



# Public Housing Broadband Site Visit Report

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CALIFORNIA ADVANCED SERVICES FUND  
BROADBAND PUBLIC HOUSING ACCOUNT



July, 2019

## **DISCLAIMER**

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More information on the California Advanced Services Fund (CASF) can be found at:  
<http://www.cpuc.ca.gov/casf/>

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# Introduction and Background

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The California Public Utilities Commission (CPUC) Communications Division (CD) submits this report on the California Advanced Services Fund (CASF) Public Housing infrastructure site visits.

The Public Housing Account was established by Assembly Bill (AB) 1299<sup>1</sup> in 2013 to provide grants dedicated to broadband connectivity and adoption in publicly supported housing communities. Eligible applicants include a publicly supported community that is wholly owned by either a Public Housing agency or an incorporated non-profit organization that has received public funding to subsidize the construction or maintenance of housing occupied by residents whose annual income qualifies as “low” or “very low” according to federal poverty guidelines. SB 745<sup>2</sup> and AB 1665<sup>3</sup> limit the awarding of grants for infrastructure projects to unserved<sup>4</sup> housing developments.

The Public Housing Account is authorized \$20 million for grants and loans to finance infrastructure projects that connect publicly supported communities with broadband Internet.<sup>5</sup> Since inception, 320 infrastructure projects have been approved and 254 completed.<sup>6</sup>

Decision (D.) 14-12-039 requires the grantees to maintain and operate the broadband network for five years after receiving Commission funding on post-installation and completion of the project. Grantees are required to submit quarterly post-completion reports for five years that provide: Percentage of Uptime,<sup>7</sup> Number of Unique Log-ons by individuals,<sup>8</sup> and Amount of Data used.<sup>9</sup>

The State Controller’s Office (SCO) completed the second interim performance and financial audit of the CASF program, as required by Pub. Util. Code section 912.2(a) in March 2017. The SCO recommended that the CPUC have staff dedicated to performing project management tasks, such as on-site visits to project locations to determine the status of the infrastructure projects. The CPUC agreed with the SCO’s recommendation and has increased the number of site visits. Site visits consist of interviews with grantees and/or contractors, observations and recommendations during a site walk of the installation, configuration, operations and maintenance (O&M) of wireless access points, digital subscriber lines, switched ethernet circuits, and its network components, conducting speed tests around or inside the residential units, reviewing the ISP circuits at main point of entry (MPOE) and its subscribed internet bandwidth to ensure that the project is capable of providing the minimum required internet service speed to residents pursuant to Decision (D.) 14-12-039.

This report summarizes the observations and recommendations made by staff during site visits at 25 low performing or problematic<sup>10</sup> projects from February through April 2019.

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1 AB 1299 (Bradford) CASF (2013-2014) Ch. 507, amending Pub. Util. Code § 281.

2 SB 745 (Hueso) CASF (2015-2016) Ch. 710, amending Pub. Util. Code § 281 and 914.7.

3 AB 1665 (Eduardo Garcia) CASF (2017-2018) Ch. 851, amending Pub. Util. Code § 281, 912.2 and 914.7.

4 A housing development is unserved when at least one housing unit within the housing development is not offered broadband Internet service, (Pub. Util. Code section 281(i)(3)(B)(ii)). The CPUC has interpreted the phrase “not offered broadband Internet service” to mean that the unit does not have access to a commercially available broadband Internet service, such as Digital Subscriber Line (DSL), a cable modem, or another protocol, available at the unit. (Resolution T-17575, p. 8.)

5 The Account is also authorized \$5 million for adoption projects for residents in publicly supported communities.

6 Status as of January 29, 2019.

7 The time or the percentage the network service is up and operational.

8 Given that the Wi-Fi and DSL networks funded through the BPHA typically do not have a network log-on; network usage is, instead, tracked by the number of individual devices that access the network monthly.

