA11	ARVIN	504,945	125,650	24.88%
ATSCCA11	ATASCADERO	1,273,917	36,864	2.89%
ATWRCA12	ATWATER	1,284,996	100,452	7.82%
AUBNCA01	AUBURN MAIN	11,644,189	796	0.01%
AVNLCA12	AVENAL	257,340	3,090	1.20%
AVBHCA11	AVILA BEACH	174,207	12,261	7.04%
CLVSCA11	AXMINSTER	107,820,568	211,711	0.20%
SNJSCA22	SAN JOSE BAILEY	210,321	0	0.00%
BAKRCA11	BAKER	785,077	0	0.00%
BALBCA01	BALBOA	1,731,657	30,235	1.75%
FRSNCA11	BALDWIN	3,658,291	86,304	2.36%
BNGRCA11	BANGOR	132,655	9,498	7.16%
BYPKCA11	BAYWOOD PARK	353,626	34,216	9.68%
BVLYCA11	BEAR VALLEY	193,648	5,392	2.78%
BELLCA11	BELL	904,618	74,783	8.27%
SNTCCA11	BELLOMY	3,954,082	57,184	1.45%
BNLMCA11	BEN LOMOND	193,402	7,353	3.80%
BNCICA11	BENICIA	1,745,712	31,708	1.82%
BKLYCA01	BERKELEY	6,369,114	22,994	0.36%
BTISCA11	BETHEL ISLAND	1,855,786	0	0.00%
BVHLCA01	BEVERLY HILLS	16,586,082	14,066	0.08%
BGSRCA11	BIG SUR	705,477	2,956	0.42%
BGGSCA11	BIGGS	214,166	9,166	4.28%
BLRSCA12	BLAIRSDEN	186,818	2,830	1.52%
BLLKCA11	BLUE LAKE	294,214	8,185	2.78%
BDBACA11	BODEGA BAY	201,578	28,446	14.11%
SNANCA12	BOLSA	906,413	28,133	3.10%
NILDCA12	BOMBAY BEACH	94,386	755	0.80%
BNVLCA11	BOONVILLE	476,427	0	0.00%
BRSPCA11	BORREGO SPRINGS	316,958	13,016	4.11%
BLCKCA11	BOULDER CREEK	699,098	5,130	0.73%
BRDLCA90	BRADLEY	110,990	0	0.00%
BRWLCA11	BRAWLEY	917,570	38,768	4.23%
BREACA12	BREA	1,579,388	124,708	7.90%
BRWDCA12	BRENTWOOD	1,508,845	21,201	1.41%
BGVLCA11	BRIDGEVILLE	226,067	7,702	3.41%



Table 5.9 (page 3 of 16)				
		Total Account 6410	TFS Outside Plant	Percent of total OSP
		Cable & Wire	<b>Rehabilitation Project</b>	Maintenance
CLLI	Wire Center Name	Maintenance Expense	Costs	Spending
SNANCA11	BRISTOL	7,956,766	236,001	2.97%
ESCNCA01	BROADWAY	37,606,425	178,832	0.48%
BNPKCA11	BUENA PARK	2,933,287	246,089	8.39%
BRBNCA11	BURBANK	4,775,886	154,366	3.23%
BRLNCA01	BURLINGAME	4,369,036	47,000	1.08%
BURLCA11	BURREL MAIN	176,378	0	0.00%
FVPNCA11	BURREL TUXEDO	130,987	0	0.00%
SNANCA01	BUSH	3,014,762	123,598	4.10%
SNFCCA01	BUSH/PINE	11,408,613	75,857	0.66%
BTCYCA11	BUTTE CITY	77,052	3,873	5.03%
SNDGCA01	C ST	-654,588	1,985	-0.30%
CLXCCA12	CALEXICO	756,693	26,412	3.49%
CLPTCA11	CALIPATRIA	195,918	18,895	9.64%
CLSTCA11	CALISTOGA	1,296,218	0	0.00%
CMBACA11	CAMBRIA	554,457	43,300	7.81%
CMNLCA11	CAMP NELSON	64,647	0	0.00%
CAMPCA11	CAMPO	623,463	0	0.00%
CMPVCA11	CAMPTONVILLE	131,301	1,345	1.02%
LSANCA23	CAPITOL	7,453,237	8,563	0.11%
CRMLCA11	CARMEL	1,798,123	14,824	0.82%
CRVYCA11	CARMEL VALLEY	412,260	1,158	0.28%
SNLOCA01	CARRISA PLAINS	-151,289	53,414	-35.31%
SNVACA01	CARROLL	3,998,856	25,328	0.63%
CRTHCA11	CARUTHERS	158,568	4,200	2.65%
CSTCCA11	CASTAIC	1,434,670	47,485	3.31%
CSVLCA11	CASTROVILLE	304,114	9,205	3.03%
CYCSCA11	CAYUCOS	223,643	18,185	8.13%
ALMDCA11	CENTRAL	1,918,849	38,410	2.00%
CNVYCA11	CENTRAL VALLEY	551,153	10,698	1.94%
WLANCA01	CENTURY CITY	1,634,986	10,293	0.63%
CHLNCA11	CHALLENGE	172,719	0	0.00%
ORNGCA11	CHAPMAN	3,251,480	91,720	2.82%
CHICCA01	CHICO	16,468,619	27,069	0.16%
CHWCCA11	CHOWCHILLA	758,975	100,264	13.21%
CHLRCA11	CHUALAR	71,070	3,584	5.04%
CHVSCA12	CHULA VISTA EAST	46,621,844	155,877	0.33%
CYTNCA11	CLAYTON	403,751	51,599	12.78%
CLOKCA11	CLEARLAKE OAKS	345,826	0	0.00%
FRSNCA12	CLINTON	6,711,224	44,617	0.66%



Table 5.9 (page 4 of 16)				
	Wire Conter Name	Total Account 6410 Cable & Wire	TFS Outside Plant Rehabilitation Project	TFS Spending as Percent of total OSP Maintenance Spending
		630 561	16 629	2 64%
CLNGCA01	COALINGA	493 911	14,003	2.84%
CBMTCA11	COBB MOUNTAIN	828.637	0	0.00%
SNDGCA11	COLLEGE	1.416.632	29,922	2.11%
COTNCA11	COLTON	2.440.967	106.370	4.36%
BKFDCA13	COLUMBUS	2.208.951	67.433	3.05%
CMTNCA01	COMPTON	30,543,211	443,996	1.45%
CNCRCA01	CONCORD	35,922,238	216,272	0.60%
ANHMCA17	CONVERSION	197,658	42,110	21.30%
CORDCA12	CORDELIA	660,161	5,013	0.76%
CRNGCA12	CORNING	697,880	12,388	1.78%
CORNCA11	CORONA	12,500,034	173,531	1.39%
CRDMCA11	CORONA DEL MAR	1,795,454	66,637	3.71%
CRNDCA11	CORONADO	420,101	18,846	4.49%
CSMSCA11	COSTA MESA	19,839,287	91,823	0.46%
CTWDCA11	COTTONWOOD	380,895	28,438	7.47%
CTVLCA11	COULTERVILLE	278,296	0	0.00%
CYWLCA11	COYOTE WELLS	67,751	3,798	5.61%
CRCTCA02	CROCKETT	142,360	0	0.00%
CWLDCA12	CROWS LANDING	88,248	19,915	22.57%
CLCYCA11	CULVER CITY	2,163,334	144,354	6.67%
SNJSCA12	CUPERTINO DIAL WAY	39,558,665	118,548	0.30%
ANHMCA11	CYPRESS	2,673,060	231,833	8.67%
DAVLCA12	DANVILLE	2,062,206	163,981	7.95%
DAVSCA11	DAVIS	2,714,159	0	0.00%
DLMRCA12	DEL MAR	1,996,909	18,683	0.94%
DLRYCA11	DEL REY	151,261	5,364	3.55%
DELNCA11	DELANO	5,577,273	16,084	0.29%
HYWRCA11	DEPOT COURT	3,185,046	45,282	1.42%
ORSICA11	DINUBA LAWRENCE	424,275	9,481	2.23%
DINBCA01	DINUBA MAIN	3,697,458	9,908	0.27%
DIXNCA11	DIXON	1,294,928	0	0.00%
ELSGCA12	DOUGLAS	22,272,246	28,606	0.13%
DWNVCA11	DOWNIEVILLE MAIN	79,757	0	0.00%
SRCYCA11	DOWNV SIERR CITY	323,607	796	0.25%
DLZRCA11	DULZURA	120,033	1,585	1.32%
DNGNCA12	DUNNIGAN	120,730	0	0.00%
DNSMCA11	DUNSMUIR	122,035	13,902	11.39%
DTFLCA11	DUTCH FLAT ALTA	713,452	0	0.00%



Table 5.9 (page 5 of 16)				
CLU	Wire Center Name	Total Account 6410 Cable & Wire Maintenance Expense	TFS Outside Plant Rehabilitation Project Costs	TFS Spending as Percent of total OSP Maintenance Spending
ERLMCA11	EARLIMART	354,725	11,159	3.15%
NHLDCA11	EDGEWOOD	5.297.982	91.063	1.72%
EDWRCA01	EDWARDS	70,794	0	0.00%
ELCJCA11	EL CAJON	30,659,067	66.658	0.22%
ELCNCA01	EL CENTRO	21,616,514	31,730	0.15%
FLSMCA13	EL DORADO HILLS	1,520,047	44,174	2.91%
ELMNCA01	EL MONTE	19,526,730	29,887	0.15%
YSMTCA12	EL PORTAL	169,448	181	0.11%
ELSBCA11	EL SOBRANTE	13,840,633	0	0.00%
ELTRCA11	EL TORO	6,973,079	40,554	0.58%
ELK CA11	ELK 5861 S HIGHWAY 1	164,055	0	0.00%
EKCKCA11	ELK CREEK	69,732	0	0.00%
BKFDCA11	EMPIRE	4,232,547	76,208	1.80%
ENCTCA12	ENCINITAS	2,147,028	36,376	1.69%
RDNGCA11	ENTERPRISE	1,529,672	7,236	0.47%
ESCLCA11	ESCALON	421,171	6,052	1.44%
ESPRCA11	ESPARTO	186,133	0	0.00%
GRGVCA01	EUCLID	23,799,780	29,063	0.12%
EURKCA01	EUREKA MAIN	6,320,389	28,095	0.44%
OLDLCA11	EXPORT	2,597,476	0	0.00%
FROKCA11	FAIR OAKS WHITEHALL	9,131,851	137,684	1.51%
FRFDCA01	FAIRFIELD	13,296,025	7,287	0.05%
BKFDCA12	FAIRVIEW/MAIN	14,853,409	221,978	1.49%
FLBKCA12	FALLBROOK	1,658,856	66,551	4.01%
FETNCA11	FELTON	1,428,535	13,630	0.95%
FLMRCA11	FILLMORE	288,974	52,013	18.00%
VNTRCA02	FIR	1,724,623	22,802	1.32%
FRBHCA11	FIREBAUGH	365,607	31,898	8.72%
FLSMCA14	FLSM BLUE RAVINE	985,139	14,727	1.49%
FNTACA11	FONTANA	35,174,107	260,336	0.74%
FSVLCA11	FORESTVILLE	484,810	41,290	8.52%
FTBRCA02	FORT BRAGG	2,497,680	32,732	1.31%
FTUNCA11	FORTUNA	772,482	13,001	1.68%
SNJSCA14	FOX.CAMPBELL	4,607,004	142,653	3.10%
OKLDCA03	FRANKLIN	30,074,217	27,446	0.09%
FRMTCA12	FREMONT ADAMS	5,424,128	80,442	1.48%
FRMTCA11	FREMONT MAIN	26,552,887	277,145	1.04%
FRGLCA11	FRENCH GULCH	42,210	0	0.00%
FRSNCA01	FRESNO MAIN	5,649,098	167,280	2.96%



Table 5.9 (page 6 of 16)				
CLU	Wire Center Name	Total Account 6410 Cable & Wire Maintenance Expense	TFS Outside Plant Rehabilitation Project Costs	TFS Spending as Percent of total OSP Maintenance Spending
WSCRCA11	ERONTIER	4,865,996	40,589	0.83%
SCRMCA13	FRUITRIDGE	16.664.809	60.169	0.36%
OKLDCA04	FRUITVALE	1.282.783	48.017	3.74%
FUTNCA01	FULLERTON	7,366,536	230,160	3.12%
FRCKCA11	FURNACE CREEK	394,652	0	0.00%
GALTCA11	GALT	824,928	6,690	0.81%
SCRMCA03	GARDEN	7,522,734	97,530	1.30%
GRDNCA01	GARDENA	51,199,940	644,416	1.26%
PCBHCA01	GARNET	1,716,293	17,781	1.04%
GZLLCA11	GAZELLE	24,813	1,890	7.62%
GRTWCA11	GEORGETOWN	408,502	4,696	1.15%
GRBRCA11	GERBER	128,803	717	0.56%
GYVLCA11	GEYSERVILLE	170,473	0	0.00%
LAJLCA11	GIRARD	805,185	25,478	3.16%
SCRMCA11	GLADSTONE	22,887,962	19,042	0.08%
GLDLCA11	GLENDALE	18,183,481	224,292	1.23%
SLNSCA12	GLENVIEW	137,677	0	0.00%
GNZLCA11	GONZALES	221,993	4,565	2.06%
GSHNCA11	GOSHEN	538,929	28,384	5.27%
GRVYCA01	GRASS VALLEY MAIN	11,746,386	9,518	0.08%
GNFDCA11	GREENFIELD	416,631	38,648	9.28%
SNCZCA11	GREENWOOD	12,240,738	108,742	0.89%
GRNDCA13	GRENADA	63,244	0	0.00%
GRDLCA11	GRIDLEY	693,452	660	0.10%
GVLDCA11	GROVELAND	674,129	39,125	5.80%
GULLCA11	GUALALA	565,391	0	0.00%
GUVLCA11	GUERNEVILLE	492,068	25,148	5.11%
GUSTCA11	GUSTINE	473,514	55,634	11.75%
YRLNCA12	GYPSUM CANYON	167,063	21,509	12.88%
PLTNCA13	HACIENDA	16,478,579	2,461	0.01%
HMBACA12	HALF MOON BAY	1,725,599	32,939	1.91%
HMCYCA11	HAMILTON CITY	72,802	8,289	11.39%
HNFRCA01	HANFORD	11,944,028	53,924	0.45%
ALPICA12	HARBISON/ALPINE	1,573,876	16,939	1.08%
CRLSCA11	HARDING	1,427,040	49,648	3.48%
HWTHCA01	HAWTHORNE	958,018	163,357	17.05%
SNLNCA11	HAYWARD HESPERIAN	3,058,207	114,545	3.75%
HYWRCA01	HAYWARD MAIN	17,725,137	40,681	0.23%
HLBGCA11	HEALDSBURG	1,817,159	32,764	1.80%



Table 5.9 (page 7 of 16)				
		Total Account 6410 Cable & Wire	TFS Outside Plant Rehabilitation Project	TFS Spending as Percent of total OSP Maintenance
CLLI	Wire Center Name	Maintenance Expense	Costs	Spending
HERLCA11	HERALD	243,759	0	0.00%
HRCLCA11	HERCULES	1,086,298	5,047	0.46%
HGLDCA11	HIGHLAND	2,266,932	70,773	3.12%
HLSTCA11	HOLLISTER	3,964,823	120,559	3.04%
OKLDCA12	HOLLY	27,694,481	86,354	0.31%
HLWDCA01	HOLLYWOOD	59,841,492	41,708	0.07%
HLVLCA11	HOLTVILLE	375,771	42,745	11.38%
HMWDCA11	HOMEWOOD	336,148	3,865	1.15%
HPLDCA12	HOPLAND	144,173	0	0.00%
PCBHCA11	HORNBLEND	209,113	3,904	1.87%
HRBKCA11	HORNBROOK	113,155	1,876	1.66%
HGSNCA11	HUGHSON	278,087	30,335	10.91%
SLNSCA13	HUNTER	210,551	12,111	5.75%
HNPKCA01	HUNTINGTON PARK	31,320,164	317,833	1.01%
HURNCA11	HURON	198,113	0	0.00%
HYVLCA11	HYDESVILLE	155,265	7,417	4.78%
IGNCCA12	IGNACIO	957,730	8,316	0.87%
IMPRCA11	IMPERIAL	410,217	24,845	6.06%
IMBHCA11	IMPERIAL BEACH	1,042,640	163,568	15.69%
INVRCA11	INVERNESS	175,688	0	0.00%
IONECA11	IONE	435,215	0	0.00%
IRVNCA01	IRVINE	4,189,445	38,635	0.92%
IVNHCA11	IVANHOE	10,661,367	68,492	0.64%
JCSNCA01	JACKSON	8,739,606	35,107	0.40%
JCMBCA11	JACUMBA	355,189	7,268	2.05%
JMTWCA11	JAMESTOWN	437,824	9,655	2.21%
JAMLCA60	JAMUL	202,969	24,009	11.83%
JULNCA12	JULIAN	801,670	0	0.00%
SNJSCA21	JUNCTION AVE	2,764,288	19,755	0.71%
KLVLCA12	KELSEYVILLE	481,678	0	0.00%
KGCYCA11	KING CITY	622,436	10,572	1.70%
KGBGCA11	KINGSBURG	715,152	4,344	0.61%
KNFYCA11	KNIGHTS FERRY	32,627	0	0.00%
KYBRCA11	KYBURZ	137,730	3,290	2.39%
IGWDCA01	LA BREA	1,127,167	49,253	4.37%
CRLSCA12	LA COSTA	3,087,519	19,050	0.62%
LAHNCA11	LA HONDA	515,846	6,493	1.26%
LAMSCA01	LA MESA	2,786,737	266,722	9.57%
ANHMCA12	LA PALMA	72,659,103	62,361	0.09%



Table 5.9 (page 8 of 16)				
CLU	Wire Contor Name	Total Account 6410 Cable & Wire Maintenance Expense	TFS Outside Plant Rehabilitation Project	TFS Spending as Percent of total OSP Maintenance Spending
LEYTCA11		622 495	45.383	7 29%
L GNGCA12		4 234 590	40 127	0.95%
PSDNCA12		3.006.403	119,769	3.98%
LKBRCA11	LAKE BERRYESSA	173.215	0	0.00%
LKLACA11	LAKE LOS ANGELES	367.890	5.504	1.50%
GRVYCA11	LAKE OF THE PINES	876,329	0	0.00%
GRVYCA12	LAKE WILDWOOD	246,397	0	0.00%
LKPTCA02	LAKEPORT	1,265,360	0	0.00%
LKSDCA12	LAKESIDE	1,826,709	35,218	1.93%
NHWDCA01	LANKERSHIM	2,282,763	147,888	6.48%
LRKSCA11	LARKSPUR KING	1,585,871	0	0.00%
CLBSCA50	LAS VIRGENES	405	2,071	511.17%
LATNCA11	LATON	76,273	4,090	5.36%
LGRDCA11	LE GRAND	98,794	20,797	21.05%
LGRNCA12	LE GRANGE	165,804	20,431	12.32%
FZPKCA11	LEBEC CHESTNUT	385,423	68,559	17.79%
LEBCCA11	LEBEC MAIN	314,559	21,396	6.80%
ANHMCA01	LEMON	5,442,312	152,984	2.81%
LEMRCA11	LEMOORE MAIN	570,493	4,235	0.74%
LEMRCA12	LEMOORE WYMAN	66,740	0	0.00%
LNVYCA11	LEONA VALLEY	314,506	23,959	7.62%
LSTNCA11	LEWISTON	55,315	1,721	3.11%
LNCLCA11	LINCOLN	549,514	9,724	1.77%
SNDGCA03	LINDA VISTA	45,895,483	106,010	0.23%
LTRKCA11	LITTLEROCK	894,944	9,025	1.01%
LVOKCA11	LIVE OAK	419,826	3,098	0.74%
LVMRCA11	LIVERMORE	9,487,492	166,339	1.75%
LCFRCA11	LOCKEFORD	163,047	6,269	3.84%
LODICA01	LODI	12,232,558	51,644	0.42%
LOLTCA11	LOLETA	230,630	1,486	0.64%
LOMTCA11	LOMITA	1,800,481	298,338	16.57%
LSATCA11	LOS ALTOS	1,746,964	43,085	2.47%
LSBNCA12	LOS BANOS	3,161,171	46,118	1.46%
LSMLCA11	LOS MOLINOS	202,376	1,197	0.59%
LWLKCA11	LOWER LAKE	4,893,725	0	0.00%
LLTNCA11	LOYALTON	78,071	0	0.00%
MADRCA12	MADERA BONADELLE	180,990	26,441	14.61%
MADRCA11	MADERA MAIN	9,391,703	89,510	0.95%
NHWDCA02	MAGNOLIA	2,318,840	166,305	7.17%



Table 5.9 (page 9 of 16)				
CLU	Wire Center Name	Total Account 6410 Cable & Wire Maintenance Expense	TFS Outside Plant Rehabilitation Project Costs	TFS Spending as Percent of total OSP Maintenance Spending
MTRYCA01	MAIN	25,701,025	26,454	0.10%
MARNCA11	MARINA	1.254.194	1,788	0.14%
SNDGCA12	MARKET	2.947.618	41.816	1.42%
MRTZCA11	MARTINEZ	2.151.637	126.942	5.90%
MYVICA01	MARYSVILLE MAIN	4.393.799	6.346	0.14%
SNVACA11	MATHILDA	2.233.069	5.313	0.24%
SNFCCA04	MCCOPPIN ST.	54.475.885	22.236	0.04%
MKVLCA11	MCKINLEYVILLE	752,044	0	0.00%
LSANCA08	MELROSE	6,666,247	198,150	2.97%
MNDCCA11	MENDOCINO	766,570	18,942	2.47%
MNDTCA11	MENDOTA	273,669	32,458	11.86%
MNPKCA11	MENLO PARK	2,423,864	13,724	0.57%
MRCDCA01	MERCED	12,587,718	394,140	3.13%
MRDNCA11	MERIDIAN	151,977	956	0.63%
BKFDCA15	METTLER	520,139	26,360	5.07%
MDTWCA11	MIDDLETOWN	833,897	0	0.00%
MLVYCA01	MILL VALLEY	1,846,851	73	0.00%
MLBRCA11	MILLBRAE	1,844,500	39,252	2.13%
MLPSCA11	MILPITAS ABEL	3,726,528	111,831	3.00%
MRNDCA11	MIRANDA	300,075	0	0.00%
OCSDCA11	MISSION	36,912,758	102,676	0.28%
MSVJCAAT	MISSION VIEJO	0	0	#DIV/0!
MDSTCA03	MODESTO KELLOG	1,584,315	56,121	3.54%
MDSTCA04	MODESTO KINGSWOOD	865,567	17,483	2.02%
MDSTCA02	MODESTO MAIN	38,377,221	308,339	0.80%
MDSTCA52	MODESTO DAVIS	4,800	0	0.00%
MDSTCA05	MODESTO TALLY	323,617	11,066	3.42%
MOJVCA01	MOJAVE	6,041,452	3,354	0.06%
MKHLCA12	MOKELUMNE HILL	358,951	863	0.24%
MTAGCA11	MONTAGUE	134,022	4,404	3.29%
MNRICA11	MONTE RIO	230,248	16,734	7.27%
LSANCA35	MONTEBELLO	5,216,636	29,093	0.56%
MRPKCA12	MOORPARK	1,153,190	12,440	1.08%
MORGCA12	MORAGA	408,015	80,295	19.68%
SLNSCA14	MORO	581,976	4,429	0.76%
MRBACA11	MORRO BAY	379,548	68,547	18.06%
MSBHCA11	MOSS BEACH	726,124	26,925	3.71%
OKLDCA13	MOUNTAIN	1,270,277	35,944	2.83%
MTPSCA11	MOUNTAIN PASS	126,916	0	0.00%



CONFIDENTIAL AND PROPRIETARY PER P.U. CODE § 583, GENERAL ORDER 66-D, & D.16-08-024

Table 5.9 (page 10 of 16)				
CLU	Wire Conter Name	Total Account 6410 Cable & Wire Maintenance Expense	TFS Outside Plant Rehabilitation Project Costs	TFS Spending as Percent of total OSP Maintenance Spending
MTVWCA11	MOUNTAIN VIEW	10.088.104	71.379	0.71%
YBCYCA01	MSVL FRANKLIN	8.348.921	12.385	0.15%
MTSHCA12	MT SHASTA	2,393,383	18.833	0.79%
BCWYCA11	N TAHOE BROCKWAY	1,606,189	966	0.06%
NAPACA01	NAPA	17,540,582	9,850	0.06%
NVCYCA11	NEVADA CITY	1,041,853	13,821	1.33%
NHLLCA01	NEWHALL	8,579,356	26,229	0.31%
NWMNCA12	NEWMAN	274,281	1,981	0.72%
NICSCA11	NICASIO	85,705	1,140	1.33%
NICECA11	NICE	182,701	0	0.00%
NCLSCA12	NICOLAUS	296,362	0	0.00%
FLSMCA12	NIMBUS	7,874,066	52,054	0.66%
NIPMCA11	NIPOMO	526,710	22,908	4.35%
BKFDCA19	NOMAD	1,111,215	23,641	2.13%
LSANCA12	NORMANDY	15,055,898	117,335	0.78%
ANNPCA11	NORTH ANNAPOLIS	88,447	0	0.00%
NSCRCA12	NORTH NATOMAS	1,184,684	6,270	0.53%
NSJNCA11	NORTH SAN JUAN	312,295	15,376	4.92%
THCYCA01	NORTH TAHOE MAIN	4,893,958	5,662	0.12%
NYUBCA11	NORTH YUBA	303,957	0	0.00%
NORGCA11	NORTHRIDGE	27,867,563	192,472	0.69%
OKDLCA11	OAKDALE	1,946,140	35,963	1.85%
LACNCA11	OAKGROVE	1,186,360	0	0.00%
OKLYCA11	OAKLEY	675,004	2,928	0.43%
OKVWCA11	OAKVIEW	7,685,909	7,465	0.10%
OCDNCA11	OCCIDENTAL	449,500	2,452	0.55%
OJAICA11	OJAI	689,835	27,395	3.97%
ORNGCA13	OLIVE	5,479,358	245,233	4.48%
SNFCCA06	ONONDAGA	2,501,279	0	0.00%
ORNGCA11	ORANGE CHAPMAN	1,281,433	91,720	7.16%
ORCVCA11	ORANGE COVE	172,220	19,507	11.33%
ORNDCA11	ORINDA	533,285	6,291	1.18%
ORLDCA11	ORLAND	702,775	30,063	4.28%
ORVLCA12	OROVILLE EAST	534,501	33,800	6.32%
ORVLCA11	OROVILLE MAIN	7,854,720	10,874	0.14%
OTMSCA11	OTAY MESA	756,343	32,982	4.36%
PCFCCA11	PACIFICA	2,116,011	8,625	0.41%
PLDLCA01	PALMDALE	13,790,825	40,397	0.29%
PLALCA02	PALO ALTO MAIN	4,740,318	20,135	0.42%



Table 5.9 (page 11 of 16)				
		Total Account 6410 Cable & Wire	TFS Outside Plant Rehabilitation Project	TFS Spending as Percent of total OSP Maintenance
		Maintenance Expense	Costs 40.200	Spending
		1,700,700	49,399	2.70%
PRUSCATI		3,230,190	01,004	1.09%
PRUSCAIZ	PARADISE PINES	1,132,094	42,024	3.71%
		1,840,383	211,847	11.31%
	PARK SORRENTO	1,071,863	132,337	12.35%
PRERCATI		220,952	11,001	4.98%
		3,845,243	152,853	3.98%
PSDNCATT	PASADENA GREEN	18,973,075	103,228	0.54%
PSKNCA11		51,254	00 507	0.00%
PSRBCAUT	PASO ROBLES MAIN	11,022,370	26,527	0.24%
PALACATT		538,723	19,192	3.56%
PDLYCA11	PEDLEY	3,007,003	114,871	3.82%
PPWDCA11	PEPPERWOOD	94,440	0	0.00%
PSCDCA11	PESCADERO	952,892	4,699	0.49%
PTLMCA01		8,226,472	22,234	0.27%
CTTICA12	PETALUMA SWIFT	1,233,526	0	0.00%
LEBCCA12		87,113	8,364	9.60%
PNVYCA11	PINE VALLEY	229,070	10,376	4.53%
PNCRCA11	PINECREST	107,987	1,858	1.72%
PIRUCA11	PIRU	114,405	7,216	6.31%
PSBHCA11	PISMO BEACH	362,636	37,226	10.27%
PSBGCA01	PITTSBURG MAIN	13,570,267	79,451	0.59%
PSBGCA11	PITISBURG WILLOW	327,753	3,809	1.16%
PXLYCA11	PIXLEY	195,706	4,822	2.46%
PLCNCA11	PLACENTIA	2,937,182	275,499	9.38%
AUBNCA11	PLACER HILL	722,104	0	0.00%
PLVLCA11	PLACERVILLE MAIN	13,821,808	30,162	0.22%
PLVLCA12	PLACERVL NIAGARA	685,843	33,651	4.91%
PLNDCA11	PLANADA	53,829	24,542	45.59%
LSANCA05	PLEASANT	2,207,304	36,301	1.64%
PLGVCA12	PLEASANT GROVE	322,559	2,148	0.67%
PLTNCA12	PLEASANTON	1,464,458	51,803	3.54%
LSANCA13	PLYMOUTH	2,385,518	362,148	15.18%
PNARCA11	POINT ARENA	335,758	0	0.00%
PRSNCA11	POINT REYES	683,673	0	0.00%
PTVLCA11	PORTERVILLE	5,630,697	67,502	1.20%
PTOLCA01	PORTOLA	114,214	0	0.00%
PTVYCA11	POTTER VALLEY	175,458	0	0.00%
POWYCA11	POWAY MIDLAND	1,241,652	31,097	2.50%



Table 5.9 (page 12 of 16)				
CLU	Wire Center Name	Total Account 6410 Cable & Wire Maintenance Expense	TFS Outside Plant Rehabilitation Project Costs	TFS Spending as Percent of total OSP Maintenance Spending
QNCYCA12	QUINCY	1.895.481	2.191	0.12%
RAMNCA11	RAMONA	3,233,962	3,619	0.11%
LSANCA11	RAMPART	5,423,371	35,311	0.65%
RBRNCA11	RANCHO BERNARDO	1,989,752	77,074	3.87%
RNMRCA11	RANCHO MURIETTA	186,610	2,301	1.23%
RNPSCA11	RANCHO PENASQUITOS	429,474	8,272	1.93%
RNSDCA11	RANCHO SAN DIEGO	394,695	18,111	4.59%
RSFECA12	RANCHO SANTA FE	1,142,223	28,736	2.52%
RDBLCA01	RED BLUFF	8,484,842	11,302	0.13%
RDNGCA02	REDDING MAIN	14,667,761	13,603	0.09%
TUSTCA70	REDHILL	25,371,016	21,071	0.08%
RDCYCA01	REDWOOD CITY	21,613,946	76,618	0.35%
SNDGCA15	REGENTS	3,657,790	18,977	0.52%
LSANCA38	REPUBLIC	786,792	105,064	13.35%
RESDCA01	RESEDA	11,014,184	251,104	2.28%
RILTCA11	RIALTO RIVERSIDE	3,321,420	155,751	4.69%
LSANCA09	RICHMOND	2,367,962	55,062	2.33%
RCMDCA11	RICHMOND MAIN	3,192,918	142,930	4.48%
RCVACA11	RICHVALE	41,609	0	0.00%
RIDECA11	RIO DELL	181,600	3,512	1.93%
RILNCA12	RIO LINDA	928,782	7,028	0.76%
RVRBCA11	RIVERBANK	484,542	35,172	7.26%
RVDLCA11	RIVERDALE	159,255	0	0.00%
RVSDCA01	RIVERSIDE ORANGE	41,486,806	272,674	0.66%
RCKLCA01	ROCKLIN	1,521,940	15,521	1.02%
RTPKCA11	ROHNERT PARK	1,607,874	28,980	1.80%
RSMDCA11	ROSAMOND	527,070	5,655	1.07%
ROSMCA11	ROSEMEAD	1,565,444	16,016	1.02%
RCKLCA11	S PLACER ROCKLIN	7,443,598	0	0.00%
SNBUCA02	S SAN FRANCISCO	10,987,469	156,919	1.43%
SNDGCA05	SAIPAN	1,781,504	134,174	7.53%
SNADCA11	SAN ANDREAS	998,911	4,352	0.44%
SNARCA11	SAN ARDO	141,694	5,264	3.72%
SNCRCA11	SAN CARLOS	4,126,497	108,695	2.63%
SNCLCA12	SAN CLEMENTE	2,357,142	14,982	0.64%
SNJSCA15	SAN FELIPE RD	2,984,573	134,591	4.51%
SNGBCA01	SAN GABRIEL	1,580,935	23,768	1.50%
SNGNCA11	SAN GERONIMO	192,116	33	0.02%
SNJSCA02	SAN JOSE MAIN	31,049,115	293,621	0.95%



Table 5.9 (page 13 of 16)				
CI 11	Wire Contor Nome	Total Account 6410 Cable & Wire	TFS Outside Plant Rehabilitation Project	TFS Spending as Percent of total OSP Maintenance
SICPCA12		9 648 684	727	0 01%
SNI CCA11	SANTUCAS	87 514	5 467	6 25%
SNLOCA01	SAN LUIS OBISPO	13 234 307	53 414	0.20%
SNMACA11	SAN MARTIN	878.063	72,389	8.24%
SNMTCA11	SAN MATEO	13.014.455	127,593	0.98%
SNPDCA01	SAN PEDRO 5TH ST	2.015.955	221.191	10.97%
SNRFCA01	SAN RAFAEL MAIN	7.872.497	8.740	0.11%
SNRMCA11	SAN RAMON	1.862.427	40.838	2.19%
SNYSCA12	SAN YSIDRO	433,467	57.237	13.20%
SNCZCA01	SANTA CRUZ MAIN	2,480,311	34,137	1.38%
SNMICA11	SANTA MARGARITA	197,728	9,870	4.99%
RSMGCA11	SANTA MARGUERITA	743,651	26,807	3.60%
SNRSCA01	SANTA ROSA MAIN	39,891,197	104,605	0.26%
SANTCA01	SANTEE	1,506,824	68,651	4.56%
SATCCA12	SATICOY	426,760	6,984	1.64%
SAGSCA11	SAUGUS	904,253	0	0.00%
SSLTCA11	SAUSALITO	643,590	0	0.00%
SCVYCA01	SCOTTS VALLEY	615,369	54,596	8.87%
SESDCA11	SEASIDE	9,865,282	5,509	0.06%
SBSTCA11	SEBASTOPOL	1,576,923	18,767	1.19%
SELMCA11	SELMA	812,091	6,018	0.74%
ASMTCA11	SEQUOIA	287,562	4,911	1.71%
SHFTCA11	SHAFTER	808,591	12,741	1.58%
SHLKCA01	SHASTA LAKE	274,056	783	0.29%
SHOKCA01	SHERMAN OAKS	12,172,945	197,420	1.62%
SGSPCA11	SHINGLE SPRINGS	1,932,186	119,651	6.19%
SHSHCA11	SHOSHONE	371,984	794	0.21%
FRSNCA13	SIERRA	3,272,374	169,570	5.18%
SRVLCA11	SIERRAVILLE	29,413	0	0.00%
SLVRCA11	SILVERADO	320,457	3,126	0.98%
SIMICA11	SIMI VALLEY	14,827,615	76,732	0.52%
SMAVCA11	SMARTVILLE	198,060	380	0.19%
SNRSCA11	SNRS LOS ALAMOS	1,609,790	137,365	8.53%
LOMSCA11	SO PLACER LOOMIS	701,108	27,256	3.89%
NWCSCA11	SO PLACER NWCAS	535,178	1,429	0.27%
STAHCA13	SO TAHOE MEYERS	105,068	5,771	5.49%
STAHCA01	SO TAHOE SUSSEX	3,661,642	8,950	0.24%
SDSPCA11	SODA SPRINGS	539,621	5,567	1.03%
SLMNCA11	SOLAMINT	13,986,683	50,897	0.36%



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Table 5.9 (page 14 of 16)						
CLU	Wire Center Name	Total Account 6410 Cable & Wire Maintenance Expense	TFS Outside Plant Rehabilitation Project	TFS Spending as Percent of total OSP Maintenance Spending		
SI DDCA11	SOLEDAD	549 631	17 901	3 26%		
SONMCA12	SONOMA	3.936.389	27.236	0.69%		
TWHRCA11	SONORA JUNO	463,409	26.079	5.63%		
SNRACA13	SONORA MAIN	10.699.849	50.735	0.47%		
SGATCA01	SOUTH GATE	1.179.166	72.274	6.13%		
MSVJCAAT	SOUTH MISSION VIEJO	6.279.883	0	0.00%		
SNJSCA11	SOUTH WHITE RD	19,407,620	181,555	0.94%		
SNTCCA01	SPACE PARK	5,895,992	0	0.00%		
IRVNCA12	SPECTRUM	987,523	14,001	1.42%		
SPVLCA11	SPRINGVILLE	344,632	11,438	3.32%		
SNRFCA11	SAN RAFAEL PARKWAY	7,575,417	6,900	0.09%		
ANGWCA11	ST HELENA ANGWIN	571,073	0	0.00%		
STHNCA11	ST HELENA MAIN	2,356,302	0	0.00%		
SNFCCA12	STEINER ST.	85,145	46,599	54.73%		
BEALCA11	STERLING/BEALE AFB	151,290	922	0.61%		
STBHCA11	STINSON BEACH	477,188	0	0.00%		
SKTNCA12	STOCKTON ASHLEY	761,452	13,000	1.71%		
SKTNCA11	STOCKTON GRANITE	4,763,421	88,949	1.87%		
SKTNCA01	STOCKTON MAIN	37,815,511	95,618	0.25%		
SKTNCA14	STOCKTON REDWOOD	1,483,704	11,699	0.79%		
STFRCA11	STONYFORD	66,215	1,419	2.14%		
SRFRCA11	STRATFORD	98,786	0	0.00%		
SUISCA11	SUISUN	822,809	3,173	0.39%		
SUNLCA11	SUNOL	145,630	9,476	6.51%		
LSANCA29	SUNSET	1,227,700	15,282	1.24%		
STCKCA11	SUTTER CREEK	212,205	0	0.00%		
STAHCA12	TAMARACK	105,132	9,618	9.15%		
DAVLCA13	TASSAJARA	326,449	9,501	2.91%		
THCHCA01	TEHACHAPI	1,022,183	7,223	0.71%		
BKFDCA14	TEMPLE	47,283,524	243,106	0.51%		
TMTNCA11	TEMPLETON	438,697	11,082	2.53%		
SNDGCA14	TENNYSON	4,230,655	55,211	1.31%		
TRBLCA11	TERRA BELLA	286,167	8,438	2.95%		
CHVSCA11	THIRD AVE	1,952,697	114,966	5.89%		
BRBNCA13	THORNTON	430,650	24,869	5.77%		
LAMTCA11	THORNWALL	424,231	33,351	7.86%		
THRRCA11	THREE RIVERS	298,131	12,444	4.17%		
TBRNCA11	TIBURON	407,172	0	0.00%		
TPTNCA11	TIPTON	155,831	0	0.00%		



Table 5.9 (page 15 of 16)						
				TES Sponding og		
		Total Account 6410 Cable & Wire	TFS Outside Plant Rehabilitation Project	Percent of total OSP Maintenance		
CLLI	Wire Center Name	Maintenance Expense	Costs	Spending		
TMLSCA12	TOMALES	147,255	0	0.00%		
TRNCCA11	TORRANCE	1,839,370	132,315	7.19%		
TRACCA11	TRACY	10,134,781	37,408	0.37%		
TRPSCA11	TRES PINOS	53,187	9,215	17.33%		
TRNDCA11	TRINIDAD	342,208	824	0.24%		
TRUCCA11	TRUCKEE MAIN	3,591,904	8,178	0.23%		
TRUCCA12	TRUCKEE N STAR	66,017	0	0.00%		
TULRCA11	TULARE	2,558,303	144,385	5.64%		
TRLCCA11	TURLOCK	11,685,883	444,840	3.81%		
TUSTCA11	TUSTIN	10,248,866	97,110	0.95%		
SNFCCA64	UC MED CENTER	141,220	0	0.00%		
UKIHCA12	UKIAH CALPELLA	536,072	0	0.00%		
UKIHCA01	UKIAH MAIN	3,806,891	5,053	0.13%		
LSANCA06	UNION	2,693,299	24,570	0.91%		
UNCYCA11	UNION CITY	3,588,376	186,307	5.19%		
SNDGCA02	UNIVERSITY	3,922,673	15,172	0.39%		
UPLKCA11	UPPER LAKE	137,916	0	0.00%		
VCVLCA12	VACAVILLE	5,711,732	61,452	1.08%		
VLLJCA01	VALLEJO	15,951,908	23,612	0.15%		
VLCTCA11	VALLEY CENTER	1,469,886	64,112	4.36%		
VYFRCA11	VALLEY FORD	1,405,293	754	0.05%		
VYSPCA11	VALLEY SPRINGS	391,422	2,697	0.69%		
VNNYCA02	VAN NUYS	27,063,664	230,513	0.85%		
CNPKCA01	VANOWEN	9,982,338	337,430	3.38%		
VINACA12	VINA	45,628	0	0.00%		
VISLCA11	VISALIA MAIN	23,499,124	136,664	0.58%		
FRVLCA11	VISALIA SHERWOOD	118,579	52,209	44.03%		
IVNHCA11	VISALIA SYCAMORE	218,148	68,492	31.40%		
VISTCA12	VISTA INDIANA	3,493,229	126,901	3.63%		
SNJSCA13	W. CHYNOWETH	24,468,806	312,458	1.28%		
NSCRCA11	WABASH	23,949,042	50,426	0.21%		
WLBSCA11	WALKER BASIN	164,090	9,573	5.83%		
WLLCCA11	WALLACE	109.362	1.405	1.29%		
WNCKCA11	WALNUT CREEK	3.268.585	116,734	3.57%		
WNSPCA12	WARNER SPRINGS	213.191	0	0.00%		
WASCCA01	WASCO	801.146	21.762	2.72%		
COLACA01	WASHINGTON	17.176.614	106.298	0.62%		
WTFRCA11	WATERFORD MAIN	415.459	34.681	8.35%		
WTVLCA01	WATSONVILLE MAIN	5,789,688	347,149	6.00%		



	Table 5.9 (page 16 of 16)					
CLLI	Wire Center Name	Total Account 6410 Cable & Wire Maintenance Expense	TFS Outside Plant Rehabilitation Project Costs	TFS Spending as Percent of total OSP Maintenance Spending		
WANACA11	WAWONA	27,891	0	0.00%		
LSANCA10	WEBSTER	3,300,989	120,674	3.66%		
WEEDCA01	WEED	430,729	2,718	0.63%		
WEOTCA11	WEOTT	120,554	4,596	3.81%		
BKFDCA17	WEST	4,968,162	45,931	0.92%		
WTLDCA12	WHEATLAND	565,969	1,827	0.32%		
WLTSCA12	WILLITS	830,763	10,965	1.32%		
WLWSCA11	WILLOWS	849,058	29,206	3.44%		
WLMGCA01	WILMINGTON	2,994,808	424,238	14.17%		
WNDSCA11	WINDSOR	1,197,792	10,960	0.92%		
WNTRCA11	WINTERS	725,857	11,047	1.52%		
RVSDCA11	WOODCREST	1,561,356	175,026	11.21%		
WDLKCA11	WOODLAKE	275,065	74,711	27.16%		
WDLDCA11	WOODLAND	12,446,343	0	0.00%		
FRSNCA15	WOODWARD	379,166	42,310	11.16%		
YRLNCA11	YORBA LINDA	2,570,053	172,387	6.71%		
YNVLCA11	YOUNTVILLE	419,717	0	0.00%		
YREKCA11	YREKA	1,248,622	996	0.08%		
ORVACA11	YUKON	2,643,696	44,864	1.70%		
	TOTALS	2,827,584,476	29,320,089	1.04%		



#### Table 5.10

#### AT&T CALIFORNIA TOTAL CABLE & WIRE GROSS ADDITIONS (ACCT 2410) AND C&E OSP REHAB EXPENDITURES 50 WIRE CENTERS WITH LARGEST PLANT ADDITIONS 2013-2017

	Total Account 2410	Total Account 2410		C&E Spending as
	Cable & Wire Gross	Cable & Wire Gross	C&E Outside Plant	Percent of total OSP
	Plant Additions May	Plant Additions	Rehabilitation Project	Gross Adds - May 17
CLLI Wire Center Name	17 Response	August 6 Response	Costs	Response
SNJSCA02 SAN JOSE MAIN	97,778,638	(100,453)	275,980	0.28%
SNFCCA01 BUSH/PINE	92,771,157	(64,497)	89,681	0.10%
IRVNCA11 AIRPORT	87,903,445	42,896	34,088	0.04%
NHWDCA02 MAGNOLIA	85,790,657	45,959	94,603	0.11%
GRDNCA01 GARDENA	85,329,194	(439,336)	356,099	0.42%
CNCRCA01 CONCORD	76,425,990	258,490	69,941	0.09%
OKLDCA03 FRANKLIN	74,803,757	88,999	41,186	0.06%
CMTNCA01 COMPTON	69,951,289	66,540	539,538	0.77%
CORNCA11 CORONA	67,585,650	37,357	207,114	0.31%
SNANCA01 BUSH	66,106,508	304,708	247,362	0.37%
SNRSCA01 SANTA ROSA MA	IN 64,969,120	52,918	123,781	0.19%
SNTCCA01 SPACE PARK	63,306,239	8,541	25,693	0.04%
ANHMCA01 LEMON	62,476,858	8,693	162,824	0.26%
PSDNCA11 PASADENA GREE	EN 61,930,069	(58,323)	51,426	0.08%
BKFDCA12 FAIRVIEW/MAIN	59,625,877	(4,943)	402,912	0.68%
FRMTCA12 FREMONT ADAM	S 59,618,183	(282,325)	337,902	0.57%
FNTACA11 FONTANA	58,996,675	266,201	346,871	0.59%
FRFDCA01 FAIRFIELD	57,555,395	203,457	8,637	0.02%
VNNYCA02 VAN NUYS	57,301,547	1,270	107,225	0.19%
RVSDCA01 RIVERSIDE ORAN	NGE 57,137,127	47,327	274,205	0.48%
SNJSCA21 JUNCTION AVE	56,843,067	251,400	38,981	0.07%
SNJSCA12 CUPERTINO DIAL	. W/ 56,650,918	11,199	189,223	0.33%
SNDGCA02 UNIVERSITY	56,444,190	57	30,335	0.05%
SKTNCA01 STOCKTON MAIN	56,288,059	11,870	801,042	1.42%
FROKCA11 FAIR OAKS WHIT	EH/ 56,030,078	(7,748)	491,689	0.88%
SNFCCA21 611 FOLSOM ST.	55,820,407	248,964	9,306	0.02%
MDSTCA02 MODESTO MAIN	55,659,325	66,274	69,988	0.13%
BNPKCA11 BUENA PARK	54,364,981	1,129,386	257,732	0.47%
HYWRCA01 HAYWARD MAIN	53,027,648	84,024	74,080	0.14%
BSRNCA70 2600 CAMINO RA	MO 51,709,701	11,105	-	0.00%
SNDGCA01 C ST	51,153,799	136,827	71,251	0.14%
CLVSCA11 AXMINSTER	50,717,328	3,894	332,647	0.66%
NSCRCA11 WABASH	49,229,852	48,275	214,461	0.44%
FUTNCA01 FULLERTON	49,216,883	1,080	587,460	1.19%
NAPACA01 NAPA	49,038,042	82,434	175,341	0.36%
OKLDCA12 HOLLY	48,942,241	405,367	143,266	0.29%
FRSNCA01 FRESNO MAIN	48,920,256	(770,225)	610,397	1.25%
LSANCA05 PLEASANT	48,096,407	6,782	489,832	1.02%



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	Table 5.10 (page 2 of 2)						
CLLI	Wire Center Name	Total Account 2410 Cable & Wire Gross Plant Additions May 17 Response	Total Account 2410 Cable & Wire Gross Plant Additions August 6 Response	C&E Outside Plant Rehabilitation Project Costs	C&E Spending as Percent of total OSP Gross Adds - May 17 Response		
LSANCA35	MONTEBELLO	47,133,161	224,370	231,908	0.49%		
SNANCA11	BRISTOL	46,789,194	(222,263)	551,873	1.18%		
SNJSCA14	FOX.CAMPBELL	46,059,045	74,401	318,886	0.69%		
HYWRCA11	DEPOT COURT	45,175,688	1,285,425	20,371	0.05%		
SNFCCA04	MCCOPPIN ST.	44,952,597	226,419	9,726	0.02%		
CNPKCA01	VANOWEN	44,649,064	205,178	20,900	0.05%		
GLDLCA11	GLENDALE	44,495,109	1,725	116,068	0.26%		
ESCNCA01	BROADWAY	44,165,482	22,818	243,041	0.55%		
SNDGCA15	REGENTS	43,600,985	25,274	38,685	0.09%		
SNDGCA06	37TH ST	43,258,233	65,692	273,884	0.63%		
FRSNCA12	CLINTON	42,476,157	234,087	423,909	1.00%		
SNBUCA02	S SAN FRANCISCO	42,329,961	(1,427)	326,977	0.77%		
	TOTALS	2,890,601,233	4,346,146	10,960,326	0.38%		



#### Table 5.11

#### AT&T CALIFORNIA

#### TOTAL CABLE & WIRE MAINTENANCE EXPENSES (ACCT 6410) AND TECHNICAL FIELD SERVICES OSP REHAB EXPENDITURES 50 WIRE CENTERS WITH HIGHEST CABLE & WIRE MAINTENANCE EXPENDITURES 2013-2017

				TFS Spending as
		Total Account 6410	TFS Outside Plant	Percent of total OSP
		Cable & Wire	Rehabilitation Project	Maintenance
CLLI	Wire Center Name	Maintenance Expense	Costs	Spending
FLSMCA14	FLSM BLUE RAVINE	107,820,568	14,727	0.01%
MTPSCA11	MOUNTAIN PASS	72,659,103	0	0.00%
UPLKCA11	UPPER LAKE	59,841,492	0	0.00%
CWLDCA12	CROWS LANDING	54,475,885	19,915	0.04%
HRCLCA11	HERCULES	51,199,940	5,047	0.01%
MRCDCA01	MERCED	47,283,524	394,140	0.83%
ALHBCA01	ALHAMBRA	46,621,844	302,618	0.65%
FZPKCA11	LEBEC CHESTNUT	45,895,483	68,559	0.15%
STHNCA11	ST HELENA MAIN	41,486,806	0	0.00%
BRDLCA90	BRADLEY	39,891,197	0	0.00%
PTLMCA01	PETALUMA MAIN	39,558,665	22,234	0.06%
CRNGCA12	CORNING	38,377,221	12,388	0.03%
SNDGCA02	UNIVERSITY	37,815,511	15,172	0.04%
EKCKCA11	ELK CREEK	37,606,425	0	0.00%
BLLKCA11	BLUE LAKE	36,912,758	8,185	0.02%
TULRCA11	TULARE	35,922,238	144,385	0.40%
FNTACA11	FONTANA	35,174,107	260,336	0.74%
GRNDCA13	GRENADA	31,320,164	0	0.00%
CLXCCA12	CALEXICO	31,049,115	26,412	0.09%
LKLACA11	LAKE LOS ANGELES	30,659,067	5,504	0.02%
PLALCA02	PALO ALTO MAIN	30,543,211	20,135	0.07%
SNLCCA11	SAN LUCAS	30,074,217	5,467	0.02%
QNCYCA12	QUINCY	28,805,704	2,191	0.01%
SUNLCA11	SUNOL	27,867,563	9,476	0.03%
GALTCA11	GALT	27,694,481	6,690	0.02%
CYWLCA11	COYOTE WELLS	27,063,664	3,798	0.01%
OCSDCA11	MISSION	26,552,887	102,676	0.39%
MRBACA11	MORRO BAY	25,701,025	68,547	0.27%
CHVSCA11	THIRD AVE	25,371,016	114,966	0.45%
SNDGCA14	TENNYSON	24,468,806	55,211	0.23%
CLVSCA11	AXMINSTER	23.949.042	211.711	0.88%
MOJVCA01	MOJAVE	23,799.780	3.354	0.01%
WLLCCA11	WALLACE	23,499,124	1,405	0.01%



Table 5.11 (page 2 of 2)					
CLLI	Wire Center Name	Total Account 6410 Cable & Wire Maintenance Expense	TFS Outside Plant Rehabilitation Project Costs	TFS Spending as Percent of total OSP Maintenance Spending	
MARNCA11	MARINA	22,887,962	1,788	0.01%	
GVLDCA11	GROVELAND	22,272,246	39,125	0.18%	
ORVACA11	YUKON	21,616,514	44,864	0.21%	
RDNGCA02	REDDING MAIN	21,613,946	13,603	0.06%	
SAGSCA11	SAUGUS	19,839,287	0	0.00%	
VYSPCA11	VALLEY SPRINGS	19,526,730	2,697	0.01%	
ALMDCA11	CENTRAL	19,407,620	38,410	0.20%	
FRMTCA12	FREMONT ADAMS	18,973,075	80,442	0.42%	
WLMGCA01	WILMINGTON	18,183,481	424,238	2.33%	
NICECA11	NICE	17,725,137	0	0.00%	
CTTICA12	PETALUMA SWIFT	17,540,582	0	0.00%	
RILNCA12	RIO LINDA	17,176,614	7,028	0.04%	
SNJSCA13	W. CHYNOWETH	16,664,809	312,458	1.87%	
CHLRCA11	CHUALAR	16,586,082	3,584	0.02%	
BVHLCA01	<b>BEVERLY HILLS</b>	16,478,579	14,066	0.09%	
SCVYCA01	SCOTTS VALLEY	16,468,619	54,596	0.33%	
SNDGCA06	37TH ST	15,951,908	69,559	0.44%	
	TOTALS	1,585,874,825	3,011,711	0.19%	



## Summary and conclusions

AT&T California's pattern of devoting little more than a *de minimis* share of its capital investment and operating expense resources to address deteriorating POTS outside plant is an area of major concern for the CPUC. In Chapter 4A, we examined in detail the long-term deterioration in most service quality metrics and, in particular, in AT&T's responses to out-of-service conditions. The data confirm that, for the most part, service quality and responses to out-of-service trouble conditions have declined over the 2010-2017 period. The exception to this can be found in wire centers that have received plant upgrades that support U-verse branded VoIP, Internet access, and video (IPTV) services.



Despite the clear service quality objectives as set out at GO 133-C/D, the only areas where AT&T California has maintained POTS service quality in its network were in those wire centers where the company has invested in revenue-driven advanced broadband services.

Thus, and despite the clear service quality objectives as set out at GO 133-C/D, the only situations in which POTS service quality has been maintained at roughly the same level over the full 8-year study period is to be found where revenue-driven investments in advanced services have been undertaken. The potential revenue gains from such initiatives clearly offer a stronger incentive for capital investment that the threat of fines or other regulatory measures that might be adopted in response to persistent substandard POTS service quality.



# 6 INFRASTRUCTURE POLICIES AND PROCEDURES: FRONTIER

#### Principal observations and takeaways

- In its economic assessment of the 2016 purchase of the three Verizon ILECs, Frontier had concluded that the intra-corporate transfer payments that the three companies had been making to various Verizon centralized services affiliates were excessive, and that Frontier could realize some \$700-million in annual cost savings by capturing these functions within its own organization.
- Frontier began shifting functions previously provided by Verizon service affiliates to its own organization almost immediately after completing the acquisition in April 2016. This strategy may well have contributed to many of the transition problems that Frontier had encountered.
- The general overview that Frontier has provided of its maintenance practices and policies does not provide any information as to the extent to which these policies and practices are actually being followed.
- Both Verizon and Frontier have invested heavily in upgrading and expanding Fiber-to-the-Premises ("FTTP") services both before and after the April 2016 closing of the transaction. FTTP facilities are now available to more than two-thirds of all people living in Frontier-served areas.



# INFRASTRUCTURE POLICIES AND PROCEDURES: FRONTIER

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## Introduction

Although this study covers a 96-month period from January 2010 through December 2017, the current management of what is now Frontier California was in place for only 21 out of those 96 months. A substantial portion of the ongoing management and operation of the Verizon California entity was carried in several "centralized service organizations" - subsidiaries of the parent company that assumed specific areas of responsibility for management and certain specific functions of the various Verizon ILECs nationwide.



In its economic assessment of the 2016 purchase of the three Verizon ILECs, Frontier had concluded that the intra-corporate transfer payments that the three companies had been making to various Verizon centralized services affiliates were excessive, and that Frontier could realize some \$700-million in annual cost savings by capturing these functions within its own organization.

In its assessment of the economic efficacy of the proposed purchase of the three Verizon ILECs in California, Texas and Florida, Frontier had concluded that the intracorporate transfer payments that Verizon had been extracting from these three ILECs for its various centralized affiliate services were excessive, and that Frontier could realize significant cost savings by transferring these functions to its own organization. Frontier anticipated potential annual savings of some \$700-million by year 3 due primarily to the avoidance of certain Verizon "allocated costs" associated with centralized services furnished to the three Verizon ILECs by affiliates. As explained in the Joint Applicants' Response to an FCC staff information request:

Frontier estimates \$700 million in annualized corporate consolidated cost efficiencies for the proforma combined company, primarily through costs that do not transfer to Frontier at the closing of the Transaction. As previously discussed in the record, \$525 million of that projected savings will come from elimination of Verizon corporate cost allocations for various shared services, like network operations, engineering, and accounting and administrative functions. Another \$175 million in savings will be based on managing other allocations and costs. Achievement of these cost efficiencies is expected to improve Frontier's cash flows and overall financial strength, which will provide it with greater financial flexibility to invest in its network and expand the availability of new products and services, including broadband, for customers.109

<sup>109.</sup> Verizon Communications Inc. and Frontier Communications Corporation, Consolidated Application for the Partial Assignment and Transfer of Control of Domestic and International Section 214 Authorizations, FCC WT Docket No. 15-44Frontier/Verizon July 1, 2015 Response to FCC Wireline Competition Bureau Information Request dated June 17, 2015, at p. 13, citation omitted.

The process of transferring functions that were previously provided by the various Verizon centralized service affiliates to Frontier commenced concurrently with Frontier's takeover in April 2016, and may have contributed to the various transition problems that the Company encountered in the immediate aftermath of the transfer of control.<sup>110</sup>

Frontier began shifting functions previously provided by Verizon service affiliates to its own organization almost immediately after completing the acquisition in April 2016. This strategy may well have contributed to many of the transition problems that Frontier had encountered.

## Frontier California's Outside Plant Maintenance, Inspection, and Repair Programs

In response to DR-04F, Frontier described its "Outside Plant Maintenance, Inspection, and Repair Programs." These are summarized below as taken from the descriptions provided by Frontier. These descriptions, however, provide only a *normative* picture of Frontier's maintenance and inspection programs that, by themselves, teach little or nothing as to the actual extent to which these practices, priorities and performance are followed within the Frontier California maintenance organizations.

RP

The general overview that Frontier has provided of its maintenance practices and policies does not provide any information as to the extent to which these policies and practices are actually being followed.

Frontier describes these programs as consisting of the following principal elements:

- Maintenance programs, consisting of (1) a Copper Rehab Program that tracks trouble areas and aids in identifying copper plant for repair and replacement, (2) the California Copper Rehab website, which also tracks issues that require repair or replacement, and (3) Pole Maintenance.
- Quality Inspection Program
- GO 95 Inspection and Maintenance Program

https://arstechnica.com/information-technology/2016/05/frontier-outages-persist-35-days-after-switch-from-verizon/



<sup>110.</sup> See, e.g., "Nightmarish Transition from Verizon to Frontier Has No End in Sight," ARS Technica, May 5, 2016, available at (accessed 1/24/19)

• Maintenance of Underground Facilities in accordance with General Order 128. Frontier has provided details of the various activities included within each of these programs in a confidential response to DR-04F, which is summarized as follows:

# Maintenance Programs

1. Copper Rehabilitation Program

The Copper Rehabilitation Program is a preventative maintenance program used to identify, track, monitor and measure the repair and replacement of defective copper outside plant. The program proactively identifies facilities with the highest potential for reduction in customer trouble and associated operating costs, and tracks funding for cable repair or replacement. A Copper Rehab "work package" is created in the database when previously closed customer trouble tickets indicate a pattern of cable trouble. Work packages are available for the "Rehab Group" to test, isolate, and repair. Repairs are completed using expense funding but, if the repair identified through this system requires capital dollars, it is managed through the Defective Cable Repair (DCR) process.

2. *The California Copper Rehab website*, which also tracks issues that require repair or replacement

Frontier California employees provide data to Frontier's California Copper Rehab database which is a program that requires company technicians to identify and document OSP plant that requires repair or replacement. If a technician identifies an outside plant condition in need of repair, he or she is to submit it through Frontier California's Copper Rehab website. Plant issues entered in the CA Copper Rehab website are identified while technicians are conducting regular maintenance and installations in the field or through the T-Zone Inspection and Maintenance Protocols.<sup>111</sup> T-Zone inspections require Frontier California field technicians to perform inspections for specific types of outside plant including the following:

- a. Aerial Outside Plant T-Zone inspection, where a technician is dispatched to repair a customer affecting condition.
- b. Buried Outside Plant T-Zone inspection, which requires technicians to examine the pedestal and surrounding work area for possible defects, and to look for any exposed cable leading to and from the pedestal.

<sup>111.</sup> T-Zone forms are used to report irregular plant conditions.

- c. Manhole T-Zone inspections, with field technicians examining the entire manhole for defects.
- 3. Pole Maintenance

This maintenance includes transferring cables, drops (the cable from the pole to the customer's house or business), and down guys (support wires extending from the pole to the ground) from old poles to new poles. It also includes Frontier's collaboration with Southern California Edison for inspections and vegetation removal (i.e., tree trimming) for jointly owned poles.

## Quality Inspection Program

The company describes its long-standing quality inspection program as an effort that aims to proactively identify and repair problems with outside plant:

- A group of experienced Frontier Inspectors (Quality Assurance Organizational Review ("QAOR") Inspectors) who do not manage line technicians but instead work to inspect and improve Frontier California's network. The QAOR Inspectors conduct random inspections throughout each Local Manager territory annually. They focus on the quality of the work orders, installations, and repair jobs. They also audit the customer service provided to confirm the customer's satisfaction, and check the coding of the job. They evaluate safety conditions, proper placement of equipment, and adherence to proper methods and procedures. The inspections cover a detailed checklist of items. The results are communicated to the team upon completion, and audit scores are recorded in performance-assessment scorecards.
- 2. "Local inspections" are conducted by Frontier California Supervisors or Local Managers, who manage technicians. The Local Managers are required to perform ten (10) inspections per month. In addition, construction Inspectors/Coordinators are required to perform ten (10) inspections on vendor work. These local inspections also focus on the customer service provided and compliance with installation or maintenance guidelines. Some inspections can be done post-installation, but most are done during installation. The Local Managers and Inspectors go through a detailed checklist and score the technician on how well he or she did with the work order. Half of these inspections are performed on Frontier's aerial facilities and the other half are performed on Frontier's underground facilities. These inspections impact annual technician performance ratings, which are used for determining satisfactory job performance and career progression.

Frontier explains that, while it is satisfied with scores of 90 percent, it still requires that the technician immediately follow up on *any* problems identified in the scorecard. The technician must return to the customer site within 14 days to repair anything that fell short



of 100 percent. After that repair, the technician must send a photograph of the finished repair to his or her manager to confirm that the work is complete. These inspection results are tracked in the Copper Rehab database.

# GO 95 Inspection and Maintenance Program

Frontier explains that GO 95 sets forth design, construction, maintenance and safety requirements for electrical and communications aerial plant. GO 95, Rule 18, directs utilities to correct nonconformance based upon three priority levels:

- 1. Priority Level 1 issues are those that create an "immediate safety and/or reliability risk with high probability for significant impact." For these issues, GO 95 requires companies to "[t]ake action immediately (within 24 hours), either by fully repairing the condition, or by temporarily repairing and reclassifying the condition to a lower priority."
- Priority Level 2 conditions pose a "[v]ariable (non-immediate high to low) safety and/or reliability risk." Corrective action for these conditions must be taken (a) within nine months for nonconformance that "compromise worker safety" or that "create a fire risk and are located in an Extreme or Very High Fire Threat Zone in Southern California"; (b) within 59 months for all other Level 2 nonconformance. These deadlines run from the date the nonconformance is first identified.
- 3. Priority Level 3 items are an "acceptable safety and/or reliability risk" and action should be taken "as appropriate" within 59 months.

For all GO 95 conditions, correction times may be extended under reasonable circumstances, such as lack of access to the area, or where a permit must be obtained, or where an emergency exists, such as a fire or severe weather condition.

Frontier has adopted the following protocols regarding GO 95:

- 1. *Identifying conditions that need remediation*. Frontier California learns of potential GO 95 nonconformance in four principal ways:
  - The company identifies conditions when it performs the inspections required by GO 95, Rule 80.1, which include visual inspections, periodic detailed inspections, and periodic intrusive inspections.
  - (2) Company employees or agents are required to report GO 95 conditions they discover during the course of performing their work.



- (3) In compliance with Rule 18(B) of GO 95, other entities that occupy joint poles will report conditions to Frontier. These third-party reports are a significant source of information because most poles in California are jointly used by electric utilities (which have additional inspection obligations pursuant to GO 165) and communication infrastructure providers (CIPS). For example, a particular pole may have five providers attached to it, each of which may inspect facilities at different times and report GO 95 conditions to all other attaching entities.
- (4) Frontier California and other companies may learn of conditions during Safety and Enforcement Division ("SED") audits.
- 2. Categorizing nonconforming conditions for remediation and tracking to ensure repair by deadline

When Frontier California employees or agents receive any notice of a potential Priority Level 1 condition, they act as soon as possible to contact the group or person responsible for investigating and fixing it. In general, when Frontier California learns of a nonconformance, an e-mail notice is sent to the Local Manager assigned to the geographic area where the nonconformance has been located. The email identifies the level of the nonconformance and the time by which it is required to be corrected (e.g., a notice could describe a GO 95 Level 2 nonconformance that must be corrected within 59 months). Thereafter, an email notification update is issued every six months up to the required completion date. Once the required completion date is within eleven months, Frontier sends emails more frequently with notification of the approaching deadline. If Frontier learns in its inspections of a potential nonconformance related to another utility, then pursuant to GO 95, this condition is reported promptly to the other utility.

## Underground Facilities Maintenance.

GO 128 was enacted to "formulate, for the State of California, uniform requirements for underground electrical supply and communication systems, the application of which will insure adequate service and secure safety to all persons engaged in the construction, maintenance, operation or use of underground systems and to the public in general."<sup>112</sup> It applies to underground electrical supply and communication systems used in connection with public utility service. It requires that these systems be maintained in "such condition as to secure safety to workmen and the public in general."<sup>113</sup>

<sup>113.</sup> GO 128, Rule 12.2.



<sup>112.</sup> GO 128, Rule 11.

GO 128 requires communications systems to be "inspected by the operator frequently and thoroughly" to ensure that they are in "good condition."<sup>114</sup> Frontier California complies with this requirement. Frontier has regular Manhole T-Zone inspections, which require that Field Technicians examine the entire manhole for defects. For the line of sight inspection required by the Manhole T-Zone inspection protocol, field technicians must make sure that the manhole floor is clear of debris and adjacent cables, splice cases, and that sleeves are properly supported and secured. Frontier also conducts frequent quality inspections on recently completed work orders on existing underground facilities. Local Managers, Coordinators, and Frontier California Quality Inspection Experts (who do not manage technicians but instead travel throughout the wireline network inspecting technicians' work) are required to routinely inspect completed work orders. For new construction, Substructure Inspectors are responsible for ensuring underground facilities are consistent with GO 128. This includes inspecting new manholes, handholes, and conduits to ensure they are constructed according to GO 128 standards.

## Plant maintenance and capital investment

Frontier was requested (in DR-03F) to "provide the dollar amount of Gross Plant Additions as recorded on each of the following 47 CFR Part 32 Uniform System of Accounts ("USOA") Telecommunications Plant in Service ("TPIS") accounts separately for each central office building and its associated wire center serving area for the period June 30, 2010 through December 31, 2017, in six-month intervals ..." Frontier was also requested (in DR-04F) to provide "specific data on annual outside plant undertakings from 2010-2017 [consisting of] (a) Spreadsheet with financial data for Construction project investment by wire center (former Verizon territories); and (b) Spreadsheet with financial data for Maintenance and Repair expenses by wire center (former Verizon territories).<sup>115</sup> Frontier responded that it only had data for the time period beginning April 2016, and provided the requested data separately for April 1-December 31, 2016 and for the full calendar year 2017.



Frontier was unable to provide wire center account-level data on Gross Plant Additions, Retirements, and maintenance costs for the period when the California ILEC was under Verizon ownership.

Tables 6.1 and 6.2 summarize Frontier's 2016 and 2017 outside plant Gross Plant Additions (accounts 24XX). Table 6.1 is based upon data provided by Frontier in response to DR-03F, Request 1, Attachment 1; Table 6.2 is based upon data provided by Frontier in response to DR-04F, Request 3(a), Attachment 1. These figures should be the same, but they are not.



<sup>114.</sup> GO 128, Rule 17.2.

<sup>115.</sup> DR-04F, Information Request 3.

Table 6.1 FRONTIER CALIFORNIA GROSS OUTSIDE PLANT ADDITIONS PER FRONTIER RESPONSE TO DR-03F 2016-2017						
Account	2016	2017	Total			
2411-Poles	80,283	44,477,174	44,557,457			
2421-Aerial Cable	18,995,031	40,653,598	59,648,629			
2422-Underground Cable	1,727,729	36,045,343	37,773,072			
2423-Buried Cable	20,691,405	79,146,334	99,837,739			
2426-Intrabuilding Cable	170,630	902,134	1,072,764			
2431-Aerial Wire	0	0	0			
2441-Conduit Systems 244,952 6,703,176 6,948,1						
TOTAL	41,910,031	207,927,759	249,837,790			
Source: Frontier response to DR-04F, Request 1	, Attachment 1.					

Table 6.2						
FRONTIER CALIFORNIA GROSS OUTSIDE PLANT ADDITIONS PER FRONTIER RESPONSE TO DR-04F 2016-2017						
Account	2016	2017	Total			
2411-Poles	46,842,090	23,841,369	70,683,458			
2421-Aerial Cable	39,339,561	29,235,997	68,575,558			
2422-Underground Cable	25,813,905	34,365,255	60,179,160			
2423-Buried Cable	35,762,705	75,492,338	111,255,042			
2426-Intrabuilding Cable	780,228	352,474	1,132,702			
2431-Aerial Wire	0	2,204	2,204			
2441-Conduit Systems	10,689,764	22,357,453				
TOTAL 160,206,178 173,979,403 334,185,5						
Source: Frontier response to DR-04F, Request 3	(a), Attachment 1.					

Table 6.3 below breaks down the outside plant additions by wire center:



Table 6.3						
FRONTIER CALIFORNIA OUTSIDE PLANT GROSS ADDITIONS BY WIRE CENTER 2016-17						
		DR 03-F			DR 04-F	
Wire Center	2016	2017	Total	2016	2017	Total
ADELANTO	-	61,448	61,448	674,096	2,360,582	3,034,678
ALDERPOINT	-	42,231	42,231	986,358	(239,816)	746,542
ALPAUGH	-	15,354	15,354	488,064	83,851	571,915
ANZA	-	4,283,384	4,283,384	554,641	8,691,268	9,245,909
APPLE VALLEY	-	368,694	368,694	1,398,825	672,720	2,071,546
ARROWHEAD FARMS	-	352,198	352,198	328,456	(459,445)	(130,989)
ARTESIA	72,318	1,320,282	1,392,600	4,815,267	1,352,413	6,167,679
AZUSA	126,010	357,166	483,176	160,160	315,309	475,468
BADGER	-	49,028	49,028	46,483	(14,873)	31,609
BALDWIN PARK	69,781	864,330	934,110	100,578	181,135	281,713
BANNING	35,067	696,825	731,892	189,422	242,411	431,833
BARSTOW	-	207,392	207,392	101,522	968,268	1,069,789
BEAUMONT	51,094	564,492	615,586	336,459	727,173	1,063,632
BEL AIR	28,310	266,393	294,702	40,978	121,668	162,647
BELL GARDENS	46	395,083	395,129	63,514	149,428	212,942
BELLFLOWER	473,959	644,078	1,118,037	168,398	(36,201)	132,197
BERMUDA DUNES	67,258	96,856	164,114	18,516	83,653	102,169
BIG BEAR CITY	-	253,477	253,477	18,811	44,500	63,311
BIG BEAR LAKE	-	153,623	153,623	4,063,930	800,420	4,864,350
BISHOP	-	268,724	268,724	65,943	87,421	153,364
Blythe	-	-	-	107	6,015	6,123
BORON	-	95,973	95,973	-	4,678	4,678
BRIDGEPORT	-	95,973	95,973	3,395	4,503	7,899
BUTTONWILLOW	-	26,877	26,877	913	(73,353)	(72,440)
CALIFORNIA CITY	-	188,107	188,107	29,475	32,351	61,826
CALIFORNIA HOT SPF	-	26,877	26,877	-	7,000	7,000
CALIMESA	2,737	286,321	289,058	104,041	31,082	135,123
CAMARILLO	260,912	2,839,221	3,100,132	20,395,069	(15,008,007)	5,387,062
CANTUA CREEK	-	7,682	7,682	-	5,950	5,950
CARPINTERIA	-	240,595	240,595	32,358	96,671	129,030
CAZADERO	-	61,426	61,426	372,262	64,904	437,166
CHINA LAKE	-	34,550	34,550	4,006	13,414	17,420
CHINO	241,246	1,614,201	1,855,446	704,066	605,767	1,309,833
CLAREMONT	32,653	630,748	663,401	87,532	381,039	468,571
CLEMENTS	-	53,754	53,754	60,131	273,358	333,489
COACHELLA	44,823	32,703	77,526	10,545	26,039	36,584
COLFAX	-	176,616	176,616	3,737	9,835	13,572
CORCORAN	-	69,108	69,108	206,399	73,975	280,374
COVELO	-	119,021	119,021	-	5,717	5,717
COVINA	76,709	1,623,710	1,700,419	465,322	784,685	1,250,007
CRESTLINE	-	256,826	256,826	33,505	87,541	121,046
CROWLEY LAKE	-	69,100	69,100	(0)	31,462	31,462
CUCAMONGA	100,531	1,328,910	1,429,441	788,776	644,981	1,433,756
1						



Table 6.3 (page 2 of 5)						
		DR 03-F			DR 04-F	
Wire Center	2,016	2,017	Total	2,016	2,017	Total
CULVER CITY	6,623,516	6,882,846	13,506,361	11,145,722	2,039,083	13,184,805
DESERT HEIGHTS	-	10,113	10,113	19,436	866	20,302
DESERT HOT SPRING	86,076	309,519	395,595	296,529	451,618	748,147
DESERT KNOLLS	-	96,014	96,014	43,092	5,867	48,960
DIAMOND BAR	17,680	67,267	84,946	39,776	144,464	184,240
DOS PALOS	-	145,898	145,898	-	19,903	19,903
DOWNEY	68,879	1,367,828	1,436,707	389,869	407,705	797,574
DUNLAP	-	161,252	161,252	-	217,858	217,858
EDGEMONT	5,063	504,993	510,055	549,342	276,480	825,823
EL MIRAGE	-	23,042	23,042	2,035	55,561	57,596
EL RIO	15,667	194,052	209,720	218,284	302,378	520,662
ELLWOOD	109,003	220,932	329,934	127,936	798,908	926,844
ELSINORE	172,793	1.224.446	1.397.239	490.502	373.018	863,520
ETIWANDA	49,226	348.553	397,779	167.257	195,776	363.033
EXETER	-	115,180	115,180	88,968	280,780	369,748
FARMERSVILLE	-	19,195	19,195	17.713	47.096	64,809
FARMINGTON	-	30,718	30,718	18.682	51.216	69.897
FELLOWS	-	49,913	49,913	(161,438)	364,948	203.510
FORT IRWIN	-	7.682	7.682	82.781	73.553	156.333
FOWLER	-	306.817	306,817	181.771	236,608	418,379
GARBERVILLE	-	168,934	168,934	12,133	93,166	105,300
GILROY	-	264,919	264,919	4,445,478	2.296.537	6.742.016
GLENDORA	55.406	6.874.117	6.929.523	5.684.022	922.771	6.606.793
GLENNVILLE	-	65.267	65.267	7.266	4.678	11.943
GOLETA	-	448,139	448,139	135.877	146.278	282,155
GRANADA HILLS	78.522	629.210	707,732	54.858	119,360	174,218
GRANT GROVE VILLA	-	23.227	23.227	13.206	9,995	23.201
GUADALUPE	17.416	122,843	140.258	1,176	110.858	112.034
HAYFORK	-	157.411	157.411	-	267	267
HELENDALE-SILVER I	-	-	-	201.045	(532.024)	(330,979)
HEMET	20.599.586	8.066.680	28.666.266	28.044.615	6.430.305	34,474,920
HERMOSA BEACH	170.338	651.466	821,804	166.785	107.466	274,250
HESPERIA	-	664.241	664,241	599.703	825.064	1.424.767
HOMELAND	127.032	928,255	1.055.287	656.044	421.313	1.077.357
НООРА	-	115,180	115.180	56.687	144.239	200.926
Huntington Beach	517.706	1.428.121	1.945.827	1,193,172	1.248,405	2.441.577
IDYLLWILD	-	298.434	298,434	2.724	84.638	87.362
INDEPENDENCE	-	15.358	15,358		5,443	5,443
INDIO	72.753	963.650	1.036.403	691.353	366.501	1.057.855
INYOKERN	-	126.684	126.684	32,596	19,586	52,182
JOSHUA TREE	-	52.606	52.606	16.499	13,448	29.947
JUNE LAKE	-	42.228	42.228	1.398	94.090	95.488
KENWOOD	-	94.752	94,752	310.455	(458.072)	(147.617)
KERNVILLE	-	241.851	241.851	63.427	41.157	104.584
KNIGHTS LANDING	-	23.036	23.036	393	1.018	1.412
LA HABRA	-	454.468	454.468	67.080	49.257	116.337
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CONFIDENTIAL AND PROPRIETARY PER P.U. CODE § 583, GENERAL ORDER 66-D, & D.16-08-024

Table 6.3 (page 3 of 5)							
DR 03-F			DR 04-F				
Wire Center	2,016	2,017	Total		2,016	2,017	Total
LA PUENTE	166,597	7,891,051	8,057,648	3	,834,187	2,664,364	6,498,551
LA QUINTA	80,105	787,541	867,646		170,933	183,343	354,277
LA VERNE	10,939	19,377,545	19,388,484	1	,093,605	27,486,659	28,580,264
LAGUNA BEACH	413	103,142	103,555		422,428	33,100	455,528
LAKE HUGHES	-	250,091	250,091		48,801	223,466	272,267
LAKE ISABELLA	-	153,467	153,467		588,899	104,695	693,594
LANCASTER	105,895	4,462,332	4,568,227	1	,945,400	6,793,480	8,738,880
LATHROP	-	19,195	19,195		1,743	17,239	18,982
LAYTONVILLE	-	211,165	211,165		3,492	30,897	34,389
LEE VINING	-	34,541	34,541		13,410	9,241	22,651
LEGGETT	-	23,036	23,036		-	2,080	2,080
LEMON COVE	-	23,036	23,036		(5,410)	32,351	26,941
LENWOOD	-	107,535	107,535	1	,804,994	151,252	1,956,247
LINDEN	-	57,595	57,595		97,061	159,366	256,426
LINDSAY	-	283,503	283,503		70,950	86,563	157,513
LOMA LINDA	1,022	656,948	657,969		244,454	390,497	634,951
LOMPOC	16,074	673,802	689,876		112,354	198,004	310,358
LONE PINE	-	99,785	99,785		-	45,352	45,352
LONG BEACH	620,354	5,072,098	5,692,452	1	,657,609	1,219,830	2,877,439
LOS ALAMOS	-	70,198	70,198		967	7,012	7,979
LOS ANGELES	-	152,863	152,863		210	8,328	8,538
Los Gatos	-	1,270,899	1,270,899		175,798	1,701,156	1,876,954
LOS SERRANOS	-	295,270	295,270		239,950	274,833	514,783
LOST HILLS	-	19,195	19,195		7,382	11,740	19,123
LUCERNE VALLEY	-	184,347	184,347		50,766	409,726	460,492
MALIBU	66,048	2,454,313	2,520,361		126,279	8,965,790	9,092,069
MAMMOTH LAKES	-	88,272	88,272		35,839	45,616	81,455
MANHATTAN BEACH	174,942	148,215	323,156		53,502	105,847	159,349
Manteca	-	191,970	191,970		222,775	(58,794)	163,982
MARICOPA	-	46,072	46,072		-	91,465	91,465
MCFARLAND	-	76,811	76,811		199,697	(30,717)	168,980
MCKITTRICK	-	38,411	38,411		11,460	1,351	12,811
MECCA	-	84,628	84,628		6,509	148,182	154,691
MENTONE	-	7,382	7,382		(112,193)	74,846	(37,347)
MIRAMONTE	-	69,098	69,098		18,005	5,000	23,005
MONROVIA	10,546	401,625	412,171		116,875	191,484	308,359
MONTECITO	13,722	250,478	264,200		71,746	(2,074)	69,672
MORGAN HILL	-	314,894	314,894		270,595	1,123,891	1,394,486
MORONGO VALLEY	-	61,425	61,425		188,345	(12,356)	175,988
MURRIETA	321,738	969,676	1,291,414		470,157	543,877	1,014,033
MUSCOY DEVORE	417,762	618,541	1,036,303		996,445	135,086	1,131,531
Needles	-	-	-		277	966	1,243
NEWBERRY SPRINGS	-	96,014	96,014		739	4,234	4,974
NEWBURY PARK	167,536	162,381	329,917		45,750	91,148	136,898
NORTH SHORE	-	33,882	33,882		12,280	475	12,755
NORWALK	97,846	1,028,597	1,126,443		175,745	1,090,398	1,266,143



Table 6.3 (page 4 of 5)							
	DR 03-F			DR 04-F			
Wire Center	2.016	2.017	Total	2.016	2.017	Total	
NOVATO	-	434,060	434,060	62,373	664,593	726,966	
OASIS	-	95,258	95,258	50,884	252,036	302,920	
ONTARIO	309,079	3,241,286	3,550,365	1,358,690	3,033,385	4,392,075	
ORCUTT	16,752	266,397	283,149	27,094	233,275	260,369	
ORLEANS	-	15,364	15,364	-	130	130	
ORO LOMA	-	15,364	15,364	7,989	2,637	10,626	
OXNARD	343,418	1,157,199	1,500,617	274,049	205,823	479,872	
PACIFIC PALISADES	153	208,142	208,295	85,760	86,034	171,794	
PACOIMA	83,723	8,654,028	8,737,751	6,507,710	1,424,623	7,932,333	
PALM DESERT	11,233	574,517	585,750	285,969	311,251	597,220	
PALM SPRINGS	38,371	8,754,551	8,792,923	863,327	8,244,688	9,108,015	
PALOS VERDES ESTA	36,016	415,849	451,865	147,230	107,115	254,344	
PARKFIELD	-	-	-	333,737	1,064,666	1,398,403	
PASADENA	-	8,553	8,553	22,310	14,188	36,498	
PERRIS	97,224	1,615,269	1,712,493	353,951	840,713	1,194,664	
PHELAN	-	80,633	80,633	52,331	36,742	89,073	
PICO RIVERA	-	482,072	482,072	81,690	333,003	414,693	
PIERCY	-	24,689	24,689	5,046	181	5,226	
PLAYA DEL REY	19,989	973,464	993,453	329,189	598,596	927,785	
POINT MUGU NAWC	-	52,164	52,164	20,165	89,978	110,144	
POMONA	132,157	1,316,253	1,448,411	4,942,069	879,839	5,821,908	
QUAIL VALLEY	106,415	633,080	739,494	453,246	564,954	1,018,200	
QUARTZ HILL	106,646	149,506	256,152	50,729	195,646	246,376	
RANCHO CALIFORNIA	137,863	860,300	998,163	282,879	1,448,737	1,731,616	
RANCHO CORDOVA	-	-	-	-	304,791	304,791	
RANCHO MIRAGE	88,904	180,678	269,582	150,678	36,553	187,231	
RANDSBURG	-	41,889	41,889	3,816	1,463	5,278	
REDLANDS	54,581	1,003,464	1,058,045	430,292	261,792	692,084	
REDONDO BEACH	125,335	360,154	485,489	105,913	277,401	383,314	
REEDLEY	8,845	532,260	541,106	281,380	368,411	649,791	
RIDGECREST	-	159,933	159,933	56,531	238,153	294,684	
RIPON	-	-	-	18,043	283,264	301,307	
RUNNING SPRINGS	-	84,472	84,472	7,429	47,023	54,452	
SALTON CITY	-	32,539	32,539	1,499	97,948	99,447	
SAN BERNARDINO	284,765	15,684,525	15,969,290	1,026,192 2	20,675,209	21,701,401	
SAN DIMAS	90,671	507,262	597,932	182,125	193,646	375,771	
SAN FERNANDO	18,322	355,759	374,080	86,390	384,079	470,469	
SAN JACINTO	60,187	513,707	573,894	221,220	417,475	638,695	
SAN MIGUEL	-	7,622	7,622	46,235	1,650	47,884	
Sanger	-	-	-	47,075	392,828	439,902	
SANTA BARBARA	6,450	6,403,155	6,409,605	772,380	7,612,596	8,384,975	
SANTA MARIA	78,872	1,038,130	1,117,001	336,863	546,511	883,374	
Santa Monica	1,408,311	684,833	2,093,144	133,938	167,460	301,398	
SANTA PAULA	7,530	512,419	519,949	166,708	67,409	234,117	
SEA RANCH	-	-	-	-	13,746	13,746	
SEAL BEACH	38,736	526,574	565,310	780,194	(388,053)	392,141	



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Table 6.3 (page 5 of 5)							
		DR 03-F				DR 04-F	
Wire Center	2,016	2,017	Total		2,016	2,017	Total
SEPULVEDA	102,278	746,284	848,562		179,518	27,403	206,921
SIERRA MADRE	-	316,666	316,666		58,553	25,750	84,303
SNELLING	-	-	-		-	165	165
SOLVANG	14,458	481,638	496,097		110,363	607,576	717,939
SOUTH LAGUNA BEA	-	19,832	19,832		(16)	(7,507)	(7,523)
STRATHMORE	-	2,060	2,060		30,509	25,269	55,778
SUMMIT VALLEY	-	15,359	15,359		175,276	(7,770)	167,506
SUN CITY	886,622	897,268	1,783,890		354,575	507,437	862,012
SUNLAND	12,560	401,470	414,030		19,777	143,843	163,620
SUNNYMEAD	273,925	897,773	1,171,699		532,490	207,814	740,304
SYLMAR	4,934	441,509	446,443		46,524	88,413	134,937
TAFT	-	-	-		7,047	99,554	106,601
TEMECULA	81,133	920,768	1,001,902		275,883	635,406	911,289
THERMAL	-	97,675	97,675		57,400	169,989	227,388
THOUSAND OAKS	217,405	1,607,090	1,824,495		654,514	696,257	1,350,771
THOUSAND PALMS	-	46,071	46,071		5,978	14,701	20,679
TIVY VALLEY	-	-	-		464,207	1,787,060	2,251,267
TOPANGA	5,766	323,361	329,127		472,467	66,527	538,994
TORRANCE	137,603	15,287,472	15,425,075		321,841	21,628,178	21,950,019
TRANQUILLITY	-	-	-		(4,257)	(48,237)	(52,493)
TRONA	-	34,565	34,565		45,423	(5,558)	39,864
TWENTYNINE PALMS	-	88,632	88,632		13,879	17,004	30,882
UPLAND	2,608,794	14,153,991	16,762,785		12,965,051	2,640,895	15,605,946
VALLE VISTA	615,135	152,180	767,315		2,111	13,226	15,338
VANDENBERG AFB	-	3,836	3,836		-	10,002	10,002
VICTORVILLE	-	49,917	49,917		5,359,823	4,481,418	9,841,241
WALNUT	122,613	508,358	630,971		249,472	669,602	919,074
WEAVERVILLE	-	-	-		2,678	916,601	919,279
WEIMAR	-	4,144	4,144		-	6,914	6,914
WELDON	-	42,246	42,246		13,105	57,090	70,195
WEST LOS ANGELES	64,966	833,797	898,763		199,102	259,195	458,297
WESTMINSTER	95,630	1,613,818	1,709,448		4,806,666	968,342	5,775,008
WHITETHORN	-	20,719	20,719		403	87,284	87,687
WHITTIER	210,271	2,652,861	2,863,131		800,944	1,182,958	1,983,903
WILLOW CREEK	-	1,262	1,262		4,843	2,700,204	2,705,047
WRIGHTWOOD	-	65,290	65,290		689,114	(19,548)	669,566
YERMO	-	30,725	30,725		622	61,714	62,336
YUCAIPA	2,636	479,371	482,007		141,015	111,166	252,181
YUCCA VALLEY	-	76,874	76,874	Ш	76,540	2,607,673	2,684,212
TOTALS	41,916,992	207,549,872	249,450,732	$\left  \right ^{-}$	160,183,942	173,987,471	334,155,282



Frontier has provided gross plant additions data from several sources that are not consistent with one another. Table 6.4 below summarizes the gross additions amounts provided by Frontier from each of the individual sources:

Table 6.4						
FRONTIER CALIFORNIA GROSS OUTSIDE PLANT ADDITIONS FROM VARIOUS SOURCES 2016-2017						
Acct	O.P. Category	Form 43-02	DR-03F	DR-04F		
2411	Poles	60,463,000	44,557,457	70,683,458		
2421	Aerial Cable	75,864,000	59,648,629	68,575,558		
2422	Underground					
	Cable	55,325,000	37,773,072	60,179,160		
2423	Buried Cable	110,421,000	99,837,739	111,255,042		
2426	Intrabuilding Cable	1,074,000	1,072,764	1,132,702		
2431	Aerial Wire			2,204		
2440	Conduit Systems	23,489,000	6,948,128	22,357,453		
	TOTAL	326,636,000	249,837,790	334,185,581		
Source: Frontier response to DR-03F, Attachment 2;						

Table 6.5 below summarizes Frontier's outside plant maintenance expenses for 2016-17, by maintenance expense account:

Table 6.5							
FRONTIER CALIFORNIA GROSS OUTSIDE PLANT MAINTENANCE EXPENSES 2016-2017							
Account	O.P. Category	2016	2017	Total			
6411	Poles	3,912,736	6,423,741	10,336,477			
6421	Aerial Cable	29,009,338	43,123,060	72,132,398			
6422	Underground Cable	11,791,084	13,010,315	24,801,399			
6423	Buried Cable	33,389,710	46,177,738	79,567,448			
6424	Submarine Cable	8,312	155,066	163,378			
6426	Intrabuilding Network	100,656	(15,829)	84,827			
6431	Aerial Wire	1,638,866	2,802,085	4,440,951			
6441	Conduit	345,625	366,839	712,464			
	TOTAL	80,196,327	112,043,015	192,239,342			
Source: Frontier response to DR-04F, Request 3(b), Attachment 2.							


Because of these unexplained discrepancies in the data, ETI has been unable to develop meaningful assessments as to the nature of Frontier's outside plant investments, specifically with respect to rehabilitation of copper distribution facilities used to provide legacy services vs. FTTP projects that are deployed for the purpose of offering FiOS.

Discrepancies in Frontier's reporting of Gross Plant Additions for 2016 and 2017 undermine ETI's ability to assess the nature and emphasis of the company's outside plant investment strategy.

#### Fiber-to-the-Premises upgrades

While the investments in Fiber-to-the-Premises distribution plant made by both Verizon and Frontier cannot be directly tracked to individual wire centers or with respect to their timing, we do know that Frontier has considerably expanded the availability of FTTP and FiOS services since its acquisition of the company in April 2016. As of the closing date, Verizon had upgraded 55 wire centers with FTTP facilities passing approximately 1.5-million homes. Between April 2016 and December 2017, Frontier had added another 59 wire centers to the list of FTTPenabled areas, bringing the total number of FiOS-capable COs to 114, with some 2.6-million homes being passed by these facilities.

Both Verizon and Frontier have invested heavily in upgrading and expanding Fiber-to-the-Premises ("FTTP") services both before and after the April 2016 closing of the transaction. FTTP facilities are now available to more than two-thirds of all people living in Frontier-served areas.

#### Summary and conclusions

Our examination of Frontier's infrastructure policies and practices was limited due to several factors:

- (1) Frontier was unable to provide data covering the period of Verizon ownership.
- (2) Frontier provided three separate sources of account- and wire center-level data covering the 21 months under its ownership and management (April 1, 2016 through December 31, 2017). There were numerous unexplained discrepancies among these three data sources.



(3) Notwithstanding these discrepancies and other data limitations, Frontier, and Verizon before it, have expanded FTTP availability to more than two-thirds of homes passed within its service area.



## **T** AT&T CORPORATE AND CALIFORNIA ILEC INVESTMENT POLICIES

#### Principal observations and takeaways

- AT&T California's potential revenue from raising prices and curtailing investments in its legacy POTS services far exceed any financial penalties imposed for its failure to meet the GO 133-C/D service quality standards.
- To support its "harvesting" strategy and maintain revenues despite a massive drop-off in demand, AT&T California has raised its rates for legacy flat-rate residential service by 152.6% since the service was de-tariffed by the CPUC in 2009.
- AT&T senior management's interest in and attention to its legacy wireline ILEC operations has been largely supplanted by its wireless operations and the recent satellite TV and video content acquisitions.
- AT&T California financial statements show an incomplete assessment of the ILEC's financial condition due to the large volume of inter-affiliate transactions made at transfer prices that are not set on the basis of arm's length negotiations.
- Cumulatively, over the full 8-year period, AT&T California had total net after-tax income of \$3.4-billion, but paid out \$7.6-billion to its parent company, AT&T Inc, thereby eroding the California company's capital base by roughly \$4.2-billion and impairing its ability to maintain and upgrade its aging infrastructure.
- AT&T, Inc. has also been eroding its California ILEC's capital base by investing less in its infrastructure than its annual depreciation accruals and retirements.
- AT&T's "harvesting" philosophy explains why AT&T has failed to improve service quality for its POTS services at least to the point where the GO 133-C/D standards can be achieved, because the gains it can realize by raising prices and curtailing investment and maintenance far exceed any financial penalties it might suffer from persistently poor service quality.





#### AT&T CORPORATE AND CALIFORNIA ILEC INVESTMENT POLICIES

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#### Introduction

AT&T California d/b/a AT&T California is a wholly-owned subsidiary of AT&T Inc. AT&T Inc. was created by the 2005 merger of AT&T Corp. and SBC Communications, Inc., which itself had by then merged with three of the original seven Regional Bell Operating Companies ("RBOCs" – Pacific Telesis Group ("PTG"), Ameritech and BellSouth) that had been created when the local Bell System operating companies ("BOCs") were divested by AT&T Corp. on January 1, 1984.<sup>116</sup> AT&T California is an "Incumbent Local Exchange Carrier" as the term is defined at 47 U.S.C. §251(b)(1).<sup>117</sup> Following the break-up of the former Bell System in 1984,<sup>118</sup> AT&T California was owned by PTG, which provided local telephone service in California and Nevada through its AT&T California and Nevada Bell subsidiaries. Organizationally, Nevada Bell operates as part of AT&T California.

In 1992, PTG announced its decision to "spin-off" its cellular wireless subsidiary, PacTel, which divestiture was approved by the CPUC in 1993.<sup>119</sup> In 1996, several months following the U. S. Congress' enactment of the federal *Telecommunications Act of 1996* ("TA96"),<sup>120</sup> PTG and Southwestern Bell, another RBOC that, at that time, was providing service in Texas, Oklahoma, Kansas, Missouri and Arkansas, announced their intention to merge. That merger was approved

117. United States v. American Tel. & Tel. Co., 552 F. Supp. 131 (D.D.C. 1982), aff'd sub nom. Maryland v. United States, 460 U.S. 1001 (1983).

118. Adopted at Sec. 251(b)(1) of the *Telecommunications Act of 1996*: "... the term incumbent local exchange carrier' means, with respect to an area, the local exchange carrier that (A) on the date of enactment of the Telecommunications Act of 1996, provided telephone exchange service in such area; and (B)(i) on such date of enactment, was deemed to be a member of the exchange carrier association pursuant to section 69.601(b) of the Commission's regulations (47 C.F.R. 69.601(b)); or (ii) is a person or entity that, on or after such date of enactment, became a successor or assign of a member described in clause (i).

119. Re Pacific Telesis Group, A.93-02-028, D.93-11-011, 51 CPUC 2d 728.

120. P. L. 106-106.



<sup>116.</sup> The AT&T/SBC merger was approved by the California PUC on November 18, 2005, and by the FCC on November 17, 2005. *I/M/O the Joint Application of SBC Communications, Inc. ("SBC") and AT&T Corp. ("AT&T") for Authorization to Transfer Control of AT&T's Communications of California (U-5002), TCG Los Angeles, Inc. (U-5462), TCG San Diego (U-5389), and TCG San Francisco (U-5454) to SBC, Which Will Occur Indirectly as a AT&T's Merger With a Wholly-Owned Subsidiary of SBC, Tau Merger Sub Corporation, A.05-02-027, D.05-11-028, November 18, 2005; <i>I/M/O SBC Communications Inc. and AT&T Corp. Applications for Approval of Transfer of Control*, WC Docket No. 05-65, *Memorandum Opinion and Order*, FCC 05-183, Adopted: October 31, 2005, Released: November 17, 2005.

by the FCC in January 1997 and by the CPUC in April 1997.<sup>121</sup> Seven years later, SBC and AT&T Corp. announced plans to merge, and that transaction was completed in late 2005.<sup>122</sup>

Following the 1984 break-up of the former Bell System, BOCs were prohibited, by the Consent Decree entered into by AT&T Corp. and the United States Department of Justice, from offering long distance services beyond designated areas known as Local Access and Transport Areas ("LATAs"). InterLATA long distance services were to be provided by AT&T Corp. and by competing Interexchange Carriers ("IXCs") that were to be afforded "equal access" to BOC local exchange networks. TA96, among other things, modified certain provisions of the 1984 Consent Decree and provided a process by which BOCs, upon satisfying certain specified requirements relating to equal access to and interconnection with their local exchange networks, would be allowed to re-enter the interLATA long distance market.<sup>123</sup> By a decision issued by the CPUC in 2002, AT&T California was found to have met these requirements<sup>124</sup> and, through an affiliate, commenced offering long distance services to its (and other local carriers') exchange service customers.

Ironically, by the end of the decade, far-reaching technological and competitive changes had taken place in the local and long distance telecommunications markets the effect of which was to permanently diminish the scope of the long distance market that AT&T California and its sister BOCs had so long fought to reenter. Voice over Internet Protocol ("VoIP") technology as we know it today emerged as an Internet application in the mid-1990s. By the mid-2000s, cable MSOs began adopting it as the technology for their then-nascent voice telephone service offerings, and a number of "over-the-top" VoIP-based services, such as Skype, Vonage, MagicJack, Ring Central and Ooma began to capture successively larger shares of the "long distance" market that had long been the domain of a handful of large interexchange carriers, including AT&T, along with MCI and Sprint. VoIP was also rapidly adopted by mid-size and large business and government customers. The growth of wireless service pricing that

123. 47 U.S.C.§271.



<sup>121.</sup> I/MO the Joint Application of Pacific Telesis Group (Telesis) and SBC Communications, Inc. (SBC) for SBC to Control AT&T California (U 1001 C), Which Will Occur Indirectly as a Result of Telesis' Merger With a Wholly Owned Subsidiary of SBC, SBC Communications (NV) Inc., A.96-04-038, D.97-03-067 issued March 31, 1997 1997 Cal. PUC LEXIS 629; Applications of Pacific Telesis Group and SBC Communications, Inc. for Consent to Transfer Control of Pacific Telesis Group and its Subsidiaries, FCC Report No. LB-96-32, Memorandum Opinion and Order, FCC 97-28, Rel. January 31, 1997.

<sup>122.</sup> *I/M/O SBC Communications Inc. and AT&T Corp. Applications for Approval of Transfer of Control*, FCC WC Docket No. 05-65, *Memorandum Opinion and Order*, FCC 05-183, Rel. November 17, 2005.

<sup>124.</sup> D. 02-09-050; R. 93-04-003; I. 93-04-002, R.95-04-043; I.95-04-044, Decision Granting AT&T California Telephone Company's Renewed Motion for an Order That it Has Substantially Satisfied the Requirements of the 14-point Checklist in § 271 of the Telecommunications Act of 1996 and Denying That it Has Satisfied § 709.2 of the Public Utilities Code, 2002 Cal. PUC LEXIS 619.

eliminated any distinction between "local" and "long distance" calling further eroded the demand for and use of legacy wireline circuit-switched long distance service.

#### **Competition and deregulation**

As noted in Chapter 2, there were also major regulatory changes introduced over the three decades following the 1984 break-up of the former Bell System. In 1989, the CPUC adopted the "New Regulatory Framework" ("NRF") that replaced traditional cost-plus rate-of-return regulation of ILEC prices and earnings with a new scheme known as "price caps."<sup>125</sup> Under price cap regulation, the aggregate price level would be adjusted annually based upon economywide inflation rates rather than changes in a carrier's own costs, then offset by a fixed "productivity" adjustment (known as the "X-factor" in the price cap formula) and further adjusted to recognize certain exogenous conditions that were deemed to fall outside of the carriers' control, such as certain tax changes and changes in law. The NRF was initially applied to the two largest ILECs in California – AT&T California and GTE-California.

One key provision of the NRF was a process by which price regulation for certain individual services could be eliminated if it was determined by the Commission that sufficient competition had emerged so as to obviate any further need for price regulation.<sup>126</sup> That deregulation process was further accelerated by the CPUC's adoption, in 2006, of the *Uniform Regulatory Framework* ("URF").<sup>127</sup> *URF* called for the detariffing of all retail ILEC services with the exception of basic residential access ("POTS"), which were to remain subject to price caps up until January 1, 2009.<sup>128</sup> However, the Commission also concluded that "[t]he basic residential service in California should remain affordable and should not trend above the current highest basic residential rate in the state" and that it "retains the authority and firm resolve, should it see evidence of market power abuses, to reopen this proceeding and promptly investigate any such abuses."<sup>129</sup>

In 2005, the FCC both preempted and deregulated the then-dominant form of high-speed Internet access known as "Digital Subscriber Line" ("DSL") service, which was provided by ILECs using the same physical copper loop that was already in place and long being used to

<sup>129.</sup> Id., at Conclusions of Law (COL) 31-32.



<sup>125.</sup> I. 87-11-033, D.89-10-031, issued October 12, 1989.

<sup>126.</sup> Id., at Conclusion of Law (COL) 16.

<sup>127.</sup> Order Instituting Rulemaking on the Commission's Own Motion to Assess and Revise the Regulation of Telecommunications Utilities, R. 05-04-005, D.06-08-030 issued August 24, 2006.

<sup>128.</sup> Id., at Conclusions of Law (COL) 29-30.

provide basic local exchange service.<sup>130</sup> In 2012, the California legislature further narrowed the scope of CPUC regulation when it adopted PU Code § 710, which deregulated all services that were furnished using VoIP technology.<sup>131</sup>

#### AT&T California remains the underlying provider of most retail local network services being offered under the AT&T California or other AT&T affiliate brand names

The scope of the direct retail offerings by AT&T California has been narrowed, however, mainly to legacy circuit-switched local access and message services. Broadband Internet access is provided utilizing many of the same AT&T California network facilities as POTS. Bundles of circuit-switched local and long distance telephone service are furnished jointly by AT&T California and by AT&T's long distance affiliate. From its recent acquisition of DirecTV, AT&T is also offering bundles of voice, Internet and satellite TV services furnished by several affiliates. Notably, the retail customer for most of these bundles still receives only one monthly bill, issued by AT&T California (AT&T California), on behalf of itself and whichever other AT&T affiliates are jointly furnishing the customer's service. Mechanically, and with the exception of tariffed switched and special access services, each of the providing affiliates will "purchase" the underlying network services and functions, including billing and collection services, from AT&T California at mutually-agreed-upon prices.<sup>132</sup> Where tariffed services are involved, the affiliate will (presumably) be charged the tariff rates.

From the perspective of most residential consumers, the organizational assignment of responsibility for the individual retail offerings, while nominally disclosed on the customer's monthly bill, is of little interest or consequence: Most direct contacts between retail residential/ small business customers and AT&T are accomplished via AT&T California, irrespective of which entity is nominally responsible for the retail provision of a particular service within the customer's service bundle.

Even where AT&T California is not the retail provider of a particular service or service component, its role as the underlying network provider requires that its network be capable of supporting these various affiliate-offered services. For example, AT&T California has been upgrading its network to support several types of broadband services – *U-verse* brand IPTV, *U-verse* brand Internet, and *U-verse* brand VoIP-based phone service – by extending fiber into



<sup>130.</sup> Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Report and Order and Notice of Proposed Rulemaking, 20 F.C.C.R. 14853 (2005) ("BWIA Order").

<sup>131.</sup> Stats. 2012, Ch 733, Sec 3. (SB 1161) Effective January 1, 2013. Repealed as of January 1, 2020, by its own provisions.

<sup>132.</sup> This is undoubtedly an overly simplified description. AT&T Inc., the parent company, is the ultimate owner of several hundred domestic and foreign affiliates. Most inter-affiliate financial transactions and relationships are opaque, both as to their precise nature and their magnitude.

individual neighborhoods in relatively close proximity to its end-user customers under a Fiberto-the-Node ("FTTN") architecture. As of the end of 2017, some 557 out of the total of 615 AT&T California wire centers had been upgraded to support at least one if not all three of these broadband services.<sup>133</sup>

As discussed in Chapter 4, although the *motivation* behind the deployment of FTTN and other network upgrades is the capability to offer broadband services to compete with cable MSO offerings, once installed these same facilities can and will be used to provide legacy POTS and other circuit-switched services.

## The AT&T California component of parent AT&T Inc. revenues have been steadily diminishing, as has the share of the overall AT&T capital budget that is being allocated to the California ILEC.

Over the 2010-2017 period, AT&T California's parent AT&T Inc. has experienced significant growth in its overall gross revenues, rising 29.2% from \$124.3-billion in 2010 to \$160.5-billion in 2017. AT&T's market capitalization is approximately \$240-billion.<sup>134</sup> The primary sources of that growth have come from wireless services, where the number of AT&T Mobility connections nationwide grew by 41.2% between 2010 and 2016 (the most recent date for which FCC data is available),<sup>135</sup> and from acquisitions, primarily from DirecTV. The 2018 acquisition of Time Warner, whose own revenues in 2017 were \$31.27-billion,<sup>136</sup> will obviously push AT&T Inc.'s revenues up even further.

AT&T senior management's interest in and attention to its legacy wireline ILEC operations has been largely supplanted by its wireless operations and the recent satellite TV and video content acquisitions.

AT&T California revenues, on the other hand, have been moving in the opposite direction. As shown on Table 7.1 below, in 2010, AT&T California gross revenues were \$9.70-billion, dropping to \$8.63-billion in 2017. AT&T California's share of total AT&T Inc. revenues has fallen by an even greater amount, from 7.80% in 2010 to 5.37% in 2017.

135. FCC Sixteenth CMRS Report, FCC 13-34, at p. 55, Table 13; Seventeenth CMRS Report, DA 14-1862, at p. 11, Table II.B.1, Nineteenth CMRS Report, DA 16-1061, at p. 11, Table II.B.1; Twentieth CMRS Report, FCC 17-126, at p. 15, Table II.B.1.

136. Time Warner Inc. 2017 Form 10-K, at 135.



<sup>133.</sup> AT&T California Response to CD Data Request 01A.

<sup>134.</sup> As of August 17, 2018.

Table 7.1										
AT&T CALIFORNIA AND AT&T INC. TOTAL OPERATING REVENUES 2010-2017 (\$000,000)										
	2010 2011 2012 2013 2014 2015 2016 2017									
AT&T Inc.	124,280	126,723	127,434	128,752	132,447	146,801	163,786	160,546		
AT&T CA	9,697	9,754	9,374	9,580	9,641	10,008	9,441	8,626		
AT&T CA %	7.80%	7.70%	7.36%	7.44%	7.28%	6.82%	5.76%	5.37%		
Source: AT&T I	nc. Annual R	eports 2010-	2017; AT&T	CA ARMIS I	Form 43-01 a	as filed with (	CPUC.			

As discussed in Chapter 4, AT&T California has experienced a precipitous drop in total legacy circuit-switched access lines over the 2010-2017 period. Nationally, AT&T Inc. has actually sustained a slightly greater access line loss than its California subsidiary, as shown in Table 7.2 below:

Table 7.2										
AT&T CALIFORNIA AND AT&T INC. LEGACY SWITCHED ACCESS LINES IN SERVICE 2010-2017 (000)										
	2010 2011 2012 2013 2014 2015 2016 2017									
AT&T Inc.	41,883	36,734	31,887	24,639	19,896	16,670	13,986	11,753		
AT&T CA	7,602	6,681	5,837	4,996	4,149	3,415	2,872	2,417		
AT&T CA %	18.15%	18.19%	18.31%	20.28%	20.85%	20.49%	20.54%	20.56%		
Source: AT&T Ir Trouble Reports year.	Source: AT&T Inc. Annual Reports 2010-2017; CA POTS lines in service derived from GO 133-C § 3.3 and 3.4 Trouble Reports per 100 Lines (TRPH) quarterly filings, 2010-2017. Switched access lines are average over each vear									

Thus, where AT&T nationally experienced a net legacy switched access line decrease of 71.9% over the 2010-2017 period, for California, AT&T's switched access lines decreased by slightly less, about 68.2%. Notably, however, despite experiencing a 68.2% drop in legacy switched access lines over the period, AT&T California gross revenues decreased by only 11.04% over the same period, as summarized on Table 7.3 below:



			Та	ble 7.3							
AT&T CALIFORNIA OPERATING REVENUES DECREASED, BUT BY FAR LESS THAN THE DECREASE IN LEGACY SWITCHED ACCESS LINES 2010-2017 (\$000,000 and 000)											
	2010	2011	2012	2013	2014	2015	2016	2017			
Revenues	\$ 9,697	\$ 9,754	\$ 9,374	\$ 9,580	\$ 9 <mark>,641</mark>	\$10,008	\$ 9,441	\$ 8,626			
% of 2010		100.59%	96.67%	98.79%	99.42%	103.21%	97.36%	88.96%			
Switched access lines	7,602	6,681	5,837	<mark>4,996</mark>	4,149	3,415	2,872	2,417			
% of 2010		87.88%	76.78%	65.72%	54.58%	44.92%	37.78%	31.79%			

Of course, a portion of AT&T California operating revenues come from services other than legacy POTS lines. It is thus instructive to compare the decrease in switched access lines more directly with the principal revenue sources associated with these services. Fortunately, more detailed revenue data is provided in the annual financial reports, ARMIS Forms 43-01, 43-02 and 43-03, filed by AT&T California with the CPUC:



Despite experiencing a 68.2% drop in legacy switched access lines from 2010 through 2017, AT&T California's gross revenues decreased by only 11.04% over the same period.



	Table 7.4										
AT&T CALIFORNIA LEGACY SWITCHED ACCESS LINE REVENUES HAVE DECREASED BY A GREATER PERCENTAGE THAN FOR TOTAL OPERATING REVENUES GENERALLY, BUT STILL BY FAR LESS THAN THE DECREASE IN LEGACY SWITCHED ACCESS LINES 2010-2017 (\$000 and 000)											
	2010	2011	2012	2013	2014	2015	2016	2017			
USOA Acct 5001 Basic Area Rev	\$2,118,017	\$ 2,121,000	\$ 1,966,000	\$ 1,882,000	\$ 1,729,553	\$ 1,579,000	\$ 1,448,000	\$ 1,258,000			
USOA Acct 5081 EUCL Revenue	\$ 627,273	\$ 538,000	\$ 492,000	\$ 452,000	\$ 404,625	\$ 363,000	\$ 333,000	\$ 300,000			
USOA Acct 5082 Switched Access	\$ 320,356	\$ 278,617	\$ 282,585	\$ 262,064	\$ 260,174	\$ 220,886	\$ 180,913	\$ 113,694			
Total switched access line rev	\$3,065,646	\$2,937,617	\$2,740,585	\$2,596,064	\$2,394,352	\$2,162,886	\$1,961,913	\$1,671,694			
Switched access lines (000)	7,602	6,681	5,837	4,996	4,149	3,415	2,872	2,417			
<pre>\$ per Switched access line</pre>	\$403.27	\$439.70	\$469.52	\$519.63	\$577.09	\$633.35	\$683.12	\$691.64			
Source: AT&T CA Reports per 100 Lin	ARMIS Form 4 nes (TRPH) qu	3-01 as filed varterly filings,	with CPUC; PC 2010-2017. S	OTS lines in se witched acces	ervice derived s lines are ave	from GO 133- erage over eac	C § 3.3 and 3. ch year.	4 Trouble			

When confined to only those revenue sources directly attributable to legacy switched access line services – specifically, USOA Account 5001 (Basic Area Revenue),<sup>137</sup> USOA Account 5081 (End User Common Line revenue),<sup>138</sup> and USOA Account 5082 (Switched Access revenue),<sup>139</sup>

137. 47 CFR §32.5001 defines "Basic Area Revenues" to "include revenue derived from the provision of the following: (1) Basic area message services such as flat rate services and measured services. Included is revenue derived from non-optional extended area services. Also included is revenue derived from the billed or guaranteed portion of semi-public services. (2) Optional extended area service. (3) Cellular mobile telecommunications systems connected to the public switched network placed between mobile units and other stations within the mobile service area. (4) General radio telecommunications systems connected to the public switched network placed between mobile units and other stations within the mobile service area, as well as revenue from mobile radio paging, mobile dispatching, and signaling services. (b) Revenue derived from charges for nonpublished number or additional and boldfaced listings in the alphabetical section of the company's telephone directories shall be included in account 5230, Directory revenue. (c) Revenue from private mobile telephone services which do not have access to the public switched network shall be included in Account 5200, Miscellaneous revenue.

138. 47 CFR § 32.5081 End user revenue: (a) This account shall contain federally and state tariffed monthly flat rate charge assessed upon end users. (b) Subsidiary record categories shall be maintained in order that the company may separately report amounts related to federal and state tariffed charges.

139. 47 CFR § 32.5082 Switched access revenue. (a) This account shall consist of federally and state tariffed charges assessed to interexchange carriers for access to local exchange facilities. (b) Subsidiary record categories shall be maintained in order that the company may separately report the amounts contained herein that relate to limited pay telephone, carrier common line, line termination, local switching, intercept, information, common transport and dedicated transport. The subsidiary records shall also separately show the federal and state tariffed



AT&T California legacy access line-related revenues decreased by only about 45%, significantly below the 68.2% drop in switched access line demand. Significantly, Account 5082 Switched Access Revenues – revenues from charges that AT&T California collects when its legacy access line customers originate or receive an interLATA long distance call – decreased by almost as much as the number of legacy switched access lines – 65% vs. 68.2%. Switched access rates, which remain subject to tariff at both the state and federal levels, had remained unchanged over the 2010-2017 period.



Even when confined to only those revenue sources directly attributable to legacy switched access line services, AT&T California legacy access line-related revenues decreased by only about 45%, significantly below the 68.2% drop in switched access line demand.

AT&T California's response to the rapidly eroding demand for legacy POTS services has not been to cut prices to retard such "cord-cutting," but instead to implement large rate increases so as to "harvest" as much revenue from the remaining POTS customers as long as they continue to retain their service.

The 2006 URF decision allowed California's large ILECs to *detariff* most of their retail services.<sup>140</sup> As we discussed in Chapter 4A, as soon as detariffing of residential rates took effect in January 2009, AT&T implemented a 26.3% rate increase for flat-rate residential service and a 27.7% increase for measured residential service. A succession of rate increases has continued ever since, and by the end of 2017 AT&T California's rates for flat-rate and measured residential POTS access lines had risen to 152.6% and 325.4% of their pre-URF levels, respectively. This succession of rate increases for legacy POTS services is summarized in Chapter 4A, at Table 4A.10.



To support its "harvesting" strategy and maintain revenues despite a massive drop-off in demand, AT&T California has raised its rates for legacy flat-rate residential service by 152.6% since the service was de-tariffed by the CPUC in 2009.

These regular and ongoing increases in legacy circuit-switched POTS access line rates are entirely consistent with the type of "harvesting strategy" discussed in Chapter 4. While putatively "subject to competition," these legacy services have been on the decline over the entire 2010-2017 period as customers replace them with AT&T *U-verse* digital service bundles

<sup>140.</sup> PU Code § 871.5(a) caps LifeLine rates at one-half of the 1FR rate for flat-rate basic residential service.



charges. Such subsidiary record categories shall be reported as required by part 43 of this chapter.

of voice, Internet access and video, or with competitor-provided wireline services, or with wireless. A "harvesting strategy" can be pursued where it is determined that, while some customers will discontinue their service in response to the steadily increasing prices, there are still a sufficient number of customers who confront few if any actual competitive alternatives and/or who simply retain their AT&T legacy POTS service due to inertia – they simply haven't gotten around to seeking our any alternatives.

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AT&T California's response to the erosion of the market for legacy POTS services has been to raise prices, cut back on investment and maintenance, and instead "harvest" those customers that remain on its network for as long as they continue to take their service.

A company will raise its prices only where such an action will result in an increase in profit overall, where the price elasticity of demand is sufficiently low such that, even though some small percentage of customers will discontinue their service, that loss of business will be less than the additional revenues that result from the price increase being paid by customers who remain. AT&T's conduct with respect to these legacy POTS-type services demonstrates that the Company does not perceive them as being subject to so much competition that it must maintain its prices at competitive levels.

Additionally, even where some POTS customers are induced to seek an alternative service in response to a price increase, many will end up purchasing the substitute service from the same provider, AT&T California and/or its wireless affiliate, AT&T Mobility in this case. Indeed, one effect of raising the price of the legacy service is to reduce the *differential in price* between that service and the higher-priced digital service bundles, thus accelerating the migration of customers away from POTS. A companion strategy is to reduce the price of the substitute service – the *U-verse* Internet + Phone bundle in this case – while simultaneously raising the price of the legacy service. AT&T California has been doing just that, to the point where the Internet + Phone bundles is often *lower* than the price of POTS, particularly when certain optional features and long distance services are included. Coupled with the deteriorating service quality associated with POTS services as discussed in Chapter 4, the fact that AT&T has been able to profitably implement this succession of annual rate increases for more than a decade since the implementation of *URF* raises serious questions as to the Commission's conclusion in *URF* that competition had developed to a point where continued regulatory protection of basic residential telephone service prices is no longer required or appropriate.



The fact that AT&T has been able to profitably implement a succession of large annual legacy services rate increases for more than a decade since the implementation of URF raises serious questions as to the Commission's conclusion in URF that competition had developed to a point where continued regulatory protection of basic residential telephone service prices is no longer required or appropriate.

### AT&T California has been consistently *disinvesting* in its California local network infrastructure.

Because AT&T California is a wholly-owned subsidiary of AT&T Inc., it is the parent AT&T Inc. that determines the amount of capital investment funds that will be available for local infrastructure investment by its individual operating companies. AT&T California dividends out some portion of, all or, as has been the case for the last two years, more than all of its net operating income to its parent. Table 7.5 below summarizes AT&T California net income and dividend payments to its sole shareholder over the 2010-2017 period:

				Table	7.5					
AT&T CALIFORNIA NET INCOME AND DIVIDEND PAYMENTS TO PARENT AT&T INC. 2010-2017 (\$000)										
	2010	2011	2012	2013	2014	2015	2016	2017	Total	
AT&T-CA Net Income	(2,318,705)	(833,514)	(213,584)	1,531,443	608,020	1,921,482	1,493,479	1,210,137	3,398,758	
Dividend paid to AT&T	1,355,722	0	0	0	1,354,158	1,527,615	1,861,782	1,507,216	7,606,493	
Change in Retained Earnings	- 3,674,407	- 833,514	- 213,584	+1,531,443	- <mark>74</mark> 6,138	+ 393,867	- 368,303	- 297,079	-4,207,735	
Source: AT&T	CA ARMIS For	ms 43-02 a	s filed annu	ally with CPU	IC.					

Cumulatively, over the full 8-year period, AT&T California had total net after-tax income of \$3.4-billion, but paid out \$7.6-billion to its parent company, AT&T Inc, thereby eroding the California company's capital base by roughly \$4.2-billion and impairing its ability to maintain and upgrade its aging infrastructure.



Thus, rather than reinvesting a portion of its net income back into its network, AT&T California has, at least for the past several years, been *disinvesting* by paying out more in dividends to its sole stockholder than it generated as profits from its operations.



AT&T, Inc. has also been eroding its California ILEC's capital base by investing less in its infrastructure than its annual depreciation accruals and retirements.

And this is not the only indication of a *disinvestment* policy on the part of AT&T, as is further demonstrated in Table 7.6 below:

			Та	ble 7.6				70		
AT&T CALIFORNIA PATTERN OF INVESTMENT 2010-2017 (\$000)										
2010 2011 2012 2013 2014 2015 2016 2017										
BOY Gross Telecom Plant in Service (TPIS)	38,012,545	38,820,045	41,239,852	41,885,833	41,171,577	40,334,511	40,592,685	40,459,982		
Gross Plant Additions	1,294,281	2,823,661	1,026,656	1,349,988	1,003,950	692,124	840,9 <mark>2</mark> 9	1,126,575		
Retirements	(469,928)	(371,653)	(459,523)	(2,041,895)	(1,833,538)	(440,952)	(951,050)	(4,979,833)		
Adjustments	(16,853)	(32,201)	70,848	(22,349)	(7,478)	7,002	(45,145)	(45,145)		
EOY Gross Telecom Plant in Service	38,820,045	41,2 <mark>39,</mark> 852	41 <mark>,8</mark> 85,833	41,171,577	40,334,511	40,5 <mark>92,68</mark> 5	40,45 <mark>9,9</mark> 82	36,561,579		
Annual TPIS depreciation accruais (acct 6561)	2,269,324	2,317,862	2,263,393	1,635,691	1,179,213	980,435	<b>894,38</b> 4	946,481		
Cumulative depreciation reserve	30,725,620	33,919,953	35,789,894	35,483,033	35,212,622	35,737,860	35,667,638	31,669,055		
Net EOY TPIS	8,094,425	7,319,901	6,095,939	5,688,544	5,121,889	4,854,825	4,792,344	5,002,131		
Source: AT&T CA and 3.4 Trouble Re over each year.	ARMIS For eports per 1	rm 43-01 as 00 Lines (T	filed with CF RPH) quarte	PUC; POTS rly filings, 20	line <mark>s i</mark> n servi 10-2017. Sv	ce derived fr vitched acce	om GO 133- ss lines are	C§3.3 average		

AT&T California's Gross Telecommunications Plant in Service ("TPIS") remained relatively constant in the \$38- to \$41-billion range over the 2010-2017 period. However, total Gross Plant Additions over the period – \$10.16-billion – were exceeded by the total depreciation accruals taken over the corresponding period – \$12.48-billion – representing a net *disinvestment* of \$2.33-billion. In addition, some \$11.55-billion in retirements occurred – more than 43% of it in 2017 alone – bringing end-of-period net TPIS down to only \$5.06-billion.



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The combined effect of large price increases plus disinvestment has enabled AT&T California to achieve earnings levels far in excess of anything that would be allowed under traditional regulatory models.

To put this in perspective, consider the following. In D.16-12-035, the CPUC adopted a set of costs of capital for small ILECs still subject to rate-of-return regulation ranging between 8.44% and 9.22%.<sup>141</sup> AT&T California's Form 43-02 annual financial report for 2017 as submitted to the CPUC puts the company's Net Plant at \$4.97-billion. Small ILECs were typically allowed somewhat higher rates-of-return than large ILECs such as AT&T California, since their smaller size and limited geographic scope tended to elevate their risk above that for the larger ILECs. Thus, if we were to conservatively apply, for example, a 9.0% authorized rate of return (a midpoint in the range adopted by the CPUC) to AT&T California's Net Plant of \$4.97-billion, AT&T California would be allowed net after-tax earnings of \$447.3-million if the company were subject to traditional rate-of-return regulation.

By contrast, Form 43-03 gives AT&T California's 2017 Net after-tax income at \$1.21billion, or \$714-million more than would have been allowed under RORR. Put differently, AT&T California's 2017 return on net investment can be roughly calculated as \$1.21-billion / \$4.97-billion,<sup>142</sup> which works out to a rate of return in the range of 24.33%. This is not a precise calculation as it would be undertaken in a formal General Rate Case under RORR. In a General Rate Case under RORR, various adjustments would be examined whose effect could be to either increase or reduce the reported RORR.

But even AT&T California's nominally reported revenues, expenses and net income cannot by themselves provide a complete or accurate picture of the ILEC entity's financial performance. This is because of the extensive nature and amount of inter-affiliate transactions that take place on an ongoing basis between the AT&T California ILEC entity and numerous other affiliates that are themselves, directly or indirectly, wholly owned by the parent company AT&T Inc. These transactions involve both *purchases* made by the ILEC from other AT&T affiliates as well as *sales* made by the ILEC to other AT&T affiliates. Table 7.7 below provides a summary of these transactions and their relationship to AT&T California's overall revenues, operating expenses, and net income.