9 Data usage occurs whenever an individual stream, download, upload, use apps, or open browsers.

10 Public Housing grantee projects reporting poor network performance or having not submitted reports to the commission.

# Program Status

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**Overview:**

The 330 Public Housing infrastructure projects approved to date would provide free or low-cost broadband connectivity to 22,026 Public Housing units, at an average cost of \$495 per residential unit. The total grant amount approved was \$9,434,056 and \$7,399,934 was dispersed.

*Figure 1 below* shows the total monies awarded per grantee as of January 30, 2019. Of the 330 projects approved, 254 have been completed.

The X-axis shows the awarded grant amount and Y-axis shows awarded grantee in multiples of Hundred Thousand USD. Bar colors represent Network Vendors or Contractors<sup>11</sup> hired by Public Housing grantees to build (Install, Provision and Commission) the Wi-Fi or DSL or Switched Ethernet Network.

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<sup>11</sup> The CPUC does not govern which Network Vendor or Contractor a Public Housing grantee chooses.

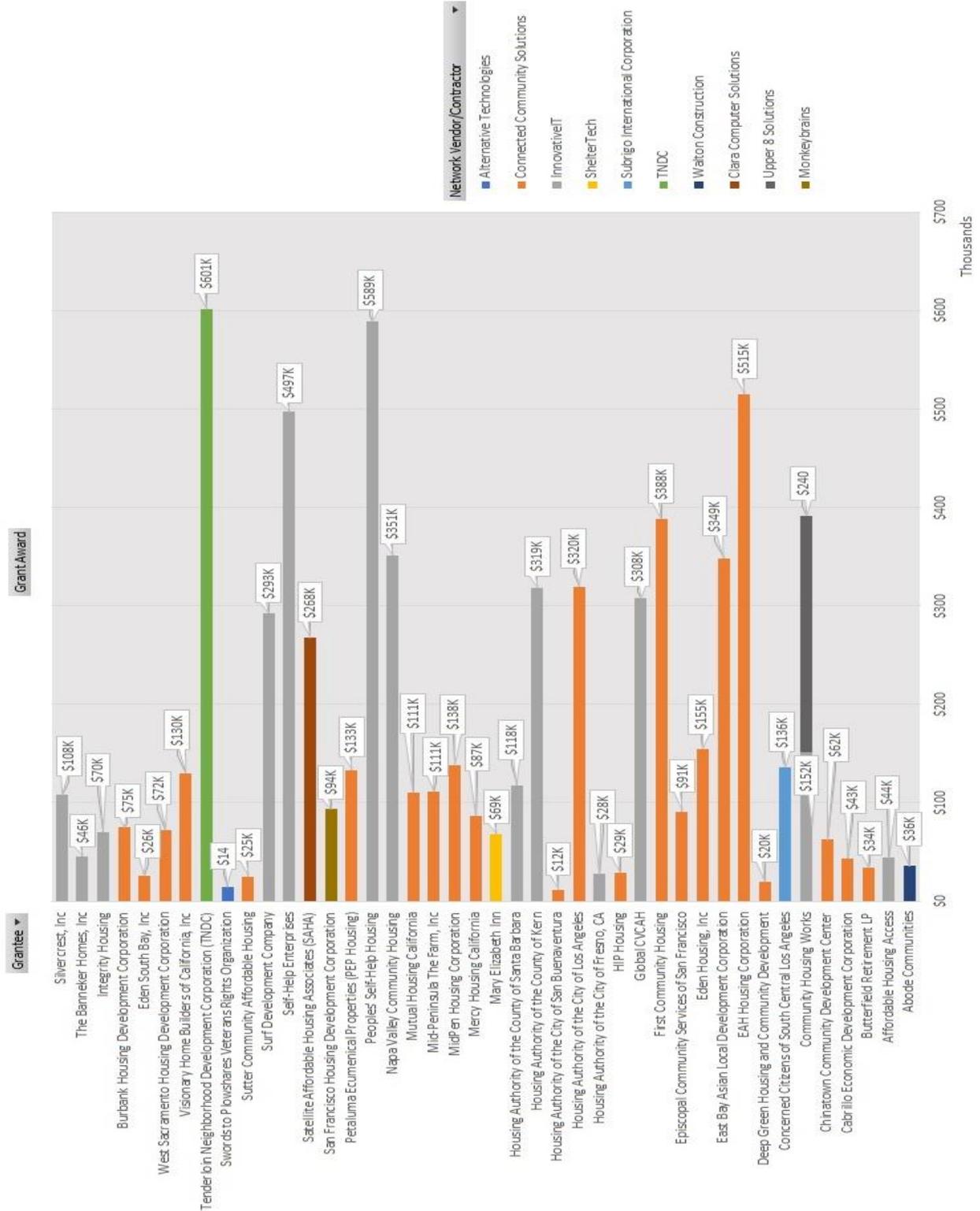


Figure 1: Total Monies Awarded Grantees as of 1/30/2019

# Site Visits

## Objective:

To determine whether the current wireless or wireline infrastructure<sup>12</sup> is meeting the grant requirements, a site visit has been conducted to ensure that the Public Housing grantees are:

- Providing minimum required Upstream and Downstream internet data rate to the residents
- Subscribed an adequate ISP bandwidth at MPOEs to meet the minimum internet data rate or internet speed for the resident's use
- Providing quarterly service availability uptime status report to the commission for review
- Operating and maintaining (O&M) the network, proper engineering documentation, quality of service (QoS) and with consistent internet services available to the residents

## Methodology:

*Figure 2 below* identifies a list of 25 Low-performance or problematic project sites as of January 30, 2019. These 25 sites were prioritized for site visits based on the following criteria:

- Completed infrastructure projects which grantees have not reported since the project completion date
- Completed infrastructure projects for which grantees have not reported in the last two quarters or more
- Completed infrastructure projects where the submitted data in the last quarter report shows uptime less than 99% and/or poor data usage