<sup>142.</sup> AT&T California 2017 Form 43-02, Table B-1, p. 3.



<sup>141.</sup> Application of Calaveras Telephone Company et al ("Independent Small ILECs") for a Determination of Applicants. Cost of Capital for Ratemaking Purposes, A.15-09-005, D.16-12-035, at Ordering Paragraph 1.



AT&T California financial statements show an incomplete assessment of the ILEC's financial condition due to the large volume of inter-affiliate transactions made at transfer prices that are not set on the basis of arm's length negotiations.

AT&T's ILECs are organized into a number of mostly state-level operating subsidiaries, although some of the AT&T ILEC entities provide service in several states. Other AT&T "service company" entities provide a range of centralized services to the ILECs as well as to other non-ILEC AT&T operations. The use of centralized services has a long history in the telecommunications industry, dating back to AT&T Bell System days, when the AT&T General Department provided a broad range of back-office services and Bell Laboratories provided centralized research and development for the entire AT&T corporate family. In theory, the use of centralized services should produce scale and scope efficiencies that would then benefit all of the using entities. In practice, this is not always the case. AT&T, Verizon and their predecessors, in particular, have a long history of employing the use of centralized services organizations to extract profits from their operating telephone companies.



Table 7.7 AT&T CALIFORNIA AFFILIATE TRANSACTIONS WITH OTHER UNITS OF AT&T INC. 2010-2017 (\$000)											
	2010	2011	2012	2013	2014	2015	2016	2017			
AT&T-California operating revenue	9,696,777	9,754,246	9,373.754	9,580,095	9,641,220	10,007,776	9,440,692	8,626,042			
Sales to other AT&T affiliate	2,978,741	2,942,621	1,566,044	1,700,570	1,645,297	1,864,210	1,967,601	1,681,965			
Pct from sales to affiliates	30.72%	30.17%	16.71%	17.75%	17.07%	18.63%	20.84%	19.50%			
AT&T CA pre-tax OpEx excl depr/amort <sup>143</sup>	10,715,929	5,688,139	6,899,881	4,736,569	7,025,256	5,241,041	5,575,240	5,267,556			
Services Purchased from AT&T affiliates	2,122,027	2,458,684	2,712,380	2,657,560	2,884,788	3,185,779	3,135,299	2,762,898			
Pct of total OpEx paid to affiliates	19.80%	43.22%	39.31%	56.11%	41.06%	60.79%	56.24%	52.45%			
AT&T-CA Net Income	(2,318,705)	(833,514)	(213,584)	1,531,443	608,020	1,921,482	1,493,479	1,210,137			
Source: AT&T CA A	RMIS Form	43-02, Tab	le I-2, Form	43-03, as f	iled annual	ly with CPUC	).				

With the exception of tariffed switched and special access services that are being purchased from AT&T California by various other AT&T affiliates, the specific *transfer prices* at which these transactions are recorded can hardly be viewed as being set on the basis of arm's length negotiations. Since both the seller and buyer in each instance are wholly-owned by the same parent company, the nominal transfer price has little or no effect upon the parent company's bottom line. However, if it is the parent company's goal to extract cash from the ILEC entity, setting an inflated transfer price can accomplish this as effectively as making a dividend payment to the parent, but with far less exposure as to the precise purpose of the policy. As Table 7.8 demonstrates, in four out of the last five years, *more than 50% of AT&T California total operating expenses net of depreciation and amortization were paid over to other AT&T affiliates for services rendered*.

That this type of manipulation may have occurred is hardly idle speculation. In fact, AT&T and its post-1984 RBOC offspring have a long history of such transactions. In California, for

<sup>143.</sup> Amounts shown are calculated as Total Operating Expenses (Form 43-03 Line 720) – Depreciation/ Amortization expenses (Form 43-03 Line 6560), which represents current cash operating expenses. The source data for this calculation is as follows:

	2010	2011	2012	2013	2014	2015	2016	2017
Line 720 Total Operating Exp	13,010,515	8,006,001	9,163,274	6,356,472	8,216,812	6,212,753	6,469,624	6,206,258
Line 6560 Depre/Amort	2,294,586	2,317,862	2,263,393	1,619,903	1,191,556	971,712	894,384	938,702



example, the Commission would routinely include an examination of affiliate transactions between AT&T California and other affiliates, and would in some cases adjust the transfer price for regulatory purposes. As far back as 1968, the CPUC had initiated an investigation into the prices being charged by Western Electric, then the AT&T manufacturing affiliate, for telecommunications equipment being purchased by (then) Pacific Telephone and Telegraph Company (PT&T).<sup>144</sup> The fact that the CPUC has been regularly collecting information on, and monitoring, both sales to and purchases from affiliates underscores the legitimacy of this concern.

One particularly well-known example of this conduct is the case of the NYNEX Materiel Enterprises Company ("MECO") that was created by NYNEX following the Bell System breakup to provide centralized procurement services to the two NYNEX ILEC affiliates – New York Telephone Company ("NYT") and New England Telephone Company ("NET"). MECO would purchase equipment and supplies from vendors, and then resell it at a markup to the two ILECs. In 1990, the NYPSC initiated an investigation of NYT's purchasing practices and, in particular, its purchases from and through MECO.<sup>145</sup>

The NYPSC determined that an independent auditor would be hired to perform a thorough investigation of NYT's transactions with affiliates and determine their financial effects on NYT's ratepayers. In a subsequent session, NYT was ordered to perform a cost/benefit analysis for directory services it provided to ratepayers in order to establish whether the transactions and arrangements between NYT and its affiliate NYNEX Information Resources Company ("NIRC") were best serving the public.<sup>146</sup> After seven years of discovery and other efforts, a settlement agreement was approved in 1997 that resolved both cases. In exchange for an end to the investigation of NYT's transactions with affiliates, the settlement provided refunds of \$30-million for transactions with NIRC and another \$53-million for transactions with affiliates other than NIRC (including MECO).<sup>147</sup>



<sup>144.</sup> Investigation into Practices and Contracts of PT&T Co., Case No. 8858, Decision No. 76726, January 27, 1970, 1970Cal. PUC LEXIS 86, 70 CPUC 644.

<sup>145.</sup> Proceeding on Motion of Commission to Investigate Transactions Among New York Telephone Company and its Affiliates, New York Public Service Commission, Case Nos. 90-C-0191 and 90-C-0912, Order Granting Interlocutory Appeal In Part, November 26, 1990.

<sup>146.</sup> Proceeding on Motion of the Commission to Investigate the Directory Publishing Operations of New York Telephone Company and NYNEX Affiliates State of New York Public Service Commission Case No. 92-C-0272, Order Instituting Proceeding, April 1, 1992, at 5-6.

<sup>147.</sup> Id., Opinion and Order Approving Settlement with Modifications, June 5, 1997.

# Persistent disinvestment, extensive affiliate transactions at self-serving transfer prices, extraordinarily large rate increases, and deteriorating service quality all point to "harvesting" as AT&T California's overarching strategy for its legacy services and customers.

These extensive affiliate transactions, the directly measurable indicators of disinvestment – depreciation accruals that exceed gross additions, payments of dividends to the parent company that exceed the nominally reported net income, and the persistent erosion of AT&T California's Net Plant – and the deteriorating service quality overall, together compel certain conclusions as to AT&T California's overall financial condition and investment policies:

- (1) The succession of annual rate increases applicable to AT&T California's legacy POTS services were not in any sense cost-driven or cost-based, and instead appear to have been driven by the company's pursuit of a harvesting strategy with respect to these services.
- (2) Earnings of this magnitude confirm that AT&T California's harvesting strategy is achieving the intended increases in profitability without the need for the infusion of large amounts of new capital investment in the company's local network infrastructure.
- (3) Persistent *disinvestment* in the AT&T California local network has been the principal source of the erosion in the net book value of the company's Telecommunications Plant in Service and the resulting escalation of the result of return on its remaining net investment.
- (4) Persistent disinvestment, deterioration in service quality, and escalating prices for AT&T California's basic residential services are not consistent with the level of competition that has been portrayed by AT&T California and that the Commission has accepted as a basis for its adoption and continuation of the Uniform Regulatory Framework.

### Wireline voice services have not been the focus of AT&T California's capital investments over the 2010-2017 period.

Under the FCC's Uniform System of Accounts and associated financial reporting requirements. ILECs had been required to maintain a set of regulatory accounting records in a form established by the FCC, and to report various aspects of their capital investments among a number of functional categories.<sup>148</sup> They had also been required to report, by category (USOA

<sup>148.</sup> To facilitate its regulatory mission, the FCC in 1935 established a "Uniform System of Accounts" ("USOA") as detailed in Part 31 of its Rules (47 CFR § 31). In 1986, the USOA was revised and expanded, and Part 31 was superseded entirely by a new Part 32 (47 CFR § 32). The FCC also adopted a reporting protocol known as the "Automated Reporting Management Information System" ("ARMIS"). In 2007 the FCC decided that it would forbear from requiring ARMIS reporting by ILECs after 2007. *Petition of AT&T Inc. for Forbearance Under 47 U.S.C. § 160(c) From Enforcement of Certain of the Commission's ARMIS Reporting Requirements; Petition of* 



account), annual Gross Additions, Retirements, annual and cumulative Depreciation Accruals, and gross and net telecommunications plant in service ("TPIS"). Much of this information was also being maintained at the individual wire center level. Data for the 2010-2017 period was provided to ETI by AT&T California pursuant to data requests.<sup>149</sup> Over the June 30, 2010 through December 21, 2017 period, AT&T California made Gross Additions to its TPIS totaling just under \$9-billion.<sup>150</sup> Table 7.8 below breaks this down among the various USOA account categories.

In 2017, the FCC determined that "price cap ILECs" – those large carriers that are subject to FCC price cap rather than rate-of-return regulation - will no longer be required to maintain separate USOA accounting records after 2017.<sup>151</sup> This study has benefitted greatly from the availability of ARMIS-type reporting by the two ILECs that are under examination here. Although the FCC no longer requires that AT&T California and Frontier California maintain accounting records pursuant to the USOA as it had existed prior to the 2017 ruling, the FCC Order explicitly provides that "[n]othing in this Order precludes a state or regulatory agency, or another party as part of a contractual requirement, from requiring a carrier to maintain the Class A accounts or otherwise maintain the USOA. See, e.g., 17 CFR § 1770.11 (requiring Rural Utility Service borrowers to maintain Class A accounts)."<sup>152</sup> And in her Statement Approving in Part and Concurring in Part, FCC Commissioner Mignon L. Clyburn remarked, "So to those carriers who advocate for decreased regulatory burdens, let me assure you: I am with you. However, the next time this Commission or a state commission asks for cost data, to support a rulemaking, investigate a complaint, or bring an enforcement action, I hope we do not hear protestations that the request is too burdensome because the data is not kept in the format that the FCC or state commission needs."

Among the specific Recommendations that we offer in Chapter 12 of this Report, we believe that the important role that the Part 32 accounting data has played in this study makes a compelling case that this and the associated ARMIS-type annual reporting be maintained in California.

152. Id., at 7, fn. 51.



*Qwest Corporation for Forbearance from Enforcement of the Commission's ARMIS and 492A Reporting Requirements Pursuant to 47 U.S.C. § 160(c)*, WC Docket No. 07-139 *et al. Memorandum Opinion and Order and Notice of Proposed Rulemaking*, Rel. September 6, 2008, FCC 08-203: However, Part 32 USOA requirements remained in effect, and state commissions were not precluded from continuing to require such reporting. The CPUC has required that URF ILECs, including AT&T California and Verizon (now Frontier) California continue to submit ARMIS-type reports on an annual basis. *See*, GO 104-A, D. 93-02-019.

<sup>149.</sup> AT&T California June 4, 2018 response to DR-03A, corrected by AT&T California on August 6, 2017.

<sup>150.</sup> AT&T California Response to DR-03A, as corrected 8/6/18

<sup>151.</sup> *I/M/O Comprehensive Review of the Part 32 Uniform System of Accounts*, WC Docket No. 14-130; *Jurisdictional Separations and Referral to the Federal-State Joint Board*, CC Docket No. 80-286, *Report and Order*, FCC 17-15, Rel. February 24, 2017.

	Table 7.8							
	AT&T CALIFORNIA							
	GROSS PLANT ADDITIONS 2010-2017	,						
Account	Account name	TOTAL 2010-17						
2003	Telecommunications plant under construction	(8,066,786,096)						
2111	Land	(9,977,959)						
2112	Motor vehicles.	214,515,947						
2114	Tools and other work equipment.	98,120,967						
2121	Buildings	429,300,823						
2122	Furniture	16,832						
2123	Office Equipment	65,169						
2124	General purpose computers	37,922,921						
2211	Non-digital switching	605,095						
2212	Digital electronic switching	5,595,666,673						
2220	Operator systems	8,279,498						
2231	Radio systems	97,567,584						
2232	Circuit equipment	9,723,463,826						
2341	Large private branch exchanges	7,234,433						
2362	Other terminal equipment.	686,522,316						
2411	Poles	8,964,750						
2421	Aerial cable	6,264,904						
2422	Underground cable	3,587,848						
2423	Buried cable	10,352,429						
2424	Submarine & deep sea cable	14,598						
2426	Intra-building network	3,640,192						
2431	Aerial wire	3,303						
2441	Conduit systems	12,705,740						
2682	Leasehold improvements	50,109,763						
2690	Intangibles	67,479,475						
TOTAL		8,985,641,032						
Source: AT&	Response to DR-03A, as corrected 8/6/18							

Approximately \$8-billion of Telecommunications Plant Under Construction (Account 2003) was transferred to other accounts during the period. The two largest areas of investment were in Account 2212 – Digital Electronic Switching (\$6-billion) and in Account 2232 – Circuit Equipment \$9.7-billion). Account 2212 is further broken down into two subaccounts – Account 2212.1 – Circuit Switching, and Account 2212.2 – Packet Switching. The vast majority of new Digital Switching investment over the 2010-2017 period was for Packet Switches. Notably,



Packet Switches, which are used to support VoIP, Internet access and various other advanced services, are *not* used in the provision of basic local POTS services. Account 2232 (Circuit Equipment) is defined as including, principally, "equipment which is used to reduce the number of physical pairs otherwise required to serve a given number of subscribers by utilizing carrier systems, concentration stages or combinations of both. It shall include equipment that provides for simultaneous use of a number of interoffice channels on a single transmission path. ..."<sup>153</sup> Form 43-02 provides a year-by-year breakdown of Gross Additions for each of these two subaccounts, which are summarized in Table 7.9 below:

			Tabl	le 7.9					
AT&T CALIFORNIA DIGITAL ELECTRONIC SWITCHING GROSS ADDITIONS AND RETIREMENTS 2010-2017 (\$000)									
	2010	2011	2012	2013	2014	2015	2016	2017	
ACCOUNT 2212.1	DIGITALE	LECTRONI	CSWITCH		MENI-CI		TCHING		
TPIS, BOY	5,192,369	3,380,463	3,329,989	3,337,443	3,335,875	3,311,678	3,324,271	3,267,116	
Gross Additions	35,900	50,232	25,151	12,512	0	2,564	13,432	9,103	
Retirements	(77,668)	(34,998)	(66,484)	(27,651)	(30,779)	(15,528)	(113,695)	(67,271)	
Adjustments	(1,770,138)	- 65,708	48,767	13,571	6,582	25,557	43,108	33,120	
Net change	(1,811,906)	(50,474)	7,434	(1,568)	(24,197)	12,593	(57,155)	(25,048)	
TPIS, EOY	3,380,463	3,329,989	3,337,443	3,335,875	3,311,678	3,324,271	3,267,116	3,242,068	
ACCOUNT 2212.2	DIGITAL E	LECTRONI	C SWITCH	ING EQUIP	PMENT- PA	ACKET SW	ITCHING		
TPIS, BOY	501,701	2,353,490	2,974,769	3,022,123	3,216,631	3,257,793	3,222,835	,184,665	
Gross Additions	123,201	581,779	116,681	223,916	110,672	48,319	55,088	75,460	
Retirements	(40,342)	(17,780)	(20,772)	(20,810)	(57,629)	(60,564)	(53,777)	(145,206)	
Adjustments	1,768,930	57.280	·48,555	(8,598)	(11,881)	-22,713	(39,481)	(65,731)	
Net change	1,851,789	621,279	47,354	194,508	41,162	(34,958)	(38,170	(135,477)	
TPIS, EOY	2,353,490	2,974,769	3,022,123	3,216,631	3,257,793	3,222,835	3,184,665	3,049,188	
Notes: TPIS="Teleco Source: AT&T Forms	mmunications 43-02	Plant-In-Sei	rvice"; BOY=	"Beginning c	of Year"; EON	∕-"End-of-Ye	ar"		

In 2010, AT&T California appears to have transferred approximately \$1.77-billion worth of Account 2212 digital central office switching equipment from subaccount 2212.1 Circuit Switching to Account 2212.2 Packet Switching. And from 2012 onward, retirements in Account 2212.1 have exceeded gross additions. Over the 2010-2017 period, AT&T California Account 2212.1 Circuit Switching gross additions totaled \$148.9-million, whereas Account 2212.2 Packet Switching gross additions were \$1.34-billion. However, when the 2010 transfer is applied to

153. 47 CFR §32.2322.



these figures, gross Circuit Switching additions were actually a *negative* \$1.62-billion, whereas Packet Switching gross additions, as adjusted for the transfer, were about \$3.1-billion. And not only have the bulk of AT&T California's central office switch investments been in Packet Switching equipment, retirements of Circuit Switches have exceeded new purchases in every year after 2011.

Account 2232 is also broken down into two subaccounts – subaccount 2232.1 includes Electronic circuit equipment; Subaccount 2232.2 includes Optical circuit equipment. Form 43-02 provides a year-by-year breakdown of Gross Additions for each of these two subaccounts, which are summarized in Table 7.10 below:

Table 7.10											
AT&T CALIFORNIA CIRCUIT EQUIPMENT GROSS ADDITIONS AND RETIREMENTS 2010-2017 (\$000)											
	2010	2011	2012	2013	2014	2015	2016	2017			
ACCOUNT 2232.1 ELECTRONIC CIRCUIT EQUIPMENT											
TPIS, BOY	501,701	2,353,490	2,974,769	3,022,123	3,216,631	3,257,793	3,222,835	3,184,665			
Gross Additions	392,755	1,406,660	232,120	320,099	136,296	62,952	47,805	96,967			
Retirements	169,117	167.980	147,660	102,702	207,965	153,629	107,243	283,205			
Adjustments	-3,267	4,551	32,261	8,209	7,035	2,952	5,672	(7,811)			
Net change	220,371	1,243,231	116,721	225,606	-64,634	(87,725)	(53,766)	(194,049)			
TPIS, EOY	2,353,490	2,974,769	3,022,123	3,216,631	3,257,793	3,222,835	3,184,665	3,049,188			
ACCOUNT 2213.2	OPTICAL C	CIRCUIT EC									
TPIS, BOY	0	0	0	0	0	21	50	788			
Gross Additions	0	0	0	0	6	29	58	931			
Retirements	0	0	0	0	0	0	-895	-4,072			
Adjustments	0	0	0	0	15	0	1,575	4,137			
Net change	0	0	0	0	21	29	738	996			
TPIS, EOY	0	0	0	0	21	50	788	1,784			
Notes: TPIS="Telecom Source: AT&T Forms 4 of optical circuit equipr to optical signals or op	nmunications 43-02. Note: ment," but at tical signals	Plant-In-Ser 47 CFR §3 47 CFR §32 to electronic	vice"; BOY= 2.2232(c) de .2232(d) pro signals shall	"Beginning c fines Optical vides that "C l be categoriz	of Year"; EON Circuit Equi ircuit equipm zed as electr	'-"End-of-Ye pment as inc nent that con onic" – shall	ar" luding "the o verts electro be assigned	riginal cost nic signals to			

subaccount 2232.1–Electronic Circuit Equipment.

Although it would seem that the bulk of AT&T's investment in circuit equipment has been on the electronic, rather than optical side, as noted in Table 7.10 above, while 47 CFR §32.2232(c) defines Optical Circuit Equipment as including "the original cost of optical circuit equipment," at 47 CFR §32.2232(d), the rule provides that "Circuit equipment that converts electronic signals to optical signals or optical signals to electronic signals shall be categorized as electronic -- shall



be assigned to subaccount 2232.1–Electronic Circuit Equipment." Given that AT&T has been engaged in a major fiber optic upgrade both in feeder and in many distribution routes, it is highly likely that the bulk of Subacount 2232.2 gross additions have involved circuit equipment that converts electronic signals to optical signals or optical signals to electronic signals. And although this equipment is undoubtedly being used by AT&T to provide circuit-switched legacy POTS-type services, the drivers for these upgrades has clearly been the company's pursuit of nonregulated broadband and other advanced services markets.

## RF

Those capital investments that AT&T has been making in its California ILEC have, for the most part, not been directed at legacy basic voice services.

Table 7.7 above showed that AT&T California has been steadily disinvesting in its local network. Between retirements and annual depreciation accruals, there are more assets being written off and depreciated than are being acquired. Depreciation is an operating expense, but since it does not involve any immediate cash outlay (as is the case for most other types of operating expenses), depreciation provides, in effect, a source of cash that can be used for plant upgrades and replacements. Here, however, AT&T California's Gross Additions are consistently falling below its ongoing depreciation accruals.

It is also instructive to examine the pattern of Gross Additions over time so as to gain an understanding as to how AT&T California is allocating its investment dollars. Table 7.11 below provides an account-by-account breakdown of Gross Additions on an annual basis for each year 2010 through 2017. This table was compiled from data provided by AT&T California in response to DR-03A.<sup>154</sup> AT&T has been investing heavily in packet switching equipment (Account 2212.2) and in Electronic Circuit Equipment (Account 2232.1), which includes "[c]ircuit equipment that converts electronic signals to optical signals or optical signals to electronic signals" (47 CFR §32.2232(d)).

<sup>154.</sup> AT&T Response to DR-03A dated June 4, 2018 as corrected by AT&T on August 6, 2018. Note: These figures should, in principle, match the aggregate data included in AT&T California's annual ARMIS financial reports as filed with the CPUC. However, this is not the case. ETI has requested that AT&T provide an explanation for these discrepancies and/or a reconciliation, with corrections as required, but this has not been forthcoming.

	Table 7.11												
	AT&T CALIFORNIA GROSS PLANT ADDITIONS 2010-2017												
USOA Account	Account Name	2010	2011	2012	2013	2014	2015	2016	2017	2010-2017 TOTAL			
2111	Land	(2,538,341)	(518,080)	(118,192)	(2,885,028)	(3,314,850)	(158,627)	-	(613,234)	(10,146,351)			
2112	Motor vehicles.	49,247,216	46,921,383	37,356,751	38,829,956	49,926,061	3,577,385	7,920,034	6,952,213	240,731,001			
2114	Tools and other work equipment.	8,165,048	16,436,823	15,679,525	9,173,516	79,365,263	2,205,574	8,293,399	8,845,773	148,164,920			
2121	Buildings	71,604,672	62,441,593	118,540,252	58,087,734	46,731,078	36,132,542	57,168,436	51,108,828	501,815,135			
2122	Furniture	11,046	326,033	55,661	43,402	-	-	6,587	-	442,729			
2123	Office Equipment	24,556	1,674,674	7,950	6,385	-	-	15,120	16,476	1,745,160			
2124	General purpose computers	16,924	33,892,852	5,980,044	2,040,763	12,064,222	15,919	55,677	20,604	54,087,005			
2211	Non-digital switching	2	(2)	297,250	96,206	1,405,115	575,148	230,852	986,352	3,590,922			
2212.1	Digital electronic switching-Circuit	(1,734,239,186)	(30,299,513)	73,836,801	98,505,731	67,362,754	28,121,861	56,541,879	42,222,688	(1,397,946,985)			
2212.2	Digital electronic switching-Packet	1,892,119,978	653,885,242	68,204,785	63,315,394	1,093,039,230	25,606,526	15,592,923	9,749,126	3,821,513,204			
2220	Operator systems	3,238	(6,007)	(34,376)	29,290	5,463	(255)	-	1,755	(892)			
2231	Radio systems	5,393,373	2,956,933	1,290,365	1,845,227	6,587,062	6,553,112	1,200,480	5,732,361	31,558,913			
2232.1	Circuit equipment-Electronic	389,250,317	1,411,196,409	264,377,773	123,738,967	2,650,390,029	65,917,874	53,467,124	89,166,762	5,047,505,254			
2232.2	Circuit equipment-Optical	-	-	-	-	21,001	28,676	1,633,150	5,069,052	6,751,879			
2341	Large private branch exchanges	9,872	9,395,811	-	-	-	-	-	-	9,405,683			
2351	Public Telephone Terminal Equipm	53,273	463	-	-	-	-	-	-	53,736			
2362	Other terminal equipment.	139,136,140	113,805,652	73,034,306	126,278,316	172,516,234	123,563,541	71,595,638	95,410,934	915,340,761			
2411	Poles	38,822,555	34,101,733	48,430,246	45,339,269	61,740,475	70,398,564	65,884,220	68,533,501	433,250,563			
2421	Aerial cable	144,116,584	99,009,095	76,923,457	(92,170,261)	247,261,983	62,670,675	123,681,905	228,004,789	889,498,227			
2422	Underground cable	183,592,878	180,170,273	144,455,015	(370,077,538)	793,599,097	168,959,172	206,625,165	264,763,347	1,572,087,409			
2423	Buried cable	56,837,855	58,007,913	39,272,854	(88,493,982)	145,566,927	30,988,221	53,592,760	68,432,700	364,205,247			
2424	Submarine & deep sea cable	345	14,252	-	-	-	-	-	-	14,598			
2426	Intra-building network	102,015	213,607	67,540	153,401	4,792,383	2,681,705	1,554,748	7,829,891	17,395,290			
2441	Conduit systems	70,702,722	61,618,454	43,079,413	(15,353,433)	174,660,293	76,275,071	85,780,478	135,008,857	631,771,854			
2682	Leasehold improvements	308,700	22,362,107	745,871	8,023,873	12,713,779	2,736,165	6,306,037	2,196,669	55,393,201			
2690	Intangibles	5,859,599	51,959,553	21,147,118	12,735,633	7,402,340	939,048	6,423,667	1,283,005	107,749,962			
TOTAL		1,318,601,379	2,829,567,253	1,032,630,408	19,262,820	5,623,835,939	707,787,897	823,570,281	1,090,722,448	13,445,978,425			
Source: A	T&T Response to DR-03A, Attachment 1,	as corrected Novem	nber 1, 2018.										



#### Investments at individual wire centers

AT&T was asked to, and did, provide certain investment- and asset-related data at the individual wire center level. This included Gross Additions (by account), Retirements, and Operating Expenses including annual depreciation charges. Wire centers vary in size from a few hundred to tens of thousands of access lines. Thus, in order to compare AT&T's investment practices across all of its wire centers, we constructed two different index values in the form of "Gross Additions per Access Line" by dividing the total Gross Additions for the wire center by the number of circuit-switched exchange access lines in service. However, as we have previously noted, AT&T California experienced a close-to 70% drop-off in demand for POTS-type services over the 2010-2017 period, which raised the question as to which POTS line count should be utilized for this purpose. In the end, ETI developed two investment indices, as follows:

- Gross Additions per average number of circuit-switched access lines over the full 2010-2017 period, and
- (2) Gross Additions per circuit-switched access line based upon December 2017 end-of-period line counts.

In the first approach, we are comparing total Gross Additions made over the full 8-year period with the average number of lines in service over that same 8-year period. But since investments in plant are typically driven by expectations of *future* demand, the second approach provides for the possibility that AT&T California had scaled its plant acquisitions to conform to the anticipated fall-off in POTS demand over the period of time that the new plant would remain in service.

There is, as it turns out, an extraordinarily wide variation in the per-access line investment across the full scope of AT&T California's 615 wire centers, ranging from less than \$200 to more than \$100,000 per average access line. Based upon end-of-period (December 2017) access lines in service, the per-access line Gross Additions ranged between \$296 and nearly \$200,000. The average amount of Gross Additions per access line, based upon average lines in service over the full 8-year period, was \$1,877; using end-of period (December 2017) access line in service, the average per-line Gross Addition was \$3,971. Tables 7.12 and 7.13 below provide the total and per-access line Gross Additions made of the full 8-year period based upon average access lines in service, for the 30 wire centers with the lowest per-access line expenditure and the 30 wire centers with the highest per-access line expenditure, respectively.



Table 7.12												
GROSS ADDITIONS PER ACCESS LINE IN SERVICE												
30 WIRE CENTERS WITH THE LOWEST PER-LINE EXPENDITURES												
			Average		20							
			Access	Average								
		Gross	Lines in	Gross								
		Additions	Service	Addition per	Broadband							
Wire Center	CLLI	2010-2017	2010-2017	Access Line	Available							
SEQUOIA PACIFIC STATE	SCRMCALR	2,797	12,987	0	NO							
BLAIRSDEN	BLRSCA12	297,360	1,624	183	NO							
LOYALTON	LLTNCA11	236,701	762	311	YES							
CAMP NELSON	CMNLCA11	354,354	806	440	NO							
FOLSOM BLUE RAVINE	FLSMCA14	7,223,597	27,916	259	YES							
MORAGA	MORGCA12	1,179,413	3,894	303	YES							
DELREY	DLRYCA11	1,005,576	3,179	316	YES							
BRADLEY	BRDLCA9	342,621	745	460	NO							
WAWANA	WANACA11	185,249	358	518	YES							
LAGRANDE DPEDRO	LGRNCA12	734,777	1,282	573	YES							
SF LARKIN-STEINER	SNFCCA12	19,176,342	43,321	443	YES							
PINE MOUNTAIN	LEBCCA12	711,642	1,628	437	NO							
SIERRA CITY	SRCYCA11	375,931	459	819	YES							
SHERMAN OAKS	SHOKCA1	13,485,002	29,707	454	YES							
CHALLANGE	CHLNCA11	1,065,113	1,357	785	NO							
ALHAMBRA	ALHBCA1	9,344,801	21,836	428	YES							
OROVILLE EAST	ORVLCA12	1,539,298	2,988	515	YES							
SOUTH TAHOE MEYERS APACHE	STAHCA13	855 250	2 264	378	YES							
	CRMI CA11	12 245 635	26,395	464	YES							
	OT MILO/ (TT	12,240,000	20,000	+0+	120							
LOS VIRGENES	CLBSCA5	1,143,279	2,377	481	YES							
ARNOLD	ARNLCA11	2,223,061	4,276	520	YES							
HYDESVILLE	HYVLCA11	284,138	475	598	NO							
BANGOR	BNGRCA11	346,087	492	704	NO							
NORTH SAN JUAN	NSJNCA11	526,914	782	674	YES							
TWAIN HARTE	TWHRCA11	1,843,592	3,725	495	YES							
MOSS BEACH	MSBHCA11	954,431	1,994	479	YES							
STINSON BEACH	STBHCA11	1,327,529	1,709	777	YES							
VALLEY SPRINGS	VYSPCA11	1,376,163	2,263	608	YES							
MADISON 2MO	LSANCA2	10,823,579	17,381	623	YES							
BAYWOOD PARK	BYPKCA11	1,267,857	3,083	411	YES							
Source: AT&T DR-03A, AT&T F	orms 43-02, AT&T (	GO-133C Trouble Re	port submissions	6								



Table 7 13												
AT&T CALIFORNIA												
GROSS ADDITIONS PER ACCESS LINE IN SERVICE												
30 WIRE CENTERS WITH THE HIGHEST PER-LINE EXPENDITURES												
			Average									
		<b>C</b> == = = =	Access	Average								
		Additions 2010-	Lines in Service	Addition per	Broadband							
Wire Center	CLLI	2017	2010-2017	Access Line	Available							
LA CANADA OAK GROVE	LACNCA11	2,827,328	23	125,080	NO							
PARKWAY	SNRFCA11	700,195,048	6,956	100,665	YES							
MOUNTAIN PASS	MTPSCA11	1,022,910	22	46,125	NO							
BAKER	BAKRCA11	5,884,897	210	28,021	NO							
DUNNIGAN	DNGNCA12	4,827,752	321	15,026	YES							
BIGSUR	BGSRCA11	15,049,141	542	27,749	NO							
BISHOP RANCH	BSRNCA70	51,540,470	3,193	16,140	YES							
BISHOP RANCH	BSRNCA70	51,540,470	3,193	16,140	YES							
COYOTE WELLS	CYWLCA11	1,713,308	103	16,555	YES							
ANNAPOLIS	ANNPCA11	2,116,418	109	19,372	NO							
TUSTIN70	TUSTCA70	14,708,511	1,135	12,954	YES							
PLEASANTON HACIENDA	PLTNCA13	34,984,231	3,069	11,400	YES							
COBB MOUNTAIN	CBMTCA11	6,141,376	954	6,435	YES							
GRENADA	GRNDCA13	1,508,864	211	7,153	YES							
MATHILDA SUNNEYVALE	SNVACA11	30,254,521	3,931	7,697	YES							
SAN LUCAS	SNLCCA11	724,841	80	9,053	NO							
BEALE	BEALCA11	1,259,963	147	8,586	YES							
SEQUOIA ASH MTN	ASMTCA11	1,198,654	114	10,536	NO							
PASKENTA	PSKNCA11	1,470,318	134	11,008	NO							
CROWS LANDING	CWLDCA12	1,405,446	157	8,952	YES							
SUISUN CITY	SUISCA11	5,115,871	834	6,131	YES							
IRVINE AIRPORT	IRVNCA11	82,473,787	11,111	7,423	YES							
GAZELLE	GZLLCA11	543,557	89	6,121	NO							
STANFORD RANCH	RCKLCA01	17,134,350	3,454	4,961	YES							
MOJAVE	MOJVCA01	7,956,916	1,219	6,527	YES							
SANTA CLARA		60.047.007	0.040	0.007	VEO							
	SNTCCAU1	62,047,037	9,010	6,887	YES							
	SINJSCA22	1,806,943	238	7,582	NO							
NINLAND BOMBAY BEACH	NILDCA12	1,040,630	224	4,642	NO							
	LNCLCA11	10,560,824	2,264	4,666	YES							
HOPLAND	HPLDCA12	2,340,898	401	5,833	YES							
Source: AT&T DR-03A, AT&T Forms 43-02, AT&T GO-133C Trouble Report submissions												

Table 7.14 provides details on Gross Additions for all AT&T California wire centers.



ATAT CALIFORNIA CROSS ADDITIONS PER ACCESS LINE IN SERVICE           Vire Center         Corps           <th colspan="</th> <th colspan="9">Table 7.14</th>	Table 7.14									
National Celliponnia           Constant Collipsion         Gross Adds por Access Ac										
Cross         Gross         Adds per Adds per Adds per Access         Adds per Access         Adds per Access         Adds per Access           Wire Center         CLLI         2010-2017         2010-2017         Lines         2012         Bios         Access         Broadband           AGTON         ACTINCAI         2.827.328         1.665         1.698         842         3.358         YES           AGUADUCE         AGDICAIT         1.022.910         955         1.072         530         1.930         YES           ALMEDA CENTRAL         ALMOCAIT         5.848.817         1.4.981         1.933         7.291         807         YES           ALAMEDA CENTRAL         ALMOCAIT         5.848.817         1.4.981         1.933         7.291         806         1.0497         1.4.34         YES           ALHAMBRA         ALHBCADI         15.040,470         3.283         15.689         1.0497         1.4.34         YES           ALTA DUTCH FLATS         DTFLCA11         7.171.3.038         862         1.989         602         2.846         YES           ANAHEIM CYPRESS         ANHMCA17         2.14.708.511         4.317         3.407         2.083         3.709         YES           ANAHEIM CYPRESS </th <th>(</th> <th></th> <th>TIONS PER A</th> <th></th> <th>E IN SER</th> <th>/ICE</th> <th></th> <th></th>	(		TIONS PER A		E IN SER	/ICE				
Close         Construction         Construction         Adds per Access         Boc         Access         Boc         Access         Adds per Access         Adds per Access         Boc         Access         Boc         Access         Boc         Access         Adds per Access <th< th=""><th colspan="10"></th></th<>										
Total Gross         Access         Arg         Lines         Access         Dec 2017         Broadband           Wire Center         CLLI         2010-2017         2010-2017         Lines         Access         Dec         2017         Lines         Access         Dec         2017         Lines         Access         Dec         2017         Lines         Access         Dec         2017         Lines         Access         Dec         Access         Access <t< th=""><th colspan="10">Average Adds per Access Adds per</th></t<>	Average Adds per Access Adds per									
Additions         Lines         Access         Dec.         Access         Broadband           Mire Center         CLLI         2019/2017         Line         2017         Line         Available           ACTON         ACTNCA11         2,627,328         1,665         1,698         842         3,358         YES           AGUA DUCE         AGDICA11         1,002,910         955         1,072         530         1,390         YES           ALAMEDA CENTRAL         ALMDCA11         5,884,897         14,981         393         7,291         807         1,844         YES           ALBANY SOLANO         ALBYCA11         41,877,752         15,899         302         7,491         644         YES           ALHAMBRA         ALHBCA01         15,649,470         3,283         15,699         1,047         1,434         YES           ALTA DUTCH FLATS         DTFLCA11         1,713,308         862         1,989         602         2,446         YES           ANAHEIM CYPRESS         ANHIMCA12         14,708,511         4,317         3,407         2,043         7,066         YES           ANAHEIM CYPRESS         ANHIMCA11         2,116,242         3,153         76         16,302 <td< th=""><th></th><th></th><th>Total Gross</th><th>Access</th><th>Avg</th><th>Lines</th><th>Dec 2017</th><th></th></td<>			Total Gross	Access	Avg	Lines	Dec 2017			
Wire Center         CLU         2010-2017         2010-2017         Line         Avallable           ACTON         ACTNCAIL         2827.328         1.665         1.698         842         3.358         YES           AGOURA         AGORCAII         700.195.048         13.049         53.657         5.98         116.333         YES           ALMEDA CENTRAL         ALMDCA11         5.884.897         14.981         393         7.291         807         YES           ALBANY SOLANO         ALBYCA11         4.827.752         15.989         302         7.491         644         YES           ALHAMBRA         ALHBCA11         5.1640.470         5.49         962.624         50         1,303.809         NO           ALPINE         ALPICA11         2.116.470         7.491         8.482         1.989         602         2.846         YES           ALTA DUTCH FLATS         DTFLCA11         1.713.308         862         1.989         602         2.846         YES           ANAHEIM LEPALMA         ANHMCA12         14.706.511         4.317         3.407         2.083         7.061         YES           ANAHEIM LAPALMA         ANHMCA11         14.984.231         2.243         15.693			Additions	Lines	Access	Dec	Access	Broadband		
ACTON         ACTNCA11         2,227,328         1,665         1,698         842         3,358         YES           AGUURA         AGDUCA11         10,022,910         955         1,072         530         119,303         YES           ALAMEDA CENTRAL         ALMDCA11         5,884,897         14,981         393         7,291         807         YES           ALBANY SOLANO         ALBYCA11         4,827,752         15,689         302         7,491         6444         YES           ALLEGHANEY         ALGICA11         5,1540,470         3,283         15,699         1642         27,946         YES           ALTA DUTCH FLATS         DTFLCA12         51,540,470         3,283         15,699         602         2,846         YES           ANAHEIM LEMON         ANHMCA11         2,116,418         2,2820         93         9,327         227         YES           ANAHEIM LEMON         ANHMCA11         4,1703,511         4,317         3,407         2,083         7,061         YES           ANAHEIM LEMON         ANHMCA11         14,084,231         2,243         1,5131         9,433         3,709         YES           ANAHEIM LEMON         ANHMCA11         12,24,964         1,515	Wire Center	CLLI	2010-2017	2010-2017	Line	2017	Line	Available		
AGOURA         AGORCA11         700,195,048         13,049         53,657         5,988         116,933         YES           ALAMEDA CENTRAL         ALMOCA11         5,884,897         14,981         393         7,291         807         YES           ALBANDY SOLANO         ALBYCA11         4,827,752         15,989         302         7,491         644         YES           ALHAMBRA         ALBYCA11         51,540,470         54         962,624         50         1,030,809         NO           ALTA DUTCH FLATS         DTFLCA11         1,713,308         862         1,989         602         2,846         YES           ANAHEIM LA PALMA         ANHIMCA12         1,4708,511         4,317         3,407         2,083         7,061         YES           ANAHEIM LA PALMA         ANHIMCA01         34,984,231         2,2431         1,531         9,433         3,709         YES           ANAHEIM LA PALMA         ANHIMCA01         1,508,864         1,858         812         993         1,520         YES           ANAHEIM LA PALMA         ANHIMCA01         7,24,841         2,276         YES         ANGWIN         ANGWCA01         1,259,963         109         11,533         75         16,800         <	ACTON	ACTNCA11	2,827,328	1,665	1,698	842	3,358	YES		
AGUA DULCE         AGDLCA11         1,022,910         955         1,072         530         1,930         YES           ALAMEDA CENTRAL         ALBYAN11         5,884,897         1,481         481         393         7,291         807         YES           ALBANY SOLANO         ALBYCA11         4,827,752         15,898         302         7,491         644         YES           ALLEGHANEY         ALGHCA11         51,540,470         3,283         16,699         1,433         YES           ALTA DUTCH FLATS         DTFLCA11         1,713,308         862         1,989         602         2,846         YES           ANAHEIM LAPALMA         ANHMCA11         2,116,418         22,820         93         9,327         227         YES           ANAHEIM LEMON         ANHMCA11         3,4984,231         2,243         1,531         9,433         3,709         YES           ANAHEIM LEMON         ANHMCA01         34,984,231         2,243         1,520         YES           ANAHEIM LEMON         ANHMCA01         34,984,231         1,221         24,786         653         46,332         YES           ANAHEIM LEMON         ANHMCA01         30,254,521         1,271         2,476         655	AGOURA	AGORCA11	700,195,048	13,049	53,657	5,988	116,933	YES		
ALAMEDA CENTRAL         ALMDCA11         5,884,897         14,981         393         7,291         807         YES           ALBANY SOLLANO         ALBYCX         15,989         302         7,491         644         YES           ALHAMBRA         ALHEGA11         15,049,412         21,836         669         10,497         1,434         YES           ALLEGHANEY         ALPINE         ALPICA12         51,540,470         54         962,624         60         1,030,809         NO           ALPINE         ALPICA12         51,540,470         54         962,224         60         2,846         YES           ANAHEIM CYPRESS         ANHHMCA11         1,116,418         22,820         93         9,327         227         YES           ANAHEIM VERESS         ANHMCA11         3,498,231         22,843         1,531         9,433         3,709         YES           ANAHEIM VERDNO         ANBMCA01         15,08,864         1,858         812         993         1,520         YES           ANGWIN         ANGWCA11         0,254,521         1,221         24,766         653         46,332         YES           ANHM HILLS         ANNPCA11         1,259,963         109         11,533	AGUA DULCE	AGDLCA11	1,022,910	955	1,072	530	1,930	YES		
ALBANY SOLANO         ALBYCA11         4,827,752         15,899         302         7,491         6444         YES           ALHAMBRA         ALHECOAI         15,540,470         3,183         15,699         10,497         1,433         YES           ALTA DUTCH FLATS         DTFLCA11         51,540,470         3,283         15,699         602         2,846         YES           ALTA DUTCH FLATS         DTFLCA11         2,116,418         22,820         93         9,327         227         YES           ANAHEIM LEMON         ANHMCA11         2,116,418         22,820         93         9,327         227         YES           ANAHEIM LEMON         ANHMCA11         2,116,418         22,843         1,531         9,433         3,709         YES           ANAEIM LEMON         ANHMCA01         34,984,231         2,243         1,403         2,093         2,926         YES           ANGELS CAMP         ANTCCA11         1,918,654         13,078         192         5,883         204         YES           ANNAPOLIS         ANTCCA11	ALAMEDA CENTRAL	ALMDCA11	5,884,897	14,981	393	7,291	807	YES		
ALHAMBRA         ALHBCA01         15,049,141         21,836         689         10,497         1,434         YES           ALLEGHANEY         ALPINE         ALPIACA11         51,540,470         54         962,624         50         1,030,809         NO           ALTA DUTCH FLATS         DTFLCA11         1,713,308         862         1,989         602         2,846         YES           ANAHEIM CYPRESS         ANHMCA11         2,116,418         22,820         93         9,327         227         YES           ANAHEIM CYPRESS         ANHMCA11         2,116,418         2,2821         93         9,433         7,061         YES           ANAHEIM CHON         ANHMCA01         34,984,231         2,2843         1,531         9,433         7,097         YES           ANDERSON         ARSKCA11         6,141,376         4,378         1,403         2,093         1,520         YES           ANGWIN         ANGWCA01         1,508,864         1,858         812         993         1,520         YES           ANNENDLS         ANNPCA11         1,259,963         109         11,533         75         16,600         NO           ANTIOCH         ANTOCCH         ANTOCCH1         1,470,318 <td>ALBANY SOLANO</td> <td>ALBYCA11</td> <td>4,827,752</td> <td>15,989</td> <td>302</td> <td>7,491</td> <td>644</td> <td>YES</td>	ALBANY SOLANO	ALBYCA11	4,827,752	15,989	302	7,491	644	YES		
ALLEGHANEY         ALGHCA11         51,540,470         54         982,624         50         1,030,809         NO           ALFINE         ALPINE         ALPICA12         51,540,470         3,283         15,699         1,843         27,966         YES           ALTA DUTCH FLATS         DTFLCA11         1,713,308         862         1,989         602         2,846         YES           ANAHEIM LA PALMA         ANHMCA11         2,116,418         22,820         93         9,327         227         YES           ANAHEIM LA PALMA         ANHMCA11         4,1708,511         4,317         3,407         2,083         7,061         YES           ANAEISI LA PALMA         ANHMCA17         724,841         2,378         1,403         2,099         2,926         YES           ANGELS CAMP         ANCMCA01         1,508,64         1,888         812         993         1,520         YES           ANGUNN         ANSVCA11         0,254,521         1,221         24,786         653         46,332         YES           ANNAPOLIS         ANNPCA11         1,259,963         109         11,533         75         16,800         NO           ANTOCH         ARTCCA11         1,496,544         13,0	ALHAMBRA	ALHBCA01	15,049,141	21,836	689	10,497	1,434	YES		
ALPINE       ALPICA12       51,540,470       3,283       15,699       1,643       27,966       YES         ANTA DUTCH FLATS       DTFLCA11       1,713,308       862       1,989       602       2,846       YES         ANAHEIM LA PALMA       ANHMCA11       2,116,418       22,843       1,531       9,433       3,709       YES         ANAHEIM LEMON       ANHMCA11       4,708,511       4,317       3,407       2,083       7,061       YES         ANDERSON       ARSINCA11       6,141,376       4,378       1,403       2,099       2,926       YES         ANGWIN       ANCMCA01       1,508,864       1,888       812       993       1,520       YES         ANGWIN       ANCWCA11       0,254,521       1,221       24,786       653       46,332       YES         ANNAPOLIS       ANNPCA11       1,259,963       109       11,533       75       16,800       NO         ANTICOCH       ANTCCA11       1,470,318       7,098       207       3,315       444       YES         APTOS       APTSCA12       1,470,318       7,098       207       3,315       4444       YES         ARCATA       ARCTCA11       5,413,787	ALLEGHANEY	ALGHCA11	51,540,470	54	962,624	50	1,030,809	NO		
ALTA DUTCH FLATS         DTFLCA11         1,713,308         862         1,989         602         2,846         YES           ANAHEIM CYPRESS         ANHMCA11         2,116,418         22,820         93         9,327         227         YES           ANAHEIM LA PALMA         ANHMCA11         14,708,511         4,317         3,407         2,083         7,061         YES           ANAHEIM LEMON         ANHMCA11         6,141,376         4,378         1,403         2,099         2,926         YES           ANGELS CAMP         ANCMCA01         1,508,864         1,888         812         993         1,520         YES           ANGUNN         ANSWCA11         0,254,521         1,221         24,786         653         46,332         YES           ANNAPOLIS         ANNPCA11         1,259,963         109         11,533         75         16,800         NO           ANTIOCH         ANTCCA11         1,198,654         13,078         92         5,883         204         YES           ARCADIA         ARCDCA11         1,405,446         12,638         111         5,466         240         YES           ARCADIA         ARCTCA11         5,415,871         4,273         1,197	ALPINE	ALPICA12	51,540,470	3,283	15,699	1,843	27,966	YES		
ANAHEIM CYPRESS         ANHMCA11         2,116,418         22,820         93         9,327         227         YES           ANAHEIM LA PALMA         ANHMCA12         14,708,511         4,317         3,407         2,083         7,061         YES           ANAHEIM LEMON         ANHMCA01         14,984,231         2,2843         1,531         9,433         3,709         YES           ANGELS CAMP         ANGWCA01         1,508,864         1,858         812         993         1,520         YES           ANGWIN         ANGWCA01         1,508,864         1,858         812         993         1,520         YES           ANGWIN         ANGWCA01         1,259,963         109         11,533         75         16,800         NO           ANNAPOLIS         ANNPCA11         1,259,963         109         11,533         75         16,800         NO           ANTOCH         ANTCCA11         1,259,963         109         11,533         75         16,800         NO           ANTOCH         ANTCCA11         1,259,963         109         11,55         7676         733         11,562         YES           ARCADA         ARCTCA11         5,115,871         4,273         1,197	ALTA DUTCH FLATS	DTFLCA11	1,713,308	862	1,989	602	2,846	YES		
ANAHEIM LA PALMA         ANHMCA12         14,708,511         4,317         3,407         2,083         7,061         YES           ANAHEIM LEMON         ANHMCA01         34,984,231         22,843         1,531         9,433         3,709         YES           ANDERSON         ARSNCA11         6,141,376         4,378         1,403         2,099         2,926         YES           ANGWIN         ANGWCA11         30,254,521         1,221         24,786         653         46,332         YES           ANIM HILLS         ANHMCA17         724,841         2,736         265         976         743         YES           ANNAPOLIS         ANNPCA11         1,259,963         109         11,533         75         16,800         NO           ANTIOCH         ANTCCA11         1,198,654         13,076         92         5.883         204         YES           ARCADIA         ARCDCA11         1,470,318         7.098         207         3,315         444         YES           ARCATA         ARCDCA11         5,115,671         4,273         1,197         2,070         2,471         YES           ARROYO GRANDE         ARRCA11         7,134,3557         4,276         127         2,	ANAHEIM CYPRESS	ANHMCA11	2,116,418	22,820	93	9,327	227	YES		
ANAHEIM LEMON         ANHMCA01         34,984,231         22,843         1,531         9,433         3,709         YES           ANDERSON         ARSNCA11         6,141,376         4,378         1,403         2,099         2,926         YES           ANGELS CAMP         ANCMCA01         30,254,521         1,221         24,786         653         46,332         YES           ANMAPOLIS         ANHMCA17         724,841         2,736         265         976         743         YES           ANNAPOLIS         ANNCCA11         1,259,963         109         11,533         75         16,800         NO           ANTIOCH         ANTCCA11         1,496,654         13,078         92         5,883         204         YES           ARCADIA         ARCDCA11         1,405,446         12,638         111         5,846         240         YES           ARCATA         ARCTCA11         5,115,871         4,273         1,197         2,070         2,471         YES           ARNOLD         ARNLCA11         5,4357         4,276         127         2,363         230         YES           ARNOLD         ARNCA11         6,047,037         2,405         25,800         909 <td< td=""><td>ANAHEIM LA PALMA</td><td>ANHMCA12</td><td>14,708,511</td><td>4,317</td><td>3,407</td><td>2,083</td><td>7,061</td><td>YES</td></td<>	ANAHEIM LA PALMA	ANHMCA12	14,708,511	4,317	3,407	2,083	7,061	YES		
ANDERSON         ARSNCA11         6,141,376         4,378         1,403         2,099         2,926         YES           ANGELS CAMP         ANCMCA01         1,508,864         1,858         812         993         1,520         YES           ANGWIN         ANGWCA11         30,254,521         1,221         24,786         653         46,332         YES           ANHM HILLS         ANNPCA11         1,259,963         109         11,533         75         16,800         NO           ANTIOCH         ANTCCA11         1,405,446         13,078         92         5,883         204         YES           ARCATA         ARCDCA11         1,405,446         12,638         111         5,486         240         YES           ARCATA         ARCTCA11         5,115,871         4,273         1,197         2,070         2,471         YES           ARINGTON         ARTNCA11         82,473,787         18,387         4,485         7,133         11,562         YES           ARROYO GRANDE         ARGRCA12         7,956,916         10,132         785         4,598         1,731         YES           ATASCADERO         ATSCCA11         1,806,943         6,095         296         2,769 <td>ANAHEIM LEMON</td> <td>ANHMCA01</td> <td>34,984,231</td> <td>22,843</td> <td>1,531</td> <td>9,433</td> <td>3,709</td> <td>YES</td>	ANAHEIM LEMON	ANHMCA01	34,984,231	22,843	1,531	9,433	3,709	YES		
ANGELS CAMP       ANCMCA01       1,508,864       1,858       812       993       1,520       YES         ANGWIN       ANGWCA11       30,254,521       1,221       24,786       653       46,332       YES         ANNAPOLIS       ANNPCA11       724,841       2,736       265       976       743       YES         ANNAPOLIS       ANNPCA11       1,259,963       109       11,533       75       16,800       NO         ANTICCH       ANTCCA11       1,198,654       13,078       92       5,883       204       YES         ARCADIA       ARCDCA11       1,405,446       12,638       111       5,846       240       YES         ARCATA       ARCTCA11       5,415,871       4,273       11,97       2,070       2,471       YES         ARNOLD       ARINCA11       82,473,787       18,387       4,485       7,133       11,562       YES         ARROYO GRANDE       ARGRCA12       7,966,916       10,132       785       4,598       1,731       YES         ATASCADERO       ATSCCA11       1,806,943       6,095       296       2,769       653       YES         ATASCADERO       ATSCCA11       1,806,943       6,095	ANDERSON	ARSNCA11	6,141,376	4,378	1,403	2,099	2,926	YES		
ANGWIN         ANGWCA11         30,254,521         1,221         24,786         653         46,332         YES           ANHM HILLS         ANHCA17         724,841         2,736         265         976         743         YES           ANNAPOLIS         ANNCA11         1,259,963         109         11,533         75         16,800         NO           ANTIOCH         ANTCCA11         1,198,654         13,078         92         5,883         204         YES           APTOS         APTSCA12         1,470,318         7,098         207         3,315         4444         YES           ARCATA         ARCDCA11         1,405,446         12,638         111         5,846         240         YES           ARCATA         ARCTCA11         5,115,871         4,273         1,197         2,070         2,471         YES           ARNOLD         ARNLCA11         5,415,871         4,273         1,197         2,070         2,471         YES           ARROVO GRANDE         ARRNSCA11         1,713,4350         1,064         16,111         510         33,597         YES           ARROVO GRANDE         ARGCA12         7,966,916         10,132         785         4,598 <t< td=""><td>ANGELS CAMP</td><td>ANCMCA01</td><td>1,508,864</td><td>1,858</td><td>812</td><td>993</td><td>1,520</td><td>YES</td></t<>	ANGELS CAMP	ANCMCA01	1,508,864	1,858	812	993	1,520	YES		
ANHM HILLS         ANHMCA17         724,841         2,736         265         976         743         YES           ANNAPOLIS         ANNPCA11         1,259,963         109         11,533         75         16,800         NO           ANTIOCH         ANTCCA11         1,198,654         13,078         92         5,883         204         YES           APTOS         APTSCA12         1,470,318         7,098         207         3,315         444         YES           ARCADIA         ARCTCA11         5,115,871         4,273         1,197         2,070         2,471         YES           ARCATA         ARCTCA11         5,115,871         4,273         1,197         2,363         230         YES           ARNOLD         ARTNCA11         82,473,787         18,387         4,485         7,133         11,562         YES           ARNOLD         ARROYO GRANDE         ARGCAC12         7,956,916         10,132         785         4,598         1,731         YES           ARVIN         ARVCA12         1,040,630         5,663         184         2,236         465         YES           ATWATER         ATWRCA12         2,0778,835         1,470         1,4134         524	ANGWIN	ANGWCA11	30,254,521	1,221	24,786	653	46,332	YES		
ANNAPOLIS         ANNPCA11         1,259,963         109         11,533         75         16,800         NO           ANTIOCH         ANTCCA11         1,198,654         13,078         92         5,883         204         YES           APTOS         APTSCA12         1,470,318         7,098         207         3,315         444         YES           ARCADIA         ARCDCA11         1,405,446         12,638         111         5,846         240         YES           ARCATA         ARCTCA11         5,115,871         4,273         1,197         2,070         2,471         YES           ARLINGTON         ARTNCA11         543,557         4,276         127         2,363         230         YES           AROMAS         ARMSCA11         17,134,350         1,064         16,111         510         33,597         YES           ARVIN         ARVNCA11         62,047,037         2,405         25,800         909         68,259         YES           ATASCADERO         ATSCCA11         1,806,943         6,095         296         2,769         653         YES           AUBURN MAIN         AUBNCA01         10,560,824         12,603         838         6,678         1,58	ANHM HILLS	ANHMCA17	724,841	2,736	265	976	743	YES		
ANTIOCH       ANTCCA11       1,198,654       13,078       92       5,883       204       YES         APTOS       APTSCA12       1,470,318       7,098       207       3,315       444       YES         ARCADIA       ARCDCA11       1,405,446       12,638       111       5,846       240       YES         ARCATA       ARCTCA11       5,115,871       4,273       1,197       2,070       2,471       YES         ARLINGTON       ARTNCA11       82,473,787       18,387       4,485       7,133       11,562       YES         ARNOLD       ARNLCA11       543,557       4,276       127       2,363       230       YES         ARROYO GRANDE       ARRXCA11       17,134,350       1,064       16,111       510       33,597       YES         ARROYO GRANDE       ARRVCA11       62,047,037       2,405       25,800       909       68,259       YES         ATMATER       ATWCA12       1,040,630       5,663       184       2,236       465       YES         AUBURN MAIN       AUBNCA01       10,560,824       12,603       838       6,678       1,581       YES         AVENAL       AVNLCA12       20,778,835       1,470<	ANNAPOLIS	ANNPCA11	1,259,963	109	11,533	75	16,800	NO		
APTOS       APTSCA12       1,470,318       7,098       207       3,315       444       YES         ARCADIA       ARCDCA11       1,405,446       12,638       111       5,846       240       YES         ARCATA       ARCTCA11       5,115,871       4,273       1,197       2,070       2,471       YES         ARLINGTON       ARTNCA11       82,473,787       18,387       4,485       7,133       11,562       YES         ARNOLD       ARNLCA11       543,557       4,276       127       2,363       230       YES         ARROYO GRANDE       ARGRCA12       7,956,916       10,132       785       4,598       1,731       YES         ARVIN       ARVNCA11       62,047,037       2,405       25,800       909       68,259       YES         ATASCADERO       ATSCCA11       1,806,943       6,095       296       2,769       653       YES         AUBURN MAIN       AUBNCA01       10,560,824       12,603       838       6,678       1,581       YES         AVENAL       AVNLCA12       20,778,835       1,470       14,134       524       39,654       YES         AVENAL       AVNLCA12       20,778,835       1,470 <td>ANTIOCH</td> <td>ANTCCA11</td> <td>1,198,654</td> <td>13,078</td> <td>92</td> <td>5,883</td> <td>204</td> <td>YES</td>	ANTIOCH	ANTCCA11	1,198,654	13,078	92	5,883	204	YES		
ARCADIA       ARCDCA11       1,405,446       12,638       111       5,846       240       YES         ARCATA       ARCTCA11       5,115,871       4,273       1,197       2,070       2,471       YES         ARLINGTON       ARTNCA11       82,473,787       18,387       4,485       7,133       11,562       YES         ARNOLD       ARNCA11       543,557       4,276       127       2,363       230       YES         AROMAS       ARMSCA11       17,134,350       1,064       16,111       510       33,597       YES         ARROYO GRANDE       ARGRCA12       7,956,916       10,132       785       4,598       1,731       YES         ARVIN       ARVNCA11       62,047,037       2,405       25,800       909       68,259       YES         ATASCADERO       ATSCCA11       1,060,943       6,095       296       2,769       653       YES         AUBURN MAIN       AUBNCA01       10,560,824       12,603       838       6,678       1,581       YES         AUBURN PLACER HILLS       AUBNCA11       2,340,898       3,280       714       1,731       1,352       YES         AVENAL       AVNLCA12       20,778,835	APTOS	APTSCA12	1,470,318	7,098	207	3,315	444	YES		
ARCATA       ARCTCA11       5,115,871       4,273       1,197       2,070       2,471       YES         ARLINGTON       ARTNCA11       82,473,787       18,387       4,485       7,133       11,562       YES         ARNOLD       ARNLCA11       543,557       4,276       127       2,363       230       YES         AROMAS       ARMSCA11       17,134,350       1,064       16,111       510       33,597       YES         ARROYO GRANDE       ARGCA12       7,956,916       10,132       785       4,598       1,731       YES         ARVIN       ARVNCA11       62,047,037       2,405       25,800       909       68,259       YES         ATASCADERO       ATSCCA11       1,806,943       6,095       296       2,769       653       YES         ATWATER       ATWRCA12       1,040,630       5,663       184       2,236       465       YES         AUBURN MAIN       AUBNCA011       0,500,824       12,603       838       6,678       1,581       YES         AVENAL       AVENLCA12       20,778,835       1,470       14,134       524       39,654       YES         AVENAL       AVBHCA11       8,249,586       688<	ARCADIA	ARCDCA11	1,405,446	12,638	111	5,846	240	YES		
ARLINGTON       ARTNCA11       82,473,787       19,387       4,485       7,133       11,562       YES         ARNOLD       ARNLCA11       543,557       4,276       127       2,363       230       YES         AROMAS       ARMSCA11       17,134,350       1,064       16,111       510       33,597       YES         ARROYO GRANDE       ARGRCA12       7,956,916       10,132       785       4,598       1,731       YES         ARVIN       ARVNCA11       62,047,037       2,405       25,800       909       68,259       YES         ATASCADERO       ATSCCA11       1,806,943       6,095       296       2,769       653       YES         ATWATER       ATWRCA12       1,040,630       5,663       184       2,236       465       YES         AUBURN MAIN       AUBNCA01       10,560,824       12,603       838       6,678       1,581       YES         AVENAL       AVNLCA12       20,778,835       1,470       14,134       524       39,654       YES         AVILA BEACH       AVBHCA11       8,249,586       688       11,986       369       22,357       YES         BAKER       BAKRCA11       5,242,312       3,	ARCATA	ARCTCA11	5,115,871	4,273	1,197	2,070	2,471	YES		
ARNOLD       ARNLCA11       543,557       4,276       127       2,363       230       YES         AROMAS       ARMSCA11       17,134,350       1,064       16,111       510       33,597       YES         ARROYO GRANDE       ARGRCA12       7,956,916       10,132       785       4,598       1,731       YES         ARVIN       ARVNCA11       62,047,037       2,405       25,800       909       68,259       YES         ATASCADERO       ATSCCA11       1,806,943       6,095       296       2,769       653       YES         AUBURN MAIN       AUBNCA01       10,560,824       12,603       838       6,678       1,581       YES         AUBURN PLACER HILLS       AUBNCA11       2,340,898       3,280       714       1,731       1,352       YES         AVENAL       AVNLCA12       20,778,835       1,470       14,134       524       39,654       YES         AVENAL       AVNLCA12       20,778,835       1,470       14,134       524       39,654       YES         AVENAL       AVNECA11       8,249,586       688       11,386       3,669       22,357       YES         BAKERSFIELD COLUMBUS       BKFDCA13       64,461	ARLINGTON	ARTNCA11	82.473.787	18,387	4,485	7.133	11,562	YES		
AROMAS       ARMSCA11       17,134,350       1,064       16,111       510       33,597       YES         ARROYO GRANDE       ARGRCA12       7,956,916       10,132       785       4,598       1,731       YES         ARVIN       ARVNCA11       62,047,037       2,405       25,800       909       68,259       YES         ATASCADERO       ATSCCA11       1,806,943       6,095       296       2,769       653       YES         ATWATER       ATWRCA12       1,040,630       5,663       184       2,236       465       YES         AUBURN MAIN       AUBNCA01       10,560,824       12,603       838       6,678       1,581       YES         AUBURN PLACER HILLS       AUBNCA11       2,340,898       3,280       714       1,731       1,352       YES         AVENAL       AVNLCA12       20,778,835       1,470       14,134       524       39,654       YES         AVILA BEACH       AVBHCA11       8,249,586       688       11,986       369       22,357       YES         BAKER       BAKRCA11       5,342,312       3,698       1,445       1,382       3,866       YES         BAKERSFIELD COLUMBUS       BKFDCA12       25	ARNOLD	ARNLCA11	543,557	4.276	127	2.363	230	YES		
ARROYO GRANDE       ARGRCA12       7,956,916       10,132       785       4,598       1,731       YES         ARVIN       ARVNCA11       62,047,037       2,405       25,800       909       68,259       YES         ATASCADERO       ATSCCA11       1,806,943       6,095       296       2,769       653       YES         ATWATER       ATWRCA12       1,040,630       5,663       184       2,236       465       YES         AUBURN MAIN       AUBNCA01       10,560,824       12,603       838       6,678       1,581       YES         AUBURN PLACER HILLS       AUBNCA11       2,340,898       3,280       714       1,731       1352       YES         AVENAL       AVNLCA12       20,778,835       1,470       14,134       524       39,654       YES         AVENAL       AVNHCA11       52,49,586       688       11,986       369       22,357       YES         BAKER       BAKRCA11       52,564,837       210       250,284       140       375,463       NO         BAKERSFIELD COLUMBUS       BKFDCA12       25,922,878       16,058       1,614       7,352       3,526       YES         BAKERSFIELD MAIN FAIRVIEW       BKFDCA12 <td>AROMAS</td> <td>ARMSCA11</td> <td>17.134.350</td> <td>1.064</td> <td>16.111</td> <td>510</td> <td>33.597</td> <td>YES</td>	AROMAS	ARMSCA11	17.134.350	1.064	16.111	510	33.597	YES		
ARVIN       ARVNCA11       62,047,037       2,405       25,800       909       68,259       YES         ATASCADERO       ATSCCA11       1,806,943       6,095       296       2,769       653       YES         ATWATER       ATWRCA12       1,040,630       5,663       184       2,236       465       YES         AUBURN MAIN       AUBNCA01       10,560,824       12,603       838       6,678       1,581       YES         AUBURN PLACER HILLS       AUBNCA11       2,340,898       3,280       714       1,731       1,352       YES         AVENAL       AVNLCA12       20,778,835       1,470       14,134       524       39,654       YES         AVILA BEACH       AVBHCA11       8,249,586       688       11,986       369       22,357       YES         BAKER       BAKRCA11       52,564,837       210       250,284       140       375,463       NO         BAKERSFIELD COLUMBUS       BKFDCA13       64,461,466       6,593       9,777       2,802       23,006       YES         BAKERSFIELD MAIN FAIRVIEW       BKFDCA12       2,592,878       16,058       1,614       7,352       3,526       YES         BAKERSFIELD MAIN FAIRVIEW	ARROYO GRANDE	ARGRCA12	7.956.916	10.132	785	4.598	1.731	YES		
ATASCADERO       ATSCCA11       1,806,943       6,095       296       2,769       653       YES         ATWATER       ATWRCA12       1,040,630       5,663       184       2,236       465       YES         AUBURN MAIN       AUBNCA01       10,560,824       12,603       838       6,678       1,581       YES         AUBURN PLACER HILLS       AUBNCA11       2,340,898       3,280       714       1,731       1,352       YES         AVENAL       AVNLCA12       20,778,835       1,470       14,134       524       39,654       YES         AVILA BEACH       AVBHCA11       8,249,586       688       11,986       369       22,357       YES         BAKER       BAKRCA11       52,564,837       210       250,284       140       375,463       NO         BAKERSFIELD COLUMBUS       BKFDCA13       64,461,466       6,593       9,777       2,802       23,006       YES         BAKERSFIELD MENTRE       BKFDCA11       5,342,312       3,698       1,445       1,382       3,866       YES         BAKERSFIELD MAIN FAIRVIEW       BKFDCA12       25,922,878       16,058       1,614       7,352       3,526       YES         BAKERSFIELD METTLER<	ARVIN	ARVNCA11	62.047.037	2,405	25,800	909	68,259	YES		
ATWORDERATWRCA121,040,6305,6631842,236465YESAUBURN MAINAUBNCA0110,560,82412,6038386,6781,581YESAUBURN PLACER HILLSAUBNCA012,340,8983,2807141,7311,352YESAVENALAVNLCA1220,778,8351,47014,13452439,654YESAVILA BEACHAVBHCA118,249,58668811,98636922,357YESBAKERBAKRCA1152,564,837210250,284140375,463NOBAKERSFIELD COLUMBUSBKFDCA1364,461,4666,5939,7772,80223,006YESBAKERSFIELD MAIN FAIRVIEWBKFDCA1225,922,87816,0581,6147,3523,526YESBAKERSFIELD MAIN FAIRVIEWBKFDCA1225,922,87816,0581,6147,3523,526YESBAKERSFIELD METTLERBKFDCA153,652,5594019,11532711,170NOBAKERSFIELD NOMADBKFDCA191,091,5965,4572002,330468YESBAKERSFIELD VEST ROSEDAL BKFDCA17599,6389,984603,952152YESBALBOABALBCA013,109,8196,4534823,166982YESBALBOABALBCA013,109,8196,4534823,166982YESBALBOABALBCA013,109,8196,4534823,166982YESBALBOABALBCA013,109,819 </td <td>ATASCADERO</td> <td>ATSCCA11</td> <td>1 806 943</td> <td>6 095</td> <td>296</td> <td>2 769</td> <td>653</td> <td>YES</td>	ATASCADERO	ATSCCA11	1 806 943	6 095	296	2 769	653	YES		
AUBURN MAIN       AUBNCA01       10,560,824       12,603       133       6,678       1,581       YES         AUBURN PLACER HILLS       AUBNCA01       2,340,898       3,280       714       1,731       1,352       YES         AVENAL       AVNLCA12       20,778,835       1,470       14,134       524       39,654       YES         AVILA BEACH       AVBHCA11       8,249,586       688       11,986       369       22,357       YES         BAKER       BAKRCA11       52,564,837       210       250,284       140       375,463       NO         BAKERSFIELD COLUMBUS       BKFDCA13       64,461,466       6,593       9,777       2,802       23,006       YES         BAKERSFIELD MAIN FAIRVIEW       BKFDCA12       25,922,878       16,058       1,614       7,352       3,526       YES         BAKERSFIELD METTLER       BKFDCA15       3,652,559       401       9,115       327       11,170       NO         BAKERSFIELD NOMAD       BKFDCA14       952,308       20,800       46       8,210       116       YES         BAKERSFIELD TEMPLE       BKFDCA17       599,638       9,984       60       3,952       152       YES         BAKERSFIEL	ATWATER	ATWRCA12	1 040 630	5 663	184	2 236	465	YES		
AUBURN PLACER HILLSAUBNCA112,340,8983,2807141,7311,352YESAVENALAVNLCA1220,778,8351,47014,13452439,654YESAVILA BEACHAVBHCA118,249,58668811,98636922,357YESBAKERBAKRCA1152,564,837210250,284140375,463NOBAKERSFIELD COLUMBUSBKFDCA1364,461,4666,5939,7772,80223,006YESBAKERSFIELD EMPIREBKFDCA115,342,3123,6981,4451,3823,866YESBAKERSFIELD MAIN FAIRVIEWBKFDCA1225,922,87816,0581,6147,3523,526YESBAKERSFIELD MAIN FAIRVIEWBKFDCA1225,922,87816,0581,6147,3523,526YESBAKERSFIELD METTLERBKFDCA191,091,5965,4572002,330468YESBAKERSFIELD NOMADBKFDCA14952,30820,800468,210116YESBAKERSFIELD TEMPLEBKFDCA17599,6389,984603,952152YESBALBOABALBCA013,109,8196,4534823,166982YESBANGORBNGRCA1119,575,84349239,81036154,227NOBAYWOOD PARKBYPKCA1158,202,7743,08318,8801,13051,507YESBEALEBEALCA1154,341,407147370,29987624,614YES	AUBURN MAIN	AUBNCA01	10 560 824	12 603	838	6 678	1 581	YES		
AVENAL       AVNLCA12       20,778,835       1,470       14,134       524       39,654       YES         AVILA BEACH       AVBHCA11       8,249,586       688       11,986       369       22,357       YES         BAKER       BAKRCA11       52,564,837       210       250,284       140       375,463       NO         BAKERSFIELD COLUMBUS       BKFDCA13       64,461,466       6,593       9,777       2,802       23,006       YES         BAKERSFIELD EMPIRE       BKFDCA11       5,342,312       3,698       1,445       1,382       3,866       YES         BAKERSFIELD MAIN FAIRVIEW       BKFDCA12       25,922,878       16,058       1,614       7,352       3,526       YES         BAKERSFIELD METTLER       BKFDCA15       3,652,559       401       9,115       327       11,170       NO         BAKERSFIELD NOMAD       BKFDCA19       1,091,596       5,457       200       2,330       468       YES         BAKERSFIELD TEMPLE       BKFDCA17       599,638       9,984       60       3,952       152       YES         BAKERSFIELD WEST ROSEDAL BKFDCA17       599,638       9,984       60       3,952       152       YES         BALBOA		AUBNCA11	2,340,898	3 280	714	1 731	1,352	YES		
AVILA BEACH       AVBHCA11       8,249,586       688       11,986       369       22,357       YES         BAKER       BAKRCA11       52,564,837       210       250,284       140       375,463       NO         BAKERSFIELD COLUMBUS       BKFDCA13       64,461,466       6,593       9,777       2,802       23,006       YES         BAKERSFIELD EMPIRE       BKFDCA11       5,342,312       3,698       1,445       1,382       3,866       YES         BAKERSFIELD MAIN FAIRVIEW       BKFDCA12       25,922,878       16,058       1,614       7,352       3,526       YES         BAKERSFIELD METTLER       BKFDCA15       3,652,559       401       9,115       327       11,170       NO         BAKERSFIELD NOMAD       BKFDCA19       1,091,596       5,457       200       2,330       468       YES         BAKERSFIELD TEMPLE       BKFDCA17       599,638       9,984       60       3,952       152       YES         BALBCA       3,109,819       6,453       482       3,166       982       YES         BALBOA       BALBCA01       3,109,819       6,453       482       3,166       982       YES         BANGOR       BNGRCA11 <td< td=""><td>AVENAI</td><td>AVNI CA12</td><td>20 778 835</td><td>1 470</td><td>14 134</td><td>524</td><td>39 654</td><td>YES</td></td<>	AVENAI	AVNI CA12	20 778 835	1 470	14 134	524	39 654	YES		
BAKER       BAKRCA11       52,564,837       210       250,284       140       375,463       NO         BAKERSFIELD COLUMBUS       BKFDCA13       64,461,466       6,593       9,777       2,802       23,006       YES         BAKERSFIELD EMPIRE       BKFDCA11       5,342,312       3,698       1,445       1,382       3,866       YES         BAKERSFIELD MAIN FAIRVIEW       BKFDCA12       25,922,878       16,058       1,614       7,352       3,526       YES         BAKERSFIELD METTLER       BKFDCA15       3,652,559       401       9,115       327       11,170       NO         BAKERSFIELD NOMAD       BKFDCA19       1,091,596       5,457       200       2,330       468       YES         BAKERSFIELD TEMPLE       BKFDCA14       952,308       20,800       46       8,210       116       YES         BAKERSFIELD WEST ROSEDAL BKFDCA17       599,638       9,984       60       3,952       152       YES         BALBOA       BALBCA01       3,109,819       6,453       482       3,166       982       YES         BANGOR       BNGRCA11       19,575,843       492       39,810       361       54,227       NO         BAYWOOD PARK       <			8 249 586	688	11 986	369	22 357	YES		
BAKERSFIELD COLUMBUS       BKFDCA13       64,461,466       6,593       9,777       2,802       23,006       YES         BAKERSFIELD EMPIRE       BKFDCA11       5,342,312       3,698       1,445       1,382       3,866       YES         BAKERSFIELD EMPIRE       BKFDCA12       25,922,878       16,058       1,614       7,352       3,526       YES         BAKERSFIELD MAIN FAIRVIEW       BKFDCA12       25,922,878       16,058       1,614       7,352       3,526       YES         BAKERSFIELD METTLER       BKFDCA15       3,652,559       401       9,115       327       11,170       NO         BAKERSFIELD NOMAD       BKFDCA19       1,091,596       5,457       200       2,330       468       YES         BAKERSFIELD TEMPLE       BKFDCA14       952,308       20,800       46       8,210       116       YES         BAKERSFIELD WEST ROSEDAL BKFDCA17       599,638       9,984       60       3,952       152       YES         BALBOA       BALBCA01       3,109,819       6,453       482       3,166       982       YES         BANGOR       BNGRCA11       19,575,843       492       39,810       361       54,227       NO         BAYWOOD PA	BAKER	RAKRCA11	52 564 837	210	250 284	1/0	375 463	NO		
BAKERSFIELD EMPIRE       BKFDCA11       5,342,312       3,698       1,445       1,382       3,866       YES         BAKERSFIELD MAIN FAIRVIEW       BKFDCA12       25,922,878       16,058       1,614       7,352       3,526       YES         BAKERSFIELD MAIN FAIRVIEW       BKFDCA12       25,922,878       16,058       1,614       7,352       3,526       YES         BAKERSFIELD METTLER       BKFDCA15       3,652,559       401       9,115       327       11,170       NO         BAKERSFIELD NOMAD       BKFDCA19       1,091,596       5,457       200       2,330       468       YES         BAKERSFIELD TEMPLE       BKFDCA14       952,308       20,800       46       8,210       116       YES         BAKERSFIELD WEST ROSEDAL BKFDCA17       599,638       9,984       60       3,952       152       YES         BALBOA       BALBCA01       3,109,819       6,453       482       3,166       982       YES         BANGOR       BNGRCA11       19,575,843       492       39,810       361       54,227       NO         BAYWOOD PARK       BYPKCA11       58,202,774       3,083       18,880       1,130       51,507       YES         BEALE			64 461 466	6 593	230,20 <del>4</del> 0 777	2 802	23 006	VES		
BAKERSFIELD LMITIKE       BKT DCA11       5,342,312       5,030       1,443       1,302       5,000       1ES         BAKERSFIELD MAIN FAIRVIEW       BKFDCA12       25,922,878       16,058       1,614       7,352       3,526       YES         BAKERSFIELD METTLER       BKFDCA15       3,652,559       401       9,115       327       11,170       NO         BAKERSFIELD NOMAD       BKFDCA19       1,091,596       5,457       200       2,330       468       YES         BAKERSFIELD TEMPLE       BKFDCA14       952,308       20,800       46       8,210       116       YES         BAKERSFIELD WEST ROSEDAL BKFDCA17       599,638       9,984       60       3,952       152       YES         BALBOA       BALBCA01       3,109,819       6,453       482       3,166       982       YES         BANGOR       BNGRCA11       19,575,843       492       39,810       361       54,227       NO         BAYWOOD PARK       BYPKCA11       58,202,774       3,083       18,880       1,130       51,507       YES         BEALE       BEALCA11       54,341,407       147       370,299       87       624,614       YES		BKEDCA11	5 3/2 312	3,608	5,111	1 382	23,000	VES		
BAKERSFIELD MAIN FAILVIEW BKFDCA12       23,922,878       10,038       1,014       7,332       3,326       1ES         BAKERSFIELD METTLER       BKFDCA15       3,652,559       401       9,115       327       11,170       NO         BAKERSFIELD NOMAD       BKFDCA19       1,091,596       5,457       200       2,330       468       YES         BAKERSFIELD TEMPLE       BKFDCA14       952,308       20,800       46       8,210       116       YES         BAKERSFIELD WEST ROSEDAL BKFDCA17       599,638       9,984       60       3,952       152       YES         BALBOA       BALBCA01       3,109,819       6,453       482       3,166       982       YES         BANGOR       BNGRCA11       19,575,843       492       39,810       361       54,227       NO         BAYWOOD PARK       BYPKCA11       58,202,774       3,083       18,880       1,130       51,507       YES         BEALE       BEALCA11       54,341,407       147       370,299       87       624,614       YES			25 022 979	16 058	1,440	7 252	3,000	VES		
BAKERSFIELD MOLTTELK       BKFDCA19       1,091,596       5,457       200       2,330       468       YES         BAKERSFIELD TEMPLE       BKFDCA14       952,308       20,800       46       8,210       116       YES         BAKERSFIELD TEMPLE       BKFDCA14       952,308       20,800       46       8,210       116       YES         BAKERSFIELD WEST ROSEDAL BKFDCA17       599,638       9,984       60       3,952       152       YES         BALBOA       BALBCA01       3,109,819       6,453       482       3,166       982       YES         BANGOR       BNGRCA11       19,575,843       492       39,810       361       54,227       NO         BAYWOOD PARK       BYPKCA11       58,202,774       3,083       18,880       1,130       51,507       YES         BEALE       BEALCA11       54,341,407       147       370,299       87       624,614       YES		BKEDCA15	3 652 550	10,030	0,115	327	11 170	NO		
BAKERSFIELD NOMAD       BKFDCA19       1,091,396       3,437       200       2,330       466       1ES         BAKERSFIELD TEMPLE       BKFDCA14       952,308       20,800       46       8,210       116       YES         BAKERSFIELD WEST ROSEDAL BKFDCA17       599,638       9,984       60       3,952       152       YES         BALBOA       BALBCA01       3,109,819       6,453       482       3,166       982       YES         BANGOR       BNGRCA11       19,575,843       492       39,810       361       54,227       NO         BAYWOOD PARK       BYPKCA11       58,202,774       3,083       18,880       1,130       51,507       YES         BEALE       BEALCA11       54,341,407       147       370,299       87       624,614       YES		BKFDCA13	1 001 506	401 5 457	9,113	2 2 2 2 0	11,170	VES		
BAKERSFIELD TEMPLE       BKPDCA14       952,306       20,800       40       6,210       116       TES         BAKERSFIELD WEST ROSEDAL BKFDCA17       599,638       9,984       60       3,952       152       YES         BALBOA       BALBCA01       3,109,819       6,453       482       3,166       982       YES         BANGOR       BNGRCA11       19,575,843       492       39,810       361       54,227       NO         BAYWOOD PARK       BYPKCA11       58,202,774       3,083       18,880       1,130       51,507       YES         BEALE       BEALCA11       54,341,407       147       370,299       87       624,614       YES		BKFDCA19	1,091,390	20,437	200	2,330	400	VES		
BAKERSFIELD WEST ROSEDAL BKPDCA17       599,636       9,964       60       5,952       152       YES         BALBOA       BALBCA01       3,109,819       6,453       482       3,166       982       YES         BANGOR       BNGRCA11       19,575,843       492       39,810       361       54,227       NO         BAYWOOD PARK       BYPKCA11       58,202,774       3,083       18,880       1,130       51,507       YES         BEALE       BEALCA11       54,341,407       147       370,299       87       624,614       YES			902,000	20,000	40	0,210	110	TES VES		
DALBOA         DALBOA         DALBOA         S, 109, 619         6,453         482         3, 106         982         YES           BANGOR         BNGRCA11         19,575,843         492         39,810         361         54,227         NO           BAYWOOD PARK         BYPKCA11         58,202,774         3,083         18,880         1,130         51,507         YES           BEALE         BEALCA11         54,341,407         147         370,299         87         624,614         YES	DANERSFIELD WEST KUSEDA		239,030 2100 210	9,904	100	3,90Z	152	TEO		
DAINGOR         BINGRCATT         19,575,843         492         39,810         361         54,227         NO           BAYWOOD PARK         BYPKCA11         58,202,774         3,083         18,880         1,130         51,507         YES           BEALE         BEALCA11         54,341,407         147         370,299         87         624,614         YES		DALDUAUT	3,109,819	0,403	4ŏZ	3,100	90Z	TEO		
DATWOOD PARK         BTPRCATT         58,202,774         3,083         18,880         1,130         51,507         YES           BEALE         BEALCA11         54,341,407         147         370,299         87         624,614         YES		BINGRUATT	19,5/5,843	492	39,810	301	54,227			
BEALE BEALCATT 54,341,407 147 370,299 87 624,614 YES		BTPKCA11	50,2U2,114	3,083	18,880	1,130	51,507	YES		
			2 096 102	14/	310,299	) ۲ ۱۵۸	6 440	TEO VEO		