Appliant Name	Project Name	Company	Priority	Comments	Grant	Completion Date
Concerned Citizens of South Central LA	Central Avenue Village Square Apartments	Subrigo International Corp	1	No Uptime reported	\$24,437.85	01-Nov-15
Concerned Citizens of South Central LA	Gwen Bolden Manor Apartments	Subrigo International Corp	1	No Uptime reported	\$14,399.28	01-Oct-15
Housing Authority of the City of Fresno	El Cortez	InnovativeIT	1	No Uptime reported	\$27,840.00	25-Sep-18
Integrity Housing	Dudley Street Senior Apartments (now Olivera)	InnovativeIT	2	Last reported in 2Q18	\$37,350.00	15-Mar-17
Silvercrest	Parc Grove Commons	InnovativeIT	1	No Uptime reported	\$64,400.00	01-Apr-16
Swords to Plowshares	The Fairfax Hotel	Alternative Technologies	2	Last reported in 2Q18	\$9,353.24	29-Oct-15
Swords to Plowshares	The Stanford Hotel	Alternative Technologies	2	Last reported in 2Q18. Uptime < 0.99	\$5,143.88	18-Sep-15
Silvercrest	Parc Grove Northwest	InnovativeIT	1	No Uptime reported	\$43,560.00	01-Apr-16
Housing Authority of the County of Kern	Green Gardens	InnovativeIT	2	Last reported in 2Q18	\$31,200.00	05-Oct-17
Housing Authority of the County of Kern	Homer Harrison	InnovativeIT	2	Last reported in 2Q18. Uptime < 0.99	\$30,000.00	31-Aug-17
Housing Authority of the County of Kern	Park Place Apartments	InnovativeIT	2	Last reported in 2Q18	\$36,000.00	31-Aug-17
Housing Authority of the County of Kern	Plaza Towers	InnovativeIT	2	Last reported in 2Q18	\$35,100.00	31-Aug-17
Housing Authority of the County of Kern	Plaza Towers Annex	InnovativeIT	2	Last reported in 2Q18	\$36,900.00	31-Aug-17
Housing Authority of the County of Kern	Quincy St. Apartments	InnovativeIT	2	Last reported in 2Q18. Uptime < 0.99	\$19,200.00	31-Aug-17
Housing Authority of the County of Kern	Village Park Apartments	InnovativeIT	2	Last reported in 2Q18. Uptime < 0.99	\$27,000.00	31-Aug-17
Housing Authority of the County of Kern	Pinewood Glen	InnovativeIT	2	Last reported in 2Q18	\$33,000.00	31-Aug-17
Housing Authority of the County of Kern	Residence at West Columbus	InnovativeIT	2	Last reported in 2Q18. Uptime < 0.99	\$30,000.00	31-Aug-17
Housing Authority of the County of Kern	Residence at Old Town Kern	InnovativeIT	2	Last reported in 2Q18	\$18,000.00	31-Aug-17
Integrity Housing	Guest House (now The Orchard)	InnovativeIT	1	No Uptime reported	\$32,400.00	31-Jul-18
Housing Authority of the County of Kern	Baker Street	InnovativeIT	2	Last reported in 2Q18	\$22,200.00	31-Aug-17
Community Housing Works	Cypress Cove (Manzanita)	InnovativeIT	2	Uptime reported in 3Q18 is < 0.99	\$85,000.00	27-Jun-17
The Banneker Homes	Banneker Homes	InnovativeIT	1	No Uptime reported	\$45,900.00	23-Aug-18
Visionary Home Builders	Meadow View Terrace	Connected Community Solutions	2	Uptime reported in 3Q18 is < 0.99	\$15,530.00	03-Apr-18
Community Housing Works	Cedar Nettleton	Upper 8 Solutions, Inc.	1	No Uptime reported	\$30,150.00	15-Jan-18
Community Housing Works	Mission Cove	Upper 8 Solutions, Inc.	1	No Uptime reported	\$41,400.00	10-Jul-18

Figure 2: Low-performance or Problematic project sites as of January 30, 2019

<sup>12</sup> Wireless infrastructure is Wi-Fi network and Wireline infrastructure is either Digital Subscriber Line (DSL) or Switched Ethernet

In each site visit, staff met with a Public Housing Representative and/or Network Vendor. Active surveys were conducted throughout the property to investigate finer details of the installation and commissioning quality, system integration parameters check such as Signal Strength, SSID, Frequency channels, Point-to-Point Protocol over Ethernet (PPPoE).

In addition, surveys were done to test internet data speed performance and the connectivity ability throughout the Wi-Fi Access Points, Repeaters, and DSL Modems. Further, staff used the 'Site Visit Checklist' document<sup>13</sup> and tools such as Wi-Fi Analyzer, CalSPEED mobile, and desktop applications to check the data service speed and signal quality.

## **Site Visit Observations and Recommendations:**

### Swords to Plowshares Veterans Rights Organization

Date of visit: February 11, 2019

Staff visited this grantee for the following two low-performance project sites and found that the sites are old historic buildings. The Information Technology/Main Distribution Frame (IT/MDF) room, where the Main Point of Entry (MPOE) for the ISP, was not in a very ideal strategic location.

- The Fairfax Hotel
- The Stanford Hotel

At The Fairfax Hotel site, the MPOE was at the basement of the building and the Public Housing IT Engineer mentioned to staff the reason of low-performance in the fourth quarter of 2018 was due to an outage that took place by the water flooded into the IT/MDF room from the basement window. Staff determined there was no safe entry or proper access to the IT/MDF room to fix the residential internet services down issues and to check whether the issue pertaining to the ISP or the network. Staff also found the cables from the switches, router, firewall, and ISP modem, in the MDF room, were not wired properly over the cable tray ladder with no proper tie-wraps for the cables going out to the WAPs through a conduit, as you can see below in [\*Figure 3\*](#).

At The Stanford Hotel site, the MPOE was also in the basement without proper ventilation in a small cabinet with several other Comcast dwelling network equipment. Lack of proper airflow between these network equipment to dissipate the heat generated by the equipment. Staff found it was hot in this small closet due to the heat being generated from the equipment. [\*Figure 4\*](#) below, shows that the cables were not properly trayed on the cable ladder tray nor run through a proper conduit and was hanging like spaghetti with no labeling. Public Housing IT Manager mentioned the reason for a dip in performance during the 4<sup>th</sup> quarter 2018 was due to the ISP was down because of heavy rains.

### **Key Observations:**

Below listed are the key observations by the staff during the site visit of the above two site visits.

- Poor low voltage workmanship with no wiring and network diagram blueprint was available for both the sites
- Detailed Network Engineering & Design documentation and Installation checklist were not available
- The currently subscribed ISP bandwidth was not adequate to meet the grants minimum speed requirement, and the design calculation used by the network vendor was not correct

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<sup>13</sup> 'Site Visit Checklist' document contains 18 points Yes or No checklist items used by CPUC staff during active site survey/site walk on post completion CASF BPHA projects to check on Operations and Maintenance (O&M) performance

- Poor operations and maintenance of the infrastructure – all indoor wiring at the MPOE, cables going to the WAPs were hung on the walls and roofs in a bundle, with no cable tray ladder or using conduits. Did not follow industry standards and best practices
- None of the proper Wi-Fi tools were found that could help the grantee to troubleshoot their network
- None of the monitoring tools were available to measure the performance, availability of the network and could generate a dashboard report for quarterly reporting
- Multiple CalSPEED tests were conducted at both the sites and all test results failed to meet the grant's minimum internet speed requirement

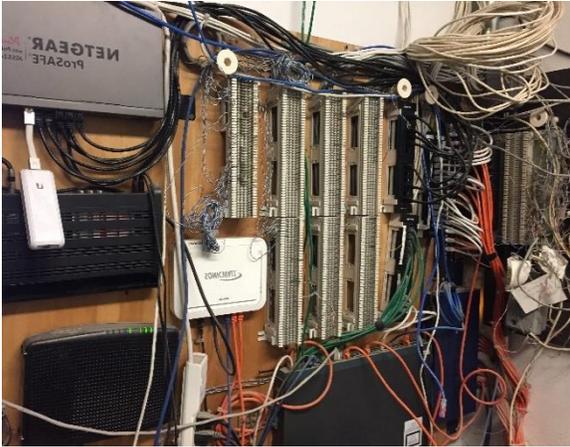


Figure 3: The Fairfax Hotel MDF Room



Figure 4: The Stanford Hotel MDF Room

### **Recommended Corrections:**

During the site visit of the above two sites, the staff made the following recommendations and asked for a corrective action plan with the Public Housing Representative.

- Both sites need a redlined engineering design document for Swords of Plowshare records and for their future references
- Must obtain the Installation checklist from the network vendor to know the sequence of tasks or activities conducted during the network deployment that can be used by the Public Housing Representative entity for their future reference
- MPOE at The Fairfax Hotel should be moved to different room or location in the building to avoid such future outages due to rain and flooded room
- MPOE closet at The Stanford Hotel needs to have proper ventilation for airflow between the network equipment with proper stack and rack
- For Indoor wiring, it is prudent to run cables on the overhead cable tray tied with neatly flushed tie wraps or run through a conduit. Current wiring at both the sites were hanging in bunches on the MDF backboard like spaghetti which needs to be corrected
- On both sites' ISP bandwidth need to be upgraded as per the design calculations to cater to an adequate bandwidth of internet services to the residents and meet grant's minimum speed requirement
- For the percentage of Uptime reporting on the quarterly reports, an industry's minimum standard requirement is to maintain Uptime of 99% or above
- To check the WAP signal quality and troubleshooting, need to use the Wi-Fi Analyzer tool and to maintain Quality of Service (QoS)