		Table 7.14 (p	age 2 of 13	)			
Wire Center	CLU	Total Gross Additions 2010-2017	Average Access Lines 2010-2017	Gross Adds per Avg Access	Access Lines Dec 2017	Gross Adds per Dec 2017 Access	Broadband Available
BEAR VILLY SPRING	BVSPCA11	18 763 158	1 531	12 259	447	41 976	YES
BELL	BELLCA11	912 426	8 911	102	3 205	285	YES
	BNI MCA11	14 831 651	1 354	10 952	676	21 940	YES
BENICIA	BNCICA11	40 159 643	5 088	7 892	2 283	17 591	YES
BERKELEY BANCROFT	BKI YCA01	6 284 934	18 765	335	9 863	637	YES
BETHELISLAND	BTISCA11	2 475 807	750	3 302	313	7 910	YES
BEVERLY HILLS	BVHLCA01	15,600,555	30,180	517	18.609	838	YES
BIG SUR	BGSRCA11	8,543,766	542	15.754	407	20,992	NO
BIGGS	BGGSCA11	1,153,614	603	1,914	284	4.062	YES
BISHOP RANCH	BSRNCA70	920.965	3.193	288	1.658	555	YES
BISHOP RANCH	BSRNCA70	1.181.287	3,193	370	1.658	712	YES
BLAIRSDEN	BLRSCA12	974.532	1.624	600	1.006	969	NO
BLUE LAKE	BLLKCA11	40.180.686	460	87.296	266	151.055	NO
BODEGA BAY	BDBACA11	4,293,409	788	5,449	403	10,654	YES
BOONVILLE	BNVLCA11	54,891,461	1,151	47,676	740	74,178	YES
BORREGO SPRINGS	BRSPCA11	2,533,336	1,443	1,756	801	3,163	YES
BOULDER CREEK	BLCKCA11	1,395,480	2,200	634	1,191	1,172	YES
BRADLEY	BRDLCA90	1,143,666	745	1,535	528	2,166	NO
BRAWLEY	BRWLCA11	891,413	4,882	183	2,089	427	YES
BREA	BREACA12	599,328	8,150	74	3,612	166	YES
BRENTWOOD	BRWDCA12	1,029,898	9,899	104	4,343	237	YES
BRIDGEVILLE	BGVLCA11	10,106,881	231	43,767	188	53,760	NO
BRISTOL	SNANCA11	53,362,083	25,227	2,115	11,730	4,549	YES
BROCKWAY	BCWYCA11	75,242,596	2,381	31,598	1,066	70,584	YES
BROCKWAY	BCWYCA11	8,343,137	2,381	3,504	1,066	7,827	YES
BUENA PARK	BNPKCA11	56,536,844	12,007	4,709	5,203	10,866	YES
BURBANK PALM	BRBNCA11	792,062	24,366	33	11,552	69	YES
BURBANK THORNTON	BRBNCA13	49,237,936	1,373	35,869	819	60,120	YES
BURLINGAME	BRLNCA01	485,687	17,071	28	9,056	54	YES
BURRELL	BURLCA11	1,207,697	169	7,156	100	12,077	YES
BUSH	SNANCA01	9,734,418	22,424	434	9,997	974	YES
BUTTE CITY	BTCYCA11	46,112,503	161	286,469	121	381,095	NO
CALABASAS LOS VIRGENES	CLBSCA50	28,902,996	2,377	12,159	1,220	23,691	YES
CALABASAS PARK SORRENTO	CLBSCA11	17,184,726	8,389	2,048	4,440	3,870	YES
CALEXICO	CLXCCA12	12,816,649	6,121	2,094	2,285	5,609	YES
CALISTOGA	CLSTCA11	1,145,333	2,427	472	1,245	920	YES
CALPATRIA	CLPTCA11	1,230,142	647	1,901	293	4,198	YES
	CMBACATT	14,257,101	3,076	4,635	1,629	8,752	YES
		98,502,068	806	122,200	130	134,934	NO
		1,954,368	213	9,193	114 500	17,144	YES
		0,110,270	1,110	5,510	230	11,309	YES
		4,000,000	330 007 00	i∠, I Iŏ ⊽≉	240 15 010	10,094	IEO VEO
		2,400,409	JJ, / DU	222	10,010	10/	IEO VEO
	CDISCAIL	2,031,000	0,312	322	∠,004 ⊿ ⊿ 4 4	/00 570	IEO VEO
CADMEL MAIN		2,014,290	3,130 26 205	200	4,411	57U 110	TEO VEO
		1,479,107	20,390	0C 17 650	1 160	11Z 21.051	
	SNI/ACA01	37,120,192	2,103 10 272	1 697	0.026	31,901	VEQ
ON THE OUTINT VALE	SINKAGAUI	02,002,100	13,312	1,007	3,020	J,0Z I	160



Table 7.14 (page 3 of 13)								
		Total Gross Additions	Average Access Lines	Gross Adds per Avg Access	Access Lines Dec	Gross Adds per Dec 2017 Access	Broadband	
Wire Center	CLLI	2010-2017	2010-2017	Line	2017	Line	Available	
CARUTHERS	CRTHCA11	24,195,922	948	25,533	427	56,665	YES	
CASTAIC	CSTCCA11	54,648,483	7,696	7,101	4,054	13,480	YES	
CASTROVILLE	CSVLCA11	2,573,671	2,465	1,044	1,296	1,986	YES	
CAYUCOS	CYCSCA11	8,618,999	1,296	6,648	617	13,969	YES	
CENTRAL VALLEY	CNVYCA11	83,661,390	3,555	23,534	1,794	46,634	YES	
CENTURY CITY	WLANCA01	3,532,260	11,686	302	6,567	538	YES	
CHALLANGE	CHLNCA11	54,787,249	1,357	40,381	1,204	45,504	NO	
CHICO MAIN	CHICCA01	50,422,018	24,345	2,071	12,112	4,163	YES	
CHOWCHILLA	CHWCCA11	7,720,187	2,616	2,951	1,133	6,814	YES	
CHUALAR	CHLRCA11	21,931,282	307	71,367	173	126,770	YES	
CHULA VISTA APACHE	CHVSCA12	51,178,307	6,131	8,348	2,638	19,400	YES	
CHULA VISTA THIRD AVENUE	CHVSCA11	18,995,041	10,874	1,747	4,670	4,067	YES	
CLAYTON	CYTNCA11	4,354,637	3,558	1,224	1,710	2,547	YES	
CLEAR LAKE OAKS	CLOKCA11	533,919	1,354	394	654	816	YES	
CLOVERDALE	CODLCA11	16,855,434	2,139	7,879	994	16,957	YES	
CLOVIS	CLVSCA11	14,976,400	23,980	625	9,943	1,506	YES	
COALINGA	CLNGCA01	10,520,377	2,305	4,564	940	11,192	YES	
COBB MOUNTAIN	CBMTCA11	15,367,389	954	16,103	369	41,646	YES	
COLMA DALY CITY	COLACA01	53,799,687	14,027	3,835	6,767	7,950	YES	
COLTON	COTNCA11	84,209,537	8,536	9,866	3,767	22,355	YES	
COMPTON	CMTNCA01	4,019,935	27,254	147	11,646	345	YES	
CONCORD	CNCRCA01	1,476,325	21,505	69	10,486	141	YES	
CORDELIA	CORDCA12	837,173	3,097	270	1,553	539	YES	
CORNING	CRNGCA12	37,012,636	2,953	12,533	1,409	26,269	YES	
CORONA	CORNCA11	45,488,452	33,916	1,341	12,892	3,528	YES	
CORONA DEL MAR	CRDMCA11	1,131,049	12,895	88	7,314	155	YES	
CORONADO	CRNDCA11	63,492,461	4,071	15,598	1,996	31,810	YES	
COSTA MESA	CSMSCA11	15,450,816	16,224	952	7,016	2,202	YES	
COSTA MESA	CSMSCA11	13,820,290	16,224	852	7,016	1,970	YES	
COTATI	CTTICA12	2,808,110	5,240	536	2,282	1,231	YES	
COTTONWOOD	CTWDCA11	3,063,097	3,979	770	2,418	1,267	YES	
COULTERVILLE	CTVLCA11	1,668,606	852	1,960	722	2,311	NO	
COYOTE WELLS	CYWLCA11	627,602	103	6,064	57	11,011	YES	
CROCKETT	CRCTCA02	48,361,377	692	69,864	318	152,080	YES	
CROWS LANDING	CWLDCA12	1,732,581	157	11,036	106	16,345	YES	
CULVER CITY	CLCYCA11	41,196,976	19,759	2,085	9,355	4,404	YES	
DANVILLE MAIN 12	DAVLCA12	1,884,269	12,609	149	5,966	316	YES	
DANVILLE TASSAJARA 13	DAVLCA13	1,131,807	6,364	178	2,747	412	YES	
DAVIS	DAVSCA11	2,494,811	10,913	229	4,815	518	YES	
DEL MAR	DLMRCA12	26,506,947	13,397	1,979	6,377	4,157	YES	
DEL REY	DLRYCA11	20,295,011	3,179	6,383	1,686	12,037	YES	
DELANO	DELNCA11	34,827,767	6,055	5,752	2,373	14,677	YES	
DINUBA	DINBCA01	11,104,061	3,827	2,901	1,590	6,984	YES	
DIXON	DIXNCA11	10,959,605	3,868	2,833	1,590	6,893	YES	
DOWNIEVILLE	DWNVCA11	4,196,323	329	12,739	255	16,456	YES	
DULZURA	DLZRCA11	74,183,110	748	99,186	543	136,617	YES	
DUNNIGAN	DNGNCA12	47,159,309	321	146,780	128	368,432	YES	
DUNSMUIR	DNSMCA11	5,463,164	939	5,819	484	11,288	YES	



		Table 7.14 (p	age 4 of 13	)			
Wire Center	CULI	Total Gross Additions 2010-2017	Average Access Lines 2010-2017	Gross Adds per Avg Access Line	Access Lines Dec 2017	Gross Adds per Dec 2017 Access Line	Broadband Available
FARLIMART	ERI MCA11	7 949 220	1 148	6 927	406	19 579	YES
EDGEWOOD N HIGHI		45 586 523	12 252	3 721	4 823	9 4 5 2	YES
FDWARDS	FDWRCA01	64 180 688	244	262 598	140	458 433	YES
FL CAJON	ELC.ICA11	49 390 946	10 231	4 828	4 691	10 529	YES
EL CENTRO	ELCNCA01	1.313.541	10.325	127	4,607	285	YES
EL MONTE	ELMNCA01	4.643.846	24.912	186	11.463	405	YES
EL PORTAL	YSMTCA12	24.949.571	419	59.485	321	77,725	YES
EL SEGUNDO DOUGLAS	FLSGCA12	7 821 234	7 911	989	4 649	1 682	YES
FL TORO	ELTRCA11	83.544.417	26.021	3.211	13.058	6,398	YES
FLK	ELK CA11	31.011.147	291	106.472	223	139,063	NO
ELK CREEK	EKCKCA11	31.011.147	164	188,948	111	279,380	NO
ENCINITAS	ENCTCA12	1.006.022	12.379	81	5.427	185	YES
ESCALON	ESCI CA11	43 446 821	2 448	17 749	1 096	39 641	YES
ESCONDIDO	ESCNCA01	7.520.367	19,413	387	8,998	836	YES
ESPARTO	ESPRCA11	43.557.040	675	64.547	295	147.651	YES
EUCLID	GRGVCA01	43.328.248	20.368	2.127	8.212	5.276	YES
EUREKA	EURKCA01	6.211.313	10.997	565	5.537	1.122	YES
EXPORT OILDALE	OLDLCA11	42.372.171	7.547	5.614	3,490	12,141	YES
FAIR OAKS	FROKCA11	12,793,156	19,890	643	8,796	1,454	YES
FAIRFIELD	FRFDCA01	20.906.322	13,691	1.527	6,009	3,479	YES
FALLBROOK	FLBKCA12	13.252.972	9.134	1.451	4.165	3.182	YES
FARMERSVILLE	FRVLCA11	47.236.884	1.192	39.644	493	95.815	YES
FELTON	FETNCA11	34.183.533	2.229	15.338	1.156	29,571	YES
FILLMORE	FLMRCA11	39.911.051	2.272	17.568	931	42.869	YES
FIREBAUGH	FRBHCA11	14.053.908	1.365	10.298	687	20,457	YES
FIVE POINTS	FVPNCA11	20,953,602	244	85,875	179	117,059	NO
FOLSOM BLUE RAVINE	FLSMCA14	10,800,708	27,916	387	13,639	792	YES
FOLSOM EL DORADO HILLS	FLSMCA13	10,800,708	6,921	1,560	3,078	3,509	YES
FOLSOM NIMBUS	FLSMCA12	23,065,686	4,672	4,937	2,151	10,723	YES
FONTANA	FNTACA11	25,337,498	19,626	1,291	6,994	3,623	YES
FORESTVILLE	FSVLCA11	1,041,535	1,565	665	812	1,283	YES
FORT BRAGG	FTBRCA02	57,248,425	5,898	9,707	3,563	16,067	YES
FORTUNA	FTUNCA11	63,602,496	2,646	24,038	1,236	51,458	YES
FRAZIER PARK	FZPKCA11	983,940	1,570	627	872	1,128	YES
FREMONT ADAMS OLIVER 12	FRMTCA12	5,181,799	16,717	310	7,919	654	YES
FREMONT MAIN 11	FRMTCA11	6,352,444	20,722	307	9,274	685	YES
FRENCH GULCH	FRGLCA11	6,976,041	161	43,310	103	67,729	NO
FRESNO BALDWIN	FRSNCA11	696,245	16,543	42	6,681	104	YES
FRESNO CLINTON	FRSNCA12	2,711,386	11,802	230	4,994	543	YES
FRESNO MAIN	FRSNCA01	547,555	19,462	28	9,133	60	YES
FRESNO SIERRA	FRSNCA13	2,945,286	16,736	176	7,600	388	YES
FRESNO WEST HIGHWAY CITY	FRSNCA14	27,181,777	9,487	2,865	3,911	6,950	YES
FRESNO WOODWARD	FRSNCA15	1,346,783	3,211	419	1,281	1,051	YES
FRONTIER	WSCRCA11	20,710,323	8,986	2,305	4,185	4,949	YES
FULLERTON	FUTNCA01	27,974,845	20,743	1,349	9,403	2,975	YES
FURNACE CREEK	FRCKCA11	36,479,158	204	178,455	146	249,857	NO
GALT	GALTCA11	27,684,391	4,275	6,475	1,736	15,947	YES
GARDENA	GRDNCA01	29,834,973	29,232	1,021	14,190	2,103	YES



		Table 7.14 (p	bage 5 of 13	)			
Wire Center	CLU	Total Gross Additions 2010-2017	Average Access Lines 2010-2017	Gross Adds per Avg Access	Access Lines Dec 2017	Gross Adds per Dec 2017 Access	Broadband Available
GARNET	PCBHCA01	39 194 244	11 231	3 4 9 0	4 955	7 910	YES
GAZELLE	GZLI CA11	881 982	89	9 932	45	19,600	NO
GEORGETOWN	GRTWCA11	21.435.891	2,160	9,925	1.486	14,425	YES
GERBER	GRBRCA11	39,487,510	536	73,692	219	180,308	YES
GEYERSVILLE	GYVLCA11	2,188,169	541	4.042	328	6,671	YES
GLENDALE	GLDLCA11	19.688.219	35.695	552	17.247	1.142	YES
GLENVIEW	SLNSCA12	9.544.679	1,188	8.036	642	14.867	YES
GONZALES	GNZLCA11	9.943.906	1.486	6,690	687	14,474	YES
GOSHEN	GSHNCA11	34.528.417	1.297	26.621	813	42.470	YES
GRASS VALLEY	GRVYCA01	60.480.621	15.239	3.969	8.934	6.770	YES
GREEN FIELD	GNFDCA11	19.926.447	2.353	8.467	1.078	18,485	YES
GRENADA	GRNDCA13	19.571.518	211	92,788	91	215.072	YES
GRIDLEY	GRDLCA11	19,809,982	2,260	8,765	964	20,550	YES
GROVELAND	GVLDCA11	12,059,068	3,033	3,976	2,142	5,630	YES
GUALALA	GULLCA11	24,427,883	1,527	15,996	1,142	21,390	NO
GUERNEVILLE	GUVLCA11	1,377,668	1,475	934	779	1,769	YES
GUSTINE	GUSTCA11	11,811,906	1,501	7,869	694	17,020	YES
GYPSUM CANYON	YRLNCA12	13,256,339	1,706	7,770	692	19,157	YES
HALF MOON BAY	HMBACA12	16,978,654	5,091	3,335	2,686	6,321	YES
HAMILTON CITY	HMCYCA11	1,170,754	421	2,784	170	6,887	YES
HANFORD	HNFRCA01	9,534,354	10,525	906	4,454	2,141	YES
HAWTHORNE	HWTHCA01	966,968	15,051	64	6,110	158	YES
HAYWARD DEPOT	HYWRCA11	29,721,543	13,424	2,214	6,198	4,795	YES
HAYWARD MAIN	HYWRCA01	1,689,112	20,264	83	9,134	185	YES
HEALDSBURG	HLBGCA11	39,562,134	5,294	7,473	2,964	13,348	YES
HERALD	HERLCA11	2,285,784	638	3,584	307	7,446	YES
HERCULES PINOLE	HRCLCA11	915,484	7,162	128	3,133	292	YES
HICKORY SALINAS	SLNSCA11	33,748,014	6,561	5,144	2,602	12,970	YES
HIGHLAND	HGLDCA11	4,893,843	6,739	726	2,509	1,951	YES
HOLLISTER	HLSTCA11	22,009,665	7,623	2,887	3,329	6,611	YES
HOLLYWOOD	HLWDCA01	446,428	22,584	20	11,379	39	YES
HOLTVILLE	HLVLCA11	16,006,710	1,431	11,187	551	29,050	YES
HOMEWOOD	HMWDCA1 <sup>7</sup>	3,777,616	2,301	1,642	1,257	3,005	YES
HOPLAND	HPLDCA12	16,840,522	401	41,966	228	73,862	YES
HORNBLEND	PCBHCA11	14,184,513	1,530	9,271	663	21,394	YES
HORNBROOK	HRBKCA11	33,597,367	404	83,102	294	114,277	NO
HUGHSON	HGSNCA11	21,419,693	1,551	13,810	651	32,903	YES
HUNTER	SLNSCA13	21,419,693	1,505	14,231	781	27,426	YES
HUNTINGTON PARK	HNPKCA01	6,166,658	19,210	321	8,287	744	YES
HURON	HURNCA11	3,593,779	889	4,044	344	10,447	YES
HYDESVILLE	HYVLCA11	43,652,190	475	91,917	299	145,994	NO
IGNACIO	IGNCCA12	52,744,471	4,129	12,773	1,813	29,092	YES
IMPERIAL	IMPRCA11	35,823,350	1,731	20,700	646	55,454	YES
IMPERIAL BEACH	IMBHCA11	6,370,644	5,323	1,197	2,392	2,663	YES
INGLEWOOD	IGWDCA01	2,535,350	15,550	163	6,065	418	YES
INGLEWOOD	IGWDCA01	25,321,898	15,550	1,628	6,065	4,175	YES
INVERNESS	INVRCA11	34,994,518	691	50,675	484	72,303	YES
IONE	IONECA11	1,237,891	1,842	672	963	1,285	YES

ECONOMICS AND TECHNOLOGY, INC.
		Table 7.14 (p	age 6 of 13	)			
Wire Center	CULI	Total Gross Additions 2010-2017	Average Access Lines 2010-2017	Gross Adds per Avg Access Line	Access Lines Dec 2017	Gross Adds per Dec 2017 Access Line	Broadband Available
IRVINE	IRVNCA01	1 249 128	11 251	111	5 461	229	YES
	IRVNCA11	35 114 627	11 111	3 160	6 714	5 230	YES
IVANHOE	IVNHCA11	36 282 216	1 131	32 090	540	67 189	YES
JACKSON	JCSNCA01	20,995,346	2,856	7.352	1.675	12,535	YES
JACUMBA	JCMBCA11	25.447.192	673	37.792	399	63,777	YES
JAMESTOWN	JMTWCA11	19.208.448	1.631	11.775	922	20.833	YES
JAMUL	JAMLCA60	18.290.797	800	22.858	364	50.249	YES
JULIAN	JULNCA12	9.500.327	1.770	5.366	1.042	9,117	YES
KELSEYVILLE	KLVLCA12	8.477.589	2.378	3,565	1.248	6,793	YES
KING CITY	KGCYCA11	20.019.004	2.905	6.891	1.547	12,941	YES
KINGSBURG	KGBGCA11	4.776.973	2.989	1.598	1.255	3.806	YES
KNIGHTS FERRY	KNFYCA11	1.712.258	255	6.721	151	11.339	NO
KYBURZ	KYBRCA11	4.883.581	159	30.732	69	70,777	YES
LA CANADA OAK GROVE	LACNCA11	25,502,396	23	########	14	1,821,600	NO
LA CRESCENTA	LACRCA11	39,516,123	15,998	2,470	7,345	5,380	YES
LA HONDA	LAHNCA11	3,595,989	690	5,215	418	8,603	YES
LA JOLLA GIRARD	LAJLCA11	31,284,106	8,109	3,858	4,303	7,270	YES
LA MESA	LAMSCA01	23,543,894	14,687	1,603	6,830	3,447	YES
LAFAYETTE	LFYTCA11	9,060,156	5,282	1,715	2,602	3,482	YES
LAGRANDE D PEDRO	LGRNCA12	15,208,748	1,282	11,863	980	15,519	YES
LAGUNA NIGUEL	LGNGCA12	34,773,548	8,377	4,151	4,051	8,584	YES
LAKE BERRYESSA	LKBRCA11	11,778,087	335	35,211	206	57,175	NO
LAKE LOS ANGELES	LKLACA11	8,555,929	1,437	5,956	527	16,235	YES
LAKE OF THE PINE	GRVYCA11	4,450,238	3,672	1,212	2,119	2,100	YES
LAKEPORT	LKPTCA02	4,558,166	3,869	1,178	2,359	1,932	YES
LAKESIDE	LKSDCA12	43,672,402	4,112	10,621	2,039	21,419	YES
LAMONT	LAMTCA11	1,097,454	2,398	458	891	1,232	YES
LARKSPUR •CORTE MADERA	LRKSCA11	21,762,438	6,875	3,166	3,541	6,146	YES
LATON	LATNCA11	19,227,684	496	38,762	221	87,003	YES
LE GRANDE	LGRDCA11	17,636,842	479	36,814	210	83,985	YES
LEBEC	LEBCCA11	4,003,340	616	6,499	411	9,740	YES
LEMORE MAIN	LEMRCA11	13,727,774	3,802	3,610	1,463	9,383	YES
LEMORE WYMAN	LEMRCA12	30,913,002	246	125,742	93	332,398	YES
LEONA VALLEY	LNVYCA11	11,050,105	678	16,303	371	29,785	YES
LEWISTON	LSTNCA11	54,963,463	696	78,915	537	102,353	NO
LINCOLN	LNCLCA11	24,836,559	2,264	10,973	976	25,447	YES
LITTLE ROCK	LTRKCA11	6,301,070	2,259	2,789	1,121	5,621	YES
LIVE OAK	LVOKCA11	12,937,325	1,645	7,865	755	17,136	YES
LIVERMORE	LVMRCA11	23,968,208	14,186	1,690	7,186	3,335	YES
LOCKEFORD	LCFRCA11	17,424,971	781	22,302	301	57,890	YES
LODI	LODICA01	16,147,260	14,550	1,110	6,549	2,466	YES
LOLITA	LOLTCA11	64,886	275	236	149	435	YES
LOMITA	LOMTCA11	27,715,640	15,110	1,834	6,713	4,129	YES
LOOMIS	LOMSCA11	8,568,847	3,652	2,346	1,615	5,306	YES
LOS ALAMOS	SNRSCA11	2,359,730	7,309	323	2,981	792	YES
LOS ALTOS	LSATCA11	3,447,569	9,941	347	5,014	688	YES
LOS BANOS	LSBNCA12	8,154,074	5,439	1,499	2,411	3,382	YES
LOS MOLINOS	LSMLCA11	1,625,458	931	1,746	413	3,936	YES



		Table 7.14 (p	age 7 of 13	)			
Wire Center	CLU	Total Gross Additions 2010-2017	Average Access Lines 2010-2017	Gross Adds per Avg Access	Access Lines Dec 2017	Gross Adds per Dec 2017 Access	Broadband Available
		2 076 526	4 830	430	2 285	000	VES
		15 271 002	762	20 044	580	25 929	VES
		3/ 610 069	12 710	20,044	1 721	7 331	VES
		39 864 228	16 256	2,720	8 368	4 764	YES
	LSANCA34	12 403 352	26 242	473	11 573	1 072	YES
	LSANCA15	3 175 069	20,242	150	9 4 4 4	336	YES
	LSANCA23	24 734 791	18 520	1 3 3 6	8 4 3 5	2 932	YES
		2 163 928	18 / 01	1,000	7 722	2,352	VES
		11 240 847	25 935	1 590	13 7/0	3 000	VES
		16 737 052	18 718	80/	8 030	1 872	VES
		22 021 183	20 747	1 061	8 1/10	2 606	VES
		1 311 / 20	16 / 7/	262	6 772	2,000	VES
		1 / 16 1/3	18 207	78	7 324	103	VES
I SAN SUNSET	LSANCA29	5 002 216	11 538	434	6 151	813	YES
	LSANCA10	42 197 081	25 758	1 638	11 709	3 604	YES
	MADRCA12	10 476 437	1 151	9 099	437	23 974	YES
	MADRCA11	15 271 627	10 854	1 407	4 677	3 265	YES
MADISON 02 MO		12 694 249	17 381	730	9 670	1 313	YES
MADISON 03 MA	LSANCA03	169 306	9 7 1 5	17	6 4 3 5	26	YES
MARINA		27 752 927	3 128	8 095	1 527	18 175	VES
MARTINEZ	MRTZCA11	3 135 333	8 057	389	4 050	774	YES
MARYSVILLE	MYV/ICA01	3 765 365	8 311	453	4,000	913	YES
MATHILDA SUNNEYVALE	SNVACA11	11 172 984	3 931	2 842	1 905	5 865	YES
	MKV/LCA11	8 714 253	2 837	3 071	1,000	6 872	YES
MENDOCINO		10 062 333	2,007	3 792	1,200	5 857	YES
MENDOTA	MNDTCA11	2 467 661	1 269	1 944	514	4 801	YES
MENLO PARK	MNPKCA11	1 019 936	7 567	135	4 478	228	YES
MERCED	MRCDCA01	3 749 602	14 253	263	6.345	591	YES
MERCED	MRCDCA01	15 589 026	14 253	1 094	6,345	2 457	YES
MERIDAN	MRDNCA11	34 673 235	264	131 147	172	201 589	NO
	MDTWCA11	8 756 318	2 280	3 841	1 035	8 460	YES
MILL VALLEY	MLVYCA01	21 024 080	8 628	2 437	4 358	4 824	YES
MILIBRAE	ML BRCA11	4 155 892	5 796	717	3 032	1 371	YES
MILPITAS	MLPSCA11	3 236 387	13 480	240	6 461	501	YES
MIRANDA	MRNDCA11	520 473	541	963	323	1 611	YES
MISSION VIEJO	MSVJCAAT	1,198,670	4.387	273	2.304	520	YES
MISSION VIEJO	MSV.ICAAT	607 726	4 387	139	2 304	264	YES
MODESTO DAVIS	MDSTCA52	2.937.673	19	155,125	18	163.204	NO
MODESTO KELLOG SOUTH CI	FMDSTCA03	19.331.377	7.650	2.527	3.142	6,153	YES
MODESTO KINGSWOOD CUR	TI MDSTCA04	7.654.518	3,360	2.278	1.399	5,471	YES
MODESTO MAIN	MDSTCA02	4.972.059	30,761	162	13.262	375	YES
MODESTO TALLY	MDSTCA05	14,994,288	2.277	6.585	752	19.939	YES
MOJAVE	MOJVCA01	20,518,313	1.219	16.830	673	30.488	YES
MOKELUMNE HILL	MKHLCA12	23,303.384	334	69.875	212	109.922	NO
MONTAGUE	MTAGCA11	36,112,083	1.043	34.621	593	60,897	YES
MONTE RIO	MNRICA11	6,664 351	900	7,408	573	11,631	YES
MONTEREY	MTRYCA01	2.093.665	13,450	156	6,692	313	YES
MOORPARK	MRPKCA12	3,526,865	6,254	564	2,870	1,229	YES



		Table 7.14 (p	age 8 of 13	)			
Wire Center	CUL	Total Gross Additions 2010-2017	Average Access Lines 2010-2017	Gross Adds per Avg Access	Access Lines Dec 2017	Gross Adds per Dec 2017 Access	Broadband Available
MORAGA	MORGCA12	11 410 591	3 894	2 931	1 993	5 725	YES
MORO	SI NSCA14	22 559 472	2 754	8 192	1 448	15 580	YES
MORRO BAY	MRBACA11	30 106 396	3 026	9 951	1 222	24 637	YES
MOSS BEACH	MSBHCA11	27 578 275	1 994	13 831	942	29,276	YES
MOUNT SHASTA	MTSHCA12	1 364 724	2 819	484	1 445	944	YES
MOUNTAIN PASS	MTPSCA11	7 817 588	22	352 507	18	434 310	NO
	MTVWCA11	2 283 640	18.370	124	9 013	253	YES
MURPHYS	MRPHCA11	17 632 194	1 805	9 767	989	17 828	YES
NAPA	NAPACA01	2 012 016	18 801	107	9 003	223	YES
NATIONAL CITY HIGHLAND	NTCYCA11	1 515 027	3 793	399	1 695	894	YES
NEVADA CITY	NVCYCA11	9 243 021	5 689	1 625	3 777	2 447	YES
NEWCASTLE	NWCSCA11	3 049 380	2 155	1 4 1 5	1 090	2 798	YES
NEWHALL	NHLLCA01	16.957.387	14,810	1,145	6.404	2,648	YES
NEWMAN	NWMNCA1:	3.829.861	1,655	2.314	644	5,947	YES
NHWDLANKERSHIM	NHWDCA01	14,153,914	16,751	845	7.344	1,927	YES
NHWD MAGNOLIA	NHWDCA02	1.317.573	32,032	41	14,846	89	YES
NICASIO	NICSCA11	16.381.983	392	41.786	280	58,507	NO
NICE	NICECA11	247.436	1.229	201	572	433	YES
NICOLAUS	NCLSCA12	12.523.971	208	60.091	116	107.965	YES
NILAND MAIN	NILDCA11	2.361.008	314	7.515	118	20.009	YES
NINLAND BOMBAY BEACH	NILDCA12	3,128,121	224	13.952	95	32,928	NO
NIPOMO	NIPMCA11	9.469.625	2.783	3.402	1.222	7,749	YES
NORMANDY	LSANCA12	12.091.229	25.065	482	11.107	1.089	YES
NORTH NATOMAS	NSCRCA12	27.956.514	5.868	4.764	2,461	11.360	YES
NORTH SAN JUAN	NSJNCA11	7,035,137	782	9,001	537	13,101	YES
NORTH STAR	TRUCCA12	34,476,237	1,200	28,736	696	49,535	YES
NORTH YUBA	NYUBCA11	502,373	848	592	573	877	NO
NORTHRIDGE	NORGCA11	1,056,050	26,850	39	12,509	84	YES
OAKDALE	OKDLCA11	3,116,837	5,588	558	2,382	1,308	YES
OAKLAND 45TH OLYMPICCENT	OKLDCA11	3,116,837	20,506	152	10,372	301	YES
OAKLAND FRANKLIN	OKLDCA03	505,077	25,294	20	14,731	34	YES
OAKLAND HOLLY	OKLDCA12	17,171,380	18,972	905	9,151	1,876	YES
OAKLAND KELLOGFRUITVALE	OKLDCA04	3,323,220	12,610	264	5,814	572	YES
OAKLAND MOUNTAIN	OKLDCA13	14,813,727	10,927	1,356	5,249	2,822	YES
OAKLEY	OKLYCA11	3,765,349	3,367	1,118	1,324	2,844	YES
OAKVIEW	OKVWCA11	8,601,730	1,849	4,653	739	11,640	YES
OCCIDENTAL	OCDNCA11	1,334,629	1,254	1,064	779	1,713	NO
OCEANSIDE MISSION	OCSDCA11	16,873,009	11,282	1,496	5,143	3,281	YES
OJAI	OJAICA11	18,643,536	4,559	4,089	2,015	9,252	YES
ORANGE CHAPMAN	ORNGCA11	11,504,831	17,781	647	8,236	1,397	YES
ORANGE COVE	ORCVCA11	8,981,545	1,262	7,115	462	19,441	YES
ORANGE OLIVE	ORNGCA13	10,194,130	14,089	724	6,032	1,690	YES
ORANGE WEST	ORNGCA14	33,020,156	7,853	4,205	3,748	8,810	YES
ORANGEVALE	ORVACA11	2,541,181	6,730	378	2,713	937	YES
ORINDA	ORNDCA11	1,835,211	4,248	432	2,208	831	YES
ORLAND	ORLDCA11	8,828,069	3,314	2,664	1,623	5,439	YES
OROSI	ORSICA11	10,310,195	2,299	4,485	918	11,231	YES
OROVILLE EAST	ORVLCA12	1,195,890	2,988	400	1,678	713	YES



		Table 7.14 (p	age 9 of 13	)			
		Total Gross Additions	Average Access Lines	Gross Adds per Avg Access	Access Lines Dec	Gross Adds per Dec 2017 Access	Broadband
Wire Center	CLLI	2010-2017	2010-2017	Line	2017	Line	Available
OROVILLE MAIN	ORVLCA11	13,076,743	8,246	1,586	4,219	3,099	YES
OTAY MESA	OTMSCA11	6,854,018	2,023	3,388	1,166	5,878	YES
PACIFICA	PCFCCA11	25,140,474	7,565	3,323	3,570	7,042	YES
PALMDALE	PLDLCA01	25,961,705	12,687	2,046	5,202	4,991	YES
PALMDALE EAST 47TH ST	PLDLCA11	7,511,389	3,565	2,107	1,091	6,885	YES
PALO ALTO MAIN	PLALCA02	10,946,320	21,298	514	11,845	924	YES
PALO ALTO SOUTH	PLALCA12	4,627,503	8,655	535	4,493	1,030	YES
PARADISE MAIN	PRDSCA11	6,285,965	7,788	807	3,887	1,617	YES
PARADISE PINES	PRDSCA12	23,146,076	2,772	8,349	1,455	15,908	YES
PARAMOUNT	PRMTCA01	1,489,718	13,747	108	5,364	278	YES
PARKWAY	SNRFCA11	13,754,221	6,956	1,977	3,512	3,916	YES
PARLIER	PRLRCA11	666,438	1,521	438	599	1,113	YES
PASADENA LAKE	PSDNCA12	16,068,498	16,339	983	6,629	2,424	YES
PASADENA MT WILSON GREE	NPSDNCA11	42,963,038	27,550	1,559	14,235	3,018	YES
PASKENTA	PSKNCA11	1,602,213	134	11,995	108	14,835	NO
PASO ROBLES	PSRBCA01	3,797,433	11,421	333	5,912	642	YES
PAUMA VALLEY	PALACA11	22,552,524	1,487	15,162	907	24,865	YES
PEDLEY	PDLYCA11	1,427,689	7,042	203	2,940	486	YES
PEPPERWOOD	PPWDCA11	5,569,702	115	48,402	82	67,923	NO
PESCADERO	PSCDCA11	1,227,332	816	1,504	604	2,032	YES
PETALUMA	PTLMCA01	1,376,272	11,844	116	5,851	235	YES
PINE MOUNTAIN	LEBCCA12	11,345,799	1,628	6,970	849	13,364	NO
PINE VALLEY	PNVYCA11	1,829,104	666	2,746	301	6,077	YES
PINECREST	PNCRCA11	987,658	1,213	814	1,000	988	NO
PIRU	PIRUCA11	19,883,781	352	56,451	160	124,274	YES
PISMO BEACH	PSBHCA11	2,441,001	2,196	1,111	913	2,674	YES
PITISBURG BAY POINT WILLO	VPSBGCA11	20,098,102	3,183	6,314	1,251	16,066	YES
PITTSBURG MAIN	PSBGCA01	2,540,136	6,407	396	2,849	892	YES
PIXLEY	PXLYCA11	17,164,773	754	22,767	327	52,492	YES
	PLCNCA11	3,796,244	14,918	254	6,473	586	YES
	PLVLCA11	20,146,153	13,970	1,442	8,045	2,504	YES
	PLVLCA12	11,959,824	4,437	2,695	2,575	4,645	YES
PLANADA	PLNDCA11	762,899	792	963	321	2,377	YES
PLEASANT GROVE	PLGVCA12	26,775,203	316	84,603	183	146,313	YES
PLEASANTON HACIENDA	PLINCA13	22,318,427	3,069	7,273	1,833	12,176	YES
	PLINCA12	1,391,140	9,955	140	4,679	297	YES
	PLMOCA11	8,249,300	2,677	3,081	1,749	4,/1/	YES
	PNARCATT	3,677,238	907	4,052	646	5,692	NO
	PRSNCATI	14,560,460	1,305	10,665	938	10,023	YES
	PTVLCATT		13,020	50	0,201	103	IES VES
		10,124,734	1,039	0,179	1,124	9,008	TEO NO
		30,052,454	805	38,098	5/9	52,940 700	
	PUWYCA11	2,301,714	6,099	3//	3,160	/28	YES
		21,010,303	2,122	ŏ,U14	2,013	10,838	TES
	RSIVIGCA11	2,110,900	4,928	430	2,312	916	TES
	KAIVINGA11	13,835,855	4,621	2,994	2,101	0,344	TES
		0,032,998 10,510,200	∠9,089 11 200	190 1707	13,301 5 005	430 2 2 2 1	TEO VEO
	RDRINGAT	19,519,590	11,300	1,7∠7	5,095	<u>১,০১।</u>	160



		Table 7.14 (p	age 10 of 13	5)			
Wire Center	CLU	Total Gross Additions 2010-2017	Average Access Lines 2010-2017	Gross Adds per Avg Access Line	Access Lines Dec 2017	Gross Adds per Dec 2017 Access Line	Broadband Available
RANCHO MURIETTA	RNMRCA11	18 354 101	1 578	11 634	647	28 368	YES
RANCHO PENASOUITOS	RNPSCA11	1 613 683	4 072	396	1 699	950	YES
RANCHO SAN DIEGO	RNSDCA11	4 185 296	2 015	2 077	963	4 346	YES
RANCHO SANTA FE	RSFECA12	42,445,494	6.467	6,563	3.677	11,544	YES
RED BLUFF	RDBLCA01	3.803.525	8.043	473	4.261	893	YES
REDDING ENTERPR	RDNGCA11	5.593.667	9,498	589	3.993	1.401	YES
REDDING MAIN	RDNGCA02	546.219	14,146	39	6.326	86	YES
REDWOOD CITY	RDCYCA01	10.908.110	18,471	591	9.046	1,206	YES
RESEDA	RESDCA01	32,231,696	25.589	1.260	11.891	2,711	YES
RIALTO	RILTCA11	15,194,643	11,497	1.322	4,594	3,307	YES
RICH APPIAN WAY EL SOBRAN	ELSBCA11	17.817.726	8.541	2.086	3,762	4,736	YES
RICHMOND	LSANCA09	17.017.441	14.539	1.170	7.415	2.295	YES
RICHMOND SF	RCMDCA11	17.017.441	18,591	915	8.477	2.007	YES
RICHVALE	RCVACA11	688,490	158	4.365	112	6,147	NO
RIO DELL	RIDECA11	31.563.299	639	49.394	265	119,107	YES
RIO LINDA	RILNCA12	4.809.739	3.200	1.503	1.361	3.534	YES
RIVERBANK	RVRBCA11	27.621.266	3.334	8,285	1.189	23,231	YES
RIVERDALE	RVDLCA11	28,117,263	858	32,772	396	71.003	YES
RIVERSIDE ORANGE	RVSDCA01	4.834.863	21.032	230	9.353	517	YES
ROHNERT PARK	RTPKCA11	14.246.410	5.252	2.713	2.467	5.775	YES
ROSAMOND	RSMDCA11	7.546.957	3.264	2.312	1.389	5.433	YES
ROSEMEAD	ROSMCA11	6.565.574	16,788	391	7.788	843	YES
S J CAPISTRANO	SJCPCA12	13,502,489	9,255	1.459	4,730	2.855	YES
SALINAS MAIN	SLNSCA01	17.078.880	15.012	1,138	6.829	2,501	YES
SAN ANDREAS	SNADCA11	7.775.795	2.349	3.311	1,448	5.370	YES
SAN ARDO	SNARCA11	4,623,595	182	25,361	120	38,530	YES
SAN BRUNO	SNBUCA02	1,900,083	21,158	90	11,319	168	YES
SAN CARLOS	SNCRCA11	1,571,774	15,314	103	7,702	204	YES
SAN CLEMENTE	SNCLCA12	15,576,085	6,274	2,483	3,010	5,175	YES
SAN GABRIEL	SNGBCA01	3,375,189	12,497	270	5,505	613	YES
SAN GERONIMO	SNGNCA11	6,937,389	954	7,268	509	13,629	YES
SAN JOSE ALMADEN VALLEY	SNJSCA18	269,785	7,681	35	3,330	81	YES
SAN JOSE BAILEY	SNJSCA22	3,796,905	238	15,932	159	23,880	NO
SAN JOSE CHYNOWETH	SNJSCA13	15,649,891	20,822	752	8,818	1,775	YES
SAN JOSE DIAL WAY	SNJSCA12	1,478,924	33,255	44	15,085	98	YES
SAN JOSE EVERGREEN SAN F	ESNJSCA15	4,176,209	14,077	297	6,015	694	YES
SAN JOSE FOXWORTHY	SNJSCA14	2,245,402	24,834	90	10,938	205	YES
SAN JOSE JUNCTION	SNJSCA21	3,719,856	11,594	321	6,956	535	YES
SAN JOSE MAIN	SNJSCA02	1,392,683	30,720	45	15,016	93	YES
SAN JOSE WHITE RD	SNJSCA11	21,157,944	22,015	961	9,366	2,259	YES
SAN JUAN BAUSTISTA	SNJNCA11	1,296,016	883	1,467	436	2,973	YES
SAN LEANDRO	SNLNCA11	7,732,960	20,670	374	9,624	804	YES
SAN LUCAS	SNLCCA11	1,836,727	80	22,941	50	36,735	NO
SAN LUIS OBISPO	SNLOCA01	1,545,960	10,737	144	5,302	292	YES
SAN LUIS OBISPO	SNLOCA01	2,396,922	10,737	223	5,302	452	YES
SAN MARTIN	SNMACA11	1,503,025	1,387	1,084	736	2,042	YES
SAN MATEO	SNMTCA11	11,078,829	17,583	630	8,965	1,236	YES
SAN PEDRO	SNPDCA01	20,553,995	17,553	1,171	8,641	2,379	YES



		Table 7.14 (p	age 11 of 13	5)			
Wire Center	CITI	Total Gross Additions 2010-2017	Average Access Lines 2010-2017	Gross Adds per Avg Access Line	Access Lines Dec 2017	Gross Adds per Dec 2017 Access Line	Broadband Available
SAN RAFAFL MAIN	SNRECA01	4 704 085	16,310	288	8 1 1 8	579	YES
SAN RAMON	SNRMCA11	18 405 123	10 383	1 773	4 809	3 827	YES
SAN YSIDRO	SNYSCA12	3 569 283	3 542	1,770	1 528	2 336	YES
SANTA ANA WEST SNAN BOLS	SISNANCA12	2 102 583	8 488	248	3 431	613	YES
SANTA CLARA BELLOMY	SNTCCA11	9 159 757	23 834	384	10 503	872	YES
SANTA CLARA SPACEPARK	SNTCCA01	3 707 678	9 010	412	5 315	698	YES
SANTA CRUZ	SNCZCA01	1 478 691	14 827	100	7 244	204	YES
SANTA CRUZ CAPITOLA	SNCZCA11	5 784 769	12 551	461	5 725	1 010	YES
SANTA MARGARITA	SNMICA11	4 218 351	983	4 292	608	6 938	YES
SANTA ROSA MAIN	SNRSCA01	25 862 577	32 279	801	13 702	1 888	YES
SANTEE	SANTCA01	1 417 034	5 428	261	2 693	526	YES
SATICOY	SATCCA12	6 575 673	5 734	1 147	2,338	2 813	YES
SAUGUS	SAGSCA11	12 411 875	8 239	1,506	3 010	4 124	YES
SAUSALITO LARKSPUR	SSI TCA11	12,111,875	3 981	3 118	2 021	6 141	YES
SCOTTS VALLEY	SCVYCA01	1.420.021	3,495	406	1.551	916	YES
SCRM EMPIRE	SCRMCA12	2 217 071	10 772	206	4 950	448	YES
SCRM FRUITRIDGE	SCRMCA13	3.641.351	7.631	477	3,569	1.020	YES
SCRM GARDEN	SCRMCA03	2 343 389	23 864		10,321	227	YES
SCRM GLADSTONE	SCRMCA11	1 741 709	14 601	119	7 078	246	YES
SCRM IVANHOF	SCRMCA02	3 389 472	19,900	170	8 826	384	YES
SEASIDE	SESDCA11	1.037.894	5,184	200	2,169	479	YES
SEBASTAPOL	SBSTCA11	1.000.451	6,713	149	3.215	311	YES
SELMA	SELMCA11	1,686,550	4,497	375	1.975	854	YES
SEQUOIA ASH MTN	ASMTCA11	1,118,991	114	9.835	85	13,165	NO
SEQUOIA PACIFIC STATE	SCRMCALF	1.735.309	12.987	134	6.970	249	NO
SF BUSH PINE	SNFCCA01	12.856.144	27.148	474	17.069	753	YES
SF EVERGREEN 9TH AVE	SNFCCA13	14.017.680	19,990	701	10,499	1.335	YES
SF FOLSOM	SNFCCA21	4.456.579	13,704	325	8.638	516	YES
SF LARKIN STEINER	SNFCCA12	17.256.497	43.321	398	25.267	683	YES
SF MARKET MCCOPPIN	SNFCCA04	4.034.480	22.075	183	12.389	326	YES
SF MISSION 25TH ST	SNFCCA05	21,944,137	23,241	944	11,716	1,873	YES
SHAFTER	SHFTCA11	2,562,749	2,318	1,106	924	2,774	YES
SHASTA LAKE	SHLKCA01	3,267,597	608	5,372	375	8,714	YES
SHERMAN OAKS	SHOKCA01	13,721,981	29,707	462	15,779	870	YES
SHINGLE SPRINGS	SGSPCA11	10,622,105	8,524	1,246	4,060	2,616	YES
SHOSHONE	SHSHCA11	7,540,361	177	42,679	141	53,478	NO
SIERRA CITY	SRCYCA11	5,285,368	459	11,508	444	11,904	YES
SIERRAVILLE	SRVLCA11	4,087,403	243	16,839	171	23,903	NO
SILVERADO	SLVRCA11	14,883,775	296	50,290	203	73,319	YES
SIMI	SIMICA11	25,223,992	21,799	1,157	9,285	2,717	YES
SMARTSVILLE	SMAVCA11	4,311,940	578	7,459	361	11,944	YES
SNDG 37TH STREET	SNDGCA06	2,048,098	10,998	186	4,613	444	YES
SNDG C STREET	SNDGCA01	2,251,456	12,676	178	6,668	338	YES
SNDG COLLEGE	SNDGCA11	8,239,348	6,625	1,244	2,986	2,759	YES
SNDG LINDA VISTA	SNDGCA03	4,662,446	19,116	244	9,517	490	YES
SNDG MARKET STREET	SNDGCA12	3,028,606	6,425	471	2,530	1,197	YES
SNDG MIRA MESA	SNDGCA16	572,176	13,687	42	6,319	91	YES
SNDG REGENTS	SNDGCA15	13,015,978	13,966	932	7,903	1,647	YES

ECONOMICS AND TECHNOLOGY, INC.

		Table 7.14 (p	age 12 of 13	6)			
Wire Center	CLU	Total Gross Additions 2010-2017	Average Access Lines 2010-2017	Gross Adds per Avg Access	Access Lines Dec 2017	Gross Adds per Dec 2017 Access	Broadband Available
SNDG SAIPAN	SNDGCA05	1 1/18 355	6 098	188	2 566	448	VES
SNDG TENNYSON	SNDGCA14	1 754 538	6 848	256	3 272	536	YES
SNDG UNIVERSITY	SNDGCA02	10 652 833	12 388	860	6,318	1 686	YES
SODA SPRINGS	SDSPCA11	21 057 290	1 0.30	20 453	591	35,630	YES
SOLEDAD	SLDDCA11	1 067 324	2 484	430	1 109	962	YES
SOLEDIT	SLMNCA11	1 375 472	10,370	133	4 056	339	YES
SONOMA	SONMCA12	3 010 354	9 595	314	4 646	648	YES
SONORA	SNRACA13	19 479 642	10,330	1 886	5 699	3 4 1 8	YES
SOUT PASADENA MISSION	SPSDCA11	706 774	6 666	106	3 273	216	YES
SOUTH GATE	SGATCA01	2 183 021	14 941	146	5 730	381	YES
SOUTH TAHOF MEYERS APAC	CESTAHCA13	11 838 377	2 264	5 229	930	12 729	YES
SOUTH TAHOE SUSSEX	STAHCA01	5 804 169	7 054	823	3 163	1 835	YES
SOUTH TAHOE TAMARACK	STAHCA12	5,700,629	311	18.345	140	40,719	YES
SPECTRUM IRVINE	IRVNCA12	15.501.093	2.620	5.915	1.881	8.241	YES
SPRINGVILLE	SPVLCA11	244.432	1.312	186	862	284	NO
ST HELENA	STHNCA11	7.432.015	4.303	1.727	2.614	2.843	YES
STANFORD RANCH	RCKLCA01	1.594.788	3.454	462	1.442	1.106	YES
STINSON BEACH	STBHCA11	1.559.504	1.709	913	1.285	1.214	YES
STOCKTON ASHLEY	SKTNCA12	959.745	2.694	356	1.409	681	YES
STOCKTON GRANITE	SKTNCA11	1.298.735	21,968	59	9.065	143	YES
STOCKTON MAIN	SKTNCA01	349,416	20,588	17	9,166	38	YES
STOCKTON REDWOOD	SKTNCA14	7.341.503	3.630	2.023	1.690	4.344	YES
STONYFORD	STFRCA11	541.619	234	2.316	153	3,540	NO
STRATFORD	SRFRCA11	21.959.639	242	90.621	109	201.465	YES
SUISUN CITY	SUISCA11	17,086,830	834	20,476	408	41,879	YES
SUNOL	SUNLCA11	1,983,593	296	6,706	206	9,629	YES
SUTTER CREEK	STCKCA11	1,876,124	1,385	1,355	827	2,269	YES
TAHOE CITY	THCYCA01	1,210,817	5,360	226	2,850	425	YES
TECHACHAPI	THCHCA01	9,862,060	5,027	1,962	2,201	4,481	YES
TEMPLETON	TMTNCA11	669,477	1,768	379	786	852	YES
TERRA BELLA	TRBLCA11	9,577,108	957	10,005	458	20,911	YES
THORNTON	THTNCA11	747,660	280	2,674	121	6,179	YES
THREE RIVERS	THRRCA11	670,482	1,074	624	672	998	YES
TIBURON	TBRNCA11	4,060,538	3,588	1,132	1,915	2,120	YES
TIPTON	TPTNCA11	2,104,512	550	3,826	242	8,696	YES
TOMALES	TMLSCA12	2,216,317	536	4,139	328	6,757	YES
TORRANCE	TRNCCA11	874,605	11,473	76	5,031	174	YES
TRACY	TRACCA11	7,782,680	12,022	647	5,062	1,537	YES
TRES PINOS	TRPSCA11	4,934,710	338	14,593	232	21,270	YES
TRINIDAD	TRNDCA11	1,100,976	615	1,791	332	3,316	NO
TRUCKEE	TRUCCA11	3,321,819	8,438	394	4,000	830	YES
TULARE	TULRCA11	3,511,929	10,317	340	4,611	762	YES
TURLOCK	TRLCCA11	538,816	16,840	32	7,875	68	YES
TUSTIN 11	TUSTCA11	659,464	18,240	36	8,385	79	YES
TUSTIN 70	TUSTCA70	2,647,881	1,135	2,332	714	3,709	YES
TWAIN HARTE	TWHRCA11	1,086,758	3,725	292	1,876	579	YES
UKIAH MAIN	UKIHCA01	5,574,645	7,930	703	4,474	1,246	YES
UNION	LSANCA06	1,628,127	11,834	138	5,400	302	YES



Table 7.14 (page 13 of 13)							
Wine Conton		Total Gross Additions	Average Access Lines	Gross Adds per Avg Access	Access Lines Dec	Gross Adds per Dec 2017 Access	Broadband
		0.091.047	11 001	220	<b>ZUT</b> 5 555	1 707	
		23 582 252	944	27 052	3,333	51 155	VES
		23,302,232	13 760	27,952	6 233	156	VES
		1 551 338	16 160	282	7 236	629	VES
		1 203 600	5 888	202	2 680	1/9	VES
		2 246 368	320	6 832	2,000	10 073	NO
		2,240,300 564 415	2 263	2/9	1 261	10,073	VES
		623 362	2,203	243	12 260	51	VES
VENTURA FIR		1 388 733	6 872	630	2 813	1 560	VES
	VNTRCA11	1 267 857	12 090	105	5 719	222	YES
	VINACA12	10 823 579	12,000	80.082	81	133 624	YES
	VISI CA11	1 376 163	19 345	71	8 244	160,024	YES
VISTA	VISTCA12	1,327,529	14 759	90	6 829	194	YES
WABASH	NSCRCA11	954 431	17 849	53	8 252	116	YES
WALKER BASIN	WI BSCA11	1 843 592	604	3 051	497	3 709	NO
WALLACE	WLLCCA11	526,914	673	783	434	1,214	YES
WALNUT CREEK	WNCKCA11	346.087	27,157	13	13,253	26	YES
WARNER SPRINGS	WNSPCA12	284,138	696	408	432	658	NO
WASCO	WASCCA01	2.223.061	2.385	932	944	2,355	YES
WATERFORD	WTFRCA11	1.143.279	1.981	577	899	1.272	YES
WATSONVILLE	WTVLCA01	12.245.635	17.071	717	8.672	1.412	YES
WAWANA	WANACA11	855.250	358	2.392	277	3.088	YES
WEED	WEEDCA01	1.539.298	1.909	807	973	1.582	YES
WEOTT	WEOTCA11	9.344.801	88	106.760	63	148.330	YES
WHEATLAND	WTLDCA12	1.065.113	1.172	908	589	1.808	YES
WILLITS	WLTSCA12	13,485,002	3,834	3,517	2,339	5,765	YES
WILLOWS	WLWSCA11	375,931	2,413	156	1,130	333	YES
WILMINGTON	WLMGCA01	711,642	14,391	49	6,414	111	YES
WINDSOR	WNDSCA11	19,176,342	4,418	4,341	1,892	10,135	YES
WINTERS	WNTRCA11	734,777	1,819	404	832	883	YES
WOODCREST	RVSDCA11	185,249	7,764	24	3,119	59	YES
WOODLAKE	WDLKCA11	342,621	1,536	223	658	521	YES
WOODLAND	WDLDCA11	1,005,576	11,274	89	4,926	204	YES
YORBA LINDA	YRLNCA11	1,179,413	9,507	124	3,960	298	YES
YOSEMITE MAIN	YSMTCA11	7,223,597	685	10,539	537	13,452	YES
YOUNTVILLE	YNVLCA11	354,354	1,674	212	897	395	YES
YREKA	YREKCA11	236,701	3,165	75	1,634	145	YES
YUBA CITY MARYSVILLE	YBCYCA01	297,360	12,370	24	5,421	55	YES
Source, AT&T DR-03A, AT&T F	orms 43-02, A	T&T GO-133C	<b>Trouble Rep</b>	ort submis	sions		



#### Summary and conclusions

As a relatively small – and increasingly less important – component of the massive AT&T Inc., AT&T California's financial condition and investment policies are largely subject to the parent company's control. The California ILEC entity has no ability to raise equity capital on its own and, at the moment, appears to have relatively limited debt on its books. Plant retirements and depreciation accruals have generally exceeded Gross Plant Additions on an annual basis, and the company's net Telecommunications Plant in Service (TPIS) – roughly equivalent to what would be considered its "rate base" under rate-of-return regulation – has eroded to only about \$5-billion, resulting in a Net-to-Gross book value ratio of roughly 13.7%.

It is clear that AT&T California has been consistently *disinvesting* in its California local network infrastructure. Moreover, a large portion of AT&T California's Gross Plant Additions appear to have been directed toward expanding its ability to offer services like broadband Internet access and video, rather than core legacy circuit-switched POTS services. A case in point can be seen in the investment being directed to central office switching equipment: Over the 2010-2017 period, AT&T California expended more than \$1-billion on new packet switching equipment – none of which is used in the provision of legacy POTS services – vs. only about \$100-million to replace aging circuit-switching equipment that is needed for legacy services.

There appears to be wide variation across all of AT&T California's 615 wire centers as to the amount of new investment that has been directed at each of them, and ETI has not observed any specific pattern to explain this prioritization. There is no indication, for example, that investment dollars are being directed toward those wire centers that have been underperforming with respect to service quality or in their ability to meet the Commision's GO 133-C/D service quality standards.

Notably, while the demand for AT&T California legacy POTS services has dropped by nearly 70% over the 2010-2017 period, the company's operating revenues have remained relatively close to their 2010 levels. With some year-to-year variation, revenues at the end of the 2010-2017 period are still close to 90% of what they were at its start.

One key explanation for this appears to be AT&T California's policy of effecting significant price increases for its legacy residential POTS services almost every year since the CPUC's adoption of the Uniform Regulatory Framework in 2006. AT&T California residential flat-rate (POTS) prices have risen by 152%, and for measured residential service, prices have jumped by 325%. These large and persistent price increases – coupled with the general deterioration in service quality as discussed in Chapter 4 – are entirely consistent with what appears to be a "harvesting strategy" with respect to legacy circuit-switched services.

"Harvesting" of this sort works where the price elasticity of demand is sufficiently low that persistent price increases will still be profitable. The fact that AT&T has been able to profitably implement this succession of annual rate increases for more than a decade since the de-tariffing



of basic residential voice service raises serious questions as to whether competition has developed to a point where continued regulatory protection of basic residential telephone service prices is no longer required or appropriate. In competitive markets, customers will normally respond to price increases by switching to substitute services or by purchasing less. Here, however, AT&T's "harvesting" strategy is founded on the expectation that, while some customers will discontinue their service in response to the steadily increasing prices, there are still a sufficiently large number of customers who confront few if any actual competitive alternatives and/or who simply retain their AT&T legacy POTS service due to inertia – they simply haven't gotten around to seeking out any alternatives.

Finally, and as we discussed in Chapter 4, this same "harvesting" philosophy would also explain why AT&T has failed to improve service quality for its POTS services at least to the point where the GO 133-C/D standards can be achieved. Where customers have competitive alternatives, they will respond to inferior service by "voting with their feet" and seeking out alternative suppliers. But if the market is not so competitive that customers face such limited choices, the provider has little financial incentive to direct its financial and other resources in this area.

AT&T's "harvesting" philosophy explains why AT&T has failed to improve service quality for its POTS services at least to the point where the GO 133-C/D standards can be achieved, because the gains it can realize by raising prices and curtailing investment and maintenance far exceed any financial penalties it might suffer from persistently poor service quality.



## 8 VERIZON/FRONTIER CORPORATE AND CALIFORNIA ILEC INVESTMENT POLICIES

#### Principal observations and takeaways

- In contrast to AT&T, which has the financial resources but not the interest in maintaining and upgrading its local wireline network, Frontier has a strong interest in pursuing such upgrades, but lacks the necessary financial resources to do so.
- Frontier's primary goal is to ensure the success and profitability of all of the wireline operations in its nationwide portfolio.
- Frontier's expansion/acquisition strategy was clearly ill-timed: Frontier was pursuing massive acquisitions into a market – wireline circuit-switched voice telephony – that was already in a steep decline.
- Frontier's precarious and highly leveraged financial structure raises serious concern as to its ongoing access to sufficient capital to maintain and upgrade its California network.
- Frontier's net income declined following each successive acquisition, to the point where it has now been negative for seven consecutive quarters.
- Unlike AT&T, which had raised its legacy flat-rate residential POTS rates by 152% since the onset of URF, Verizon's rates for this service had risen by only 31% as of the date of the sale to Frontier, and Frontier has not effected any rate increase since the acquisition.
- As a "pure play" ILEC holding company, Frontier Communications has a strong financial incentive to stabilize and grow its ILEC operations in California and elsewhere but if it is not able to stabilize and strengthen its overall financial health, some sort of rescue may become necessary.



#### VERIZON/FRONTIER CORPORATE AND CALIFORNIA ILEC INVESTMENT POLICIES

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#### Frontier's 2016 acquisition of Verizon's ILEC operations in California, Texas and Florida

There are stark differences between Frontier and AT&T with respect to each of these two ILECs' financial situation and their respective ability and willingness to invest in the ongoing maintenance and upgrading of their California local service infrastructure. Whereas AT&T's legacy ILEC operations have become increasingly a less important component of the parent company's activities and interest, Frontier's only business is that of operating Incumbent Local Exchange Carriers ("ILECs"), making Frontier a "pure play" ILEC whose primary, if not its only goal is the success and profitability of all of the operating ILECs in its nationwide portfolio.



In contrast to AT&T, which has the financial resources but not the interest in maintaining and upgrading its local wireline network, Frontier has a strong interest in pursuing such upgrades, but lacks the necessary financial resources to do so.

On the other hand, where parent company AT&T's overall financial condition is strong, with a market cap of approximately \$240-billion, 2017 revenues of \$160-billion, a 22.3% return on common equity, and some \$21-billion in free cash, Frontier has been teetering on financial collapse for the past several years. As of April 10, 2019, Frontier;s market cap was \$261.2-million, Frontier's share price hit its high point on February 9, 2015, at the pre-reverse split equivalent of \$124.50; on April 10, 2019, its stock closed at \$2.48, a drop of around 98% from its 2015 high. The last time that Frontier had posted positive earnings per share was in the first quarter of 2016; the Company has been posting losses for every quarter since then.<sup>155</sup> Frontier has been hemorrhaging customers in all major service categories across all of its 29-state footprint since its last major acquisition in 2016, as summarized in Table 8.1 below:

	Tab	le 8.1					
FRONTIER COMMUNICATIONS, INC. CUSTOMER COUNTS BY SERVICE CATEGORY, 2016-2018							
Voice Broadband Video							
2Q2016	5,771,000	4,570,000	1,628,000				
2Q2017	5,058,000	4,063,000	1,007,000				
2Q2018	4,667,000	3,863,000	902,000				
3Q2018 4,574,000 3,802,000 873,000							
Source: Frontier Comm	nunications, Inc. Forms 10-Qs						

155. Frontier 10-Qs for 2016, 2017 and 2018.



On April 1, 2016, Frontier Communications, Inc. completed its acquisition of what is now Frontier California under a three-state ILEC purchase from Verizon that also included Verizon ILEC operations in Florida and Texas. Frontier paid Verizon \$10.54-billion for the three ILECs, and financed the acquisition primarily through the issuance of new debt. Even before Frontier took over control of these three Verizon ILECs, its stock had fallen by around 35% from where it was in March 2015 when the deal with Verizon had been announced. Because the overall condition of what is now Frontier California changed so abruptly as of the closing date of the transaction, it is most useful to examine the company's financial condition and investment practices separately for each of the two ownership periods.



Figure 8.1. Frontier Communications stock prices 2015-2019.

All three of the ILECs in the 2015 year had become part of Verizon in 2000 as a result of the merger of Bell Atlantic and GTE. In that transaction, Bell Atlantic, which had by then merged with NYNEX, another Regional Bell Operating Company that served New York and five New England states,<sup>156</sup> acquired all of the GTE ILECs as well as GTE's mobile wireless services business. The merged company was renamed Verizon and proceeded to integrate the GTE and Bell Atlantic mobile operations into a single organization. However, while the former

<sup>156.</sup> Applications of NYNEX Corporation and Bell Atlantic Corporation for Consent to Transfer Control of NYNEX Corporation and Its Subsidiaries, File #: NSD-L-96-10, Memorandum Opinion and Order, Rel. August 14, 1997, FCC-97-286, 12 FCC Rcd 19985 (32).



GTE ILECs were now operated under the Verizon brand, they were not organizationally integrated with the Bell Operating Company ILECs in the 13 northeastern jurisdictions that had represented the dominant Bell Atlantic business activity.

Verizon's ownership of the GTE ILECs was short-lived. Beginning just months after its merger with GTE in 2000, Verizon commenced selling off portions of its wireline ILEC portfolio. The first of these divestitures involved the sale of portions of what had been GTE Southwest's operating areas in New Mexico and Oklahoma to Valor Communications.<sup>157</sup> GTE Southwest's Texas operations were retained until the 2016 3-state deal with Frontier. In 2005, Verizon sold its wireline and directory businesses in Hawaii to an affiliate of the private equity firm The Carlyle Group.<sup>158</sup> In 2007, it sold its three Northern New England territories (Maine, New Hampshire and Vermont) to FairPoint Communications, a small North Carolina-based Independent ILEC.<sup>159</sup> Verizon also sold three offshore GTE ILEC operations, in the Northern Mariana Islands (2005), the Dominican Republic (2006), and Puerto Rico (2007).<sup>160</sup> In 2010, Verizon's former GTE operations in 13 states along with the former Bell ILEC in West Virginia, were sold to Frontier.<sup>161</sup> Following completion of the 2016 3-state transaction, Verizon had divested its ILEC operations in 25 of the former GTE states plus four former Bell states. The only GTE territories that remain within Verizon's portfolio are those in Pennsylvania and Virginia, states where Verizon still operates the legacy Bell Atlantic ILEC, and in North Carolina.

Verizon had also retained the three largest GTE markets – Florida, Texas, and California – until the final 2016 divestiture. Verizon's remaining wireline ILEC footprint is now limited to eight northeastern states plus the District of Columbia plus two small territories in Connecticut and North Carolina. And recent reports in the financial press have suggested that Verizon may be shopping for a buyer of these properties as well,<sup>162</sup> a move that would transform Verizon into a wireless-only business. Table 8.2 below summarizes the various Verizon ILEC divestitures

161. Frontier Communications Corporation and Verizon Communications Inc. for Assignment or Transfer of Control, FCC WC Docket No. 09-95, Memorandum Opinion and Order, Rel. May 21, 2010; see also, ARMIS Corporate History Verizon GTE Corporation (GTTC).

162. "Altice and Verizon Wireline? Really?," Powell, R. (June 4, 2015). in *Telecom Ramblings*, http://www.telecomramblings.com/2015/06/altice-and-verizon-wireline-really/ [accessed on July 15, 2015]/



<sup>157.</sup> https://www.fcc.gov/gte-southwest-inc-dba-verizon-southwest-gtsw (accessed 1/29/19)

<sup>158.</sup> Verizon Communications Inc. 2006 Annual Report, p. 27.

<sup>159.</sup> Verizon Communications Inc. 2008 Annual Report, p. 30.

<sup>160. 2005</sup> sale of Micronesian Telecommunications Company, Verizon 2005 10-K, at 14; 2006 sale of Dominicana Telecom, Verizon 2006 Annual Report, at 18; 2007 sale of Puerto Rico Telephone Company, Verizon 2007 Annual Report, at 48.

and Frontier ILEC acquisitions that have occurred since the mid-2000s. A number of these transactions proved to be highly problematic.

Table 8.2									
VERIZON ILEC DIVESTITURES AND FRONTIER ILEC ACQUISITIONS, 2005-2016									
DIVESTED BY VERIZON ACQUIRED BY FRONTIER									
Year	ILEC	Sold to	ILEC	Bought from					
2005	GTE-Southwest, New Mexico, Okla.	Valor Communicatio ns							
2005	Northern Marianas								
2006	GTE-Illinois	Frontier	GTE-Illinois	Verizon					
2006	Dominican Republic								
2007	GTE Hawaiian Tel	Carlyle Group							
2007	Puerto Rico								
2007	Maine, NH, VT	Fairpoint							
2010			Connecticut	AT&T					
2010	GTE-13 state	Frontier	GTE-13 state	Verizon					
2010	VZ-West Virginia	Frontier	West Virginia	Verizon					
2016	GTE California, Texas, Florida	Frontier	GTE California, Texas, Florida	Verizon					
Sources: V	/erizon 10-K 2006-2017; Fro	ntier 10-K 2006-2017							

Table 8.3 below compares the total (parent) company switched access lines in service of Verizon and Frontier between 2000 and the end of 2016. Figure 8.2 provides this same data graphically. As Verizon's presence in this segment has declined, Frontier's has mushroomed:



Table 8.3										
FRONTIER AND VERIZON TOTAL SWITCHED ACCESS LINES IN SERVICE (Nationwide – 2000-2014)										
Year Frontier Verizon										
2005	2,219,000	47,650,115								
2006	2,126,500	43,920,668								
2007	2,431,676	40,285,195								
2008	2,254,333	36,161,000								
2009	2,117,512	32,561,000								
2010	5,745,718	26,001,000								
2011	5,266,916	24,137,000								
2012	4,880,017	22,503,000								
2013	4,727,935	21,085,000								
2014	5,412,750	19,795,000								
2015	5,248,853	18,387,000								
2016	8,293,895	13,939,000								
2017	7,458,815	12,821,000								
Source: Verizon ARMIS reports 2005-2007; 10-K 2008-2017.; Frontier Form 10-K reports, 2005-2017. Note: Beginning in 2012, Frontier changed its reporting from Access Lines to Customers. Frontier access line figures for 2012-2017 are estimates based upon a conversion factor for access lines-to-customers of 1.5379, calculated by dividing the number of access lines (5,373,859) by the number of customers (3,494,294) provided in Frontier 2012 3rd quarter 10-Q filing, the last filing in which both quantities are provided. Since this ratio is likely decreasing over time, the Frontier access line estimates for 2012 forward are likely overstated.										





Figure 8.2: Frontier and Verizon Total Switched Access Lines in Service between 2000 and 2014.

#### A brief history of Frontier

Frontier had its genesis as Rochester Telephone Corporation<sup>163</sup> ("RTC"), an ILEC whose service area consisted of the Rochester, New York metropolitan area. RTC was at the time the largest Independent telephone company not affiliated with any other ILEC system or holding company. While it is clear that Verizon has been shedding its wireline operations generally, and its GTE territories in particular, nearly all of Frontier's investments over the past 25 years have been in wireline operations, which have included the acquisition of a number of GTE territories. In 1993 RTC acquired half a million access lines from GTE. Just six years later, the company made a series of acquisitions from GTE in Arizona, California, Minnesota, Nebraska, and Illinois that amounted to 361,000 additional access lines.<sup>164</sup> Up through its 2016 California/Texas/Florida acquisition, Frontier continued to invest heavily in wireline operations both within and outside former-GTE territories. In 2007, the company acquired nearly half a

<sup>164.</sup> A.15-03-005 Joint Application, at 33, fn. 55.



<sup>163.</sup> Frontier Corporation New York, Press Release in 8-K filing, April 2, 1996, at 1.

million access lines in Pennsylvania from Commonwealth Telephone Enterprises, Inc. for \$1.1billion, which it had paid for with \$804.1-million in cash and newly-issued common stock, which raised \$247.4-million. Frontier paid off all but \$8.5-million of preexisting Commonwealth debt, such that this acquisition had no material impact upon Frontier's debt position overall. In that same year, Frontier acquired small ILEC properties in California from Global Valley Networks, Inc., for \$62-million, paid for with cash on hand.<sup>165</sup> Frontier's largest acquisition prior to 2016 was in 2010, a 13-state deal with Verizon involving roughly half of the former GTE ILEC properties (and Verizon West Virginia, a BOC) for \$8.7-billion, financed by \$3.5-billion in new debt plus \$5.2-billion in newly-issued stock.<sup>166</sup>

That acquisition more than doubled Frontier's size. Since a tiny portion of that transaction involved some exchanges in California, CPUC approval was required. In its decision approving the transaction, the CPUC found that "Frontier and its operating companies have a long history in serving rural areas in California and elsewhere;" and that the transaction "will accelerate Frontier's growth, creating a much larger company with increased financial strength and flexibility."<sup>167</sup> In 2014, Frontier purchased The Southern New England Telephone Company from AT&T for \$2.02-billion, adding nearly one million access lines in Connecticut.<sup>168</sup> To pay for this acquisition, Frontier issued \$775-million in 6.250% senior unsecured notes due in 2021, plus \$775-million in 6.875% senior unsecured notes due in 2025. Finally, the \$10.54-billion California/Texas/Florida purchase in 2016 was financed by approximately \$4-billion in cash plus \$6.6-billion of senior unsecured notes.<sup>169</sup>

Following the 2016 purchases, Frontier became the nation's fourth largest ILEC with roughly 4.85-million residential and business customers (roughly corresponding to about 7.5-million switched access lines) across 28 states,<sup>170</sup> but in making these various acquisitions the company had assumed \$11.9-billion in new debt, bringing its total debt as of the end of 2017 to approximately \$17-billion. Frontier's growth strategy has, in each case, involved the absorption

165. Frontier 2007 Form 10-K, at 2.

166. Frontier 2010 Form 10-K, at 2

167. Joint Application of Frontier Communications Corporation et al. and Verizon West Coast Inc. et al for Approval of the Sale of Assets, Transfer of Certificates and Customer Bases, and Issuance of Additional Certificates, A.09-06-005, D.09-10-056, Nov. 4, 2009, slip op., at 15.

- 168. Frontier 2014 Form 10-K, at 2.
- 169. Frontier 2016 Form 10-K, at 2.

170. "Frontier Communications to Acquire Verizon's Wireline Operations in California, Florida and Texas, Doubling Frontier's Size and Driving Shareholder Value," Press Release, February 5, 2015 http://investor.frontier.com/releasedetail.cfm?ReleaseID=895055 [accessed on July 15, 2015].





Figure 8.3. Following of its acquisitions, Frontier's revenue resumed its pattern of steady erosion, producing a sort of "sawtooth" effect.

of large, multi-state operations, some of which had been larger in size than the pre-acquisition Frontier. Notably, and as illustrated on Figure 8.3 above, each of these acquisitions produced a large, one-time revenue spike followed in each instance by revenue erosion from the new immediate post-acquisition level – producing a sort of "sawtooth" effect.

Frontier's expansion/acquisition strategy was clearly ill-timed: Frontier was pursuing massive acquisitions into a market – wireline circuit-switched voice telephony – that was already in a steep decline.

Frontier's expansion/acquisition strategy was, at the very least, ill-timed. The same type of "sawtooth" effect can be seen in the demand for access lines (Figure 8.4). As these "sawtooth" graphs suggest, Frontier was pursuing massive acquisitions into a market – wireline circuit-switched voice telephony – that was already in a steep decline. Verizon certainly seems to have reached this assessment, as evidenced by its decision to off-load these legacy wireline ILECs. And some securities analysts were skeptical as to the merits of Frontier's decision to agree to this deal with Verizon.<sup>171</sup> Verizon had some six years earlier come to the conclusion that further

<sup>171.</sup> See, e.g., Saibus Research, "Verizon Fools Frontier Again," Seeking Alpha, Feb. 5, 2015. ("In our September 2012 report on Frontier and CenturyLink (NYSE:CTL) as well as preceding reports on other wireline companies, we noted that nearly every company that struck a strategic deal with Verizon ended up regretting it.")





**Figure. 8.4.** As with revenues, each of Frontier's major ILEC acquisitions produced a large, one-time spike in total access lines served, followed in each instance by a steady drop-off in demand following the acquisition, producing a similar type of "sawtooth" effect.

expansion of *FiOS* beyond its 2010 footprint was no longer going to be pursued.<sup>172</sup> As a business decision, Frontier's strategy is reminiscent of the decision in 1977 by Polaroid Corporaton to invest in a new Super-8 mm silent movie film product called *Polavision* at the same time that home video cassette recorders (VCRs) and camcorders were coming onto the market.

In testimony submitted by Frontier's then-Chief Financial Officer John M. Jureller in the 2015 CPUC Verizon/Frontier transaction proceeding, A.15-03-005, Mr. Jureller explained that "Frontier is raising an estimated total of \$10.85 billion – \$2.75 billion of equity and \$8.10 billion of debt. Based upon the dividend rate of the equity already raised, and using an average debt cost of 9.0%, the total estimated incremental annual cost of capital to Frontier is approximately \$1.015 billion. This should be compared to the annual cost 'savings' of \$700 million. Frontier



Available at https://seekingalpha.com/article/2886186-verizon-fools-frontier-again (accessed 1/14/19).

<sup>172.</sup> See Robert Cheng, "Verizon to End Rollout of FiOS," *Wall Street Journal*, March 30, 2010, http://online.wsj.com/article/NA\_WSJ\_PUB:SB10001424052702303410404575151773432729614.html.

has estimated that the operation will generate incremental cash flow to support operations and capital investment, but those savings should not be in isolation of other factors."173



estifying before the CPUC in the 2015 proceeding considering the Frontier/Verizon transaction, Frontier's then-CFO John M. Jureller had all but conceded that after the transaction was completed, Frontier's debt service costs would exceed its anticipated cost savings by several hundred million dollars.

But commenting on Mr. Jureller's statement, ETI President Dr. Lee Selwyn, testifying on behalf of ORA, observed that

Based on [Mr. Jureller's] testimony, Frontier's total costs to operate the three state companies included in the transaction, including the various costs it will incur to perform the functions that are now being supported by Verizon centralized services, will actually be higher than Verizon's current total operating costs when the "allocation" of Verizon corporate overheads is excluded. Mr. Jureller now admits that "operating costs for California are not expected to be reduced." But because Frontier will be paying Verizon \$10.54-billion, a price that far exceeds the net book value of the [California/Texas/Florida] assets as currently being carried on Verizon's books, Frontier's debt service and other costs of carrying this \$10.54-billion will be considerably greater than Verizon's costs, not even considering the higher overall cost of capital confronting Frontier due to its poorer credit rating relative to Verizon's.

If this new information provided by Mr. Jureller is taken at its face value, the Commission would be compelled to find that  $\S854(b)(1)$  – the threshold requirement that the transaction provide short-term and long-term economic benefits for ratepayers – is not satisfied. Frontier's operating expenses will be greater than those that Verizon is incurring, and its capital-related costs will be substantially higher, indeed the increment in Frontier's cost of capital will exceed the avoided allocation of Verizon corporate overheads by nearly 50%. In its attempt to avoid having to allocate any of the

<sup>173.</sup> I/M/O the Joint Application of Frontier Communications Corporation et al. and Verizon California, Inc. et al for Approval of Transfer of Control Over Verizon California, Inc. and Related Approval of Transfer of Assets and Certifications, A.15-03-005, Rebuttal Testimony of John M. Jureller, CFO, Frontier Communications, Inc., August 24, 2015, at 16. Note that while Mr. Jureller had testified that Frontier planned to raise \$8.1-billion in new debt to finance the Verizon acquisition, the company's 2016 Form 10-K refers to only \$6.485-billion in new debt raised through a private debt offering of up to \$6.6-billion in senior notes. 2016 Form 10-K, at 41, This same offering is further outlined in Frontier's April 22, 2016 S-4 Registration of Securities filing, at 8.



economic benefits of the transaction to ratepayers, Frontier's Chief Financial Officer is now asserting that there will not be any net economic benefits to be shared.<sup>174</sup>

By the end of 2017, Frontier's total debt was nearly \$17-billion, resulting in 2017 debt service (interest and amortization) of \$1.9-billion annually. Frontier's cost of debt now averages 8.99%, well into the junk bond range.

Frontier's various acquisitions were accomplished at a total cost of \$22.4-billion, financed by \$10.5-billion in new equity and some \$11.9-billion in new debt.<sup>175</sup> By the end of 2017, Frontier's total debt had reached nearly \$17-billion (see Figure 8.5).<sup>176</sup> Frontier's annual debt service (interest and amortization) had, by 2017, escalated to \$1.9-billion.<sup>177</sup> Together with the persistent drop-off in customers and revenues, this resulted in severe cash flow challenges and major earnings erosion despite the revenue growth overall. At year-end 2017, Frontier's debt-to-revenue ratio was 1.86. Frontier's cost of debt now averages 8.99%, well into the junk bond range. Thus, some \$1.5-billion out of the total annual debt service of \$1.9-billion represents interest on that debt. Total 2017 debt service payments account for some 20.8% of total Frontier 2017 operating revenues.<sup>178</sup>



Id., Supplemental Testimony of Lee L. Selwyn on behalf of the Office of Ratepayer Advocates, at paras. 9-10, pp. 11-12, footnote references omitted.

<sup>175.</sup> Frontier 10-K reports, 2007-2017.

<sup>176.</sup> Frontier 2017 Form 10-K, at 27.

<sup>177.</sup> Id., at 27. In 2018, debt service interest plus debt amortization is projected at \$2.14-billion.

<sup>178.</sup> Frontier 2017 Form 10-K, at 48.



**Figure 8.5.** Each of Frontier's major ILEC purchases involved substantial debt financing, almost quadrupling between 2010 and its peak in 2017.

Frontier's 2017 Annual Report to Shareholders gives end-of-year long-term debt at \$16.97billion, with total long-term and current liabilities at \$19.48-billion. Total assets are shown as \$24.88-billion, and total shareholder equity is given as \$2.27-billion.<sup>179</sup> Using this data, the company's debt/equity ratio as of year-end 2017 was 8.58, with its total debt ratio (calculated as the ratio of total liabilities to total assets) was 78.3%. But while these figures reflect amounts being carried on Frontier's books, they understate the reality as currently being perceived by investors. Frontier's closing stock price on December 31, 2017 was \$6.76. Shares outstanding as of that date were 78.44-million, indicating a market capitalization as of the end of 2017 of \$530.26-million, or only 23.4% of the nominal book value shareholder's equity.

Included in the \$24.88-billion of assets being carried on Frontier's books is \$7.024-billion of "Goodwill." At least one source of the "Goodwill" that appears on a company's balance sheet results from an acquisition of assets in excess of the book value of those assets as recorded on the books of the seller. In this case, Frontier paid Verizon \$10.54-billion for the California/ Texas/Florida purchase, a sum that greatly exceeded the book value of these assets as had been carried on Verizon's books. When the acquisition was closed, Frontier recorded essentially the same *net book value* of the purchased assets as these had been carried on Verizon's books under

<sup>179.</sup> Frontier Communications Corporation 2017 Annual Report and Proxy Statement, dated February 28, 2017, at p. F-5.



the asset category "Property, plant and equipment, net," with the additional amount that it had paid Verizon over the net book value as "Goodwill."

Notably, Verizon had no amount for "Goodwill" shown on its regulatory accounting balance sheet, as reflected on its ARMIS Form 43-02 submissions. However, Frontier has included a portion of the "Goodwill" resulting from the premium over book value that it had paid for the Verizon assets on its 2016 and 2017 Forms 43-02. In 2016, Frontier recorded as a gross addition a Goodwill amount of \$511.12-million. For 2017, Goodwill gross additions are shown as \$93.97-million, for a total end-of-year 2017 value of \$611.09-million. To put these amounts in context, consider that, according to Frontier California's Form 43-02 for 2017, the Company's total *net* assets as of the end of 2017 were \$3.42-billion. Thus, the \$611.09-million of Goodwill resulting from the excessive purchase price of the Verizon assets represents 17.9% of the Company's total net assets.

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Frontier's precarious and highly leveraged financial structure raises serious concern as to its ongoing access to sufficient capital to maintain and upgrade its California network.

Under traditional rate-of-return type regulation, such "Goodwill" is not included in the utility's rate base and is not recoverable via return or amortization. Because of this, sales of utilities subject to rate of return regulation were rarely if ever consummated at a price materially in excess of book value. The fact that Frontier's shareholders have discounted the value of the company's stock so far below its nominal book value (including "Goodwill") is an indication that investors have come to understand that Frontier had overpaid Verizon for these assets. In fact, if the \$7-billion of "Goodwill" is subtracted from the \$24.88-billion of assets, the result would be a *negative* equity for the parent company.

Frontier's shareholders have come to understand that Frontier had grossly overpaid Verizon for these assets, and have discounted the value of Frontier's stock far below its nominal book value (including "Goodwill").

There is no realistic scenario under which a state public utilities commission would allow a rate-of-return-regulated utility to carry this level of debt or adopt the type of financial structure that Frontier has created for itself here. This is not by any means to suggest that the CPUC should reinstate rate-of-return regulation for Frontier. However, it is entirely reasonable for the CPUC to evaluate Frontier's financial performance using RORR principles as a benchmark. And the requirement that URF ILECs (Frontier and AT&T) continue to submit annual ARMIS-



type financial reports to the Commission enables precisely this type of benchmark evaluation. Since acquiring the Verizon ILEC operations in April 2016, Frontier California has invested some \$384-million in new plant, including \$94.6-million in new central office equipment (COE) and \$270.7-million in new outside plant (OSP). Most of this occurred in 2017, and represented a significant increase over the level of gross additions that Verizon had made in recent years. Frontier's 2017 Annual Report indicates that the company had made some \$2.4-billion in capital expenditures (not including the three-state acquisition) during 2016 and 2017.<sup>180</sup> The California operation received a substantial portion of those outlays. There is, however, serious concern as to Frontier's continued ability to sustain this level of new investment in light of its highly leveraged financial condition, eroding revenues, and its disappearing earnings.

In addition to its overall leverage increases resulting from the succession of new debt, Frontier's cost of debt has also been pushed skyward due to a series of downgrades by Moody's to the company's credit rating over the past two years. Moody's has downgraded Frontier's credit rating three separate times, from Ba3 to B1 in November 2016, from B1 to B2 in May 2018 and, most recently, from B2 to B3 in November 2017.<sup>181</sup> Moody's justifies these downgrades on the basis of high default risk and risk of refinancing from bonds that come due in 2020 and shortly thereafter. While Moody's report suggests that Frontier's credit rating could be improved if Frontier were successful in upgrading the physical condition of the former Verizon network infrastructures in Texas, California, and Florida, it also suggests that the time for any tangible results here likely extends beyond the time frame of Frontier's existing debt constraints.

Frontier's spate of major acquisitions, while expanding its overall revenue base, has had precisely the opposite effect upon its overall profitability. As shown in Figure 8.6, the company's profits, which had peaked in 2006 at over \$350-million, had turned into losses of \$1.8-million in 2017.<sup>182</sup> These decreases in profit are driven largely by two main factors – the steady and continuing erosion of its core wireline customer base, and a cost structure that has a large, volume- and traffic-insensitive component. At this point, Frontier has no realistic ability to raise equity capital, and whatever new debt capital that might be available to the company would almost certainly involve massive costs.

182. Frontier 2017 Form 10-K, at 27.



<sup>180.</sup> Id., at page F-8.

<sup>181.</sup> Moody's Investors Service, November 2nd, 2017: "Moody's downgrades Frontier to B3, outlook remains negative."



Frontier's net income declined following each successive acquisition, to the point where it has now been negative for seven consecutive quarters.



**Figure 8.6.** While its various acquisitions produced large increases in the number of customers and total operating revenues, their impact upon Frontier's net earnings was a succession of steep declines. [Source: Frontier 10-K Reports 2005-2017].

The extraordinary erosion in Frontier's earnings was highlighted on a performance graph that was provided in the Company's 2017 Annual Report, which compares the cumulative total return of Frontier common stock to the S&P 500 Stock Index and to the S&P Telecommunication Services Index for the five-year period commencing December 31, 2012. This graph is reproduced in Figure 8.7 below:





**Figure 8.7.** Frontier's cumulative five-year total return in comparison to the five-year total return for all S&P 500 Index stocks and for all S&P Telecommunications Services Index stocks. [Source: Frontier 2017 Annual Report, at 25.]

Prior to the 2016 transaction, Frontier had only a minimal presence (approximately 1.07%) in California, serving census blocks containing only 135,551 of the total 12.65-million households statewide. Following this transaction, however, Frontier became the second largest ILEC in the state, serving some 20.78% of the total California wireline market.<sup>183</sup> When the CPUC issued its *URF* decision in 2006, it applied this new regulatory paradigm to the two largest ILECs – AT&T and Verizon. Having acquired Verizon's operations, Frontier is now subject to the *URF* as well, and receives similar regulatory – and, more importantly, *deregulatory* – treatment as AT&T.

<sup>183.</sup> Pre-transaction Verizon California serves census blocks containing 2,628,438 households, which is 20.78% of the total 12.65-million California households as estimated by the US Census Bureau for 2013. (accessed 7/22/15) http://www.dof.ca.gov/research/demographic/state\_census\_data\_center/american\_community\_survey/



#### Frontier retains its critical role in the California telecommunications infrastructure

Frontier California remains the underlying provider of most retail local network services offered within its service area. In addition to legacy POTS-type circuit-switched services, the scope of the direct retail offerings by Frontier California also includes bundles of voice, high-speed Internet access and video marketed under the *FiOS* brand. *FiOS* was introduced by Verizon in 2005 for its fiber-to-the-premises ("FTTP") service. By the April 1, 2016 date that its purchase of the California, Texas and Florida ILEC operations from Verizon closed, Verizon had built out FTTP to approximately 1.5-million homes within its California operating areas. These FTTP build-outs were included in the assets being transferred to Frontier, and Frontier retained the right to utilize the Verizon *FiOS* brand. Frontier also provides legacy circuit-switched local access and message services, private lines, and special access.

As of the end of 2017, Frontier California facilities passed some 2.63-million homes within the former Verizon California operating footprint. Approximately 1.52-million of these were passed by fiber-to-the-premises ("FTTP") facilities.<sup>184</sup> Since acquiring the California ILEC in 2016, Frontier has built out FTTP and is offering *FiOS* in another 59 wire centers, serving additional areas with a population of roughly 2.32-million.<sup>185</sup> As discussed in Chapter 4, although the *motivation* behind the deployment of FTTP and other network upgrades is the capability to offer high-data rate broadband and video services to compete with cable MSO offerings, once installed these same facilities can and will be used to provide legacy POTS and other circuit-switched services.



<sup>184.</sup> Data derived from CPUC Broadband Availability Database. See Reply Testimony of Lee L. Selwyn (redacted) on behalf of ORA, A.15-03-005, July 28, 2015, at 53.

<sup>185.</sup> Frontier response to DR-05F, Attachment 4.

#### A Note about the Financial Analysis of Frontier California

The time frame of this study is January 2010 through and including December 2017. For 75 out of the 96 months in this study period, the ILEC entity that is now Frontier California was a wholly-owned subsidiary of Verizon Communications, Inc. When the ILEC changed hands, its new owners adopted reporting protocols that differed significantly from those in effect under Verizon's stewardship. Any direct comparability of conditions that pre-date and post-date the closing is thus problematic. Compounding this difficulty is the fact that two different Verizon/Frontier ILECs are involved – the former GTE affiliate and the former Continental ILEC affiliate that was acquired by GTE prior to its merger with Bell Atlantic to form Verizon. Although owned by GTE/Verizon for some 26 years, the two ILECs remained separate for regulatory reporting purposes. As a "Large ILEC," the former GTE-California entity continued to prepare and file ARMIS type annual financial reports with the CPUC that included, among other things, detailed account-level balance sheets and income statements, as well as details of affiliate transactions. However, the former Continental ILEC, a "Small ILEC" for regulatory purposes, had been submitting far less detailed reports. Following the transfer, Frontier had been submitting the more abbreviated financial reports for both. However, in response to a data request, the more detailed reports were prepared and provided, but for both companies combined. Except for those situations where direct comparability applies, ETI has found it necessary to prepare and include in this report separate analyses for each of the Verizon and Frontier ownership periods and for the former GTE and former Continental ILEC entities.

# Verizon California revenues had been steadily diminishing, as had its share of the overall parent company Verizon Communications, Inc. capital budget that was being allocated to the California ILEC.

Verizon California's reporting to the CPUC is bifurcared into two (2) "study areas," one of which corresponds to the former GTE California operating company (which Verizon refers to as "GTCA"); the other corresponds to the former Continental Telephone Company of California, which GTE had acquired in 1990 (i.e., long before its merger with Bell Atlantic), and which Verizon refers to as "COCA." Over the 2010-2015 period, Verizon California's parent Verizon Communications Inc. had experienced significant growth in its overall gross revenues, rising 23.4%, from \$106.6-billion in 2010 to \$131.6-billion in 2015. The primary source of that growth came from wireless services, which had experienced revenue growth of 44.6%, rising from \$63.4-billion in 2010 to \$91.7-billion in 2015. Put differently, wireless revenues increased



by \$28.3-billion, whereas all other Verizon business segments combined experienced a net decrease *of \$2.6-billion* over that same period. As of the date of the closing of its sale of Verizon California, Texas and Florida to Frontier (April 1, 2016), Verizon's market capitalization was approximately \$220-billion.<sup>186</sup>

Verizon corporate-level senior management's interest in and attention to its legacy wireline ILEC operations had been largely supplanted by its wireless operations and various acquisitions, culminating in the sale of these operating units to Frontier and others.

Verizon California revenues, on the other hand, have been moving in the opposite direction. As shown on Table 8.4 below, in 2011, Verizon California gross revenues were \$3.13-billion, dropping to \$2.77-billion in 2014 but then recovering to \$3.15-billion in 2015, the last full year prior to the sale to Frontier. But even though the California ILEC's revenues remained relatively stable over the period, its share of parent company revenues has fallen from 2.82% in 2011 to 2.39% in 2015. These results are also summarized in Table 8.4 below:

Table 8.4 VERIZON CALIFORNIA AND VERIZON COMMUNICATIONS INC. TOTAL OPERATING REVENUES (\$000)											
	2010	2011	2012	2013	2014	2015					
VZ-CA (GTE)		\$2,611,749	\$2,219,317	\$2, <mark>157,811</mark>	\$2,669,928	\$2,644,724					
VZ-CA (Continental)		516,957	538,246	571,044	615,106	476,753					
VZ-CA Total		3,128,706	2,757,563	2,728,855	3,285,034	3,121,477					
VZ Comm, Inc.	106,565,000	110,875,000	115,846,000	120,550,000	127,079,000	131,620,000					
VZ CA %	-	2.82%	2.38%	2.26%	2.59%	2.37%					
Source: Verizon Califo California 2010 CPUC NOTE: Verizon Califor Continental Telephone	omia CPUC Ann reports were no nia filed separat Company of Ca	ual Summary R t available); Ver e CPUC Report alifornia (U-1003	eports, 2011-20 izon Communic s for the former 3-C).	15, Table I-Cosi ations, Inc. Anni GTE-California	and Revenue ( ual Reports 201 (U-1002) and th	Verizon D-2015. e former					



<sup>186.</sup> https://www.marketcaphistory.com/vz/

As we discussed in Chapter 4, like AT&T California, Verizon California has experienced a precipitous drop in total legacy circuit-switched access lines over the 2010-2015 period. Nationally, Verizon has actually sustained a 23.8% drop in voice switched access lines from 2011 through 2015, whereas in California the company's voice access line demand dropped by 41.6%, as shown in Table 8.5 below:

Table 8.5										
VERIZON CALIFORNIA AND VERIZON COMMUNICATIONS INC. LEGACY SWITCHED ACCESS LINES IN SERVICE										
2010 2011 2012 2013 2014 2015										
VZ-CA (GTE)		2,195,252	1,844,558	1,606,811	1,448,684	1,274,404				
VZ-CA (Continental)		238,236	211,640	197,425	167,262	147,244				
VZ-CA Total		2,433,488	2,056,198	1,804,236	1,615,946	1,421,648				
VZ Comm, Inc.	26,001,000	24,137,000	22,503,000	21,085,000	19,795,000	18,387,000				
VZ CA % 10.08% 9.14% 8.56% 8.16% 7.73%										
Source: Verizon California CPUC Annual Summary Reports, 2011-2015, Table II-Demand Analysis (Verizon California 2010 CPUC reports were not available); Verizon Communications, Inc. Annual Reports 2010-2015. NOTE: Verizon California filed separate CPUC Reports for the former GTE-California (U-1002) and the former										

Thus, where Verizon nationally experienced a net legacy switched access line decrease of 23.8% over the 2011-2015 period, for California, Verizon's switched access lines decreased by a significantly greater amount, about 41.6%. The downward trend in the number of legacy circuit-switched access lines persisted into the post-transaction era. By 2017, average circuit-switched access lines in service had fallen by 51.5% relative to the 2011 level. Table 8.6 below extends the average number of switched access lines into the 2016-17 Frontier period:



Continental Telephone Company of California (U-1003-C).

Table 8.6										
VERIZON/FRONTIER CALIFORNIA AVERAGE LEGACY SWITCHED ACCESS LINES IN SERVICE 2010-2015										
	2010 2011 2012 2013 2014 2015 2016 2017									
		-	VE	RIZON	_	_		FRONTIER		
Verizon/Frontier CA	2,641,467	2,322,926	1,991,862	1,706,402	1,507,460	1,482,032	1,151,0	928,53		
% of 2010 87.9% 75.4% 64.6% 57.1% 56.1% 43.6% 35.2%										
Source: CA POTS lines in service derived from GO 133-C/D § 3.3 and 3.4 Trouble Reports per 100 Lines (TRPH) quarterly filings, 2010-2015. Switched access lines are average over each year.										

Notably, however, despite experiencing a 48.48% drop in legacy switched access lines over the 2011-2017 period, Verizon California gross revenues remained relatively constant through 2015, but then went into a steep decline following Frontier's takeover of the company, as summarized on Table 8.7 below:

Table 8.7										
VERIZON/FRONTIER OPERATING REVENUES DECREASED, BUT BY FAR LESS THAN THE DECREASE IN LEGACY SWITCHED ACCESS LINES, 2010-2017 (\$000)										
	2010	2011	2012	2013	2014	2015	2016	2017		
			VER	IZON			FRO	NTIER		
Revenues		\$3,128,706	\$2,757,563	\$2,728,855	\$3,285,034	\$3,121,477	\$2,252,145	\$2,054,289		
% of 2011			88.1%	87.2%	105.0%	99.8%	72.0%	65.7%		
Switched access lines	2,641,467	2,322,926	1,991,862	1,706,402	1,507,460	1,482,032	1,151,074	928,531		
% of 2011		85.7%	73.5%	64.6%	64.9%	63.8%	49.0%	40.0%		
NOTE DATA FOR 2010 IS NOT AVAILABLE, SO ANALYSIS IS BASED ON 2011-2015. Source: Verizon/ Frontier CA ARMIS Form 43-01 as filed with CPUC; POTS lines in service derived from GO 133-C/D § 3.3 and 3.4 Trouble Reports per 100 Lines (TRPH) quarterly filings, 2010-2017. Switched access lines are average over each year.										

Of course, a portion of the Verizon/Frontier California operating revenues come from services other than legacy POTS lines. It is thus instructive to compare the decrease in switched access lines more directly with the principal revenue sources associated with these services. Fortunately, more detailed revenue data is provided in the annual financial reports, ARMIS Forms 43-



01, 43-02 and 43-03, that were filed by Verizon California with the CPUC. However, this breakdown is only available for the period of Verizon ownership (2011-2015) and for the former GTE California (U-1002) entity, as summarized in Table 8.8 below.

As these data demonstrate, when confined to only those revenue sources directly attributable to legacy switched access line services – specifically, USOA Account 5001 (Basic Area Revenue), USOA Account 5081 (End User Common Line revenue), and USOA Account 5082 (Switched Access revenue) – Verizon California legacy access line-related revenues decreased by about 38.8%, only slightly less than the 42% drop in switched access line demand, over the 2011-2015 period. Switched access rates, which remain subject to tariff at both the state and federal levels, had remained unchanged over the 2010-2017 period.

Table 8.8										
VERIZON CALIFORNIA (U-1002) LEGACY SWITCHED ACCESS LINE REVENUES HAVE DECREASED ROUGHLY IN PROPORTION TO THE DECREASE IN LEGACY SWITCHED ACCESS LINES, 2011-2015 (\$000)										
	2010	2011	2012	2013	2014	2015	2016	2017		
			VEF	RIZON			FRO	NTIER		
USOA Acct 5001 Basic Area Rev		\$670,218	\$566,696	\$591,229	\$429,960	\$389,036	\$282,413	\$219,314		
USOA Acct 5081 EUCL Revenue		\$220,551	\$198,073	\$191,186	\$186,869	\$171,415	\$123,579	\$97,175		
USOA Acct 5082 Switched Access		\$174,462	\$44,270	\$42,549	\$114,878	\$91,143	\$88,246	\$79,357		
Total switched access line rev		\$1,065,231	\$809,039	\$824,964	\$731,707	\$651,594	\$494,238	\$395,846		
Switched access lines (000)		2,195,252	1,844,558	1,606,811	1,448,684	1,274,404	1,178,593	955,624		
\$ per Switched access line	> per Switched \$485.24 \$438.61 \$513.42 \$505.08 \$511.29 \$419.35 \$414.23									
NOTE DATA FO ARMIS Form 43- Reports per 100	NOTE DATA FOR 2010 IS NOT AVAILABLE. ANALYSIS IS BASED ON 2011-2015. Source: Verizon CA ARMIS Form 43-01 as filed with CPUC; POTS lines in service derived from GO 133-C/D § 3.3 and 3.4 Trouble Reports per 100 Lines (TRPH) quarterly filings, 2011-2015. Switched access lines are average over each year.									

However, local switched POTS access line rates other than California LifeLine<sup>187</sup> have been detariffed and have been subject to modest rate increases – substantially less than those implemented by AT&T California – over the 2010-2017 period, as shown in Table 8.9 below:

<sup>187.</sup> PU Code § 871.5(a) caps LifeLine rates at one-half of the 1FR rate for flat-rate basic residential service.


	Table 8.9								
VERIZON/FRONTIER CALIFORNIA BASIC RESIDENTIAL (POTS) ACCESS LINE SERVICE RATE INCREASE HISTORY, 2006-2018									
	Flat-rate Residence (1FR) Measured Rate Residence (1MR)								
	Eff data	Monthly	% incr since onset of	% incr relative to	Monthly	% incr since onset of	% incr relative to		
2006	9/1/2006	\$16 85		1/ 1/ 10	\$10.00		1/ 1/ 10		
2008	1/1/2008	\$17.25	2.37%		\$10.24	2.40%			
2009	1/1/2009	\$19.50	15.73%		\$11.80	18.00%			
2010	1/1/2010	\$19.50	15.73%	_	\$11.80	18.00%	_		
2011	1/1/2011	\$20.50	21.66%	5.13%	\$12.39	23.90%	5.00%		
2012	3/1/2012	\$20.50	21.66%	5.13%	\$12.39	23.90%	5.00%		
2013	1/1/2013	\$20.50	21.66%	5.13%	\$12.39	23.90%	5.00%		
2014	1/1/2014	\$22.00	30.56%	12.82%	\$13.40	34.00%	13.56%		
2015	1/1/2015	\$22.00	30.56%	12.82%	\$13.40	34.00%	13.56%		
2016	1/1/2016	\$22.00	30.56%	12.82%	\$13.40	34.00%	13.56%		
2017	1/1/2017	\$22.00	30.56%	12.82%	\$13.40	34.00%	13.56%		
2018	1/1/2018	\$22.00	30.56%	12.82%	\$13.40	34.00%	13.56%		
Source:	CPUC Con	nmunicatio	ns Division	Staff.					

It is instructive to compare the history of Verizon California rate increases to those imposed by AT&T California as summarized on Table 4A.10 (and referenced in Chapter 7). Historically, Verizon (and its predecessor GTE) basic local residential service rates were always higher than those of AT&T (Pacific Bell). However, that relationship changed in 2012, when AT&T raised its flat-rate residential service rate to \$21.00. Since the onset of URF, AT&T California has increased the price for its flat-rate residential POTS service by 152.57% vs. Verizon's 30.56% increase over the comparable time frame. Looking only at the 2010-2017 period under examination in this study, AT&T has raised its flat-rate residence rate by 64.13% vs. 12.82% for Verizon/Frontier.