- Use the proper software monitoring tool to measure the service availability, capture the bandwidth usage data, and the unique logons for quarterly reporting
- Do a routine health check on the network devices such as; reboot the ISP modem, Router, POE Switch's, WAPs, Repeaters as needed, to clear any cached data so it will temporarily disrupt the malware and aid the potential identification of infected devices
- Consider disabling the remote management settings on devices and secure them with strong passwords and encryption when enabled
- Secure the Public Housing residents Wi-Fi networks with password protection and share those password(s) with residents to annul from general public usage and potential security threats
- All Network devices at both sites should be upgraded to the latest available software and versions of firmware to avoid any slowness in catered bandwidth to the Public Housing residents

## Fresno Housing Authority

Date of visit: February 26, 2019

Staff visited this grantee for the following three low-performance project sites and found that the sites were well maintained but lacked a few operational guidelines to improve the internet services performance and user experience.

- Parc Grove Commons
- Parc Grove Northwest
- El Cortez

The Public Housing Senior IT Manager stated they were not able to report the quarterly uptime data due to the lack of the proper tools to collect the right dataset from the system. Grantee's network vendor was collecting the data from the network firewall and generating the quarterly report for this grantee until the grantee terminated the contract with the network vendor. As a result, the grantee didn't have any tool to capture the data and report quarterly.

The Staff helped to bridge the gap between Fresno Housing and their Network Vendor (Innovative IT) during the visit, so grantee could start continuing using their services for future quarterly reporting.

Staff conducted an active survey by walking all the three sites and following the 'site visit checklist', to ensure the installation and engineering details were meeting the industry standards to deliver Quality of Service (QoS). Below pictures [Figure 5](#) through [Figure 8](#), captured by the staff during the site walk, found that the grantee's network vendor followed the required standards during the deployment of all these sites. Staff also noticed that the grantee has been maintaining the sites well post-deployment, with few operational misses, which staff recommended to the grantee to take note (see below the recommendation section for more details).

CalSPEED tests were conducted at multiple locations on all the three project sites and found that the speed test results were meeting the grant's minimum internet speed requirement.

### **Key Observations:**

Below listed are Staff's key observations during the site visit of the above three sites.

- Blueprint for the above sites was available but detailed Network Engineering & Design documentation and Installation checklist was not available

- Indoor and Outdoor wiring and cables were run through proper conduits
- All outdoor units and network equipment such as WAPs, Repeaters, MDFs, IDF's at all the three sites were properly enclosed, weather protected and secured
- The currently subscribed ISP bandwidth was not adequate to meet the grants minimum internet speed requirement at Parc Grove Commons and Northwest sites
- None of the proper Wi-Fi tools were found that could help the grantee to troubleshoot their network
- None of the monitoring tools were available to measure the performance, availability of the network and could generate a dashboard report for quarterly reporting
- Multiple CalSPEED tests were conducted at all the three sites and the test results meet grant minimum internet speed requirements



**Figure 5: Parc Grove and Northwest MDF Room**



**Figure 6: Parc Grove WAP in an enclosure**



**Figure 7: Parc Grove Northwest WAP in an enclosure**



**Figure 8: Parc Grove Northwest WAP cabling**

### **Recommended Corrections:**

During the site visit of the above three sites, the staff made the following recommendations and asked for a corrective action plan with the Public Housing Representative.