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Unlike AT&T, which had raised its legacy flat-rate residential POTS rates by 152% since the onset of URF, Verizon's rates for this service had risen by only 31% as of the date of the sale to Frontier, and Frontier has not effected any rate increase since the acquisition.

## Verizon California had been consistently disinvesting in its California local network infrastructure.

Because Verizon California was a wholly-owned subsidiary of Verizon Communications Inc., it is the parent company Verizon that had been determining the amount of capital investment funds that it would make available for local infrastructure investment by its individual operating companies. Verizon California would dividend out some portion of its net operating income to its parent. Table 8.10 below summarizes Verizon California (U-1002) net income and dividend payments to its sole shareholder over the 2010-2017 period:

			Tab	le 8.10				
NET INCOM	VE IE AND I	rizon/fi Divident	RONTIEF PAYME (\$	R CALIFO NTS TO 5000)	PARENT	1002) COMPA	NY, 2010	-2017
	2010	2011	2012	2013	2014	2015	2016	2017
			VEF	RIZON			FRO	NTIER
VZ/FTR CA Net Income		293,766	242,212	500,163	171,559	427,759	(239,860)	244,434
Dividend paid to PARENT		0	o	500,000	0	0	0	0
Effect on Retained Earnings		293,766	242,212	163	171,559	427,759	(239,860)	244,434
NOTE DATA FOR ARMIS Forms 43-0	2010 IS NO 3 as filed at	T AVAILABL	E. ANALYS	SIS IS BASE	D ON 2011-2	2017. Sour	ce: Verizon C	A

Cumulatively, over the full 2011-2017 period, Verizon/Frontier California had total net after-tax income of 1.64-billion, and paid out only \$500-million of that to its parent company, thereby retaining \$1.14-billion of earnings and, in so doing, adding that to the California company's capital base. Verizon's, and later Frontier's, dividend policy was thus precisely the opposite of AT&T's – where AT&T California had paid a dividend to its parent that was some \$4.2-billion



more than its net income over the full 2010-2017 period, Verizon had allowed its California ILEC to *retain* \$1.14-billion of its earnings over the five years immediately preceding the sale of the company to Frontier. Like AT&T, Verizon was *disinvesting* in its California ILEC operations over the 2011-2015 period, as is demonstrated in Table 8.11 below. Note, this information is not available for the former Continental Telephone Company component of Verizon California's operations.

				Table 8	3.11				
VERIZON/FRONTIER CALIFORNIA (U-1002) PATTERN OF INVESTMENT,2010-2017 (\$000)									
	2010	2011	2012	2013	2014	2015	2016	2017	TOTAL
			VE	RIZON			FRO	NTIER	
BOY Gross Telecom Plant in Service (TPIS)		13,038,542	12,883,509	13,027,270	13,162,075	13,271,646	13,496,895	13,392,504	
Gross Plant Additions		350,459	348,443	182,887	175,465	295,395	80,373	428,559	1,861,581
Retirements		(640,085)	(198,425)	(117,927)	(298,138)	(58,819)	190	(135,489)	(1,449,073)
Transfers/ Adjustments		134,595	(6,258)	69,846	232,244	(11,327)	(164,574)	3,934	258,460
EOY Gross Telecom Plant in Service	13,038,542	12,883,511	13,027,269	13,162,076	13,271,646	13,496,895	13,392,504	13,689,508	
Annual TPIS depreciation accruals (acct 6561)		570,624	489,250	486,677	489,645	464,288	316,101	428,639	3,245,224
Cumulative depreciation reserve		9,931,044	9,271,944	10,662,757	10,976,452	11,384,050	11,229,881	11,229,881	
Net EOY TPIS		2,952,467	3,755,325	2,499,319	2,295,194	2,112,845	2,162,623	2,459,627	
Net/Gross TPIS		22.92%	28.83%	18.99%	17.29%	15.65%	16.15%	17.07%	
Change in Net Telecor	mmunication	s Plant in Se	ervice 2011-2	2017					(492,840)
NOTE DATA FOR 2 Form 43-02 as filed former GTE Califorr Company study are response to a Comr former GTE and for Contel results. The January 1, 2016. T 2016 "Transfer/Adju amount for TPIS as this Table is the EO negative \$164,574	Iet/Gross TPIS22.92%28.83%18.99%17.29%15.65%16.15%17.07%Anage in Net Telecommunications Plant in Service 2011-2017(492,840)NOTE DATA FOR 2010 IS NOT AVAILABLE. ANALYSIS IS BASED ON 2011-2017. Source: Verizon CA 2011-2015 ARMIS Form 43-02 as filed with CPUC; Frontier CA responses to DR-03F as revised 11/7/2018. Verizon filed Forms 43-02 only for the former GTE California study area. Accordingly, no detailed rate base data is available for the former Continental Telephone Company study area. This table reflects only the Verizon/Frontier U-1002 investment data for the 2010-2015 period. In response to a Communications Division data request, Frontier prepared Forms 43-02 for 2016 and 2017 that included both the former GTE and former Continental study areas. The figures shown here for 2016 and 2017 thus include both the GTE and Contel results. The accounting treatment that Frontier had adopted reflects the pre-acquisition condition of Frontier's books as of January 1, 2016. The TPIS from Verizon California that was transferred to Frontier on April 1, 2016 had been included in the 2016 "Transfer/Adjustment" on Frontier's 2016 Form 43-02. As submitted, Frontier had reported the beginning-of-year 2016 amount for TPIS as 0 and showed a positive adjustment of \$13,332,321. For consistency, the BOY TPIS for 2016 is shown on this Table is the EOY 2015 amount, and the 2016 "Adjustment" has been modified to reflect only the net adjustment to TPISt, a								

Verizon/Frontier California's Gross Telecommunications Plant in Service ("TPIS") remained relatively stable in the \$13-billion range over the 2010-2017 period. Total Gross Plant Additions - \$1.86-billion – were exceeded by the total depreciation accruals taken over the corresponding period – 3.24-billion – which, together with \$258-million in net Transfers and Adjustments,



resulted in a net *disinvestment* (change in net TPIS) of just under \$500-million. With some 1.48billion in in retirements, end-of-period net TPIS had decreased to only \$2.46-billion.

Verizon had been disinvesting in its California ILEC, with plant retirements and depreciation accruals generally exceeding its Gross Plant Additions on an annual basis, and the company's net Telecommunications Plant in Service (TPIS) had eroded to only about \$2.1-billion prior to its sale to Frontier in 2016.

To put this in perspective, and as also discussed in Chapter 7 for AT&T, consider the following. In D.16-12-035, the CPUC adopted a set of costs of capital for small ILECs still subject to rate-of-return regulation ranging between 8.44% and 9.22%.<sup>188</sup> Verizon California's Form 43-03 annual financial report for 2015 as submitted to the CPUC put the company's Net Plant at \$2.11-billion. Small ILECs were typically allowed somewhat higher rates-of-return than large ILECs such as Verizon or Frontier California, since their smaller size and limited geographic scope tended to elevate their risk above that for the larger ILECs. Thus, if we were to conservatively apply a 9.0% authorized rate of return to Verizon California's Net Plant of \$2.11-billion, the company would be allowed net after-tax earnings of approximately \$189-million if the company had been subject to traditional rate-of-return regulation.

By contrast, the same Form 43-03 puts Verizon California's 2015 net after-tax income at \$427-million, or \$238-million more than would have been allowed under RORR. Put differently, Verizon California's 2015 return on net investment can be roughly calculated as \$427-million / \$2.11-billion,<sup>189</sup> which works out to a rate of return in the range of 20.25%. This is not a precise calculation as it would be undertaken in a formal General Rate Case under RORR, where various adjustments would typically be applied that could modify this calculation either upward or downward.



If Verizon California had been subject to Rate of Return Regulation, its RORR-equivalent return on investment for 2015 exceeded 20% due mainly to the erosion in the net book value of its asset base.

But even Verizon California's nominally reported revenues, expenses and net income cannot by themselves provide a complete or accurate picture of the ILEC entity's financial performance. This is because of the extensive nature and amount of inter-affiliate transactions that took place on an ongoing basis between the Verizon California ILEC entity and numerous other affiliates that are themselves, directly or indirectly, wholly owned by the parent company.

<sup>189.</sup> AT&T California 2017 Form 43-02, Table B-1, p. 3.



<sup>188.</sup> Application of Calaveras Telephone Company et al ("Independent Small ILECs") for a Determination of Applicants. Cost of Capital for Ratemaking Purposes, A.15-09-005, D.16-12-035, at Ordering Paragraph 1.

Similar affiliate transactions also arise between Frontier California and its affiliates, although Frontier has apparently not been providing the same level of detail to the Commission as Verizon had been doing.<sup>190</sup> These transactions involve both *purchases* made by the ILEC from other Verizon affiliates as well as *sales* made by the ILEC to other Verizon affiliates. Table 8.12 below provides a summary of these transactions and their relationship to Verizon California's overall revenues, operating expenses, and net income.

Table 8.12 VERIZON CALIFORNIA (U-1002) AFFILIATE TRANSACTIONS WITH OTHER VERIZON UNITS, 2011-2015 (\$000)							
	2011	2012	2013	2014	2015		
Verizon California operating revenue	2,611,74	2,219,317	2,728,855	2,669,928	2,644,724		
Sales to other VZ affiliate	597,425	598,088	949,735	61,670	45,315		
Pct of revenues from sales to other VZ affiliates	22.87%	26.95%	34.80%	2.31%	1.71%		
VZ CA pre-tax OpEx excl depr/amort (see footnote 191)	1,585,295	1,677,857	1,312,176	1,870,528	1,394,090		
Services Purchased from VZ affiliates	949,735	1,065,542	1,058,412	1,249,482	1,066,240		
Pct of total OpEx paid to VZ affiliates	44.05%	49.17%	59.53%	52.94%	57.37%		
VZ-CA Net Income	293,766	242,212	500,163	171,559	427,759		
NOTE DATA FOR 2010 IS NOT AVAILABL ARMIS Form 43-02, Table I-2, Form 43-03,	NOTE DATA FOR 2010 IS NOT AVAILABLE. ANALYSIS IS BASED ON 2011-2015. Source: Verizon CA ARMIS Form 43-02, Table I-2, Form 43-03, as filed annually with CPUC.						

With the exception of tariffed switched and special access services that were being purchased from Verizon California by various other Verizon affiliates, the specific *transfer prices* at which these transactions are recorded can hardly be viewed as being set on the basis of arm's length negotiations. Since both the seller and buyer in each instance are wholly-owned by the same parent company, the nominal transfer price has little or no effect upon the parent company's

<sup>191.</sup> Amounts shown are calculated as Total Operating Expenses (Form 43-03 Line 720) – Depreciation/ Amortization expenses (Form 43-03 Line 6560), which represents current cash operating expenses. The source data for this calculation is as follows:

	2011	2012	2013	2014	2015
Line 720 Total Operating Exp	2,155,919	2,167,107	1,777,990	2,360,173	1,858,378
Line 6560 Depre/Amort	( 570,624)	(489,250)	(465,814)	(489,645)	(464,288





<sup>190.</sup> Form 43-02, Table I-2, enumerates the dollar amounts of purchases by the ILEC from its affiliates and of sales by the ILEC to its affiliates. Frontier does not appear to have been submitting this information to the CPUC following its 2016 acquisition of Verizon California.

bottom line. However, if it is the parent company's goal to extract cash from the ILEC entity, setting an inflated transfer price can accomplish this as effectively as making a dividend payment to the parent, but with far less exposure as to the precise purpose of the policy. As Table 8.12 demonstrates, from 2012 onward, in the range of 50% or more of Verizon California total operating expenses net of depreciation and amortization were paid over to other Verizon affiliates for services rendered.

Because so much of Verizon California's revenues and operating expenses came from inter-affiliate transactions, its nominally reported revenues, expenses and net income cannot by themselves provide a complete or accurate picture of the ILEC entity's financial performance.

As discussed more fully in Chapter 7, this type of manipulation arising from affiliate transactions has occurred in the case of Bell System companies at numerous times in the past. And of particular relevance here, Frontier had expressly stated – to investors and in testimony before this Commission in support of its assessment as to the financial merit of the 2016 Verizon ILEC acquisition – that it had concluded that the payments for centralized services allocated to Verizon California by the parent company for centralized and other affiliate services were excessive and that these could be accomplished at considerably lower cost by Frontier.<sup>192</sup>



Frontier's assessment as to the economic merit of the 2016 Verizon ILEC acquisition was heavily influenced by its belief that Verizon affiliate charges for centralized services were much higher than the cost that Frontier would incur to provide comparable services to these ILECs.

Where Verizon California's earnings would have been considered excessive by traditional RORR standards (even without adjusting for distortions resulting from less-than-arm's length



<sup>192.</sup> I/M/O Joint Application of Frontier Communications Corporation, Frontier Communications of America, Inc. (U5429C), Verizon California, Inc. (U1002C), Verizon Long Distance LLC (U5732C), and Newco West Holdings LLC for Approval of Transfer of Control Over Verizon California, Inc. and Related Approval of Transfer of Assets and Certifications, A.15-03-005, Direct Testimony of John M. Jureller, Executive Vice President and Chief Financial Officer, Frontier Communications Corporation, May 11, 2015, at 30 ("The Company estimates \$700 million in annualized corporate consolidated cost efficiencies for the pro forma combined company primarily through costs that do not transfer to Frontier at the closing of the transaction."), 25 ("While noting that [Standard & Poor's] eventual rating will depend on the specific funding for the Transaction, the agency explained that its current ratings affirmation reflects a view that 'the acquisition offers some business benefits and significant potential cost synergies' arising to a great extent from avoided expenses previously allocated by Verizon to the acquired assets."). Citations omitted.

transfer prices between the California ILEC and other Verizon affiliates), Frontier's postacquisition earnings have been negatively impacted by conditions that would not even be considered under a traditional rate-of-return type of analysis. As discussed above, in its purchase of Verizon's three ILECs in April 2016, the price that Frontier paid to Verizon was well in excess of the amount that Verizon had been carrying on its books for these assets.

That excess over book value is carried as "Goodwill" on parent company Frontier's balance sheet. Frontier explains the basis for this treatment as follows: "Goodwill represents the excess of purchase price over the fair value of identifiable tangible and intangible net assets acquired."<sup>193</sup> Goodwill would not be includable as a rate base asset under RORR, yet its acquisition created a real cost to Frontier in terms of cost of capital (debt and equity) plus any periodical amortization of the premium amount that Frontier may deem it necessary to make. Indeed, it is even possible that the California ILEC could be earning a satisfactory rate of return under traditional RORR standards while sustaining losses on a financial basis, which necessarily includes any premium above book value that it had paid to Verizon.

#### The focus of Verizon/Frontier California's capital investments over the 2010-2017 period

Frontier has not provided any wire center level accounting data for the 2010-2015 Verizon ownership period. However, aggregate account-level gross plant additions were provided in Verizon's ARMIS Form 43-02 filings with the CPUC.<sup>194</sup> Table 8.13 below summarizes the types of capital expenditures that Verizon California had made during the 2011-2015 period preceding the sale of the ILEC to Frontier.



<sup>193.</sup> Frontier 2016 Annual Report and Proxy Statement, at p. F-11.

<sup>194.</sup> Verizon's ARMIS filings made with the CPUC for 2010 were not available.

	Table 8.13				
	VERIZON CALIFORNIA GROSS PLANT ADDITIONS, 2010-201	5			
Account	Account name	<b>VERIZON 2010-15</b>			
2003	Telecommunications plant under construction				
2111	Land				
2112	Motor vehicles.	756			
2114	Tools and other work equipment.	5,373			
2121	Buildings	34,510			
2122	Furniture	13			
2123	Office Equipment				
2124	General purpose computers	3,723			
2211	Non-digital switching				
2212.1	Circuit switching	28,463			
2212.2	Packet switching	6,375			
2220	Operator systems	602			
2231	Radio systems	4,612			
2232.1	Circuit equipment - electronic and electronic/optical	612,556			
2232.2	Circuit equipment - optical	2,294			
2341	Large private branch exchanges				
2362	Other terminal equipment.	8,610			
2411	Poles	55,338			
2421	Aerial cable	106,593			
2422	Underground cable	211,622			
2423	Buried cable	214,426			
2424	Submarine & deep sea cable	6			
2426	Intra-building network	574			
2431	Aerial wire				
2441	Conduit systems	25,549			
2681	Capital Leases	209			
2682	Leasehold improvements	6,957			
2690	Amortizable Tangible Assets	7,166			
2690.1	Network software	13,932			
2690.2	General purpose computer software	3,559			
2690	Intangibles	65,836			
TOTAL GF	ROSS TPIS ADDITIONS	1,419,654			
Source: Verizon Forms 43-02, 2011-15; Frontier response to DR-03F.					

Nearly half of the total \$1.4-billion expended by Verizon in new plant additions over this fiveyear period was in Account 2232.2 – Circuit equipment - Electronic and Electronic/Optical.



This account includes circuit equipment that converts between electronic and optical signaling, and was likely a major component of the *FiOS* FTTP upgrades that had been accomplished prior to the transfer of the company to Frontier. About the same amount was spent in three outside plant categories – Account 2421, Aerial cable; Account 2422, Underground cable; and Account 2423, Buried cable. These were also likely directed toward the FTTP upgrades.

Frontier has provided annual data for 2016 and 2017 by account and by wire center in response to DR-03F and DR-04F. DR-03F, Request 1, sought "the dollar amount of Gross Plant Additions as recorded on each of [a specified list of] 47 CFR Part 32 Uniform System of Accounts ("USOA") Telecommunications Plant in Service ("TPIS") accounts separately for each central office building and its associated wire center serving area for the period June 30, 2010 through December 31, 2017, in six-month intervals." DR-04, Request 3, asked Frontier to provide "specific data on annual outside plant undertakings from 2010- 2017" as "a) Spreadsheet with financial data for Construction project investment by wire center (former Verizon territories); [and] b) Spreadsheet with financial data for Maintenance and Repair expenses by wire center (former Verizon territories)." These responses are not consistent. In Chapter 6 (Table 6.1), we provide these investment details based upon Frontier's responses to DR-04F. Table 8.14 below summarizes the data as provided in response to DR-03F.

Overall, Frontier California (both the former GTE California and Continental Telephone components) made gross plant additions totaling \$384.1-million over the 21 months from April 2016 (when Frontier acquired the company) through December 2017. \$94.6-million was spent on central office equipment (including both switches and circuit equipment), and \$270.7-million was spend on outside plant.

Table 8.14							
FRONTIER CALIFORNIA PATTERN OF INVESTMENT 2016-2017							
		2016			2017		TOTAL
	GTE-Cal	ConTel	Total	GTE-Cal	ConTel	Total	2016-17
Gross Plant Additions	59,762,538	741,261	60,503,799	285,188,955	38,397,407	323,586,362	384,090,161
COE	16,222,307	688,621	16,910,928	63,917,305	13,810,878	77,728,183	94,639,110
OSP	41,910,031	43,860	41,953,891	207,927,759	20,838,039	228,765,798	270,719,689
Source: Frontier Response to DR-03F. The COE and OSP categories combined are slightly less than the total gross additions, which also include several minor asset categories.							

The overwhelming majority (72.3%) of Frontier's 2016-17 gross additions were for outside plant. Central office equipment, including switching and circuit equipment, accounted for 23.2%, with the remaining 4.3% spread across various miscellaneous categories – Buildings, Other Terminal Equipment, Motor Vehicles, and tools. As noted in Chapter 3 above, Frontier has expanded the availability of *FiOS* well beyond the 55 wire centers that were *FiOS*-capable



FTTP as of the April 2016 acquisition date. While some portion of the nearly \$385-million in new plant additions made by Frontier since the acquisition has undoubtedly been directed at correcting service problems, it is far more likely that the bulk of these investments has been aimed at expanding *FiOS* availability throughout the Frontier California footprint. Frontier has provided account level plant additions by wire center for 2016 and 2017, as well as Forms 43-02 for those same years. There are extensive inconsistencies between these two data sources that we are not able to reconcile.

Frontier's 2016-17 plant additions were spread across 221 of the company's 270 wire centers. However, roughly 75% of the total 2-year spend was directed toward only 30 individual wire centers, as summarized in Table 8.15 below:



Tab	le 8.15					
FRONTIER CALIFORNIA 30 WIRE CENTERS THAT ACCOUNTED FOR 75% OF 2016-17 GROSS PLANT ADDITIONS						
Wire Center	2016-17 Gross Additions	Percent of Total Gross Adds				
HEMET	29,687,330	8.61%				
LA VERNE	24,450,163	7.09%				
SAN BERNARDINO	22,792,801	6.61%				
TORRANCE	20,732,143	6.01%				
UPLAND	17,249,342	5.00%				
CULVER CITY	14,836,715	4.30%				
PALM SPRINGS	13,795,220	4.00%				
ONTARIO	11,825,350	3.43%				
LONG BEACH	9,594,370	2.78%				
SANTA BARBARA	9,585,356	2.78%				
PACOIMA	8,946,553	2.59%				
LA PUENTE	8,722,210	2.53%				
GLENDORA	7,191,469	2.08%				
LANCASTER	6,774,490	1.96%				
SANTA MONICA	6,737,847	1.95%				
WHITTIER	4,929,137	1.43%				
ANZA	4,435,854	1.29%				
CAMARILLO	4,282,009	1.24%				
LOS GATOS	4,089,234	1.19%				
MALIBU	3,230,446	0.94%				
CUCAMONGA	3,039,201	0.88%				
POMONA	3,031,332	0.88%				
CHINO	2,989,723	0.87%				
HUNTINGTON BEACH	2,909,877	0.84%				
ARTESIA	2,796,512	0.81%				
COVINA	2,561,325	0.74%				
SUN CITY	2,469,328	0.72%				
THOUSAND OAKS	2,273,805	0.66%				
OXNARD	2,231,090	0.65%				
	2,209,649	0.64%				

#### Summary and conclusions

Unlike Verizon California's diminishing role as a component of its parent company, Frontier California represents a major component of its new parent, Frontier Communications Corporation. But with the parent company's financial condition approaching crisis (if not already there), Frontier California's financial condition and investment policies will be dictated by conditions that are largely beyond the CPUC's control. The California ILEC entity has no ability to raise equity capital on its own.

There is no indication that Frontier investment dollars are being directed toward those wire centers that have been underperforming with respect to service quality or in their ability to meet the Commission's GO 133-C/D service quality standards.

Verizon California did not sustain the same type of capital erosion as its AT&T counterpart, where dividend payments to the parent exceeded earnings and depreciation accruals consistently exceeded gross additions. On the other hand, AT&T California's parent company is financially strong, while Frontier's parent is at the opposite end of the financial spectrum. There appears to be wide variation across all of Frontier California's 270 wire centers as to the amount of new investment that has been directed at each of them, and ETI has not observed any specific pattern to explain this prioritization. There is no indication, for example, that investment dollars are being directed toward those wire centers that have been underperforming with respect to service quality or in their ability to meet the Commission's GO 133-C/D service quality standards.

Verizon California and post-acquisition Frontier California have not implemented the extreme succession of significant price increases for its legacy residential POTS services. And unlike AT&T, there is not evidence of a "harvesting strategy" on the part of Frontier or even Verizon before the transfer, which is not surprising. Verizon was in the process of divesting its former GTE ILECs, and a strategy aimed at allowing steady erosion of its customer base would have undermined the marketability of these ILEC operations. Frontier, as a "pure-play" ILEC, has a strong incentive to maintain and to grow its customer base, not to allow it to dissipate. These are all positives for Frontier's future if it is somehow able to reverse its financial decline.

As a "pure play" ILEC holding company, Frontier Communications has a strong financial incentive to stabilize and grow its ILEC operations in California and elsewhere – but if it is not able to stabilize and strengthen its overall financial health, some sort of rescue may become necessary.



# **9** ASSESSMENT OF SAFETY, REDUNDANCY AND RESILIENCY OF NETWORK(S): AT&T

#### Principal observations and takeaways

- The only AT&T central offices that provide physical route diversity to the Public Switched Network are those that also perform tandem switching functions.
- PSAPs are being hosted by only about a third of AT&T central offices and, except for those that are connected to COs that also support tandem switching functions, most PSAPs have no physical or logical route diversity to the public switched network or in their connection to the communities they serve.
- 45 AT&T central offices that host or otherwise provide connections to PSAPs fail to meet the minimum back-up power required by FCC regulations (72 hours).
- AT&T has sufficient procedures to address nationwide service outage emergencies but is unable to identify a minimum threshold for response. There is a strong basis to conclude that AT&T California lacks the resiliency to proactively withstand disasters.



### ASSESSMENT OF SAFETY, REDUNDANCY AND RESILIENCY OF NETWORK(S): AT&T

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ECONOMICS AND TECHNOLOGY, INC.

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#### Introduction

In response to Communications Division Data Requests made in connection with this study, AT&T California has provided limited data and documents related to its policies, practices and procedures regarding AT&T network safety, redundancy and resiliency of infrastructure, facilities and resource management in Outside Plant Engineering, Construction & Engineering, Technical Field Services and Central Office departments.<sup>195</sup> In this chapter, we assess AT&T's resiliency based upon the information that has been provided.

#### Central office and PSAP redundancy

#### Central office connection redundancy

Most AT&T California central offices that serve end user customers (known as "Class 5 central offices" or "end offices") are connected to the public switched network ("PSN") via a single physical transport facility linking the central office to another switching facility within the local network. This is usually a so-called " tandem" switch, through which calls can be routed to other Class 5 offices within the local area or via other tandem switches to more distant end offices that are served by the same or different ILECs, or via transport facilities that connect the ILEC's local network to other local, wireless, and/or long distance (interexchange) carriers. Tandem switching functions may be housed in a stand-alone switch entity that performs only these interoffice connections, but are often combined with end office functions supported by the same physical switch. The PSN is organized in a hierarchical structure. The lowest level in the switch hierarchy is the local end office, designated as "Class 5" in the PSN architecture. Successively higher levels carry successively lower numeric class designations (see Figure 9.1). Each successively higher level in the PSN switch hierarchy controls access to a successively broader geographic area.

R

The only AT&T central offices that provide physical route diversity to the Public Switched Network are those that also perform tandem switching functions.

<sup>195.</sup> AT&T Response to Data Request 05-A, at 1





Figure 9.1. The AT&T Public Switched Network is organized in a hierarchical structure.

Interoffice and interexchange connections are typically accomplished utilizing "carrierized" transport facilities where multiple individual or "logical" voice channels are combined ("multiplex") onto a single physical transport facility. The most commonly used carrier technology is known as "time-division multiplexing" ("TDM") whereby individual "analog" voice signals are converted to digital form and assigned fixed "time slots" within a rotating "carousel" of time slots in a high-capacity digital transport facility. For example, analog voice channels are converted to 64 kilobits per second ("kbps") "voice-grade-equivalent" ("VGE") digital signals, 24 of which are then combined into a single 1.544 megabits per second ("mbps") digital datastream for transmission. Multiple 1.544 mbps channels (known as T-1 or DS-1 channels) can then be combined for higher capacity transport facilities capable of carrying datarates in the multiple terabit (billions of bits per second) range. In recent years, higher level elements of the PSN have been migrated away from circuit-switched TDM technology to packet-switched Internet Protocol ("IP") technology. TDM data is converted to IP format for transport, and then converted back to TDM for delivery to the end user if that individual is being served



via legacy circuit-switched technology. Such "IP-in-the-middle" arrangements are largely transparent to users of the PSN.

While there is extensive redundancy and routing diversity designed into the interoffice and interexchange levels of the PSN, in most cases, there is only a single "umbilical" connection between an individual Class 5 end office and the tandem switch that serves as a gateway to the rest of the world. If that connection is interrupted, the connection from that end office to the public switched network is severed, thus isolating the end office and its customers until a repair can be made. "Physical Diversity" and "Logical Diversity" are defined at 47 CFR §12.4(a)(8) as follows:

Circuits or equivalent data paths are Physically Diverse if they provide more than one physical route between end points with no common points where a single failure at that point would cause both circuits to fail. Circuits that share a common segment such as a fiber-optic cable or circuit board are not Physically diverse even if they are logically diverse for purposes of transmitting data.

"Physical Diversity" for this purpose means that connectivity exists from the Class 5 central office to at least two *different* connection points on the PSN, typically tandem switches, as illustrated in Figure 9.2 below:





**Figure 9.2.** Diverse physical routing. Class 5 central office (on right) has connectivity to two different tandem switches (diverse routing); Class 5 central office (on left) has connectivity to only one tandem (no diverse routing).

AT&T was asked to "[p]rovide a list of Central Offices (by CLLI code and name) that shows the Central Offices with physical and/or logical diverse connections to the Public Switched Telephone Network." In response, AT&T identified a total of 36 central offices that perform tandem switching functions as having any physical and/or logical diverse connections to the PSN.<sup>196</sup> *No Class 5 end offices that do not also perform tandem switching functions were identified as having any such physical or logical route diversity*. Additionally, although AT&T's response did not indicate whether the diversity was physical or logical, it is reasonable to assume that, since all of these COs are *tandem* switches, the diversity to the PSN is *phsyical*. Thus, with the exception of these 36 central office switches, all remaining end offices have no physical or logical route diversity in their link to the PSN. The 36 offices that do have such route diversity are identified in Table 9.1 below.



<sup>196.</sup> AT&T response to DR-05A, Request 1.

#### **Public Safety Answering Point connection redundancy**

A "Public Safety Answering Point" ("PSAP") is a facility that receives emergency "9-1-1" type calls and dispatches police, fire, medical or other emergency assistance as needed. PSAPs are typically operated by a local city, county or other government entity, typically by the police, sheriff or fire department, and serve defined geographic areas. PSAPs are supported by a customer database that contains detailed name and location information that is keyed to the calling telephone number. When a 911 call is placed from a legacy wireline (circuit-switched) or fixed VoIP telephone line, the calling number and associated customer name and location data is displayed at a 911 operator terminal.<sup>197</sup>

Because PSAPs need to be reached immediately when an emergency arises and need to provide immediate assistance, they have a special requirement for route diversity. Calls placed to the majority of PSAPs in California involve an interoffice connection of some sort, underscoring the need for network route diversity. In addition, if a PSAP becomes overloaded (e.g., in the case of a natural disaster than affects large numbers of people) or becomes disabled (e.g., by the natural disaster itself), the ability to route 911 calls to an alternate PSAP is critical.

https://www.fcc.gov/consumers/guides/911-wireless-services (accessed 10/18/18)



<sup>197.</sup> Due to their mobile nature, the precise geographic location of a mobile wireless phone at the time that it places a call to 9-1-1 cannot be known with anywhere near the degree of accuracy or precision afforded fixed wireline services. The FCC describes the capabilities and limitations of wireless 9-1-1 as follows:

Basic and Enhanced Wireless 911 Rules

FCC wireless 911 rules aim to provide Public Safety Answering Points with meaningful, accurate location information so that local emergency responders can be dispatched to quickly provide assistance to wireless 911 callers.

The FCC's basic 911 rules require wireless service providers to transmit all 911 calls to a PSAP, regardless of whether the caller subscribes to the provider's service or not.

Phase I Enhanced 911 (E911) rules require wireless service providers to provide the PSAP with the telephone number of the originator of a wireless 911 call and the location of the cell site or base station transmitting the call.

Phase II E911 rules require wireless service providers to provide the latitude and longitude of callers to PSAPs. This information must be accurate to within 50 to 300 meters depending upon the type of location technology used.

The FCC permits exclusions for location accuracy requirements where wireless carriers determine that providing location accuracy is limited, or technologically impossible, because of either heavy forestation or the inability to triangulate a caller's location. Wireless service providers are required to file with the FCC a list of counties, or portions of counties, that they seek to exclude from these requirements. Wireless carriers must report any changes to their exclusion lists within 30 days of such changes. The exclusion lists and changes must be reported in the record of the FCC's docketed proceeding, PS Docket No. 07-114, which is publicly available online.

The FCC's wireless 911 rules apply to all wireless licensees, broadband Personal Communications Service licensees and certain Specialized Mobile Radio licensees. Mobile Satellite Service providers are excluded.

Table 9.1						
АТ	&T CALIFORNIA					
CENTRAL OFFICE SWIT	CH ENTITIES WITH RO	OUTE DIVERSITY				
TO THE PUB	LIC SWITCHED NETW	ORK				
Tandem Name	Tandem CLLI	Type of Switch				
AUBURN	AUBNCA01DS0	5ESS				
BAKERSFIELD MAIN	BKFDCA12DS0	5ESS				
CHICO	CHICCA01DS1	5ESS				
EL CENTRO	ELCNCA01DS0	5ESS				
FRESNO MAIN	FRSNCA01DS0	5ESS				
JACKSON	JCSNCA01DS1	5ESS				
MILLBRAE	MLBRCA11DS0	5ESS				
MODESTO MAIN	MDSTCA02DS0	5ESS				
ORINDA	ORNDCA11DS0	5ESS				
REDDING ENTERPRISE	RDNGCA11DS0	5ESS				
RIALTO	RILTCA11DS0	5ESS				
SACRAMENTO MAIN	SCRMCA01DS0	5ESS				
SALINAS MAIN	SLNSCA01DS0	5ESS				
SAN ANDREAS	SNADCA11DS1	5ESS				
SAN LUIS OBISPO	SNLOCA01DS1	5ESS				
SANTA ANA	SNANCA12DS0	5ESS				
SANTA CLARA	SNTCCA11DS0	5ESS				
SANTA CRUZ MAIN	SNCZCA01DS0	5ESS				
SONORA	SNRACA13DS1	5ESS				
EUREKA	EURKCA01DS0	DMS				
HOLLYWOOD	HLWDCA01DS0	DMS				
LAKEPORT	LKPTCA02DS1	DMS				
MADISON	LSANCA02DS3	DMS				
MARYSVILLE	MYVICA01DS0	DMS				
MILL VALLEY	MLVYCA01DS0	DMS				
NORTHRIDGE	NORGCA11DS0	DMS				
PLACERVILLE NIAGARA	PLVLCA12DS0	DMS				
San Diego MIRA MESA	SNDGCA16DS0	DMS				
SAN GABRIEL	SNGBCA01DS0	DMS				
SANTA ROSA	SNRSCA01DS1	DMS				
SHERMAN OAKS	SHOKCA01DS0	DMS				
STOCKTON MAIN	SKTNCA01DS0	DMS				
UKIAH	UKIHCA01DS0	DMS				
VALLEJO	VLLJCA01DS1	DMS				
VENTURA FIR	VNTRCA02DS0	DMS				
VISALIA	VISLCA11DS0	DMS				
Source: AT&T Response to DR-05A, Request 1(a)						



Routing of 911 calls to the applicable PSAP is accomplished initially at the Selective Router to which the central office that serves the caller's access line has been assigned. As shown in Table 9.2, it appears that there are 368 PSAPs within AT&T California's operating area, and that these are hosted by 233 AT&T Central Offices.<sup>198</sup> AT&T has identified a total of 406 "Central Offices with diverse connections that host PSAPs."<sup>199</sup> However, of these 406 central offices, only 206 are included in AT&T's response to DR-05A, Request 1(b) list of "Central Offices that host PSAPs" with the remaining 200 central offices identified in response to DR-05A, Request 1(c) as offering some type of diverse connections that *do not* appear to "host PSAPs." Moreover, since there are only 206 out of the 233 central offices identified by AT&T as "hosting PSAPs" that AT&T has identified as providing some type of "diverse connection," it would appear that there are 27 central offices (i.e., 233 – 206) that host PSAPs but that *do not* provide for diverse connections. There are 34 Selective Routers in AT&T California service territory.

Central office serving areas do not necessarily correspond with municipal boundaries, and in fact most do not. Customers served by a given central office may live in different towns or even different counties, or be assigned to different PSAPs even within the same municipality. As a result, accurate routing of E911 calls requites that the correct PSAP be associated with each access line based upon the customer's physical address. Selective Routers perform this function. A primary and secondary route has been established for every PSAP, and both are maintained in the Selective Router's database. If one route is unavailable or inoperative, the call will be delivered via the secondary route.<sup>200</sup>

<sup>200.</sup> See, National Emergency Number Association (NENA) VoIP E9-1-1 Requirements Working Group, "NENA Generic E9-1-1 Requirements Technical Information Document," Issue 1, July 23, 2004, at § 2.1.3.



<sup>198.</sup> AT&T Response to DR-05A, Request 1(b).

<sup>199.</sup> AT&T Response to DR-05A, Request 1(c),

	AT&T CALIFO	RNIA H ENTITIES		RSITY
entral Office CLLI	Central Office Name	Diversity to PSN	Hosts PSAPs	PSAP Diversity
				X
			X	X
			Х	X
				X
				X
				X
			Х	X
				X
				X
				X
				X
				X
			X	X
				X
				X
				X
			Х	X
			Х	
				X
			Х	X
		X	Х	X
			Х	X
				X
				X
		X	Х	X
			Х	X
				X
				X
				X
			Х	X
				X
			Х	X
			Х	X
				X
				X
			Х	X
			X	X
			Х	
				X
				X
			, 	X
			Х	
				X





Central Office CLLI	Central Office Name	Diversity to PSN	Hosts PSAPs	PSAP Diversity
		x	х	x
			Х	X
				X
				X
			Х	X
			Х	X
			Х	X
				X
			X	X
		23.		X
			X	X
				X
			Х	X
				X
				X
				X
		-		X
			Х	X
				X
				X
				X
			X	
				X
				X
			Х	X
				X
			Х	X
				X
			X	X
				X
				X
			N	X
			X	
		~	X	X
		^	× v	÷
			Λ	-
				~
				<del>                                     </del>
				Ŷ
			Y	×
		×	X	<u> </u>
			×	Y
			Λ	X
			X	Ŷ
				x
			÷	X
		<u> </u>	X	X
			x	1



Central Office CLLI	Central Office Name	Diversity to PSN	Hosts PSAPs	PSAP Diversity
			Х	Х
				Х
				Х
				Х
		Х	Х	Х
				Х
			Х	
				X
			Х	Х
				Х
				Х
				X
				X
			X	X
			X	X
			Х	× ×
				X
				X
				X
				X
			-	×
				×
			Y	A X
			~	X
				X
			Х	X
			~	X
		Х		X
				X
				Х
			Х	Х
			Х	Х
			Х	Х
			Х	
				Х
			Х	X
				X
				X
				X
				X
			Х	X
			Х	X
				X
		Х	X	X
			Х	X
				X
				х



Central Office CLLI	Central Office Name	Diversity to PSN	Hosts PSAPs	PSAP Diversity
				X
			Х	X
		¥.		X
			Х	
		25		X
				X
				X
		X		X
				X
			х	X
				X
				X
		X		X
			Х	X
				X
		62	Х	X
				X
				X
		547	4	X
				X
				X
				X
				×
				X
				X
				X
				X
			Х	X
				X
			7	X
		8-1 -	X	X
				Х
				X
			X	X
				X
				X
				X
				X
			12	X
			Х	X
		-1-		X
			Х	X
		2		X
				X
				X
		х		X
				X
			Х	



Central Office CLLI	Central Office Name	Diversit to PSN	ty Hosts I PSAPs	PSAP Diversity
				Х
				Х
		Х	Х	
				Х
		Х		Х
				Х
				Х
				Х
			Х	Х
			Х	Х
			Х	Х
				Х
			Х	Х
			Х	Х
				Х
				Х
		Х	Х	Х
			Х	Х
				Х
			Х	Х
				Х
				Х
				Х
	-	Х		Х
	-			Х
				Х
	-		Х	Х
	-		Х	Х
				Х
			Х	Х
	-			Х
			Х	Х
			Х	Х
				Х
				Х
				Х
			Х	Х
				Х
			Х	Х
				Х
				Х
				Х
				Х
		Х		
			Х	Х
			Х	Х
				Х
				Х
			X	X



Central Office CLLI	Central Office Name	Diversity to PSN	Hosts PSAPs	PSAP Diversity
				Х
				X
				X
				X
			Х	X
			N/	X
			X	X
				X
			v	×
			^	^ X
				X
		×		X
		~		X
				X
			Х	X
				X
				X
				X
				Х
			Х	Х
				Х
				Х
			Х	Х
				Х
			Х	
				Х
				Х
				Х
			Х	X
				X
			X	X
			X	X
			X	X V
				A V
		Y		A Y
		^		X
				X
			Х	X
				X
				X
				X
			Х	Х
				Х
				Х
				Х
				х



CONFIDENTIAL AND PROPRIETARY PER P.U. CODE § 583, GENERAL ORDER 66-D, & D.16-08-024

Central Office CLLI	Central Office Name	Diversity to PSN	Hosts PSAPs	PSAP Diversity
				Х
			Х	Х
				Х
			Х	Х
				Х
				Х
			Х	Х
				Х
				Х
				Х
				Х
				Х
				Х
			Х	X
				Х
			Х	X
		X		X
				X
				X
				X
			V	X
		×	X	×
				^ 
			Y	^
			X	x
			Л	X
				X
		Х	Х	X
				X
		Х	Х	Х
				Х
				Х
			Х	Х
			Х	Х
				Х
				X
			Х	Х
		X	Х	
				Х
			Х	Х
				Х
				X
				Х
				X
			Х	X
				Х





Central Office CLLI	Central Office Name	Diversity to PSN	Hosts PSAPs	PSAP Diversity
				Х
				Х
				Х
				Х
			Х	Х
			Х	X
				X
				X
				X
			V	X
			X	X
				×
		-		×
			Х	X
			~	X
				X
				Х
				Х
				Х
				Х
				Х
				Х
		Х		Х
			Х	
			Х	X
				X
			V	X
			X	X
			X	×
			Λ	X
				X
				Х
				Х
				Х
			Х	Х
				Х
		Х	X	X
			Х	Х
		ļ		Х
				X
		v	V	X
		X	X V	X V
			^	A Y
				× X
				X
		Х		~



Central Office CLLI	Central Office Name	Diversity to PSN	Hosts PSAPs	PSAP Diversity
			Х	Х
				Х
			Х	Х
				Х
			Х	Х
				Х
				X
				X
			Х	X
				X
				X
			Х	Х
				Х
				Х
			Х	Х
				Х
				Х
			Х	Х
			Х	Х
			Х	Х
			Х	Х
			Х	Х
				X
		X	Х	X
				X
			Х	X
		X	Х	X
		X		X
		X		X
				X
		X		X
		X	V	X
			A V	X
			X	~
			^	v
				^ Y
			¥	^ Y
			X	^
			X	X
			Λ	X
				X
				X
				X
			Х	X
			X	X
			~~	X
				X
Source: AT&T Response	to DR-05A, Request 1.	Ē		



The "diverse connections" that AT&T has identified in its response to DR-05A, Request 1(c) appear to refer to different signaling protocols (Signaling System 7 ("SS7") vs. Multi-Frequency ("MF") and/or to originating vs. overflow 911 call routing. It is not at all clear, however, that the "diverse connections" being referred to in this response refer to different physical routing of 911 calls over physically separate connections between the PSAP and the host central office. If there is an interruption in the physical facility connecting the PSAP with the central office, the diversity of signaling (SS7 or MF) will be of no benefit. It appears that the only central offices that host PSAPs that also offer physical route diversity are those that also provide tandem functions. The overwhelming majority of AT&T end offices do not appear to offer any physical route diversity to the first point of connection to the public switched network.



SAPs are being hosted by only about a third of AT&T central offices and, except for those that are connected to COs that also support tandem switching functions, most PSAPs have no physical or logical route diversity to the public switched network or in their connection to the communities they serve.

#### Back-up power requirements and availability

#### Central offices

FCC regulations specify minimum back-up power requirements for central offices that host or otherwise provide connections to PSAPs.<sup>201</sup> Two categories of central offices are defined for this purpose based upon whether or not the central office hosts a "selective router." A "Selective Router" is "[a] 911 network component that selects the appropriate destination PSAP for each 911 call based on the location of the caller."202

47 CFR §12.4 (c)(2)(i): With respect to any central office it operates that directly serves a PSAP, a covered 911 service provider shall certify whether it: (A) Provisions backup power through fixed generators, portable generators, batteries, fuel cells, or a combination of these or other such sources to maintain full-service functionality, including network monitoring capabilities, for at least 24 hours at full office load or, if the central office hosts a selective router, at least 72 hours at full office load; provided however, that any such portable generators shall be readily available within the time it takes the batteries to drain, notwithstanding potential demand for such generators elsewhere in the service provider's network.

<sup>202. 47</sup> CFR §12.4(a)(10).



<sup>201. -</sup> Reliability of covered 911 service providers

AT&T has provided a tabulation of all of its California central offices, specifying for each the minimum backup power requirement (i.e., 24 or 72 hours) and the number of hours for which back-up power of some sort (apparently mainly from generators) is available at that site. 45 central offices fail to satisfy the minimum back-up power requirement, as shown in Table 9.3:

Table 9.3					
AT&T CALIFORNIA					
CENTRAL OFFICE	BACK-UP POW	'ER			
MINIMUM REQUIREMEN	NTS AND AVAIL	ABILITY			
	Back-up	Back-up			
	Power	Power	Deficiency		
	Required	Available	(Available –		
CLLI Central Office Name	(Hours)	(Hours)	Required)		
	72	274.02	0		
	72	282.43	0		
	72	18.29	-53.71		
	12	220.04	0		
	24	101.22	0		
	24	1/8.05	0		
	24 70	147.76	0		
	72	1050.89	0		
	72	303.75	0		
	72	391.94 142.55	0		
	72	142.00	0		
	24	265.02	0		
	72	203.92	0		
	72	167.08	0		
	72	181.87	0		
	72	327.27	0		
	24	129 94	0		
	72	132.04	0		
	24	332.99	0		
	24	96 79	0		
	24	185.32	0		
	72	240.57	0		
	72	629.82	0		
	24	112.69	0		
	24	249.94	0		
	24	191.37	0		
	72	56.62	-15.38		
	24	292.43	0		
	72	69.27	-2.73		
	72	257.04	0		
	24	258.11	0		
	72	88.19	0		
	72	324.1	0		
	72	128.57	0		
	24	151.15	0		
	72	153.53	0		
	72	283.61	0		
	72	111.05	0		
	72	113.23	0		
	24	112.77	0		



CLU	Control Offico Namo	Back-up Power Required (Hours)	Back-up Power Available (Hours)	Deficiency (Available – Boguirad)
	Central Office Name		206.02	Nequireu)
		24	200.02	0
		24	282.0	0
		72	202.49	0
		72	522.29	66 56
		72	652 33	-00.00
		24	171.06	0
		24	461.22	0
		72	112 57	0
		72	263 59	0
		24	199 77	0
		24	124 18	ů 0
		72	122.33	ů 0
		24	174.3	0
		72	649.95	0
		72	591.23	0
		72	1235.44	0
		72	560.6	0
		72	236.69	0
		72	248.33	0
		72	180.24	0
		72	192.82	0
		72	106.12	0
		72	381.46	0
		24	243.22	0
		24	76.21	0
		72	273.24	0
		24	198.02	0
		24	191.93	0
		72	478.81	0
		24	232.24	0
		72	328.31	0
		72	217.49	0
		24	612.77	0
		12	498.04	0
		24	130.83	0
		72	327.01	0
		24	91.09	0
		72	239.27	0
		72	166 1/	0
		72	140.14	0
		72	142.47 298 95	0
		24	165 22	0
		72	316.69	0
		24	187.02	0
		24	429.48	0
		72	171.12	0
		24	1060.84	0
		72	118.96	0
		72	328.97	0
		72	187.93	0
		72	615.15	0
		72	240 18	0



		Back-up Power	Back-up Power	Deficiency
		Required	Available	(Available –
CLLI	Central Office Name	(Hours)	(Hours)	Required)
		72	99.23	0
		72	317.21	0
		12	789.51	0
		24 72	234.2	0
		72	240.49	0
		24	103.10	0
		72	186 94	0
		72	127.2	0
		24	100 99	0
		24	205.39	0
		24	156.33	0
		72	185.33	0
		72	201.41	0
		24	111.89	0
		24	336.2	0
		72	10.86	-61.14
		24	144.47	0
		72	162.95	0
		24	130.33	0
		24	400.2	0
		24	155.04	0
		24	915.04	0
		72	237.63	0
		24	174.3	0
		72	194.2	0
		72	580.22	0
		72	426.06	0
		72	171.12	0
		72	130.31	0
		24	171.86	0
		24	155.87	0
		24	131.13	0
		72	224.09	0
		72	164.44	0
		24	122.67	0
		24	164.91	0
		12	212.62	0
		24 72	312.02	0
		72	339.40	0
		72	173.32	0
		72	15/ 21	0
		72	180 88	0
		24	319.33	0
		24	145.6	0
		72	62 74	-9 26
		24	151.37	0.20
		24	198.64	0 0
		72	395.8	0 0
		72	206.67	0 0
		72	0	-72
		72	178.05	0
		72	338 14	0



		Back-up Power Required	Back-up Power Available	Deficiency (Available –
CLLI	Central Office Name	(Hours)	(Hours)	Required)
		72	153.38	0
		24	425	0
		72	176.87	0
		24	313.3	0
		72	213.69	0
		72	178.03	0
		24	100.43	0
		72	136.42	0
		24	209.41	0
		72	98.51	0 0
		24	173.36	0
		72	300.63	0
		24	105.33	0
		72	158.71	0
		72	92.35	0
		72	137.39	0
		24	106.16	0
		24	448.67	0
		72	105.68	0
		72	239.09	0
		24	144.02	0
		72	100.55	0
		24	718 18	0
		72	214.38	0
		24	100.8	0
		24	106.73	0
		72	129.65	0
		72	108.48	0
		72	121.06	0
		72	265.63	0
		72	84.16	0
		24	133.14	0
		72	162.49	0
		24	2205.02	0
		72	678.06	0
		72	132.42	0 0
		72	184.75	0
		72	237.62	0
		72	152.77	0
		72	180.7	0
		72	216.16	0
		24	135.46	0
		72	316.89	0
		72	1/207.28	0
		24	149.97	0
		72	100.10	0
		24	135 62	0
		72	112.8	0
		72	414.27	0
		72	121 69	0


		Back-up Power	Back-up Power	Deficiency
		Required	Available	(Available –
CLLI	Central Office Name	(Hours)	(Hours)	Required)
		72	102.99	0
		72	602.96	0
		72	425.99	0
		72	121.19	0
		24	146.43	0
		24	223.4	0
		24	124.95	0
		24	94.36	0
		24	90.05	0
		72	222.78	0
		24	120.79	0
		72	374.89	0
		72	144.78	0
		72	155.47	0
		72	238.44	0
		72	126.25	0
		72	97.42	0
		72	249.92	0
		72	207.66	0
		24	295.31	0
		24	142.64	0
		72	246.6	0
		72	241.06	0
		72	243.68	0
		72	1/4.07	0
		24	212.59	0
		72	158.08	0
		12	211.22	0
		24	130.12	0
		24 70	204.14	0
		72	204.00	0
		72	103.30	0
		72	103.97	0
		72	142.04	0
		72	124.33	0
		72	206 74	0
		72	200.74	0
		24	177 18	0
		72	176.47	0
		72	400 73	0
		72	406 63	0
		24	312 01	0
		24	335.23	0
		72	290.32	0
		72	422.68	0
		72	276.07	0
		24	165.11	0
		72	131.84	0
		72	149.75	0
		72	327.77	0
		72	250.82	0
		72	335.23	0
		72	118 23	0



		Back-up Power Bequired	Back-up Power Available	Deficiency (Available –
CLLI	Central Office Name	(Hours)	(Hours)	Required)
		72	127.03	0
		72	242.94	0
		72	181.52	0
		72	164.17	0
		72	202.36	0
		72	129.55	0
		72	511.16	0
		72	149.13	0
		24	136.08	0
		72	304.24	0
		72	376.03	0
		24	103.79	0
		72	741.6	0
		72	116.19	0
		24	145.17	0
		72	125.37	0
		24	203.67	0
		72	434.34	0
		24	161.31	0
		72	167.04	0
		24	175.43	0
		24	74.86	0
		72	153.96	0
		72	191.77	0
		72	208.03	0
		12	351.95	0
		24	100.02	0
		24 72	90573.00	0
		24	202.23	0
		24	158 //	0
		72	4 88	-67 12
		24	73.36	-07.12
		24	176.00	0
		24	343 59	0
		72	137.61	0
		72	66.8	-5.2
		24	199.24	0
		72	148.66	0
		72	209.91	0
		72	225.75	0
		72	317.32	0
		72	424.69	0
		72	236.66	0
		24	116.28	0
		72	133.34	0
		72	90.54	0
		24	162.78	0
		72	165.62	0
		72	712.39	0
		72	77.97	0
		72	123.77	0
		72	105.46	0
		72	121 85	0



		Back-up Power	Back-up	Deficiency
		Required	Available	(Available –
CLLI	Central Office Name	(Hours)	(Hours)	Required)
		24	170.57	0
		72	240.85	0
		72	148.27	0
		72	236.25	0
		72	115.48	0
		24	247.03	0
		72	134.18	0
		72	280	10 70
		24	10.21	-13.79
		24	139.02	0
		24 72	138.02	0
		72	263.5	0
		72	127.92	0
		72	244 44	0
		72	515.74	0 0
		72	183.22	0
		24	150.32	0
		24	211.17	0
		72	101.57	0
		72	408.51	0
		72	172.81	0
		72	324.08	0
		24	143.52	0
		24	236.4	0
		12	138.51	0
		72	00.32 75 75	0
		24	99.87	0
		24	176.33	0
		72	191.8	0
		24	513	0
		72	98.28	0
		72	7994.85	0
		72	22847.45	0
		72	164.39	0
		72	127.6	0
		72	499.14	0
		72	347.93	0
		12	214.41	0
		72	245 00	0
		72	259.86	0
		72	6019.91	0
		24	138.11	0
		72	192.22	0
		24	159.99	0
		72	173.63	0
		72	286.74	0
		24	235.44	0
		72	178.53	0
		24	101.9	0
		24	197.26	0



CUT	Control Office Name	Back-up Power Required	Back-up Power Available	Deficiency (Available –
GLLI	Central Office Name	72	145.16	Accounted)
		24	70/ 08	0
		72	90.58	0
		72	324.88	0
		24	164.45	0
		24	230.6	õ
		72	200.51	0
		72	506.2	0
		72	65.22	-6.78
		72	189.68	0
		72	103.65	0
		72	231.09	0
		24	171.19	0
		72	219.39	0
		72	377.34	0
		24	295.18	0
		72	304.12	0
		24	76.13	0
		72	194.9	0
		24	316.08	0
		72	540.04	0
		72	173.91	0
		72	98.73	0
		72	244.55	0
		24	261.77	0
		72	169.72	0
		72	335.65	0
		72	1051.51	0
		12	297.30	0
		24	105.92	0
		72	272.24	0
		72	189.56	0
		24	157.86	0
		72	142 41	0
		72	102.22	0
		72	119.41	0
		24	109.73	0
		24	123.77	0
		72	216.01	0
		72	179.44	0
		72	166.29	0
		72	96.62	0
		24	93.02	0
		72	159.87	0
		72	160.13	0
		72	351.88	0
		24	237.98	0
		72	86.05	0
		72	361.47	0
		72	455.52	0
		72	86.12	0
		24	144.27	0



		Back-up Power	Back-up Power	Deficiency
		Required	Available	(Available –
CLLI	Central Office Name	(Hours)	(Hours)	Required)
		72	114.99	0
		72	309.04	0
		72	145.51	0
		72	340.39	0
		72	208.13	0
		24	155.15	0
		24	140.72	0
		72	100.37	0
		24	197.18	0
		24	74.9	0
		72	152.88	0
		72	188.15	0
		72	148.05	0
		24	123.63	0
		72	181.71	0
		72	174.82	0
		72	185.58	0
		72	64.83	-7.17
		72	164.43	0
		24	197.53	0
		72	271.63	0
		72	343.48	0
		24	161.61	0
		24	121.47	0
		72	197.92	0
		24	160.89	0
		72	1/1.46	0
		72	1/1.86	0
		72	148.8	0
		72	110.91	0
		72	115.29	0
		12	300.00	0
		24 70	205 94	0
		12	200.04	0
		24 70	259.45	0
		72	212 56	0
		24	308 /0	0
		72	377.46	0
		72	1521.66	0
		24	202.4	0
		24	1007.06	0
		72	155 47	0
		72	323.07	0
		24	369.56	0
		72	216.07	0
		72	232.07	0
		72	324.37	0 0
		72	249.21	Ő
		24	161.1	0
		72	414.44	0
		72	88.12	0
		24	187.23	0
		72	12.3	-59 7



CLLI	Central Office Name	Back-up Power Required (Hours)	Back-up Power Available (Hours)	Deficiency (Available – Required)
		72	116 11	0
		24	94 94	0
		72	229.02	0
		24	220.02	0
		24	2/3 08	0
		72	295.00	0
		72	195 / 9	0
		72	271.86	0
		24	193.33	ů 0
		24	92.48	0
		72	240.66	0
		72	203 5	0
		72	1/2 88	0
		72	214 87	0
		72	282 32	0
		72	10/ 27	0
		72	106.76	0
		72	36/ 01	0
		72	204.01	0
		72	192 73	0
		24	102.70	0
		24	125.6	0
		72	171 72	0
		72	161 9/	0
		24	101.34	0
		72	8 27	-63 73
		24	167782 71	-03.73
		72	331.8/	0
		72	8 00	-63.01
		72	194.65	-00.01
		72	176 99	0
		24	152.64	0
		24	151 15	0
		24	279.26	0
		24	117 05	0
		72	172 44	0
		72	2016 78	0
		72	508 7	ů 0
		72	0	-72
		72	274 82	
		72	424.13	0
		72	280.13	0
		72	433.71	0
		24	297.11	0
		72	344.1	0
		72	742.03	0
		24	165.66	0
		24	208.06	0
		24	158.6	0
		72	269.18	0
		72	209.52	0
		72	168.89	0
		. 24	256	0
		72	163 72	0



0.11	0	Back-up Power Required	Back-up Power Available	Deficiency (Available –
CLLI	Central Office Name	(HOURS)	(HOURS)	Requirea)
		24	154 32	0
		72	167.45	0
		24	121	0
		72	208 22	ő
		72	128.46	ō
		72	138.7	0
		72	85.48	0
		24	132.7	0
		72	82.26	0
		24	174.82	0
		72	10.52	-61.48
		72	6.85	-65.15
		72	454.23	0
		72	220.23	0
		72	186.9	0
		72	95.4	0
		72	113.23	0
		24	382.04	0
		24	508.75	0
		72	259 56	0
		72	280.71	0
		24	373.88	0
		72	178.04	0
		24	217 48	0
		72	231.78	õ
		24	140.78	0
		72	90.88	0
		72	256.78	0
		24	296.77	0
		72	233.09	0
		72	249.53	0
		72	139.2	0
		72	142.28	0
		72	130.63	0
		72	1/7.41	0
		72	419.77	0
		72	108.87	0
		72	120.15	0
		72	317.08	0
		72	219.81	0
		72	251.78	o
		72	127.76	0
		72	196.23	ō
		24	397.23	0
		24	258.91	0
		72	448.69	0
		72	226.93	0
		24	65.02	0
		72	281.39	0
R.		24	118.34	0



		Back-up	Back-up	
		Power	Power	Deficiency
		Required	Available	(Available –
CLLI	Central Office Name	(Hours)	(Hours)	Required)
		24	134.39	0
		72	159.29	0
		72	199.57	0
		72	245.2	0
		12	195.47	0
		12	260.47	0
		24	183.32	0
		12	118.20	0
		12	300.30	0
		24	139.73	0
		12	2065	0
		72	461.00	0
		72	090.07	0
		72	241.40	0
		72	464 04	0
		12	404.24	0
		24	290.08	0
		72	120.69	0
		72	254 72	0
		72	572.90	0
		72	249.04	0
		72	240.94	0
		72	170.02	0
		72	266.45	0
		72	102.95	0
		72	131 04	0
		72	263 35	0
		24	220.31	õ
		72	289.68	0
		72	10.81	-61 19
		72	295.02	00
		24	252.69	o
		24	271.14	õ
		24	270.92	ō
		72	149.74	ō
		72	90.38	0
		72	145.6	0
		24	133.51	0
		72	166.31	0
		72	184.81	0
		72	139.44	0
		24	307.8	0
		24	83.38	0
		72	72.39	0
		72	136.66	0
		72	0	-72
		72	15.79	-56.21
		72	357.95	0
		72	54.9	-17.1
		72	409.09	0
		72	0	-72
		72	24	-48
		72	100	0



CONFIDENTIAL AND PROPRIETARY PER P.U. CODE § 583, GENERAL ORDER 66-D, & D.16-08-024

<u>eu 1</u>	Control Office Name	Back-up Power Required	Back-up Power Available	Deficiency (Available –
CLLI	Central Office Name	(Hours)	(Hours)	Required)
		72	26.76	45.04
		12	20.70	-40.24
		12	21.05	-50.57
		72	10.5	-00.0
		72	232.16	-40.8
		72	252.10	75
		72	125	-72 59 F
		72	6.2	-50.0
		72	5.7	-05.7
		72	651 00	-00.0
		72	001.89	70
		72	17	-72
		72	710 54	-50
		72	220.0	
		72	612.2	
		72	254.2	
		72	204.2	
		72	94.22 07 EE	
		12	07.00	
		12	803.22	70
		12	00	-12
		12	80.02	
		72	900.23	00
		12	0.9	-00.
		12	22.0	-49.0
		72	99.04	
		72	002.80	77
		72	0 50	62 40
		72	100	-03.40
		12	100	70
		72	265 57	-12
		72	205.57	
		72	223.01	.70
		72	75 48	-14
		72	75.40	70
		72	104 45	-/2
		72	101.40	70
		72	52.6	-12
		72	155.04	-19.4
		72	100.04	
		72	185.8	0
		72	061	

The AT&T back-up power data that is shown in Table 9.3 portrays an enormous variation in the number of back-up hours that are available in each case, ranging from a low of zero to a high of 167,782.71 hours in the central office. That translates to more than 19 years of back-up power. While there are no other locations with anything close to this level, there are others that also appear anomalous, such as 22,847.45 hours (i.e., 2 years, 7 months) in the central office.



months) in **second second**. These could, of course, be data errors, but the fact that there are several such entries may indicate that there is some other explanation.



45 AT&T central offices that host or otherwise provide connections to PSAPs fail to meet the minimum back-up power required by FCC regulations (72 hours).

#### **Electronic field equipment**

AT&T did not provide a written response to the Data Request regarding battery back-up systems for field cabinets that house pair-gain systems and various forms of fiber-fed network systems (fiber to the curb, fiber to the neighborhood/node). The following information is drawn from industry standards and verbal inquiries to AT&T staff during field visits. The industry standard for pair-gain systems, such as AT&T's original subscriber loop carrier system (SLC-96) is for the Remote Terminal to operate for a minimum of 8 hours in the event of a loss of commercial AC Power.<sup>203</sup> During physical site visits, TFS Managers informed Communications Division Staff that in the event of a major outage longer than 8 hours, portable generators are used to provide power. In one location, CD Staff observed generators that were placed onsite due to a recent storm that interrupted commercial power.

For the small number of customers served by Fiber-to-the-Premises (FTTP), AT&T's fiber terminates in an Optical Network Terminal that requires electrical power that is locally supplied by the subscriber in order to operate. In most cases, AT&T does not provide battery back-up to subscribers. According to AT&T's Terms of Service, the backup battery solution is the responsibility of the customer and can be chosen from third party manufacturers or retailers.<sup>204</sup> The amount of backup provided varies based upon many factors, including battery size, usage and temperature.

#### Allocation of resources and labor in the event of major emergencies

AT&T was asked to provide internal company standards for the allocation of resources and labor in the event of major emergencies including, but not limited to, the Company's ability to move field staff between regions in states of emergency, its mutual aid agreements with other

<sup>204.</sup> https://www.att.com/legal/terms.internetAttTermsOfService.html#Schedule\_7 (accessed 1/28/19).



<sup>203.</sup> See, Cho, Y. S., Olson, J. W. and Williamson, D. H. "D4 Digital Channel Bank Family: The SLC <sup>™</sup>-96 System." AT&T Bell System Technical Journal 61, no. 9 (November 1982): 2693. https://archive.org/stream/bstj61-9-2677/bstj61-9-2677\_djvu.txt (last accessed 1/28/2019).

states, and its policy that outlines the standard threshold of outages that trigger resource reallocation or mutual aid,205 AT&T responded that:

AT&T has no specific policy outlining standard threshold of outages that trigger resource re-allocation or mutual aid. In the event of major emergencies, decisions on the allocation of resources and labor are made on a case-by-case basis. For instance, as a first course of action, AT&T would increase the overtime hours available to its "in region" technicians. Thereafter, AT&T non-customer facing resources would be allocated to areas with elevated customer demand due to a major emergency. In the event those resources are not sufficient to meet customer demand, AT&T has the flexibility in a state of emergency to move field staff between regions across the AT&T footprint on an as-needed basis.206

AT&T did produce documentation on companywide disaster response procedures. No specific details have been provided as to the actual extent to which these practices and policies are being followed by AT&T California. Notably, however, from our examination of the persistent and recurring relationship between precipitation and service outages in the Los Angeles area over the 2010-2017 study period (as discussed in Chapter 4 above), there is a strong basis to conclude that AT&T's practices "on the ground" are far more reactive than they are proactive.



AT&T advises that it has no specific policy establishing a standard threshold of outages that trigger resource reallocation or mutual aid, and that in the event of major emergencies, decisions on the allocation of resources and labor are made on a case-by-case basis.

# Redundancy and resiliency processes and procedures in emergencies

## West Region Disaster Preparedness

AT&T explains that its West Region disaster response efforts are orchestrated by a team of "War Room Personnel ... control[ling] all fielding, engineering, and construction activities in concert with Business as Usual ("BAU") Cable Maintenance Center ("CMC") and Project Management.<sup>207</sup> For each district, a First in Assessment Team (FIAT) composed of construction and engineering managers initially assesses the scale of the damage:



<sup>205.</sup> AT&T Narrative Response to DR 05-A, at 2

<sup>206.</sup> AT&T Narrative Response to DR-04A, at 5

<sup>207.</sup> AT&T Response to DR-04A, Attachment F, "AT&T Disaster Preparedness West Region Construction & Engineering," at 5.

- Are affected poles "H" all or joint with power?<sup>208</sup>
- Are poles intact or destroyed?
- Are cables down or possibly just damaged?
- From a distance can you determine which way the fire/mud/water is spreading? This will give engineering a chance to plan and prepare fielding packages.<sup>209</sup>

And then prioritizes service restoration as follows:

- (1) Interoffice Facilities ("IOF")/Trunk Cables
- (2) Cell Sites/First Net
- (3) Remote Terminals
- (4) Fiber based services
- (5) Escalations
- (6) Local copper based services<sup>210</sup>

Information on generator inventory both in the West and in neighboring regions is readily accessible. The Regional Generator Coordinator ensures efficient regional allocation and, if needed, mobilization from "storage facilities in **Sector 2019**, CA if the outage is large enough."<sup>211</sup> Should the outage necessitate a greater response, AT&T employs one of fourteen (14) national Disaster-First Strike Teams.<sup>212</sup>

210. Id., at 7 - 8

<sup>212.</sup> AT&T Response to DR-05A, Attachment A, "ATT-TELCO-JA-000-003-359" at 30-31.



<sup>208.</sup> Poles and pole lines are often jointly owned or jointly used by the telephone and electric power utilities. The individual poles may be jointly owned, or poles may be alternately owned by the two utilities. E.g., the telephone utility may own poles 1, 3, 5, 7 and 9, and the electric utility may own poles 2, 4, 6, 8 and 10 along a given right of way. Third-party "attachees" such as cable TV or other telecommunications carriers may lease space on the poles and pay the owner(s) for their use. Poles that are used jointly by the telephone and electric utilities are organized such that the electric cables are always at the highest level, and are separated from telecommunications cables by a "buffer zone" known as the "Communications Worker Safety Zone".

<sup>209.</sup> AT&T Response to DR-04A, Attachment F, at 6-7

<sup>211.</sup> Id., at 19

#### **Disaster First Strike Team (DFST)**

The AT&T Disaster-First Strike Team (DFST) response method originated through regional team collaboration. The volunteer teams are comprised of AT&T employees experienced in disaster relief: "The teams have been trained and equipped to assist ... districts in the assessment, repair, replacement and emergency powering of DEG [Digital Electronics Group] systems. In most instances, the disaster team's mission will be totally complete within 30 days."<sup>213</sup>

Minimally, DFST teams are composed of a Team Lead, an Inventory and Administration Specialist, four (4) DEG Dispatchers, two (2) Generator Dispatchers, and a PGDB [Pair gain database] and RESTORE [Remote terminal outage tracker] Support member.<sup>214</sup> After setting up a "designated deployment/dispatch center," DEG, Construction, Core Installation and Maintenance, and Misc. Technicians are dispatched to downed sites to set up and refill generators.<sup>215</sup>

Once generators are in place, DEG Technicians respond to system-wide alarm issues.<sup>216</sup> In order to repair VRAD [Video Ready Access Device] service, policy response is dependent upon whether the Network Reliability Center is accessible and if all customers are "OK".<sup>217</sup> If both conditions are met, no action is necessary until power is restored.<sup>218</sup> If the VRAD is inaccessible, a DEG tech is dispatched.<sup>219</sup> AT&T explains further that:

If a customer report is received and the NRC can communicate with the VRAD, the NRC should verify customer provisioning and, if required, dispatch a CIM technician to verify cable pair cross connections, wiring, modem, etc. and correct the problem.

If the VRAD cannot be accessed remotely by the NRC or NO customers are OK, A DEG technician should be dispatched to the site (when safe) to verify that power is actually on. If not verify that local power plant (rectifiers, fuses, breakers) are on and functioning correctly.

- 214. Id., at 3.
- 215. Id., at 46-47.
- 216. Id., at 47.

217. Id., at 48.

218. Id.

219. Id.



<sup>213.</sup> Id., at 2.

Attempt to re-seat cards and/or remove and replace power to the VRAD prior to replacing the Network Element. If the Network Element cannot be accessed or re-provisioned, it must be replaced.<sup>220</sup>

The documentation AT&T provided failed to address the threshold constituting a national response. Additionally, though the DFST's mission rarely lasts beyond 30 days, no timetable was given for the time span between the emergency driven service outage to the arrival of DFST. Further, AT&T offered no evidence of the efficiency of a regional vs. a national response so ETI is unable to assess AT&T California's resiliency outside of the company response.



AT&T has sufficient procedures to address nationwide service outage emergencies but is unable to identify a minimum threshold for response. There is a strong basis to conclude that AT&T California lacks the resiliency to proactively withstand disasters.

## Summary

With respect to the safety, redundancy and resiliency of network, ETI was able to examine AT&T route diversity, finding that the central offices able to provide physical route diversity to the PSN also perform tandem switching functions. Further, only about a third of AT&T central offices host PSAPs and, except for those that are connected to COs that also support tandem switching functions, most PSAPs have no physical or logical route diversity to the public switched network. AT&T provided information regarding central office back-up reserve power and ETI found that 45 COs fail to meet the minimum FCC regulation. However, AT&T has yet to provide further information regarding battery-back up for subscribers served by other technologies, such as available back-up power for fiber to the neighborhood/node (FTTN), fiber to the curb (FTTC), or fiber to the home (FTTH). Finally, AT&T has provided sufficient evidence of its ability to respond in the event of a disaster. However, the absence of a standard threshold triggering a nationwide emergency response and the lack of proactive measures suggests AT&T has room to improve resiliency procedures in the state of California.

220. Id.



# **10** ASSESSMENT OF SAFETY, REDUNDANCY AND RESILIENCY OF NETWORK(S): FRONTIER

#### Principal observations and takeaways

- In rural areas and over a number of years, multiple stand-alone central office switches have been consolidated into "host/remote" configurations, offering minimal route diversity within each such consolidation.
- Stand-alone switches and tandem routing of interoffice calls, rather than host/remote configurations, are used in more densely populated urban and suburban areas.
- Frontier advises that 170 out of its 270 central offices in California currently support diverse connectivity to the Public Switched Network.
- 135 Frontier central offices, serving approximately 100,000 access lines, do not currently have redundant physical connections to the Public Switched Network.
- Only 41 out of the 93 PSAPs hosted at Frontier central offices currently have confirmed diverse connections.
- Frontier identified 241 central offices that have been equipped with at least 8 hours of back-up power; however, FCC regulations specify 24 or (for COs that support Selective Routers for 911 calls) a minimum of 72 hours of back-up power.
- Frontier did not provide sufficient data on back-up power reserves to support any conclusions as to Frontier's resiliency or ability to meet FCC regulations.
- Frontier indicated it can mobilize national resources in the event of a major emergency but failed to provide realistic measures of how that is accomplished.



# ASSESSMENT OF SAFETY, REDUNDANCY AND RESILIENCY OF NETWORK(S): FRONTIER

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#### Introduction

In response to Communications Division Data Requests made in connection with this study, Frontier has provided data and documents related to its policies, practices and procedures regarding Frontier network safety, redundancy and resiliency of infrastructure, facilities and resource management in its outside plant ("OSP") construction, engineering, and maintenance organizations.<sup>221</sup> In this chapter, we assess Frontier's resiliency based upon the information that has been provided.

#### Central office and PSAP redundancy

#### Central office connection redundancy

Frontier employs several approaches to network design and to configuration of its various central offices. Historically, central office switches were placed in central locations within their designated service areas so as to minimize the cost of the local subscriber outside plant feeder and distribution facilities that connect the central office to customers. In the pre-electronic era, electromechanical switches were physically big and complex machines that required large amounts of floor space and height. Telephone exchanges varied in size from a few hundred customers to upwards of 100,000 or more. Typically, one or more central office switches were located in each such "exchange." Outside plant feeder and distribution facilities connected individual subscribers to the central office switch, and the building in which the switch or switches was (were) located served as the homing point for these local outside plant facilities. When electronic switches were introduced in the 1980s, the new electronic switches were far more compact and smaller in size than their electromechanical counterparts.

When first introduced, the most complex and expensive component of an electronic central office switch was the central processing unit ("CPU"), a special purpose computer that provided the "intelligence" that controlled the various switching functions of individual "switching modules," each of which could serve up to a few thousand subscriber lines. These "switching modules" could be physically located in the same building as the CPU, or could be housed in remote locations with digital transport facilities connecting them to the CPU. In many smaller communities, it became more efficient to consolidate the switching requirements of a number of relatively nearby towns into a single switching system. The stand-alone electromechanical switches in many smaller exchanges were replaced by "remote service units" ("RSUs"), that were connected to the remotely-located host CPU by one or more digital transport facilities, such as T-1s (DS-1s) (each with a potential capacity of up to 24 voice-grade channels) or DS-3s (each one of which had a capacity of up to 672 individual voice-grade channels). However, the individual wire center *buildings* in each of these remotely-served communities were still needed to act as central homing points for the subscriber outside plant distribution networks.

221. Frontier Response to DR 05-F.





In rural areas and over a number of years, multiple stand-alone central office switches have been consolidated into "host/remote" configurations, offering minimal route diversity within each such consolidation.

The RSU itself was both physically and functionally similar to the switching modules that would be housed together with the host CPU. For the most part, the transport facilities connecting the host with each RSU are single "umbilical" type connections that have no redundancy or alternative routing capability in the event that the transport facility becomes disabled for any reason. That same condition still prevails today in most locations. This type of network configuration can be seen in an extract taken from a map of Frontier's California network. Figure 10.1 provides a legend of the map symbols. Figure 10.2 below illustrates the use of host/remote switch configures in the more rural portions of Frontier's territory.

The solid red lines connecting the various host switched (green circles) and remotes (green half circles) indicate the use of fiber optic transport facilities. However, these are *physical* connections that do not necessarily represent *logical* routing arrangements. As the legend (Figure 10.1) notes, "actual physical facility diversity can only be determined from outside plant and central office records. What appears diverse on this map may have commonality." In other words, the fact that a transport link physically passes through a wire center building does not necessarily mean that connectivity to that link is available at that building.<sup>222</sup>



Figure 10.1. Frontier Network Map Legend



<sup>222.</sup> Figures 10.1, 10.2, 10.4, 10.5 and 10.6 herein were extracted from Frontier's response to Communications Division data request 06 in A.15-03-005.



Figure 10.2. Portion of Frontier network in rural areas of central California.

"Physical Diversity" and "Logical Diversity" are defined at 47 CFR §12.4(a)(8) as follows:

Circuits or equivalent data paths are Physically Diverse if they provide more than one physical route between end points with no common points where a single failure at that point would cause both circuits to fail. Circuits that share a common segment such as a fiber-optic cable or circuit board are not Physically diverse even if they are logically diverse for purposes of transmitting data.

For example, in the central California map extract (Figure 10.2) above, there are five (5) remote switch units serving communities mainly in Fresno County that are identified on the corner of this map extract –

all of which are connected to a host switch at **Second Second** RSUs can only communicate with the host, and not directly with each other except via the host. Thus, and as illustrated in Figure 10.3 below, while the *physical* transport facility connecting an RSU to the host central office may pass through one or more *buildings* in which RSUs are located en route to the host switch, the *logical* channels from each





remote to the host are likely configured as "home runs" directly to the host switch with no connectivity or alternate routing at the intermediate "pass-through" locations.

Figure 10.3. Illustrative host/remote central office configuration.

In this illustration, the transport facility connecting RSU "E" to the host central office physically passes through wire centers "C" and "D", yet no connectivity is provided for RSU "E" at either of these locations. All communications among the six RSUs served by the host must pass through the host, and all connections involving any of the RSUs to the rest of the world must also pass through the host, which is the only source of connectivity to the PSTN.

While such host/remote configurations are the norm in rural and low-density areas, they are not typically used in the more densely populated urban and suburban communities, where there are a sufficient number of subscribers and traffic volumes at each wire center to support one or more stand-alone switches. Figure 10.4 is an extract from Frontier's California network map covering the company's larger exchanges in Los Angeles and Orange Counties. The vast majority of the central offices in this region are served by stand-alone switches. As in the rural area map (Figure 10.2) above, one cannot tell directly from this map where logical transport



facility terminations are present vs. pass-through channels that have no direct connectivity in the building.

Another architectural distinction between rural and urban/suburban networks is the use of tandem switches to route interoffice traffic. Multiple end-office switches are connected to the tandems, where calls are routed to other switches subtending the same tandem or, via trunks to other tandem switches, to more distant end-offices. Also present in the more densely populated areas are multiple interchange points between the Frontier and AT&T ILEC networks.



Figure 10.4. Portion of Frontier network in Los Angeles and Orange Counties.



# \*

Stand-alone switches and tandem routing of interoffice calls, rather than host/remote configurations, are used in more densely populated urban and suburban areas.

In response to a data request, Frontier has identified 170 central offices in its California network that have "physical and/or logical diverse connections to the Public Switched Telephone Network."<sup>223</sup> These are provided in Table 10.1 below. Frontier has not indicated the nature of the diverse connections or the diverse routings that each such connection is capable of supporting.



Frontier advises that 170 out of its 270 central offices in California currently support diverse connectivity to the Public Switched Network.



135 Frontier central offices, serving approximately 100,000 access lines, do not currently have redundant physical connections to the Public Switched Network.



<sup>223.</sup> Frontier response to DR-05, Request 1(a).

# Table 10.1 (page 1)

# FRONTIER CALIFORNIA CENTRAL OFFICES WITH PHYSICAL AND/OR LOGICAL DIVERSE CONNECTIONS TO THE PSTN

CLLI	CO Name	CLLI	CO Name	CLLI	CO Name	CLLI	CO Name
ADLNCAXFDS0	ADELANTO	CRCRCAXFDS0	CORCORAN	DWNYCAXG80G	IMPERIAL	MNTTCAXF96K	MONTECITO
SLBHCAXF43J	ALAMITOS	COVNCAXF33M	COVINA	INDICAXGDS0	INDIO	MRHLCAXFDS0	MORGAN HILL
NRWLCAXGDS0	ALONDRA	COVNCAXF01T	COVINA - TANDEM	LAHBCAXFDS0	LA HABRA	MUGUCAXF48G	MUGU
LNCSCAXFDS0	ANTELOPE	CRLNCAXF33X	CRESTLINE	LAPNCAXGDS0	LA PUENTE	MURTCAXF67J	MURRIETA
APVYCAXF24J	APPLE VALLEY	CCMNCAXF98K	CUCAMONGA	LAQNCAXG56L	LA QUINTA	MSCYCAXF88K	MUSCOY
ARHDCAXF33H	ARROWHEAD	CCMNCAXFDS1	CUCAMONGA	LVRNCAXF59H	LA VERNE	NWPKCAXF49K	NEWBURY PARK
ARTSCAXF86S	ARTESIA	TRNCCAXF54K	DEL AMO	LGBHCAXF49K	LAGUNA BEACH	SNBRCAXNDS0	NORTON
BLPKCAXFPSA	BALDWIN PARK	PDRYCAXF82A	DEL REY	LNCSCAXG94K	LANCASTER	NRWLCAXF92S	NORWALK
BNNGCAXF84L	BANNING	DHSPCAXF32X	DESERT HOT SPRINGS	SNBBCAXGDS0	LAS POSITAS	ONTRCAXF98K	ONTARIO
BRSWCAXHDS0	BARSTOW	DMBRCAXF86M	DIAMOND BAR	LMLNCAXF79L	LOMA LINDA	ONTRCAXMDS0	ONTARIO AIRPORT
BUMTCAXF84L	BEAUMONT	DWNYCAXF86K	DOWNEY	LMPCCAXF73K	LOMPOC	ONTRCAXP01T	ONTARIO TANDEM
BELRCAXF47K	BEL AIR	EDMTCAXF65H	EDGEMONT	LNBHCAXFDS0	LONG BEACH	OXNRCAXF48K	OXNARD
BLFLCAXF86K	BELLFLOWER	RDBHCAXF37K	EL NIDO	LNBHCAXSDS0	LONG BEACH STADIUM	PCPLCAXF45K	PACIFIC PALISADES
BRDNCAXF34G	BERMUDA DUNES	ELRICAXFDS0	EL RIO	LNBHCAXP01T	LONG BEACH TANDEM	PACMCAXF89A	PACOIMA
BBLKCAXFDS0	BIG BEAR LAKE	EKGVCAXGPS2	ELK GROVE	LSSRCAXF59J	LOS SERRANOS	PLDSCAXF34A	PALM DESERT
BSHPCAXG87X	BISHOP	ELWDCAXFDS0	ELLWOOD	LNBHCAXLDS0	M.L.KING	PLSPCAXG32G	PALM SPRINGS
LSGTCAXA35E	BLOSSOM HILL	ELSNCAXF67N	ELSINORE MAIN	MALBCAXG45A	MALIBU	PLSPCAXGDS0	PALM SPRINGS
ORCTCAXG93K	BRADLEY	ETWNCAXF89L	ETIWANDA	MMLKCAXF93F	MAMMOTH LAKES	PLSPCAXG88T	PALM SPRINGS TANDEM
WLANCAXH82J	BUNDY SANTA MONICA	EXTRCAXFDS0	EXETER	MNBHCAXF54K	MANHATTAN BEACH	TRNCCAXG37J	PALOS VERDES
WLANCAXHDS1	BUNDY WEST L.A.	BLGRCAXF92K	FLORENCE	MNTCCAXG82A	MANTECA	PERSCAXF65X	PERRIS
HNBHCAXH96A	BUSHARD	FWLRCAXF83K	FOWLER	OXNRCAXG98M	MANTILLA	WHTRCAXJ69L	PICO
CLMSCAXF79G	CALIMESA	GRVLCAXF92E	GARBERVILLE	LAPNCAXLDS0	MAPLEGROVE	POMNCAXF62E	POMONA
CMRLCAXF48K	CAMARILLO	GLRYCAXFDS0	GILROY	CLCYCAXG39K	MAR VISTA	QUVYCAXF24K	QUAIL VALLEY
CRPRCAXF68K	CARPINTERIA	GLNDCAXF33M	GLENDORA	LNBHCAXH42P	MARKET	QZHLCAXF94K	QUARTZ HILL
CHNOCAXF62J	CHINO	GOLTCAXF96K	GOLETA	SNBRCAXH88K	MARSHALL	RNCACAXF67X	RANCHO CALIF
CLMTCAXF62G	CLAREMONT	GRHLCAXF36J	GRANADA HILLS	MENTCAXF79X	MENTONE	RNMGCAXFDS0	RANCHO MIRAGE
LNBHCAXMDS0	CLARK	HEMTCAXF65C	HEMET	MNRVCAXG35K	MONROVIA	RDLDCAXF79K	REDLANDS
CCHLCAXF39L	COACHELLA	HSPRCAXFDS0	HESPERIA	LSGTCAXF35K	MONTEBELLO	HRBHCAXA37K	REDONDO BEACH
ТНОКСАХН49К	CONEJO	HNBHCAXG96L	HUNTINGTON BEACH	LSGTCAXFDS0	MONTEBELLO	RDLYCAXF63K	REEDLEY
Source: Fronti	ier response to	DR-05F, Requ	uest 1.a.				



Table 10.1 (page 2)									
FRONTIER CALIFORNIA CENTRAL OFFICES WITH PHYSICAL AND/OR LOGICAL DIVERSE CONNECTIONS TO THE PSTN									
CLLI	CO Name	CLLI	CO Name	CLLI	CO Name	CLLI	CO Name		
RDGCCAXGDS0	RIDGECREST	SNMNCAXPPSA	SANTA MONICA	TMCLCAXGDS0	TEMECULA	VTVLCAXADS0	VICTORVILLE		
PCRVCAXFDS0	RIO HONDO	SNMNCAXP01T	SANTA MONICA TANDEM	TMCLCAXHPSA	TEMECULA	WLNTCAXFDS0	WALNUT		
RLHLCAXF79L	ROLLING HILLS	SLVNCAXG68K	SANTA YNEZ	LNBHCAXT43K	TERMINO	HNBHCAXL84S	WARNER		
LAPNCAXF91K	ROWLAND	SPLVCAXF89K	SEPULVEDA	THOKCAXF49J	THOUSAND OAKS	SNBRCAXLDS0	WATERMAN		
LAPNCAXFDS1	ROWLAND	SPLVCAXFDS1	SEPULVEDA	THOKCAXFDS1	THOUSAND OAKS	WVVLCAXGDS0	WEAVERVILLE		
SNBRCAXK88E	SAN BERNARDINO	SRMDCAXF35K	SIERRA MADRE	THPLCAXFDS0	THOUSAND PALMS	WLANCAXFDS1	WEST LOS ANGELES		
SNDMCAXF59C	SAN DIMAS	HNBHCAXF84C	SLATER	WLANCAXJDS0	UNIVERSITY	WMNSCAXFDS0	WESTMINSTER		
SNFNCAXG36K	SAN FERNANDO	ONTRCAXG94L	SOUTH ONTARIO	UPLDCAXF98G	UPLAND	WLANCAXG47G	WESTWOOD		
SNJCCAXG65F	SAN JACINTO	SNCYCAXF67K	SUN CITY	LNBHCAXGDS0	UPTOWN	WHTRCAXF69M	WHITTIER SOUTH		
SNJQCAXFDS0	SAN JOAQUIN	SNLDCAXF35K	SUNLAND	LSANCAIODS0	USC OLIN HALL	WHTRCAXG94C	WHITWOOD		
SNGRCAXF87A	SANGER	SNYMCAXF92F	SUNNYMEAD	VLVSCAXF92X	VALLE VISTA	YUCPCAXF79M	YUCAIPA		
SNBBCAXF96K	SANTA BARBARA	SNMNCAXJ31K	SUNSET	WHTRCAXH94K	VALLEY VIEW	YCVYCAXG36X	YUCCA VALLEY		
SNTMCAXF92K	SANTA MARIA	SYLMCAXF36K	SYLMAR	VTVLCAXA79T	Victor Vill 79T	MALBCAXF45K	ZUMA		
SNMNCAXGDS0	SANTA MONICA	TAFTCAXFDS0	TAFT						
Source: Fronti	er response to	DR-05F, Requ	iest 1.a.	•	•	•	•		

In Advice Letter 12802 dated December 17, 2018, Frontier advised the Commission "that 1,439,542 of 1,545,090 (93.1 %) working lines within the Frontier California footprint are currently served via Exchanges with redundant physical connections."<sup>224</sup> In that same Advice Letter, Frontier has identified approximately 135 central offices that do not currently have any route diversity, explaining, for each, that there is "No financially-viable solution available."<sup>225</sup> As shown on Table 10.2 below, these 135 central offices serve approximately 100,000 access lines:



<sup>224.</sup> Advice Letter 12802, December 17, 2018, submitted "[i]n compliance with CPUC Decision No.15-12-005, Ordering Paragraph 9," Attachment A.

<sup>225.</sup> Note that there may be an inconsistency between Frontier's responses to DR-05F and the information it has provided the CPUC in Advice Letter 12802. As noted above, in response DR-05F, Response 1(a), Frontier identified 170 central offices in its California network that have "physical and/or logical diverse connections to the Public Switched Telephone Network." That would leave 100 central offices with *no* physical redundancy to the PSTN. However, Advice Letter 12802 lists 135 individual central offices with no redundant physical connections.

Table 10.2							
FRONTIER CALIFORNIA CENTRAL OFFICES WITH NO DIVERSITY							
County	Central Office	CLLI	Lines	Sile Type	CUrrent Topology	Diversity Solution/Issue	
Colusa			1,226	Remote Office	Single-Threaded FTR fiber	No financially-viable so lution available	
Colusa			2,287	Base Office	Single-Threaded FTR fiber	No financially-viable solution available	
Colusa			136	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Colusa			473	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Colusa			177	Remote Office	Single-Threaded FTR fiber	No financially-viable solullon available	
Colusa			1,413	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Del Norte			197	Remote Office	Single-Threaded FTR fiber	No financially-via ble solution available	
Del Norte			248	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Del Norte			504	Remote Office	Single-Threaded FTR fibe r	No financially-viable solution available	
Del Norte			150	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Fresno			105	Remote Office	Single-Threaded FTR copper	No financially-viable solution availabk!	
Fresno			329	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Fresno			335	Remote Office	Single-Threaded Digital Radio	No financially-viable solution available	
Fresno			121	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Fresno			191	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Fresno			181	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Fresno			648	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Fresno			237	Remote Office	Single-Threaded FTR fiber	No financially-via ble solution available	
Humbolt			127	Remote Office	Single-Threaded FTR copper	No financially-viable solution available	
Humbolt			787	Remote Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available	
Humboll			764	Remote Office	Single-Threaded Digital Radio	No financially-viable solution available	
Humboll			336	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Humboll			750	Remote Office	Single-Threaded Digital Rad io	No fina ncially-viable solution available	
Humbolt			1,161	Remote Office	Single-Threaded Digital Rad io	Fiber route Weaverville to Willow Creek	
Kern			29	Remote Office	Single-Threaded FTR copper	No financially-viable solution available	
Kern			1,627	Remote Office	Single-Threaded FTR fiber	Diverse Radio System planned for 2018	
Ke rn			2,054	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Kern			474	Remote Office	Sing le-Threaded Digital Radio	No financially-viable solution available	
Kern			1,240	Remote Office	Single-Threaded Digital Radio	No financially-viable solution available	
Kern			1,784	Remote Office	Single-Threaded Digital Radio	No financially-viable solution available	
Kern			404	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Kern			191	Remote Office	Single-Threaded FTR fiber	No financially-viable so lution available	
Kern			699	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
lassen			405	Remote Office	Single-Threaded FIR fiber	No financially-viable solution available	
lassen			245	Remote Office	Single-Threaded Analog Radio	No finan cially-viable solution available	





Table 10.2 (page 2 of 4)						
County	Central Office	CIII Lines	Sile Type	Current Topology	Diversity Solution/Issue	
lassen		495	Remote Office	Single-Threaded Analog Radio	No financially-viable solution available	
lassen		894	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
lassen		1.203	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Lassen		63	Remote Office	Single-Threaded Analog Radio	No financially-viable solution available	
lassen		363	Remote Office	Single-Threaded FTR fiber	No financial ly-viable solution available	
Lassen		5,176	Base Office	Single-Threaded FTR fiber	No financially-viable solution available	
Lassen		566	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
los Ange les		892	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Marin		5,232	Base Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution avai lable	
Mendocino		615	Base Office	Single-Threaded Digital Radio/ copp	No financially-viable solution available	
Mendocino		887	Base Office	Single-Threaded Digital Radio	No financially-viable solution available	
Mendocino		108	Remote Office	Single-Threaded Digital Radio	No financially-viable solution available	
Merced		928	Base Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available	
Merced		2,770	Base Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available	
Merced		200	Remote Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available	
Modoc		252	Remote Office	Single-Threaded FTR fiber	No finan cially-viable solution available	
Modoc		2,621	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Modoc		542	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Mono		150	Remote Office	Single-Threaded FTR fiber	Planned Interconnection with Digital 395	
Mono		683	Remote Office	Single-Threaded FTR fiber	Planned Interconnection with Digital 395	
Mono		444	Remote Office	Single-Threaded FTR fiber	Planned Interconnection with Digital 395	
Mono		226	Remote Office	Single-Threaded FIR fiber	Planned Interco nnection with Digital 395	
Mono		428	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Monterey		73	Remote Office	Single-Threaded FTR fiber	No financia lly-viable solution available	
Placer		1,089	Base Office	Single-Threaded FTR fi ber	No financially-viable solution available	
Placer		523	Remote Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available	
Plumas		1,172	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Plumas		1,295	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Plumas		77	Remote Office	Single-Threaded FTR copper	No financially-viable solution available	
Plumas		661	Remote Office	Single-Threaded Analog Radio	No financially-viable solution available	
Riverside		608	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Riverside		3,509	Base Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available	
Riverside		59	Remote Office	Single-Threaded Digital Radio	No financially-viable solution available	
Riverside		136	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Riverside		1,568	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Riverside		1,121	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Riverside		425	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	
Riverside		254	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available	



Table 10.2 (page 3 of 4)						
County	Central Office	CLU	lines	Sile Type	CUrrent Topology	Diversity Solution/Issue
Riverside			637	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
Sacramento			624	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
Sacramento			697	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
Sacramento			515	Remote Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available
Sacramento			772	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
San Bernardino			63	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
San Bernardino			252	Remote Office	Single-Threaded Analog RadiO	No financially-viable solution available
San Bernardino			269	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
San Bernardino			211	Remote Office	Single-Threaded Analog Radio	No financially-viable solution available
San Bernardino			698	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
San Bernardino			1,013	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
San Bernardino			1,533	Base Office	Single-Threaded FTR fiber	No financially-viable solution available
San Bernardino			295	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
San Berna rd ino			3,101	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
San Bernardino			984	Remote Office	Single-Threaded Digital Radio	No financially-viable solution available
San Bernardino				Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
San Bernardino			580	Remote Office	Single-Threaded FTR fiber	Diverse Radio System planned for 2018
San Bernardino			1,468	Base Office	Single-Threaded FTR fiber	No financially-viable solution available
San Bernardino			1,626	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
San Joaquin			323	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
San Joaquin			180	Remote Office	Single-Threaded FTR fibe r	No financially-viable solution available
San Joaquin			796	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
San Luis Obispo			700	Base Office	Single-Threaded Fiber to Carrier Me	No financially~viable solution available
Santa Barbara			212	Remote Office	Single-Threaded Digital Radio	No financially-viable solution available
Santa Barbara			1,426	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
Santa Barbara			593	Remote Office	Single~Threaded FTR fibe r	No financially~viable solution available
Shasta			1,155	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
Shasta			2,283	Base Office	Single-Threaded FTR fiber	No financially~viable solution available
Shasta			1S34	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
Shasta			463	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
Shasta			933	Remote Office	Single-Threaded FTR fib er	No financially-viable solution available
Shasta			2,486	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available
Siskiyou			552	Remote Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available
Solano			3,397	Base Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available
Sonoma			455	Base Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available
Sonoma			486	Base Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available
Sonoma			1,328	Base Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available
Sonoma			482	Remote Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available



Table 10.2 (page 4 of 4)								
County	Central Office	CLLI	Lines	Sile Type	CUrrent Topology	Diversity Solution/Issue		
Stanislaus			3,708	Base Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available		
Sutter			95	Remote Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available		
Tehama			219	Remote Office	Single-Threaded Analog Radio	No financially-viable solution available		
Tehema			1,948	Remote Office	Single-Threaded Analog Radio	No financially-viable solution available		
Trinity			763	Remote Office	Single-Threaded Digital Radio	No financially~viable solution available		
Trinity			275	Remote Office	Single-Threaded Digital Radio	No financially-viable solution available		
Tulare			118	Remote Office	Single-Threaded FTR fiber	No financially~viable solution available		
Tulare			95	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available		
Tulare			362	Remote Office	Single-Threaded FTR copper	No financially-viable solution available		
Tulare			114	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available		
Tulare			2,270	Base Office	Single-Threaded FTR fiber	No financially-viable solution available		
Tulare			627	Remote Office	Single-Threaded FTR fiber	No financially-viable solution available		
Tuolumne			1,280	Base Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available		
Ventura			3,545	Base Office	Dual fiber common conduit	No financially-viable solution available		
Yolo			338	Remote Office	Single-Threaded FTR fiber	No financially-viable so[utlon available		
Yolo			709	Base Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available		
Yolo			221	Base Office	Single-Threaded Fiber to Carrier Me	No financially-viable solution available		
TOTAL			110,618					
Source: Frontier	ource: Frontier Advice Letter 12802 December 17, 2018							



### Public Safety Answering Point routing redundancy

A "Public Safety Answering Point" ("PSAP") is a facility that receives emergency "911" type calls and dispatches police, fire, medical or other emergency assistance as needed. PSAPs are typically operated by a local city, county or other government entity such as the police, fire department, or sheriff, and serve defined geographic areas. PSAPs are supported by a customer database that contains detailed name and location information that is keyed to the calling telephone number. When a 911 call is placed from a legacy wireline (circuit-switched) or fixed VoIP telephone line, the calling number and associated customer name and location data is displayed at a 911 operator terminal.<sup>226</sup>

Because PSAPs need to be reached immediately when an emergency arises and need to provide immediate assistance, they have a special requirement for route diversity. Calls placed to the majority of PSAPs in California involve an interoffice connection of some sort, underscoring the need for network route diversity. In addition, if a PSAP becomes overloaded (e.g., in the case of a natural disaster than affects large numbers of people) or becomes disabled (e.g., by the natural disaster itself), the ability to route 911 calls to an alternate PSAP is critical.

Routing of 911 calls to the applicable PSAP is accomplished initially at the Selective Router to which the central office that serves the caller's access line has been assigned. As shown in Table 10.3, Frontier has identified 93 PSAPs within Frontier California's operating area that are "hosted" by 79 Frontier central offices.<sup>227</sup> All calls to 911 are first sent to a Selective Router which, after identifying the appropriate PSAP, physically routes the call to that PSAP. Some central offices host more than one PSAP, and the diversity status apparently may differ even among the several PSAPs hosted by the same CO. Of the 93 PSAPs that Frontier has identified, 41 have diverse connections, 17 have connections that are described as "Not Diverse," 42 are shown as having "Non-FTR Segments-Inconclusive," and 3 have connections that Frontier states it is currently reviewing.<sup>228</sup> 32 connections are diverse under Frontier but are transported using a third party and it is unknown whether those connections remain diverse.<sup>229</sup> There are only 11 Selective Routers in Frontier's California service territory.

<sup>229.</sup> Frontier explains that it "uses a 3rd party to carry some of the transport. The Frontier portion is diverse, but Frontier cannot commit that the 3rd party is diverse."



<sup>226.</sup> Due to their mobile nature, the precise geographic location of a mobile wireless phone at the time that it places a call to 9-1-1 cannot be known with anywhere near the degree of accuracy or precision afforded fixed wireline services. See Chapter 9, footnote 197.

<sup>227.</sup> Frontier Response to DR-05F, Attachment 2.

<sup>228.</sup> Id.

Ta	able 10.3				
FRONT					
PUBLIC SAFETY ANSWERING POINTS (PSAPs) AND HOST CENTRAL OFFICES					
City DSAD Name	PSAP Serving Office Diverse				
City FOAF Hame	Diverse				
	NON FTR Segments-				
	Inconclusive (note 1)				
	Diverse				
	Diverse				
	Not Diverse				
	Not Diverse				
	Diverse				
	Under Review				
	Diverse				
	NON FTR Segments-				
	Inconclusive (note 1)				
	Diverse				
	NON FTR Segments- Inconclusive (note 1)				
	Diverse				
	Not Diverse				
	Diverse				
	Not Diverse				
	NON FTR Segments-				
	Inconclusive (note 1)				
	NON FTR Segments-				
	NON FTR Segments-				
	Inconclusive (note 1)				
	Not Diverse				
	Diverse				
	Diverse				
	Under Review				
	NON FTR Segments-				
	Inconclusive (note 1)				
	Diverse				



	Table 10	.3 (page 2 of 3)	
Cify	PSAP Name	PSAP Serving Office	Divorsa
City	FOAF Name	POAP Gerving Office	Diverse
			NON ETR Segmente.
			Inconclusive (note 1)
			Not Diverse
		-	Not Diverse
			Not Diverse
			Not Diverse
			Divarse
			NON ETP Segmente
			Inconclusive (note 1)
			Under Review
			Diverse
			Not Diverse
			NON FTR Segments-
			Inconclusive (note 1)
		4	NON FTR Segments-
			Inconclusive (note 1)
			NON FTR Segments-
			Inconclusive (note 1)
			NON FTR Segments-
		8	Inconclusive (note 1)
		-	Diverse
			Not Diverse
			NON FTR Segments-
			Not Diverse
			Diverse
			Diverse
		-	Diverse
			NON FTR Segments-
		1 <mark>-</mark>	Inconclusive (note 1)
			Not Diverse
			Diverse
			NON FIR Segments-
		-	Diverse
			Diverse
			Diverse
			NON FTR Segments-
			Inconclusive (note 1)
			NON FTR Segments-
			Inconclusive (note 1)
			Diverse
			Diverse
			Diverse
		2	Diverse



Table 10.3 (page 3 of 3)						
City	PSAP Name	PSAP Serving Office	Diverse			
			NON FTR Segments-			
			Inconclusive (note 1)			
			NON FTR Segments-			
			Inconclusive (note 1)			
			Diverse			
			NON FTR Segments-			
			Inconclusive (note 1)			
			NON FTR Segments-			
			Inconclusive (note 1)			
			NON FTR Segments-			
			Inconclusive (note 1)			
			NON FTR Segments-			
			Inconclusive (note 1)			
			Diverse			
			Diverse			
			Diverse			
			Diverse			
			NON FTR Segments-			
			Inconclusive (note 1)			
			Not Diverse			
			NON FTR Segments-			
			Inconclusive (note 1)			
			Not Diverse			
			NON FTR Segments-			
			Inconclusive (note 1)			
			NON FTR Segments-			
			Inconclusive (note 1)			
			NON FTR Segments-			
			Inconclusive (note 1)			
			Not Diverse			
			Not Diverse			
			Diverse			
			Diverse			
			Diverse			
			NON FTR Segments-			
			Inconclusive (note 1)			
			Diverse			
			NON FTR Segments-			
			Inconclusive (note 1)			
			NON FTR Segments-			
			Inconclusive (note 1)			
Source: Frontier response Frontier portion is diverse,	to DR-05F, Request 2. Note 1 but Frontier cannot commit tha	: Frontier uses a 3rd party to carr t the 3rd party is diverse	y some of the transport. The			



# B

Only 41 out of the 93 PSAPs hosted at Frontier central offices currently have confirmed diverse connections.

Central office serving areas do not necessarily correspond with municipal boundaries, and in fact most do not. Customers served by a given central office may live in different towns or even different counties, or be assigned to different PSAPs even within the same municipality. As a result, accurate routing of E911 calls requires that the correct PSAP be associated with each access line based upon the customer's physical address. Selective routers perform this function. A primary and secondary route has been established for every PSAP, and both are maintained in the Selective Router's database. If one route is unavailable or inoperative, the call will be delivered via the secondary route.<sup>230</sup> Figure 10.5 below provides a schematic diagram of the PSTN components that are involved in routing calls to the correct PSAP whan a customer dials 911.



Figure 10.5. Handling of E911 calls via Selective Routers and Automatic Line Identification ("ALF") database lookups.

<sup>230.</sup> See, National Emergency Number Association (NENA) VoIP E9-1-1 Requirements Working Group, "NENA Generic E9-1-1 Requirements Technical Information Document," Issue 1, July 23, 2004, at § 2.1.3.



E911 calls are first routed to the Selective Router that identifies the specific PSAP to which the caller (based upon location) has been assigned, and sends the call, together with the calling number, to the specified PSAP. The calling number is transmitted to one of two Frontier Automatic Location Identification ("ALI") databases, which returns the caller's street address and other geographic location information. The results of this database "dip" are then provided to the PSAP dispatcher for display on a terminal. According to this diagram, Frontier maintains only two (2) ALI databases nationally, one located in Longmont, Colorado and the other in Miami, Florida. These remote databases, and the ability of service providers to gain access to them, are critical to the functioning of the E911 emergency reporting system. On December 27, 2018, an outage occurred at an ALI database operated by CenturyLink that served a number of wireless carriers nationwide. The outage essentially shut down wireless E911 service in sections of Arizona, New Mexico, Colorado, Idaho, Wyoming, Massachusetts, Missouri, Oregon and western Washington state, among other places.<sup>231</sup> Its occurrence underscores the potential vulnerability of all E911 services to remotely-located – and seemingly nonredundant – ALI databases.



<sup>231. &</sup>quot;A nationwide CenturyLink outage is disrupting 911, and the FCC is investigatin,g" *Washington Post*, December 28, 2018. Available at

 $https://www.washingtonpost.com/technology/2018/12/28/nationwide-centurylink-outage-is-disrupting-fcc-is-investigating/?noredirect=on&utm_term=.f78e8257d621 (accessed 1/22/19)$ 

Figure 10.6 below provides a map of the Frontier network in the Central Valley and indicates the two PSAPs to which all E911 calls originated within this area must be routed.



Figure 10.6. Frontier's network and PSAPs connections serving California's Central Valley.

PSAPs are hosted at only two (2) of the fourteen (14) central offices shown on this diagram. Referring back to Table 10.2 above, nine (9) of these fourteen (14) central offices are identified as having no route diversity or redundancy, with the explanation that there is "[n]o financiallyviable solution available."<sup>232</sup> Additionally, according to this diagram, several connections involve routing via AT&T facilities, although the specific route details are not provided.

In addition to their primary routing function, Selective Routers can also support Alternate, Overflow and Default PSAP routing. If an Alternate PSAP is specified, E911 calls will be routed to that site if the primary PSAP is unavailable for any of several reasons (e.g., an alltrunks busy condition, a preestablished alternate PSAP when the primary PSAP is not in operation). A Default PSAP may also be specified where the calling telephone number is not available (and hence the caller's location cannot be definitively established).<sup>233</sup>

<sup>233.</sup> NENA Generic E9-1-1 Requirements, at § 2,3,1,2,



<sup>232.</sup> The nine Central Valley central offices identified as having no redundancy are
### Back-up power requirements and availability

### Central Offices

FCC regulations specify minimum back-up power requirements for central offices that host or otherwise provide connections to PSAPs.<sup>234</sup> Two categories of central offices are defined for this purpose based upon whether or not the central office hosts a "selective router." A "Selective Router" is "[a] 911 network component that selects the appropriate destination PSAP for each 911 call based on the location of the caller."235

With respect to any central office it operates that directly serves a PSAP, a covered 911 service provider shall certify whether it:

(A) Provisions backup power through fixed generators, portable generators, batteries, fuel cells, or a combination of these or other such sources to maintain full-service functionality, including network monitoring capabilities, for at least 24 hours at full office load or, if the central office hosts a selective router, at least 72 hours at full office load; provided however, that any such portable generators shall be readily available within the time it takes the batteries to drain, notwithstanding potential demand for such generators elsewhere in the service provider's network.

Frontier provided a tabulation of 241 California central offices with back-up power in excess of eight (8) hours, derived from a combination of battery and back-up generator power sources.<sup>236</sup> These central offices are listed in Table 10.4 below. Frontier did not specify the minimum backup power requirement (i.e., 24 or 72 hours) for each CO or the actual number of hours for which back-up power is available at that site. ETI is thus unable to determine how many Frontier central offices meet the FCC requirements.



Frontier identified 241 central offices that have been equipped with at least 8 hours of back-up power; however, FCC regulations specify 24 or (for COs that support Selective Routers for 911 calls) a minimum of 72 hours of back-up power.



<sup>234. 47</sup> CFR §12.4 (c)(2)(i) - Reliability of covered 911 service providers

<sup>235. 47</sup> CFR §12.4(a)(10).

<sup>236.</sup> Frontier Response to DR-05F, Attachment 3.

RF

Frontier did not provide sufficient data on back-up power reserves to support any conclusions as to Frontier's resiliency or ability to meet FCC regulations.

# Table 10.4 (page 1)

# FRONTIER CALIFORNIA CENTRAL OFFICES WITH AT LEAST 8 HOURS OF BACK-UP POWER

CLLI	CO Name	CLLI	CO Name	CLLI	CO Name	CLLI	CO Name
ADLNCAXFDS0	ADELANTO	BTNWCAXF	BUTTON	ELMGCAXFH01	el Mirage	KRVLCAXFH01	KERNVILLE
SLBHCAXF43J	ALAMITOS	CHSPCAXF	CALIF HOT SPRINGS	RDBHCAXF37K	EL NIDO	KNLDCAXF	KNIGHTS LANDING
ALPNCAXF	ALDERPOINT	CLMSCAXF79G	CALIMESA	ELRICAXEDSO	EL RIO	LAHBCAXFDSO	LA HABRA
NRWLCAXGDS0	ALONDRA	CMRLCAXF48K	CAMARILLO	ELWDCAXFDSO	ELLWOOD	LAPNCAXGDSO	LA PUENTE
ALPGCAXF	ALPAUGH	CNCKCAXF	CANTUA CREEK	ELSNCAXG67K	ELSINORE GRAND	LAQNCAXG56L	LA QUINTA
LNCSCAXF	ANTELOPE	CRPRCAXF68K	CARPINTERIA	ELSNCAXF67N	ELSINORE MAIN	LVRNCAXF59H	LA VERNE
APVYCAXF24J	APPLE VALLEY	CZDRCAXGDS0	CAZADERO	ETWNCAXF89L	ETIWANDA	LGBHCAXF49K	LAGUNA BEACH
ARHDCAXF33H	ARROWHEAD	CHILKCAXF	CHINA LAKE	EXTRCAXFDS0	EXETER	LNCSCAXE	LANCASTER
ARHDCAXF92F	ARROWHEAD	CHNOCAXF62J	CHINO	FRTNCAXFH01	FARMINGTON	LNCSCAXG94K	LANCASTER
ARTSCAXF86S	ARTESIA	CLMTCAXF62G	CLAREMONT	FLWSCAXF	FELLOWS	SNBBCAXGDS0	LAS POSITAS
AZUSCAXF33K	AZUSA	LNBHCAXMDS0	CLARK	BLGRCAXF92K	FLORENCE	LTHPCAXE	LATHROP
AZUSCAXF33K	AZUSA	CLEMCAXFH01	CLEMENTS	FTIRCAXFH01	FORT IRWIN	LYVLCAXFDS0	LAYTONVILLE
BLPKCAXF33K	BALDWIN PARK	CCHLCAXF39L	COACHELLA	FWLRCAXF83K	FOWLER	LVNGCAXFH01	LEE VINING
BNNGCAXF84L	BANNING	CLFXCAXF34E	COLFAX	GRVLCAXF92E	GARBERVILLE	LGGTCAXF	LEGGETT
BRSWCAXHDS0	BARSTOW	THOKCAXH49K	CONEJO	GLRYCAXFDS0	GILROY	LMCVCAXFH01	LEMON COVE
BUMTCAXE	BEAUMONT	CRCRCAXFDS0	CORCORAN	GLNDCAXF33M	GLENDORA	LNWDCAXFH01	LENWOOD
BELRCAXF47K	BEL AIR	CVELCAXE	COVELO	GLVLCAXF	GLENNVILLE	LNDNCAXF	LINDEN
BLFLCAXF86K	BELLFLOWER	COVNCAXF33M	COVINA	GOLTCAXF96K	GOLETA	LNDSCAXF56K	LINDSAY
BNTNCAXFH01	BENTON	CRLNCAXF33X	CRESTLINE	GRHLCAXF36J	GRANADA HILLS	LMLNCAXF79L	LOMA LINDA
BRMSCAXF	BERRENDA MESA	CRLKCAXFH01	CROWLEY LAKE	HYFKCAXE	HAYFORK	LMPCCAXF73K	LOMPOC
BBCYCAXFH01	BIG BEAR CITY	CCMNCAXF98K	CUCAMONGA	HEMTCAXF65C	HEMET	LNPNCAXFH02	LONE PINE
BBLKCAXFDS0	BIG BEAR LAKE	CUYMCAXF	CUYAMA	HSPRCAXFDS0	HESPERIA	LNBHCAXFDS0	LONG BEACH MAIN
BGPICAXF	BIG PINE	TRNCCAXF54K	DEL AMO	HMLDCAXF92H	HOMELAND	LSSRCAXF59J	LOS SERRANOS
BSHPCAXG87X	BISHOP	PDRYCAXF30K	DEL REY	HOPACAXE	HOOPA	LSHLCAXF	LOST HILLS
LSGTCAXA35E	BLOSSOM HILL	DHSPCAXF32X	DESERT HOT SPRINGS	DWNYCAXG80G	IMPERIAL	LCVYCAXF	LUCERNE VALLEY
BORNCAXFH01	BORON	DSKNCAXF	DESERT KNOLLS	INDPCAXF	INDEPENDENC E	MDRVCAXF	MAD RIVER
ORCTCAXG93K	BRADLEY	DMBRCAXF86M	DIAMOND BAR	INDICAXGDS0	INDIO	MALBCAXG45A	MALIBU
BRPTCAXFH01	BRIDGEPORT	DSPLCAXFDS0	DOS PALOS	INYKCAXFH01	INYOKERN	MMLKCAXF93F	Mammoth Lakes
WLANCAXH82J	BUNDY WLA	DWNYCAXF86K	DOWNEY	JNLKCAXFH02	JUNE LAKE	MNBHCAXF54K	MANHATTAN



Table 10.4 (page 2)							
FRONTIER CALIFORNIA CENTRAL OFFICES							
CLLI	CO Name	CLLI	CO Name	CLLI	CO Name	CLLI	CO Name
OXNRCAXG98M	MANTILLA	OXNRCAXF48K	OXNARD	SNFNCAXG36K	SAN FERNANDO	TRNQCAXF	TRANQUILITY
LAPNCAXLDS0	MAPLEGROVE	PCPLCAXF45K	PACIFIC PALISADES	SNJCCAXG65F	SAN JACINTO	TWPLCAXF36K	TWENTYNINE PALMS
CLCYCAXG39K	MAR VISTA	PACMCAXF36K	PACOIMA	SNJQCAXF	SAN JOAQUIN	WLANCAXJDS0	UNIVERSITY
MRCPCAXF	MARICOPA	PLDSCAXF34A	PALM DESERT	SNMGCAXFDS0	SAN MIGUEL	UPLDCAXF98G	UPLAND
LNBHCAXH42P	MARKET	PLSPCAXG32G	PALM SPRINGS EAST	SNGRCAXF	SANGER	LNBHCAXGDS0	UPTOWN
SNBRCAXH88K	MARSHALL	TRNCCAXG37J	PALOS VERDES	SNBBCAXF96K	SANTA BARBARA	VLVSCAXF92X	VALLE VISTA
LNBHCAXL	MARTIN L KING	PRFDCAXF	PARKFIELD	SNTMCAXF92K	SANTA MARIA	WHTRCAXH94K	VALLEY VIEW
MCFACAXFH01	MCFARLAND	PERSCAXF65X	PERRIS	SNMNCAXGDS0	SANTA MONICA	VTVLCAXADS0	VICTORVILLE
MCKTCAXF_	MCKITTRICK	WHTRCAXJ69L	PICO	SNPLCAXF52A	SANTA PAULA	WLNTCAXFDSO	WALNUT
MECCCAXF	MECCA	PIRCCAXF	PIERCY	SNPLCAXF52K	SANTA PAULA	HNBHCAXL84S	WARNER
MRMNCAXFRS4	MIRAMONTE	PNCKCAXFH01	PINECREEK	SLVNCAXG68K	SANTA YNEZ	BRDNCAXF34G	WASHINGTON STREET
MNRVCAXG35K	MONROVIA	POMNCAXF62E	POMONA	SERNCAXGDS0	SEA RANCH	SNBRCAXLDS0	WATERMAN
LSGTCAXFDS0	MONTEBELLO	QUVYCAXF24K	QUAIL VALLEY	SPLVCAXF89K	SEPULVEDA	WVVLCAXGDS0	WEAVERVILLE
MNTTCAXF96K	MONTECITO	QZHLCAXF94K	QUARTZ HILL	SRMDCAXF35K	SIERRA MADRE	WLDNCAXF	WELDON
MRHLCAXFDSO	MORGAN HILL	RNCACAXF67X	RANCHO CALIFORNIA	HNBHCAXF84C	SLATER	WLANCAXF47K	WEST LOS ANGELES
LSGTCAXGRS1	MOUNTAIN	RNMGCAXF32L	RANCHO MIRAGE	SNNGCAXG	SNELLING	WMNSCAXFDS0	WESTMINSTER
MUGUCAXF48G	MUGU	RNBGCAXF	RANDSBURG	BRSWCAXJ	SOUTH BARSTOW	WLANCAXG47G	WESTWOOD
MURTCAXF67J	MURRIETA	TMCLCAXHDS0	REDHAWK	LNBHCAXS	STADIUM	WHTNCAXF	WHITEHORN
MSCYCAXF88K	MUSCOY	RDLDCAXF79K	REDLANDS	SNCYCAXF67K	SUN CITY	WHTRCAXF69M	WHITTIER SOUTH
NWBRCAXF	NEWBERRY	HRBHCAXA37K	REDONDO	SNLDCAXF35K	SUNLAND/TUJU NGA	WHTRCAXG94C	WHITWOOD
NWPKCAXF49K	NEWBURY PARK	RDLYCAXF63K	REEDLEY	SNYMCAXF92F	SUNNYMEAD	WWCKCAXF	WILLOW CREEK
NEDWCAXF	NORTH EDWARDS	RDGCCAXGDS0	RIDGECREST	SNMNCAXJ31K	SUNSET	WRWDCAXF	WRIGHTWOOD
SNBRCAXNDS0	Norton	PCRVCAXFDS0	RIO HONDO	SYLMCAXF36K	SYLMAR	YERMCAXF	YERMO
NRWLCAXF92S	NORWALK	RIPNCAXF	RIPON	TAFTCAXFDS0	TAFT	YUCPCAXF79M	YUCAIPA
NOVTCAXFDS0	NOVATO	RBNSCAXG	ROBBINS	TMCLCAXGDS0	TEMECULA	YCVYCAXG36X	YUCCA VALLEY
OLNCCAXFH01	OLANCHA	RLHLCAXF54A	ROLLING HILLS	LNBHCAXT43K	TERMINO	MALBCAXF45K	ZUMA
ONTRCAXMDSO	ONTARIO AIRPORT	LAPNCAXF91K	ROWLAND	THOKCAXF49J	THOUSAND OAKS 2	GVTACAXA	
ONTRCAXF98K	ONTARIO MAIN	RNSPCAXF	RUNNING SPRINGS	THPLCAXFDS0	THOUSAND PALMS	SRVYCAXF	
ONTRCAXG94L	ONTARIO SOUTH	SNBRCAXK88E	SAN BERNARDINO	TMCVCAXH	TIMBER COVE	WDFRCAXF	
ORLNCAXF	ORLEANS	SNDMCAXF59C	SAN DIMAS	TVVYCAXFL01	TIVY VALLEY	WEWRCAXF	
ORMACAXF	ORO LOMA						
Source: Frontie	Source: Frontier response to DR-05F, Request 3.a.i .confidential attachment DR 5 Attachment 3						



### **Electronic Field Equipment**

Frontier was asked to provide company standards for parallel power system for equipment (either video-ready access device (VRAD) or fiber to the premises (FTTP)) and for battery backup at individual subscriber locations. Frontier responded that for VRAD (also known as, FTTN, fiber to the neighborhood/node) it utilizes "commercial AC converted to DC power with battery backup at node. POTS service is conventional at the customer end and doesn't require additional powering at the customer premise." For FTTP, Frontier similarly uses "commercial AC converted to DC power with battery backup," now at the central office, and it is "passive (no line power) from the Central Office to the customer premise."

In response to the matter of battery back-up at subscriber locations, Frontier does not provide customer premises back-up for POTS or VRAD (FTTN) service. However, Frontier does require eight hours of back-up power for central offices. For POTS service, the company requires back-up reserves in both battery and generator power, but for VRAD (FTTN), only battery back-up is utilized. For FTTP at the customer premises, Frontier requires "8-24 hours of battery backup based on [the] customer's purchase of offered backup options."<sup>237</sup>

Additionally, Frontier was asked to provide company standards for the number of hours of battery back-up for subscribers served by copper-based POTS (line-powered from the central office), for FTTN, for fiber-to-the-curb ("FTTC") and for fiber-to-the-premises (FTTP). The company advises that it requires eight hours of back-up power at central offices for copper-based POTS. For FTTH back-up power, Frontier conforms to FCC requirements of "backup battery options of eight to 24 hours."<sup>238</sup> However, for central offices that host a selective router, the FCC requirement calls for 72 hours of back-up power. As noted above, Frontier has 73 central offices that host PSAPs; yet its response re DR-05F Request 3 regarding back-up power does not identify any central offices equipped for 72 hours of back-up power. Frontier noted that back-up power to FTTN and FTTC is not applicable.

### Allocation of resources and labor in the event of major emergencies

Frontier was asked to provide internal company standards for the allocation of resources and labor in the event of major emergencies including, but not limited to, the Company's ability to move field staff between regions during states of emergency, its mutual aid agreements with other states, and its policy that outlines the standard threshold of outages that trigger resource reallocation or mutual aid,<sup>239</sup> The company responded that:

239. Id., at 2.



<sup>237.</sup> Frontier Narrative Response to DR-05F Request 3, at 2.

<sup>238.</sup> Id., at 3.

Frontier activated the California Emergency Operational Center (EOC) in response to the recent wildfires and the Montecito mudslide. An Emergency Management Plan (EMP) was executed during these events, and resources from other cities were moved to the impacted areas for support of the restoration.

- a. When the need arises, resources including company trucks and vehicles can be moved from cities within the same state or from other states as required.
- b. Resources from other states can be moved anytime as needed.
- Additional resources can be allocated at any time as restoration efforts or trouble ticket levels demand.<sup>240</sup>

Frontier did not provide processes or procedures for executing an Emergency Management Plan nor did it indicate the threshold for which additional resources would be allocated from Frontier operations outside of California.

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Frontier indicated it can mobilize national resources in the event of a major emergency but failed to provide realistic measures of how that is accomplished.

### Redundancy and resiliency processes and procedures in emergencies

As noted above, Frontier's resiliency procedures for a given disaster are known as an Emergency Management Plan. The EMP is a component of Frontier's Business Continuity program, which is intended to ensure efficient outage resolution such that "Frontier Communications is capable of conducting its essential missions (people, product and profit) and can operate under all threats and conditions."<sup>241</sup> Frontier California did not provide guidelines for designing and implementing the State Emergency Plan, offering the following explanation:

While the severity and consequences of an emergency cannot be predicted, effective contingency planning can minimize the impact on Frontier's mission, personnel, and facilities and rapidly increase resilience programs. All Emergency Response Centers within Frontier follow the same process, shared practices, contacts and procedures for redundancy.<sup>242</sup>

241. Id., at 1.

242. Id.



<sup>240.</sup> Id., at 3.

With respect to Frontier's capability in the wake of a natural disaster, Frontier failed to provide internal policies or procedures, responding instead that:

Each State Emergency Management Plan applies to the functions, operations and resources necessary to ensure the continuation of Frontier's critical business processes in the event its normal operations are disrupted or threatened with disruption. The State Emergency Management Plan applies to all Frontier operations and personnel who must be familiar with the Business Continuity Plan in their respective roles and responsibilities.<sup>243</sup>

Frontier has not provided either the California Emergency Management Plan or the Business Continuity Plan.

### Summary

With respect to the safety, redundancy and resiliency of network, Frontier has provided limited information and data that provides less than a complete picture of the network attributes that ETI has been asked to examine. We have been advised as to the central offices that provide for diverse routing, but have not been able to obtain any information as to the specific nature of the routing alternatives or how they are activated. Similarly, we have been advised as to the availability of routing diversity and redundancy for PSAPs, but have not been provided with the details of the redundant routing arrangements. Frontier has identified 241 central offices that are equipped for at least 8 hours of back-up power, but the company has not provided the actual number of hours of back-up power available at each such location. Finally, while Frontier has assured us that it does have emergency response procedures and stand-by capability in place, it has thus far declined to provide specific details or written practices.

Accordingly, to the extent that the Commission believes that more details as to all of these subjects are necessary, it should pursue this further with Frontier.

<sup>243.</sup> In Data Request 04-F dated June 1, 2018, and in Data Request 05-F dated June 7, 2018, Frontier was asked to "provide Frontier internal policies and procedures for maintenance and emergency response to catastrophic events, i.e., wildfires, storms, earthquakes, mudslides etc" and to "provide overview and internal practices and procedures for redundancy and resiliency processes and procedures that are followed in emergencies", respectfully. As of January 18, 2019, Frontier has not yet furnished a sufficient response to either request, stating only the existence of such resiliency procedures without providing the supporting documentation.



# **11** CONCLUSIONS AND RECOMMENDATIONS

### Principal takeaways

- Wire centers with the lowest rates of customer drop-off have experienced the poorest levels of service quality. The likely reason for this is that a large number of customers still depend upon their legacy wireline service and lack meaningful access to competitive or alternative services.
- AT&T's investments in fiber upgrades have tended to favor higher-income communities, such that wire centers that serve areas with the lowest household incomes are also characterized by the poorest service quality.
- Despite Frontier's pervasive financial challenges, its California ILEC remains a critical component of the state's telecommunications infrastructure. Roughly 25% of all legacy POTS access lines in service in California as of December 31, 2017 were being provided by one of the Frontier ILECs.

### Recommendations

- <u>**Recommendation 1**</u>: Expand the financial penalties for carriers that fail to meet the minimum GO 133-C/D service quality standards.
- <u>Recommendation 2:</u> In an effectively competitive market, persistently poor service quality would drive customers to take their business elsewhere. Where competition is not present, fines imposed due to an ILEC's failure to meet service quality standards should be high enough so as to have the same financial consequences as poor service quality under competitive market conditions.
- <u>Recommendation 3:</u> The GO 133-C/D maximum Customer Trouble Report Rates of 6%, 8% or 10% (depending upon wire center size) of switched access lines per month are far too generous, and failure rates as high as these can hardly constitute acceptable service quality. The carriers have had little difficulty in meeting these standards, and they should be revised downward.



- <u>Recommendation 4:</u> Unless carriers can offer technically valid explanations as to how and why smaller wire centers experience the poorest service quality, the minimum GO 133-C/D standards should be applied uniformly for all wire centers.
- <u>Recommendation 5:</u> The GO 133-D fines should vary based upon the extent of a carrier's failure to meet any service quality standard, rising in magnitude as the extent of the shortfall increases.
- <u>Recommendation 6:</u> The Commission should retain its requirement that URF carriers maintain their Part 32 Uniform System of Accounts ("USOA") regulatory accounting records and submit annual ARMIS-type financial reports. The requirement should be expanded to also include wire center level accounting data, similar to those that ETI had obtained through multiple data requests in the course of this study. Carriers should be required to submit these to the Communications Division on a semi-annual basis.
- <u>Recommendation 7:</u> The Commission should establish a process to proactively examine the alternatives that would be available to maintain adequate service to Frontier California customers in the event that the parent company no longer has the financial resources to provide safe and reliable services in California.



### CONCLUSIONS AND RECOMMENDATIONS

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### A persistent and long-term service quality problem for legacy services

While a substantial portion of the demand for legacy circuit-switched residential POTS services has been supplanted by alternatives – both technological and competitive – it would be wrong as a policy matter to conclude that these services have outlasted their usefulness and that ongoing regulatory attention is no longer required. The highest drop-off rates – in excess of 70% since 2010 – have occurred primarily in the most densely populated areas; substantially lower drop-off rates have prevailed elsewhere in the state, as summarized in Table 11.1, for AT&T, below:

A WIRE CENTER S	T&T CALIFORNIA BIZE VS. ACCESS 2010-2017	LINE LOSSES	
Wire Center SizeNo. of AccessAccess LinrangeLinesLoss Pct.			
0-1000 Lines	48,148	-55.6%	
1001-2999 Lines	225,301	-66.0%	
3000-10000 Lines	845,524	-70.7%	
10001-20000 Lines	1,603,046	-71.9%	
Over 20000 lines	5,313,115	-72.7%	

The persistence of these geographic disparities in the adoption of technological and competitive alternatives despite massive and persistent price increases compels the conclusion that, for many customers, legacy services remain essential.

Wire centers with the lowest rates of customer drop-off have experienced the poorest levels of service quality. The likely reason for this is that a large number of customers still depend upon their legacy wireline service and lack meaningful access to competitive or alternative services.

Whether the result of a deliberate redlining policy or not, AT&T's policies have had a disproportionate impact upon the state's lowest income communities. Applying household income data obtained from the United States Census Bureau to the geographic areas being served by each AT&T wire center, we find a clear inverse relationship between household income and all of the principal service quality metrics, as shown on Figures 11.1 through 11.4 below.



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**Figure 11.1.** Out-of-service incidents per 100 access lines in service is lowest in the highest income areas, highest in the lowest income areas.



Figure 11.2. Out-of-service duration is shortest in highest income areas.





**Figure 11.3.** Areas with highest household incomes also have the highest percentage of outages cleared within 24 hours.



**Figure 11.4.** High income areas generally require the fewest days to clear 90% of out-of-service conditions.



All four of these metrics exhibit a degradation in service quality over the 2010-2017 study period. The highest income areas have the lowest incidence of service outages; the lowest income areas have the highest (Figure 11.1). The average duration of out-of-service conditions over 24 hours has increased for all five income categories, but remains the shortest in the highest income areas. Notably, however, the lowest income areas, which had the highest average duration at the beginning the period, had experienced a lower rate of degradation in this metric, and by the end of the period had the shortest average duration of 5079 minutes (3.53 days) (Figure 11.2). The highest income areas had the highest percentage of outages cleared within 24 hours (56%), although the two lowest income categories showed the best rates of improvement (Figure 11.3). Finally, the number of days required to clear 90% of service outages grew longer in all but the lowest income category, while still being shortest in the two highest income categories for most of the study period (Figure 11.4).

Some evidence of an AT&T household income-driven investment policy can be seen in the case of wire centers that have been upgraded with Fiber-to-the-Node ("FTTN") and other capabilities that support *U-verse* branded broadband Internet access, VoIP, and IPTV services. Table 11.2 below provides the weighted average median annual household income in areas served by wire centers that have been upgraded with fiber vs. those that have not:

Table 11.2					
AT&T CALIFORNIA WEIGHTED AVERAGE MEDIAN HOUSEHOLD INCOME IN WIRE CENTERS WITH AND WITHOUT FIBER UPGRADES					
Weighted Average No. of Wire Median Annual Fiber availability Centers Household income					
Yes	308	\$72,024			
No 253 \$60,795					
All 561 \$70,549					
Source: AT&T Response to DR-01A, US Census Bureau 2010 American Community Survey. Due to limitations on the geographic mapping of Census Blocks to AT&T wire center serving areas, Median Household Income was available for only 561 AT&T wire centers.					

As the graphs in Figures 11.1 through 11.4 demonstrate, those areas with the lowest household incomes tend to have the highest trouble report rates, the longest out-of-service durations, the lowest percentages of outages cleared within 24 hours, and the longest times required to clear 90% of service outages. As we noted in Chapter 4A above, wire centers that have experienced the smallest access line drop-off rates have exhibited the poorest performance on all service quality metrics. Clearly, those communities that AT&T perceives as the most



captive are afforded the lowest levels of attention by the company. Since, as we have also found, wire centers that have received fiber upgrades exhibit superior performance on all of the service quality metrics, the fact that these upgrades have favored higher income communities may well explain the apparent inverse relationship that we have observed as between household incomes and service quality overall.

AT&T's investments in fiber upgrades have tended to favor higherincome communities, such that wire centers that serve areas with the lowest household incomes are also characterized by the poorest service quality.

AT&T's track record on service outages has deteriorated over the 2010-2017 period that was the subject of this study. In almost every service quality metric - from the basic "Trouble Reports Per Hundred access lines ("TRPH") through the duration of service outages, the percentage cleared within 24 hours, and the length of time it took AT&T to achieve the GO 133-C/D target 90% cleared level – AT&T's performance has worsened over the study period. Despite its growing revenues and profits overall and being awash in cash, the parent company AT&T Inc. has disinvested in its California ILEC subsidiary, has extracted capital through dividends that have been well in excess of the ILEC's earnings, and has maintained the overall level of the ILEC's revenues by continuously raising prices that only the most captive of residential customers have been forced to pay. AT&T's overarching approach to its stewardship of the California ILEC infrastructure has been a "harvesting strategy" that relies upon customer captivity and inertia, rather than providing good quality service. "Harvesting" of this legacy service customer base allows AT&T to maintain revenue levels and to extract the maximum amount of capital from the California ILEC entity in order to support the parent company's wireless, video distribution, video content, and other business initiatives – activities that have captured the overwhelming bulk of management's attention.

Unlike AT&T, whose interest in ILECs had been in decline for many years, Frontier's only business is that of operating ILECs in some 29 states across the country. Unfortunately, while Frontier's attention is being directed at maintaining and growing its ILEC properties, its financial resources have deteriorated to the point where this will become increasingly difficult going forward. Frontier's common stock price has dropped by around 98% since its high in February 2015. Frontier's market cap is currently about \$270-million (as of mid-January 2019) – less than the amount of Gross Plant Additions that Frontier had invested in California alone over the first 21 months of its ownership. Its earnings have been negative in every quarter from the second quarter of 2016 onward, its \$1.9-billion in annual debt service payments were consuming 20.8% of its total operating revenues, and its prospects for raising addition debt or equity financing were all but gone.

And unlike AT&T, which has made minimal investments in upgrading its ILEC infrastructure to support broadband services – only 1.8% of homes passed by AT&T California



are being served with fiber-to-the-premises ("FTTP") distribution plant - Verizon, and Frontier after its takeover, have been actively pursuing FTTP upgrades throughout the study period. By the April 2016 date when Frontier took over the company, FTTP plant was available to roughly 1.44-million - or about 38.4% - of the population in areas served by Verizon California. Since acquiring the company, Frontier has added areas with another 2.32-million people to its FTTP network, and by the end of the study period, FTTP was available to slightly more than two-thirds of all people living in Frontier-served areas.

On the other hand, Verizon's interest in its ILEC properties had been on the wane for many years. Almost immediately after the Bell Atlantic/GTE merger that formed Verizon in 2000, the parent company had begun divesting many of its ILEC operations. While most of these divestitures involved legacy GTE ILECs, four former Bell states were also divested. Verizon California did not pursue the kind of massive rate increases that AT&T had done since the onset of URF, and did not engage in capital extraction through excessive dividends. However, Verizon's strategy in this respect may well have been driven by its ultimate goal of divesting the California ILEC, which needed to remain financially intact in order to be marketable to a wouldbe buyer. Frontier's decision to purchase Verizon California in 2015 was, however, both illtimed and ill-conceived. In the 14 months between February 2015 when the deal was first announced and the April 1, 2016 date when the transaction closed, Verizon California had lost some 240,000 POTS access lines (and there were undoubtedly corresponding line losses in Texas and Florida). However, the purchase price that had been agreed to in February 2015 was never adjusted to reflect this substantial change in condition. In agreeing to the \$10.54-billion price tag for the California, Texas and Florida purchase, Frontier had failed to consider the full extent to which the legacy wireline local exchange telephone business was in decline.



Despite Frontier's pervasive financial challenges, its California ILEC remains a critical component of the state's telecommunications infrastructure. Roughly 25% of all legacy POTS access lines in service in California as of December 31, 2017 were being provided by one of the Frontier ILECs.

Yet Frontier's operations in California remain a critical component of the state's telecommunications infrastructure. Over the 21 months under Frontier ownership from April 2016 through December 2017, Frontier did make Gross Plant Additions in the range of \$500million,<sup>244</sup> much of it likely going to fund the FTTP upgrades that were completed during that time frame. But that investment level is approximately the same as Frontier's current market cap, and thus is likely not sustainable on a going forward basis. The Commission will need to address the potential impact of Frontier's financial condition - and potential financial collapse on the existing Frontier infrastructure and the customers that it continues to serve.



<sup>244.</sup> See Table 8.11. As noted in Chapter 6 above, Frontier has provided data on its Gross Plant Additions from several sources, no two of which provide the same amounts.

### Recommendations

It has become painfully clear that the competition for legacy POTS services that has developed since the adoption of URF in 2006 has failed to provide any meaningful market incentives to the ILECs to improve service quality for their legacy services. The Commission has already taken steps aimed at addressing the ongoing ILEC service quality issues through its 2016 adoption of GO 133-D §9, which introduced explicit financial penalties for failure to achieve the GO 133-C/D §3.3(c) and §3.4(c) performance standards. Expansion of these penalties should be considered. By confronting the ILECs with explicit financial consequences of inadequate service quality, they can include these in weighing the economic merit of investments and maintenance expenses directed at improving service quality against that of other investments that offer the prospect of increased revenues and profits. To be effective, however, the financial penalties included in GO 133-D need to be rigorously enforced.



**Recommendation 1:** Expand the financial penalties for carriers that fail to meet the minimum GO 133-C/D service quality standards.

It is also important that the financial penalties be more than nominal fines. If the market were sufficiently competitive to induce the ILECs to address and improve service quality issues, the financial consequences of their failure to do so would result in a loss of business as customers "voted with their feet" to competing providers that offered superior service quality. Absent marketplace forces sufficient to provide such financial incentives, the financial consequences that need to be imposed via regulation must be comparable to those that would result under truly competitive market conditions – a simulation of the "competitive result" that has traditionally served as a bedrock principle of economic regulation of noncompetitive industries.

The Commission can look at one specific example of the effectiveness of confronting the ILEC with financial consequences of insufficient service quality performance. As discussed above, when the Commission issued D.15-12-005 in December 2015 authorizing the sale of Verizon California to Frontier, it expressly conditioned its approval upon Verizon compliance with GO 133-D service quality standards prior to the date of closing. Faced with the prospect of delaying or perhaps even losing what was for Verizon a highly advantageous \$10.54-billion deal, Verizon did manage to meet those requirements in February and March 2016 – a feat that had never been achieved prior to that time, and that has not been achieved (by Frontier) since. Verizon's action clearly demonstrates the importance of confronting the ILEC with explicit financial consequences of inferior service quality.



**Recommendation 2:** In an effectively competitive market, persistently poor service quality would drive customers to take their business elsewhere. Where competition is not present, fines imposed due to an ILEC's failure to meet service quality standards should be high enough so as to have the same financial consequences as poor service quality under competitive market conditions.

As we discussed in Chapter 2, we believe that the GO 133-C/D specification for Trouble Reports Per Hundred access lines in service ("TRPH") – a maximum of 6, 8 or 10 per 100 access lines depending upon the size of the "reporting unit" (typically a wire center) – is unduly generous. Even the poorest performing wire centers for each of the two ILECs under examination here have reported results that are consistently well below these limits, and neither ILEC has ever failed to meet this standard.

ETI believes that the TFPH standards need to be revised downward. The incidence of just under 6%, 8% or 10% of all access lines in service experiencing failures that would result in the creation of a trouble ticket in any given month could not be considered to constitute "good" service quality. Under these standards, and assuming for the sake of discussion that no single customer experiences more than one trouble condition in any given year, these standards would allow failures of 72%, 96%, and 120% respectively each year.

For example, consider the case of AT&T's Oroville East wire center which, in 2017, had one of the highest Trouble Report counts among all AT&T wire centers. In that year, Oroville East had an average of 1,786 access lines in service, which would put it in the 1000-3000 line (mid-size) category. For a wire center in this size range, the "standard" maximum number of Trouble Reports per Hundred access lines would be 8.0 *per month*, if the "per month" interpretation of this requirement is to be maintained. Over the full 2017 year, the average TRPH per month for the Oroville East wire center was 7.12. While among the highest TRPH counts in AT&T territory and the highest TRPH in the 1000-3000 line size category, Oroville East was still below the maximum 8.0 TRPH threshold.

But looking beyond a single month suggests a different picture. Over the full year 2017, there were 1,526 trouble reports in Oroville East, or 85.44 trouble reports per hundred access lines. There were many instances where the same customer had experienced multiple trouble conditions. In 2017, a total of 826, i.e., 46.25% of the 1,786 average number of access lines in the Oroville East wire center, had experienced at least one trouble condition at some point during the year. It is difficult for us to imagine that this high an incidence of service problems in a single wire center would still be considered as "acceptable."



In fact, and as we have noted, ETI's reading of GO 133-C/D suggests the possibility that the TRPH standards set forth therein may well have been misinterpreted and misapplied. §3.0(c) reads as follows:

Minimum Standard Reporting Level. Report number of trouble reports per 100 working lines (excluding terminal equipment reports). Six trouble reports per 100 working lines for reporting units with 3,000 or more working lines, eight reports per 100 working lines for reporting units with 1,001-2,999 working lines, and 10 reports per 100 working lines for reporting units with 1,000 or fewer working lines.

Note that *no specific time frame* (e.g., per month, per quarter, etc.) is being specified here – only the number of reports per 100 access lines. However, §3.3(e) may shed some light on this lack of specificity:

Reporting Frequency. Compiled monthly, reported quarterly.

Thus, while the *compilations* are to be accomplished on a monthly basis, the "reporting" is to be done on a *quarterly* basis. The term "Reporting" (not compilation) also appears at §3.3(d), which refers to "Reporting unit" as an "Exchange or wire center, whichever is smaller."

The 6%, 8% and 10% minimum standard reporting levels make much more sense if interpreted as applying *quarterly* rather than monthly. Viewed on an annual basis, they would still consider as satisfactory trouble report rates for the three "reporting unit" sizes of just under 24%, 32% and 40%. In fact, it seems difficult to believe that annual trouble rates in excess of these levels would or should ever be deemed to be acceptable.

Recommendation 3: The GO 133-C/D maximum Customer Trouble Report Rates of 6%, 8% or 10% (depending upon wire center size) of switched access lines per month are far too generous, and failure rates as high as these can hardly constitute acceptable service quality. The carriers have had little difficulty in meeting these standards, and they should be revised downward.

There are three possible approaches that the Commission should consider in addressing this issue:

(1) Revise the language of §3.0(c) to make it clear that the 6%, 8% and 10% apply to the *quarterly* reporting period, not monthly.



- (2) If a monthly TRPH standard is to be retained, these maximum levels should be reduced to no more than 1/3 of their currently stated levels – i.e., to no more than 2%, 2.67% and 3.33%, respectively, for small, mid-size and large wire centers.
- (3) Adopt a new set of maximum acceptable TRPH levels that offers an improved set of incentives for satisfactory service quality performance.

Our examination of the effects of wire center size upon service quality has clearly indicated that the smallest wire centers exhibit the highest TRPH rates, the longest out-of-service durations, the lowest percentages of service outages cleared within 24 hours, and the largest number of days to achieve the target 90% cleared rate. At a superficial level, then, the notion of basing the maximum acceptable TRPH or any other service quality standard upon wire center size may not be unreasonable.

However, there is no specific basis upon which to conclude that wire center size has any *causal* relationship with service quality. The apparently inferior service quality prevalent at small wire centers is at least as likely to result from insufficient investment in these locations' outside plant both for basic rehabilitations as well as for upgrades. Smaller wire centers have the lowest rates of customer drop-offs and also tend to be located in communities with relatively low household incomes. A policy that tolerates higher rates of trouble reports and poorer service quality compliance simply assists the ILECs in maintaining this discrimination in their treatment of customers. Unless the ILECs are able to affirmatively demonstrate a specific set of exogenous conditions – conditions that are demonstrably beyond management's control – that would account for the presence of persistently and consistently poor service quality in smaller wire centers, the Commission should eliminate the wire center size distinction in any service quality standard.



**Recommendation 4:** Unless carriers can offer technically valid explanations as to how and why smaller wire centers experience the poorest service quality, the minimum GO 133-C/D standards should be applied uniformly for all wire centers.

GO 133-C/D §3.4(c) establishes as a minimum standard that 90% of out-of-service conditions must be cleared within 24 hours, a condition that AT&T has never met and that Verizon met for only two months under penalty of having its sale to Frontier delayed or disallowed. In our analysis of service quality, we also considered as an additional metric the number of days required for the ILEC to reach the 90% cleared objective. Viewed on a quarterly basis, for AT&T this number ranged between 1.67 and 11.15 days, with an increasing trend over



the full 8-year study period; for Verizon/Frontier, the quarterly figures were slightly better, ranging between 1.85 and 5.22 days, with a lengthening trend over the full study period.<sup>245</sup>

We believe that, in addition to the seemingly unachievable 90% within 24 hours standard, GO 133-C/D should be amended to also include some financial consequences for the length of time it actually takes to reach the 90% cleared level. Under the current arrangement, GO 133-D §9.3 imposes a fine for a carrier's failure to meet the out-of-service repair interval standard, but the amount of the fine is not affected by the extent to which the carrier has actually fallen short of meeting the standard. Thus, if a carrier clears only 80% of out-of-service conditions within 24 hours for three or more months, the fine is exactly the same as it would be if that same carrier had cleared only 20% of out-of-service conditions within 24 hours for three or more months. If the 90% goal cannot be achieved and a fine will therefore need to be paid, the carrier has no incentive to bring the clearance rate closer to the 90% level.

By way of example, the fine for exceeding the highway speed limit is typically linked to the speed at which the driver was going – if the speed limit is exceeded by 20 MPH, the fine is lower than if it was exceeded by 50 MPH. But the structure of fines under GO 133-D §9.3 is not affected by the extent to which the carrier has failed to meet the standard. That should be changed. In addition, an additional fine should be imposed that is related to the days required to meet the 90% cleared requirement. If the 90% cleared requirement is not met for 5.0 days, the fine should be substantially greater than if the carrier, while still missing the 90%/24 hour standard, is able to reach the 90% cleared rate in 2.0 days.

RF RF **Recommendation 5:** The GO 133-D fines should vary based upon the extent of a carrier's failure to meet any service quality standard, rising in magnitude as the extent of the shortfall increases.

The data-driven approach utilized by ET1 in conducting this study included, in addition to the raw trouble report and out-of-service records, various financial records and data provided by the two ILECs. The sources of this data included the annual ARMIS-type financial reports that the two ILECs had been required to submit to the California PUC despite the discontinuation of this requirement by the FCC after 2007.<sup>246</sup> We also obtained, though data requests, various accounting and other financial data that the ILECs had been maintaining pursuant to the FCC's Uniform System of Accounts ("USOA"), 47 CFR §32. Access to this data enabled us to examine the nature and extent of ILEC capital investment and maintenance expenses at the

246. See, GO 104-A, D. 93-02-019.



<sup>245.</sup> See Tables 4A.8 and 4F.7. *supra*. These figures reflect adjustments in actual out-of-service durations to eliminate Sunday and holiday hours and causal factors considered to be beyond management's control. Actual durations ranged between 2.82 to 7.44 days for AT&T, and between 2.11 to 13.08 days for Verizon/Frontier. Trends based upon actuals for both companies increased over the study period.

individual wire center level, and was instrumental in forming our conclusion that much of the service quality problems of concern to the Commission can be attributed to disinvestment in the ILEC infrastructures by the two carriers.

In 2017, the FCC determined that "price cap ILECs" – those large carriers that are subject to FCC price cap rather than rate-of-return regulation – will no longer be required to maintain separate USOA accounting records after 2017, and will be allowed (by the FCC) to maintain only a single set of books organized pursuant to Generally Accepted Accounting Principles ("GAAP").<sup>247</sup> This study has benefitted greatly from the availability of ARMIS-type reporting by the two ILECs that are under examination here; GAAP does not require that this type of detail be maintained. Although the FCC no longer requires that AT&T California and Frontier California maintain accounting records pursuant to the USOA as it had existed prior to the 2017 ruling, the FCC Order explicitly provides that "[n]othing in this Order precludes a state or regulatory agency, or another party as part of a contractual requirement, from requiring a carrier to maintain the Class A accounts or otherwise maintain the USOA. See, e.g., 17 CFR § 1770.11 (requiring Rural Utility Service borrowers to maintain Class A accounts)."<sup>248</sup> And in her Statement Approving in Part and Concurring in Part, FCC Commissioner Mignon L. Clyburn remarked, "So to those carriers who advocate for decreased regulatory burdens, let me assure you: I am with you. However, the next time this Commission or a state commission asks for cost data, to support a rulemaking, investigate a complaint, or bring an enforcement action, I hope we do not hear protestations that the request is too burdensome because the data is not kept in the format that the FCC or state commission needs."

Much of the USOA accounting data that we had been able to obtain from AT&T and Frontier was itself being maintained in order that these ARMIS-type reports could be prepared. We believe that ongoing monitoring of the ILEC's investment and maintenance practices, together with ongoing monitoring of trouble tickets and other physical service quality data, is essential to any revisions to and enforcement of service quality standards on an ongoing basis. We therefore recommend that the Commission require that AT&T California and Frontier California continue to maintain USOA-type accounting records consistent with 47 CFR Part 32 *as it had existed prior to the FCC's 2017 Order*, and that the Commission continue to require the same annual ARMIS-type financial reporting that proved so essential to this study. Moreover, we recommend that the USOA reporting requirement be expanded to include the wire center-and account-level data of the type that was covered by our data requests.

248. Id., at 7, fn. 51.



<sup>247.</sup> *I/M/O Comprehensive Review of the Part 32 Uniform System of Accounts*, WC Docket No. 14-130; *Jurisdictional Separations and Referral to the Federal-State Joint Board*, CC Docket No. 80-286, *Report and Order*, FCC 17-15, Rel. February 24, 2017.

**Recommendation 6:** The Commission should retain its requirement that URF carriers maintain their Part 32 Uniform System of Accounts ("USOA") regulatory accounting records and submit annual ARMIS-type financial reports. The requirement should be expanded to also include wire center level accounting data, similar to those that ETI had obtained through multiple data requests in the course of this study. Carriers should be required to submit these to the Communications Division on a semi-annual basis.

Finally, in view of the precarious financial condition in which Frontier California's parent company finds itself, it is important that the Commission proactively consider what steps it may be required to undertake in the event that the California ILEC is unable to adequately maintain its network. The imposition of fines for failure to achieve required service quality standards will have little effect if the ILEC lacks even the financial wherewithal to pay such fines. This initiative needs to commence without delay, because the prospect of the parent company's financial collapse cannot be ignored.

**Recommendation 7:** The Commission should establish a process to proactively examine the alternatives that would be available to maintain adequate service to Frontier California customers in the event that the parent company no longer has the financial resources to provide safe and reliable services in California.

### Managing the transition from legacy to current technology services

A substantial source of the persistent service quality shortcomings that have plagued legacy POTS services over the past decade and that we have examined in this study has been a failure to develop and manage the migration from legacy circuit-switched wireline technology to state-ofthe-art IP-based and wireless services. Numerous technology transitions have occurred in the telecommunications industry over the past century or more, but the current one is unique in a number of critically important respects.

Past transitions, such as from manual switchboards to dial, from step-by-step to crossbar central office switches, from electromechanical to electronic switches, from analog to digital switching, from baseband twisted-pair copper to frequency-division multiplexing to digital timedivision multiplexing, from rotary dial to touch-tone, and from copper to fiber optics, have all occurred through a process that took place in the background, one that was largely invisible to the consumer and which, in most cases, involved little affirmative customer decisions or actions. If new customer premises equipment was required (e.g., from manual to dial telephone sets), it



was provided by the telephone company at no additional charge to the customer. In cases where the new technology made new services and features available (e.g., touch tone dialing, call waiting, caller id), customers were afforded the opportunity to purchase them on an optional basis, but could still retain the preexisting service, enhanced by the technological migration, but without the optional feature. If an additional charge was involved (e.g., from rotary dial to touch-tone), the transition was generally optional on the customer's part. In 1989, the Commission determined "that residential use of Touch Tone has increased to the point where it should be considered a basic service" and eliminated the touch tone surcharge altogether.<sup>249</sup>

This process for technology transition was successful largely because the regulatory regime within which it occurred was technology-blind – i.e., the regulatory model remained the same under the previous and the new technology. But this is no longer the case. The two major telecommunications technology transitions that have been underway for the past decade or so – from wireline to wireless and from circuit-switched to IP – each involve a total replacement of the applicable regulatory model. When a customer migrates from a legacy circuit-switched service to an IP service such as VoIP, the regulatory regime that had overseen the legacy service ceases to apply. The same happens when a customer replaces a wireline service with wireless. The *deregulation* that applies to post-transition services presents the service provider with a radically changed set of financial incentives that essentially compel it, acting in the best interests of its shareholders as it has a fiduciary duty to do, to shift management and financial resources to these potentially far more profitable nonregulated services. Both AT&T and Verizon have been doing exactly that. They have directed their capital investment away from legacy services and over to wireless, to broadband and, most recently, to *content*.

To the extent that continued provision of a baseline voice telephone service via wireline infrastructure is considered essential as a matter of public policy, there can be no justification for effectively precluding a technology transition to support these essential services merely because the replacement technology is linked to a fundamentally different regulatory model. The migration from circuit-switching to packet-switching, from analog to IP, from basic wireline voice service to basic wireless voice service, and even from voice to data, should be allowed to occur without the regulatory distortions that currently prevail.

In that regard, the enactment of PU Code §710 by the California legislature in 2012 (effective January 1, 2013)<sup>250</sup> has likely contributed to the deteriorating service quality that pervades legacy circuit-switched services *precisely because it has undermined an ILEC's ability* 



<sup>249.</sup> *I/M/O Alternative Regulatory Frameworks for Local Exchange Carriers.; In the Matter of the Application of Pacific Bell (U 1001 C), a corporation, for authority to increase intrastate rates and charges applicable to telephone services furnished within the State of California,* D.89-10-031, I.87-11-033, 1989 Cal. PUC LEXIS 576; 33 CPUC2d 43; 107 P.U.R.4th 1, at FOF 8; Ordering Paragraph 1.

<sup>250.</sup> Stats. 2012, Ch 733, Sec 3. (SB 1161) Effective January 1, 2013. Repealed as of January 1, 2020, by its own provisions.

and incentive to replace older circuit-switched central offices with packet switched technology in the same manner in which, in previous transitions, electromechanical switches were replaced by electronic, or analog electronic switches were replaced by digital. When the same regulatory model is applied to both the preexisting and the new technology, the ILEC can control the transition with an expectation of the ability to recover its investment in the new technology and earn a reasonable return thereon. Under cost-plus type regulation, the cost of the new technology could be spread over all ratepayers, sometimes by general rate increases and sometimes through feature-based surcharges. A technology-neutral incentive regulatory model of the type adopted in the *New Regulatory Framework* ("NRF") can produce a similar outcome. The post-*URF*, post-§710 regulatory structure, however, has given the ILECs the capability to increase rates for legacy technology services without providing any feature or technology enhancements to consumers. It has allowed ILECs to degrade service quality for these services, in part because of their exclusion from technology upgrades. And it has permitted ILECs to use the often substantial rate hikes as a device to coerce consumer migration to the new– and now nonregulated – technology platform.

The scope of regulation should apply with respect to the set of *functionalities* that is deemed essential and in need of some level of regulatory protection, and not with respect to the particular technology that is used to provide those functionalities. Thus, if basic voice and some minimal level of Internet access service is deemed essential, these services should be provided in the most efficient manner in each situation, whether by wireline or wireless, or by circuit- or packetswitching technology. If reliable access to emergency services (E911) and connectivity that can remain active in the event of a local power interruption are considered essential minimum service requirements from a public policy standpoint, efficient solutions can be developed under any of the technology platforms. If it is most cost effective to utilize wireless to serve sparsely populated rural areas rather than construct networks of low-capacity wireline facilities, that evaluation should not be distorted by the existence of different regulatory regimes, as is the case today. PU Code §710 is scheduled to sunset in 2020 unless extended by the California legislature. The Commission should use the reconsideration of this provision of the PUC code as an opportunity to replace it with an alternative whose focus is on functionality rather than technology, so as to reestablish a regulatory environment that is more conducive to orderly technology transition.

Fixing this problem is, at bottom, a political matter, and we do not pretend to offer a political solution. However, what is clear is that the existing arrangement is not producing anything close to an optimal result, and needs to be reexamined and revised at a fundamental level.



### Conclusion

In undertaking this study, ETI has benefitted from the extensive and valuable assistance and involvement by Communications Division staff, to whom we are extremely grateful. Throughout our work on this project, we have keep CD informed as to our methodology, preliminary results, and potential recommendations.

We believe that the analytical tools that we have developed in the course of this project can be beneficially utilized on an ongoing basis by CD to continue to monitor and analyze the service quality performance of the two URF ILECs, and strongly recommend that the analyses we have presented in this report be continued and maintained on an ongoing basis as additional data is submitted and compiled.





# **12** COMMUNICATIONS DIVISION STAFF SITE VISITS

### Principal takeaways

- In some AT&T areas, outside plant technicians' reporting locations (garages) are a long distance from their assigned distribution areas resulting in long travel times to customer locations.
- Most AT&T central offices in rural areas are not **example** basis; outside plant technicians engaged in troubleshooting must drive to the central office and perform the necessary tasks or wait for a CO technician to be dispatched.
- In rural areas served by both AT&T and Frontier, the distance from the Central Office to many users is well beyond 18,000 feet resulting in long loops or the use of electronic pair-gain equipment; both conditions require a higher level of preventative maintenance and have higher rates of failure.
- In some areas, non-management outside plant workers who leave through attrition or retirement are not replaced resulting in fewer well-trained resources.
- Cable maintenance technicians' workload has shifted from a balance of preventative maintenance work and "chasing troubles" to mostly working on customer trouble tickets.
- In rural areas, customers have fewer (if any) competitive options.



### COMMUNICATIONS DIVISION STAFF SITE VISITS

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# Introduction

Section 2.2.1 of the Request for Proposal (RFP) defined the selection criteria of facilities and locations to be physically inspected by the CPUC Communications Division (CD) Staff. The areas to be examined were chosen based on analysis conducted by ETI. These included:

- 1. "Areas that were out of service for a longer duration than the respective statewide average for each company, based on detailed service quality trouble report data; and
- 2. A random selection of remaining areas and facilities for each company not reviewed in a) above where the Consultant believes should be examined to make a complete report as described."<sup>251</sup>

The site visits described and documented in this Chapter were conducted by CPUC Communications Division Staff. The text, photos and other materials included within this Chapter were prepared by CPUC Staff.

# Criteria for Selecting Site Visits for Network Exam

### AT&T Sites were chosen using service quality report data and the following criteria:

- 1. Using AT&T's quarterly service quality data, ETI produced a ranking of wire centers from worst to best for the time period of 2016-2017.<sup>252</sup> The measure chosen for this ranking was "highest number of out-of-service (OOS) troubles lasting more than 24 hours per 100 access lines."
- 2. ETI produced a ranking of the same measure (OOS more than 24 hours) over the full study period from 2010-2017.<sup>253</sup> These are areas that have had poor service quality over the full 8-year period.
- 3. Wire centers with higher numbers of subscribers that are located in urban areas were selected to serve as a comparison to rural/small wire centers.
- 4. Wire Centers with relatively better service quality results that are contiguous to a poorly performing area, e.g. Inverness is near Nicasio and San Geronimo.
- 5. Areas identified by AT&T that would receive Construction and Engineering investment from the incremental fines imposed by General Order 133-D, e.g., Fort Bragg<sup>254</sup> and Los Gatos.<sup>255</sup>

254. AT&T Advice Letters 47212 filed February 16, 2018 and 47212A, filed July 31, 2018.



<sup>251.</sup> CPUC Request for Proposal 17PS5007 issued October 31, 2017, at 9

<sup>252.</sup> WC OOS Performance 2016-17" spreadsheet created by ETI, 05/09/2018.

<sup>253.</sup> ATT OOS over 24 Ratio Trend" spreadsheet created by ETI, 05/09/2018.

 Areas with clusters of outage complaints filed by customers with the CPUC's Consumer Affairs Branch (CAB).

CD Staff completed physical examinations of the AT&T Wire Centers listed in Table 12.1. The rank refers to ETI's calculation of the poorest performing wire centers; those with the highest ratio of POTS access lines that were Out of Service in excess of 24 hours during the period of 2016-2017. A lower number reflects a worse condition, for example, Pleasant Grove is considered AT&T's 7<sup>th</sup> poorest performing wire center (out of approximately 612).

	Tab	le <mark>12.1</mark>				
AT&T CALIFORNIA PHYSICAL SITE VISIT LOCATIONS						
Wire Center Rank County Area Designation						
Nicasio	98	Marin	Rural			
Inverness	137	Marin	Rural			
San Geronimo	15	Marin	Rural			
Boonville	43	Mendocino	Rural			
Fort Bragg	158	Mendocino	Urban			
Hopland	67	Mendocino	Rural			
Potter Valley	20	Mendocino	Rural			
Pleasant Grove	7	Sutter	Rural			
Nicolaus	8	Sutter	Rural			
Georgetown	11	El Dorado	Rural			
Lake of the Pines	54	Nevada	Urban			
Placerville	35	El Dorado	Urban			
Menlo Park	132	San Mateo	Urban			
Los Altos	138	Santa Clara	Urban			
Urban is a density of at lea	st 1,000 perso	ns per mile <sup>2</sup> . (US	Census Bureau)			

### Criteria for Selecting Site Visits for Network Exam - Frontier

Frontier represented approximately 20% of the Network Exam, therefore approximately 20% of the site visits conducted by Staff were to Frontier facilities. Additional visits were cancelled due to emergency declarations from wildfires and mudslides in Northern and Southern California in 2018. The two sites which were visited, reflected in Table 12.2 below, included a Distribution Area in Los Gatos that was identified by Frontier as receiving additional investment under § 9.7 of General Order 133-D (Alternative Proposal for Mandatory Corrective Action).

<sup>255.</sup> Frontier Advice Letter 12772A filed April 4, 2018.



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CONFIDENTIAL AND PROPRIETARY PER P.U. CODE § 583, GENERAL ORDER 66-D, & D.16-08-024

	Table 12.2				
FRO					
Wire Center	Wire Center County Area Designation				
Los Gatos - Montebello	Santa Clara	Urban			
Los Gatos – Blossom Hill	Santa Clara	Urban			

## Site Visit Guidelines

In advance of each site visit, CD Staff sent a formal Site Visit Request to define the area under review, arrange logistics, request high level network maps (see Figures 12.7-12.21 on pages 569-583) and actual customer addresses of out-of-service trouble reports aken from Service Quality data.

Site visit activities in each wire center focused on the following:

- Central Office General condition, security and accessibility of building (exterior and interior). Inspection of the following items inside the central office (CO): MDF (main distribution frame), switching equipment, ancillary equipment, battery plant, stand-by generator, fuel storage, maintenance logs and cable vault.
- Staffing resources Whether central office is staffed full-time, part-time or solely "ondemand." Approximate number of Outside Plant resources available in the area, and amount of traveling required.
- Outside Plant network equipment Inspection of digital loop carrier equipment in cabinets and associated SAI (Serving Area Interface) cross-boxes, FTTN (fiber to the node) and FTTP (fiber to the premises) equipment (where applicable).
- General Outside Plant Inspection of poles, pedestals, cables, splices, pole-mounted cross-boxes and associated facilities. Photographic documentation of damaged plant (cables. terminals, splice cases, pedestals) and temporary fixes.
- 5. Specific inspections of distribution areas (neighborhoods) with high incidences of outof-service (OOS) trouble reports, repeated troubles and customer complaints.
- 6. General observation of the population density of wire center serving area and prevalence of customers located more than 18,000 feet from the central office.

# Methodology

CD Staff started each site visit at the central office building; both AT&T and Frontier provided staff (usually first-line managers) to answer questions and provide an overview of the building, switch, vault, battery back-up, generator and day-to-day activities and staffing. The supervisors from the Outside Plant (OSP) departments answered questions about facilities and levels of services available (POTS, high-speed vs. lower speed broadband). In some cases,



additional personnel, such as a design engineer or environmental site manager were present to answer questions about the network or building facilities. In central offices where the cable vault was located in a basement, a construction or maintenance supervisor "vented" the vault to purge any dangerous gasses that may have accumulated.

After completing the full inspection of the central office, CD Staff began most Outside Plant (OSP) surveys with an inspection of a standard serving area interface (SAI) otherwise known as a cross-box or distribution box where feeder cables from the CO are cross-connected to the distribution cables that feed the individual customers. If the exchange contained Remote Terminals ("RTs") that housed electronic equipment (pair-gain or fiber-optical electronics), at least one location was inspected. While the equipment cabinet is generally out in the open and publicly visible, in order to see inside the cabinets, CD Staff relied on ILEC personnel to unlock the cabinets and provide an overview of the cable plant and equipment contained within.

The remainder of the activities consisted of traveling to pre-identified locations of customer reported complaints and "outage clusters," which are areas within the exchange that contained multiple outages on the same street or within the same neighborhood. CD Staff observed the general condition of outside plant facilities and photographed components that showed signs of deterioration or deferred maintenance. Examples included: lack of cable guards in areas of heavy tree branch overgrowth; severe de-lashing of the strand on non-self-supported copper cable; improperly sealed splice closures (or lack of closure); improper attachments of aerial plant; insufficient cable clearances between utilities; extreme cable sag between poles; bonding/grounding deficiencies; bad terminal attachments; and sloppy cable/drop maintenance practices (both aerial and buried). CD Staff were not permitted to open ground-mounted pedestals or pole-mounted terminals and splices, so any in-depth inspection or hands-on testing of facilities was not possible. CD Staff did not proactively make contact with customers, but if a resident approached, CD Staff identified themselves, stated the purpose of their visit, and inquired as to the quality of the customer's wireline service.

# AT&T Trip Reports

### Marin County - Nicasio, Inverness and San Geronimo

Nicasio, Inverness and San Geronimo are rural towns located approximately 1.5 hours north of San Francisco (see Figure 12.1). Table 12.3 provides general information about each of these wire centers.<sup>256</sup> San Geronimo is ranked as the 15<sup>th</sup> worst area (out of 612); Nicasio and Inverness are ranked 98<sup>th</sup> and 137<sup>th</sup> respectively. These rankings are based on the highest number of OOS reports exceeding 24 hours per hundred lines that occurred during the 2016-2017 time period.

<sup>256.</sup> The area calculations in Tables 12.3, 12.4, 12.5, 12.6 and 12.7 reflect the total square mileage of the central office serving area, which may include multiple cities and towns. CPUC GIS Staff provided this information as AT&T's reply to DR 02-A requesting the actual square mileage of each wire center was non-responsive.



		Table 12	2.3		
Р				N	
Rank (worst)	# Lines 4Q2017	Broad- band?	Population (2010)	Area (sq. mi.)	Designation
98	280	No	96	46 m <sup>2</sup>	Rural
137	484	Yes	1,304	23 m <sup>2</sup>	Rural
15	509	Yes	446	12 m <sup>2</sup>	Rural
	P Rank (worst) 98 137 15	PHYSICAL S   Rank # Lines   (worst) 4Q2017   98 280   137 484   15 509	Table 12MARIN COLPHYSICAL SITE VISITRank# LinesBroad-(worst)4Q2017band?98280No137484Yes15509Yes	Table 12.3MARIN COUNTYPHYSICAL SITE VISIT INFORMATIORank# LinesBroad- Population(worst)4Q2017band?(2010)98280No96137484Yes1,30415509Yes446	Table 12.3   MARIN COUNTY   PHYSICAL SITE VISIT INFORMATION   Rank # Lines Broad- Population Area   (worst) 4Q2017 band? (2010) (sq. mi.)   98 280 No 96 46 m²   137 484 Yes 1,304 23 m²   15 509 Yes 446 12 m²



Figure 12.1. Marin County Site Visit Locations

The Nicasio and Inverness Central Offices do	; the feeder
cables are	. The San
Geronimo Central Office has a	. All three COs
contain switch	es that are controlled by a host switch at a
larger central office. Batteries, generators and fuel	storage areas were observed to be in full
working order. San Geronimo has a	CD Staff inquired
as to how long the CO could operate without comm	ercial power, and was advised that it could



operate for an infinite amount of time as long as diesel fuel was delivered. If the roads were blocked due to severe weather or fires, AT&T personnel presumed that at "normal" operation, phone service could last for at least 3-5 days, but this is dependent on customer traffic and other variables.

None of the three locations have the based on workload. The 1 line supervisor for the area manages a team of technicians who cover anywhere from technician requires assistance from a CO technician, e.g., to put tone on a line, swap a pair (wires on the Main Distribution Frame) or any other task, one option is to the formation of the connection blocks on the CO and access the OSP cable connection blocks on the customer's location to the CO (and back) often results in high levels of inefficiency.

AT&T fiber-enabled high-speed internet service is not available in any of these three wire centers. In Inverness and San Geronimo, customers are limited to copper-fed DSL (digital subscriber line), but only if they live within approximately 3 route miles of the central office. In its response to CD Data Request 01-A, AT&T stated that broadband service is not available in Nicasio.

Overall, the outside plant facilities in all three wire centers showed signs of deferred maintenance that included double-pole conditions (deferred reconnection of new terminals and drop lines), broken lashing wire on cable runs (the cable sags below the supporting strand) and limited tree trimming resulting in tree branches that put weight and/or tensile force on cables. The central office buildings themselves, while old, appeared to be in good condition; the only exception was the cable vault in San Geronimo; on the day of the site visit, it appeared to be recovering from water (and mud) intrusion.

### Marin County Photographs

The following photographs are a mix of outdoor "public" pictures taken by CD Staff and "indoor" photographs taken by AT&T personnel and deemed confidential. The attestation attached to confidential photos states the following:

"PROPRIETARY AND CONFIDENTIAL INFORMATION under Cal. Gov. Code §6254 (k); Cal. PUC GO 133-D; 18 U.S.C. 1905; the Critical Infrastructure Information Act of 2002, 6 U.S.C. §133(a)(1)(E); Executive Order 12600; and New Part 4 of the Commission's Rules Concerning Disruptions to Communications, ET Docket No. 04-35, Report and Order (FCC 04-188), 19 FCC Rcd 16830, para. 40 (2004); MAY NOT BE DISCLOSED PURSUANT TO PUBLIC UTILITIES CODE SECTION 583.



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CONFIDENTIAL AND PROPRIETARY PER P.U. CODE § 583, GENERAL ORDER 66-D, & D.16-08-024
See the Declaration of Mark Berry, dated 05-10-2018."











Vertical (OSP) side of MDF	Horizontal side of MDF (to CO switch)
vertienn (ODT) side of till I	Horizonan sale of SiDT (to CO Swatch)
Generator (San Geronimo CO)	Diesel Fuel Supply (San Geronimo)



#### Mendocino County - Boonville, Fort Bragg, Potter Valley and Hopland

The towns of Boonville, Potter Valley, Hopland and the city of Fort Bragg are located in Mendocino County. Boonville and Hopland are approximately 2 hours north of San Francisco, while Fort Bragg and Potter Valley are further north at 3 to 3.5 hours from San Francisco (see Figure 12.2). Table 12.4 provides general information about each wire center. Of the four wire centers that CD Staff had visited, the worst ranked is Potter Valley at 20<sup>th</sup> out of AT&T's 612 wire centers. Potter Valley is the only CO in this group in which AT&T does not provide broadband services to customers and as the data show, service quality is poor.

		Table 12	2.4		
F	MEN	DOCINO		ON	
Rank (worst)	# Lines 4Q2017	Broad- band?	Population (2010)	Area (sq. mi.)	Designation
43	740	Yes	1,035	213 m <sup>2</sup>	Rural
158	3,563	Yes	7,278	341 m <sup>2</sup>	Urban
20	579	No	646	420 m <sup>2</sup>	Rural
67	228	Yes	756	83 m <sup>2</sup>	Rural
	Rank (worst) 43 158 20 67	MEN PHYSICAL Rank #Lines (worst) 402017 43 740 158 3,563 20 579 67 228	Table 12MENDOCINO PHYSICAL SITE VISITRank# LinesBroad- band?(worst)4Q2017band?43740Yes1583,563Yes20579No67228Yes	Table 12.4           MENDOCINO COUNTY PHYSICAL SITE VISIT INFORMATIO (worst)           Rank         # Lines         Broad- band?         Population (2010)           43         740         Yes         1,035           158         3,563         Yes         7,278           20         579         No         646           67         228         Yes         756	Table 12.4           MENDOCINO COUNTY PHYSICAL SITE VISIT INFORMATION           Rank         # Lines         Broad- band?         Population (2010)         Area (sq. mi.)           43         740         Yes         1,035         213 m²           158         3,563         Yes         7,278         341 m²           20         579         No         646         420 m²           67         228         Yes         756         83 m²





Figure 12.2. Mendocino County Site Visit Locations



All four locations appeared to have the requisite back-up batteries, generators and fuel storage; both Fort Bragg and Hopland had what looked like portable generators (see photos below). The Hopland Central Office building has a larger footprint than other comparable COs in the surrounding area. This may have been part of a past or future plan for a network expansion of some kind.

None of the Mendocino locations have the 1<sup>st</sup> line manager distributes technicians throughout the area based on workload and need. Outside Plant technicians cover a large geographic area and, when necessary, can enter





central office to test and troubleshoot a customer's line. In some of the more remote areas, the driving distance from AT&T's repair garage to a customer's location might take up to two hours, which limits the number of repair jobs a technician can complete in one day.

The design engineer for the area confirmed that none of the exchanges have fiber-enabled internet service available; copper-fed DSL is the only option, and is limited to a distance of approximately 3 route miles from the serving central office. In Potter Valley, AT&T does not offer DSL; residents confirmed that the only available non-mobile broadband options are satellite technologies, fixed wireless, or starting in 2018, DSL provided by a Competitive Local Exchange Carrier (CLEC). The CLEC currently uses AT&T's copper facilities (unbundled network elements or "UNEs") to provide wired broadband services to customers. Figure 12.3 below from the California Interactive Broadband Map<sup>257</sup> confirms the absence of wireline broadband service as of December, 2017; the areas in red represent "Unserved - No Service".



Potter Valley, AT&T's 20<sup>th</sup> worst-ranked wire center has no wired broadband option offered by AT&T.

Overall, CD Staff noted examples of deferred maintenance such as a black plastic "drape" covering a splice instead of a properly sealed closure. While it is possible that the splice locations in question are part of an ongoing construction or maintenance job in, CD Staff did not see any evidence of activity in those locations, and noted that some of the "temporary" fixes showed signs of exposure to weather. There were also areas where tree branches needed to be trimmed and where cables were sagging due to being de-lashed from the support strand.

In one of the locations, a non-management employee approached a CD Staff member to arrange a telephone call to discuss service quality issues. This technician relayed to the staff member that AT&T's business decision not to replace technicians who retire or quit is negatively impacting service quality because it forces technicians to "do more work with fewer trained resources." Until a few years ago, technicians worked on a balance of preventative maintenance projects and trouble reports (out of service conditions), but most of the work now is "fixing troubles instead of keeping them from happening". The technician noted that on days when his dispatch load (number of customer troubles) contains more jobs than can be cleared in a day, the unfinished locations are pushed out to the next day, whereas in the past, there were more technicians available to share the load. This could explain the decrease in the percentage of outof-service conditions cleared within 24 hours over the study period, as referenced in Chapter 4A.

<sup>257.</sup> California Interactive Broadband Map", http://www.broadbandmap.ca.gov/



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Figure 12.3. Lack of broadband in Potter Valley (map shows the town, not full exchange area)

# Boonville Central Office Philo Remote Terminal (fed by Boonville)

#### Mendocino County Photographs











# Sutter, El Dorado and Nevada Counties: Pleasant Grove, Nicolaus, Georgetown, Lake of the Pines and Placerville

Pleasant Grove, Nicolaus, Georgetown, Lake of the Pines and Placerville are located in three different counties north and northeast of Sacramento (see Figure 12.4). Pleasant Grove and Nicolaus are in Sutter County, Georgetown and Placerville are in El Dorado County. The Lake of the Pines Central Office is officially in the city of Auburn, but serves a gated residential community named "Lake of the Pines" in Nevada County. Table 12.5 provides general information about each wire center. Of the five wire centers, Pleasant Grove and Nicolaus are the lowest ranked at 7<sup>th</sup> and 8<sup>th</sup> respectively.

			Table 12	.5		
SUTTER, EL DORADO AND NEVADA COUNTIES PHYSICAL SITE VISIT INFORMATION						
Wire Center	Rank (worst)	# Lines 4Q2017	Broad- band?	Population (2010)	Area (sq. mi.)	Designation
Pleasant Grove	7	183	Yes	815	67 m <sup>2</sup>	Rural
Nicolaus	8	116	Yes	211	61 m <sup>2</sup>	Rural
Georgetown	11	1,486	Yes	300	141 m <sup>2</sup>	Rural
Lake of the Pines	54	2,119	Yes	3,917	103 m <sup>2</sup>	Rural
Placerville	35	8,045	Yes	10,936	252 m <sup>2</sup>	Urban





Figure 12.4. Sutter, El Dorado and Nevada Counties

DSL broadband service is available in all five wire centers with speed limitations based on the customer's cable route distance from the CO, (the further the distance, the lower the speed). Placerville is the only area served by fiber-enabled facilities that are capable of providing service beyond the approximate 15,000-foot limitation. A maintenance supervisor who lives on the border of the area served by the Lake of the Pines CO informed CD Staff that his residence is beyond AT&T's DSL service area. His only option for high-speed internet is from a fixed-wireless provider. Other competitive offerings include cable internet and satellite; however, availability depends on the location of the end-user.

The Pleasant Grove, Nicolaus, Georgetown and Lake of the Pines Central Offices contain switches that are hosted by other central offices. Placerville is equipped with a switch that presumably serves other smaller central offices in the region. The Pleasant Grove, Nicolaus and Georgetown Central Office buildings

All locations appeared to have the requisite back-up batteries, generators and fuel storage; however, Placerville's generator is

At the time of CD Staff's site visit, Lake of the Pines was the only central office with The other four areas are handled by





multiple central offices. Outside Plant technicians cover large geographic areas and can enter central office to troubleshoot a customer's line.

CD Staff observations and inquiries with AT&T personnel provided insights that revealed the possible cause(s) of the poor performance in these five areas. Pleasant Grove and Nicolaus are sparsely populated large agricultural areas where the primary crop is rice which is grown in standing water. The biggest contributor to the high rate of troubles is due to flooding; cables get wet and the water causes short-circuit conditions (known as a "loop-cross") in the cooper wires. In many locations, CD Staff observed customers' homes served by a buried drop wire because the distance from the serving terminal to the minimum point of entry (MPOE) was too far for an aerial drop wire. Over time, and sometimes due to external factors (construction, digging) these buried drops deteriorate (or are cut), resulting in an out-of-service condition for the customer. In Nicolaus, CD Staff met a customer who had filed multiple CAB (Customer Affairs Branch) complaints with the CPUC. Her home, which was fed with a buried drop approximately 200 feet from the serving pedestal, lost telephone service every time it rained. After multiple visits by AT&T repair crews who did not resolve the problem, she filed a complaint with the CAB that resulted in AT&T doing a full re-route and replacement of the buried drop wire.

Deferred maintenance and outside plant facilities that are in service beyond their usable life are contributing factors to higher rates of failure. AT&T field personnel in Georgetown and Placerville cited multiple factors including water intrusion (rain), overgrowth of tree branches, lightning strikes (which might indicate improperly bonded and grounded facilities), and damage caused by animals that chew on or otherwise damage aerial cables and facilities. In addition, both wire centers cover large geographical areas that require either long copper loops or the use of electronic pair gain systems. A longer path from the central office to the end-customer provides more potential points of failure. An AT&T employee commented that long loops are a constant source of problems, and that "from a design standpoint, the towns [Placerville and Georgetown] grew further away from the central office, we [AT&T] probably should have added another CO years ago."

Subscriber loop carrier or pair gain systems that provide telephone service to areas with a high density of subscribers and are typically located far from the central office are often a source of customer troubles. Enclosed in cabinets, or in some cases small buildings known as "huts," they are active systems that rely on commercial power and are equipped with battery backup systems. While designed to be installed outdoors and to withstand operating temperatures in the range of -20 C to +65 C,<sup>258</sup> AT&T technicians reported that if the cabinet is in an open area under direct sunlight, the temperature inside can exceed the upper level of the operating range. In one area, a remote terminal that is exposed to direct sunlight often fails due to excessive heat; AT&T was not able to install a canopy or shade cover over the cabinets due to permitting restrictions and homeowner association objections.

<sup>258.</sup> Telecordia GR-487-CORE, "Generic Requirements for Electronic Equipment Cabinets".



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### Sutter, El Dorado and Nevada County Photographs











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#### San Mateo and Santa Clara Counties: Menlo Park and Los Altos

The exchanges of Menlo Park and Los Altos are located in San Mateo and Santa Clara counties respectively, approximately 45-60 minutes south of San Francisco (see Figure 12.5). Table 12.6 provides general information about each of these wire centers. While among the most affluent cities in California, Menlo Park and Los Altos rank as the 132<sup>nd</sup> and 138<sup>th</sup> poorest performing areas in AT&T's network in California. The median household incomes (in 2017 dollars) are \$132,928 and \$208,309 for Menlo Park and Los Altos respectively. In comparison, the statewide median household income for California is \$67,169.<sup>259</sup>

Customers in the Menlo Park and Los Altos exchanges have many broadband options available, including cable, high-speed fiber provided by AT&T and by competitive local exchange carriers (CLECs) and fixed-wireless. CD Staff noted that a major fiber-to-the-home project under construction in Los Altos appeared to be targeting the same customers served by the local CLEC. However, customers that are located far from the central offices and/or in a Distribution Area that does not contain a Remote Terminal, are either relegated to low speed copper DSL or are not eligible for broadband service provided by AT&T. Given the high availability of competitive broadband options, it appears that most residents have at least one viable option for home internet service.

			Table 12	.6		
	SAM M PH	ATEO AN	D SANTA	CLARA COU	NTIES	
Wire Center	Rank (worst)	# Lines 4Q2017	Broad- band?	Population (2010)	Area (sq. mi.)	Designation
Menio Park	132	4,478	Yes	32,088	78 m <sup>2</sup>	Urban
Los Altos	138	5,014	Yes	29,076	41 m <sup>2</sup>	Urban
Sources: ETI rank	kings, AT&T se	rvice quality	report 4Q20	17, AT&T DR 01-	A, US Census	Bureau.

<sup>259.</sup> United States Census Bureau, www.census.gov/quickfacts/ca





Figure 12.5. Menlo Park and Los Altos

Each central office is equipped with AT&T and the switches; it is not apparent if these switches serve other wire centers. Cable vaults are the serve of the

While the highly populated areas of both towns are densely concentrated, there are customers that are located in the hills and therefore are further away from the central offices. In these areas, Outside Plant technicians cover large geographic areas; when the technicians must travel a long distance to **sector technicians** central office to troubleshoot a customer's line, it increases the time that a customer is out of service.

AT&T personnel reported that many outside plant troubles are caused by conditions outside their control such as squirrels and other rodents that chew on or otherwise destroy cables, vandalism, construction mishaps such as heavy equipment that causes damage to facilities, and water damage caused by rain. CD Staff maintains that while precipitation does cause problems for copper cable, proper maintenance by service providers will ensure that the network is robust enough to handle the largely predictable annual rainfall in Northern California.



### Menlo Park and Los Altos Photographs





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## **Frontier Trip Reports**

#### Santa Clara County - Blossom Hill and Montebello Central Offices in Los Gatos

The town of Los Gatos, approximately 20 minutes south of San Jose (see Figure 12.6), contains three central offices, Blossom Hill and Montebello, which serve the more densely populated areas, and Summit (also referred to as "Mountain") that provides service for the sparsely inhabited and mountainous areas of Los Gatos. Table 12.7 provides general information about each wire center; rank, number of lines and population numbers are combined.<sup>260</sup>

			Table 1	2.7		
	LOS GA	TOS - BLO	OSSOM H	ILL AND MON	ON	
Wire Center	Rank (worst)	# Lines 4Q2017	Broad- band?	Population (2010)	Area (sq. mi.)	Designation
Blossom Hill	57	7,699	Yes	29,529	9 m <sup>2</sup>	Urban
Montebello	57	7,699	Yes	29,529	34 m <sup>2</sup>	Urban
Sources: ETI ran	kings, Frontie	er DR 01-F, L	IS Census B	ureau.		



Figure 12.6. Los Gatos Central Offices

260. After the acquisition of Verizon in April, 2016, Frontier consolidated the reporting of the three Los Gatos Central Offices resulting in the inability to independently track each individually. Therefore, the ranking, number of lines and population numbers reflect the combined data.



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In contrast to many other central offices, Frontier's Blossom Hill and Montebello Central with technicians who administer the switch operations, wiring Offices are additions/changes on the main distribution frame, and assist outside plant field personnel with service orders and troubleshooting of customer lines. CD Staff observed significant activity in each location, with personnel from multiple departments either based in the building, or utilizing space as a "satellite" office. An outside plant engineer works out of the Montebello office and is able to provide engineering support to field technicians when necessary. Feeder cables are contained in . Both central offices contain switches manufactured by , that serve as the main switching systems for the wire centers. Montebello also contains an switch; Frontier personnel noted that it was added "some time ago" to upgrade the central office switch, but the plan was abandoned. The switch remains in service and retire the with a small number of working lines.

#### Generators are

The generators undergo a monthly load test and the battery system is checked twice a year. Frontier staff noted that upon loss of commercial power, the generator activates automatically to provide power to the building, the network and the battery system. Battery capacity is sized to maintain service for at least hours in the event of a catastrophic loss of power that affects both the commercial power feed and the on-site generator.

Frontier's fiber-to-the-premises *FiOS*<sup>®</sup> high-speed internet service is not available in any of the wire centers that serve Los Gatos. DSL and Fiber-to-the-Node internet services, with download speeds of up to 6, 12, and 18 megabits-per-second are available to most residents within the Blossom Hill and Montebello wire centers. Competitive options include Xfinity by Comcast (cable internet), fixed-wireless, and satellite. It appears that some form of high-speed internet service is available to almost all residents.

CD Staff observed signs of deferred maintenance including broken lashing wire on cable runs (cable sags below the supporting strand), exposed cables on riser poles (not properly contained within protective cover), overgrown tree branches (excess weight and or tensile force on cables) and pedestals and other buried cable closures that were not properly sealed.



Blossom Hill Central Office	Batteries for back-up system
Cable records in engineering office	Exchange maps
Main Distribution Frame (horizontal)	Main Distribution Frame (vertical)

# Los Gatos (Blossom Hill and Montebello) Photographs



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Diossoni fini cadle vaun	requer cables with air pressure tags
Grounding bar in cable vault	Indoor back-up generator
<u></u>	
Fibor fod Domoto Torminal	Cabla da lashad from strend
rider-ieu keinote Terminai	Cable de-lashed from strand







# Exchange Maps provided by AT&T



Figure 12.7. Map of Inverness Exchange





Figure 12.8. Map of Nicasio Exchange





Figure 12.9. Map of San Geronimo Exchange





Figure 12.10. Map of Boonville Exchange





Figure 12.11. Map of Fort Bragg Exchange







Figure 12.12. Map of Potter Valley Exchange





Figure 12.13. Map of Pleasant Grove Exchange



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Figure 12.14. Map of Nicolaus Exchange





Figure 12.15. Map of Lake of the Pines Exchange





Figure 12.16. Map of Georgetown Exchange





Figure 12.17. Map of Placerville Exchange



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# Exchange Maps from AT&T – Menlo Park and Los Altos



Figure 12.18. Map of Menlo Park Exchange



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Figure 12.19. Map of Los Altos Exchange



## Exchange Maps from Frontier - Montebello and Blossom Hill (Los Gatos)



Figure 12.20. Map of Montebello Exchange





Figure 12.21. Map of Blossom Hill Exchange



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