- All three sites need a redlined engineering design document from the network vendor for Fresno Housing records and for their future references
- Must obtain the Installation checklist from the network vendor to know the sequence of tasks or activities conducted during the network deployment that can be used by the Public Housing Representative entity for their future reference
- For quarterly reports either procure appropriate Network Management System (NMS) tool or reinstate the operations and maintenance (O&M) contract with the network vendor to report
- ISP bandwidth need to be upgraded at Parc Grove Commons and Northwest sites as per the design calculation to cater an adequate bandwidth of internet services to the residents and meet grant's minimum speed requirement
- For the percentage of Uptime reporting on the quarterly reports, ensure to maintain 99% or above
- To check WAP signal quality and for troubleshooting use the Wi-Fi Analyzer tool to maintain QoS
- Do a routine health check on the network devices such as, reboot the ISP modem, Router, Switch, Firewall, WAPs as needed, to clear any cached data which will temporarily disrupt the malware and aid the potential identification of infected devices
- Advised when enabled remote management settings on the devices, make sure to secure with strong passwords and encryption enabled
- All Network devices should be upgraded to the latest available software and versions of firmware to evade any slowness to the internet speed

### Housing Authority of the County of Kern

Dates of visit: February 27 and February 28, 2019

Staff visited this grantee for the following eleven low-performance sites and found that ten sites were maintained well except for one project site i.e. Residence at West Columbus. At West Columbus site staff found a lot of dust over the network equipment inside MPOE/DSLAM MDF, which is an outdoor enclosure and with no ventilation between the network equipment as we can see below in [Figure 9](#) all are stacked one above the other.

- Residence at Old Town Kern
- Baker Street
- Green Gardens
- Plaza Towers
- Plaza Towers Annex
- Pinewood Glen
- Residence at West Columbus
- Park Place Apartments
- Village Park Apartments
- Homer Harrison
- Quincy St. Apartments

The reason mentioned by the Public Housing IT Director for not able to submit a quarterly report timely was because it was missed on their part. Staff advised to the grantee to have a calendar reminder to follow-up with their network vendor every quarter before the deadline date approaches for all their AB1299 grant awarded

completed projects. The grantee had a five-year post project completion reporting contract signed by their network vendor to support operations and maintenance (O&M) of the network and provide timely quarterly reports as per grant requirements.

Staff also found that the grantee was not following the design principles to subscribe to the right amount of Internet bandwidth from an ISP to support the number of residential units. Staff and grantee's network vendor provided the design calculation to the grantee to calculate the bandwidth requirements for all the awarded project sites and work with the local ISP to subscribe to the right amount of bandwidth.

The staff did an active survey by walking all the eleven sites and followed the 'site visit checklist', to ensure the installation and engineering details were meeting the industry standards to deliver Quality of Service (QoS). Below pictures *Figure 9* through *Figure 29*, captured by the staff during the site walk, found that the grantee's network vendor did follow the required standards during the deployment of all the ten sites except one site, which you can see in *Figure 9*. Staff also noticed that the grantee has been maintaining the sites well post-deployment, with few operational misses, which staff recommended to the grantee to take note (see below the recommendation section for more details).

### **Key Observations:**

Below listed are the key observations by the staff during the site visit of the above eleven sites.

- Blueprint for the above sites was available but detailed Network Engineering & Design documentation and Installation checklist were not available
- The currently subscribed ISP bandwidth was not adequate to meet the grants minimum internet speed requirement at all the eleven project sites
- For all the sites grantee had a contract with the network vendor for operations and maintenance (O&M) and quarterly performance reporting
- Indoor and Outdoor wiring and cables were run through proper conduits
- All outdoor units and network equipment such as WAPs, Repeaters, MDFs, IDF's at all the eleven sites were properly enclosed, weather protected and secured
- Dust on the network equipment at outdoor MPOE inside the enclosure at West Columbus site
- Network equipment stacked at MPOE one above the other with no proper racking space or vent for the heat generated from the equipment to dissipate at West Columbus, Homer Harrison and, Quincy St. Apartment site
- Multiple CalSPEED tests were conducted at all the eleven sites and the test results meet grant's minimum internet speed requirement



Figure 9: Resident of West Columbus MDF Outdoor Closet

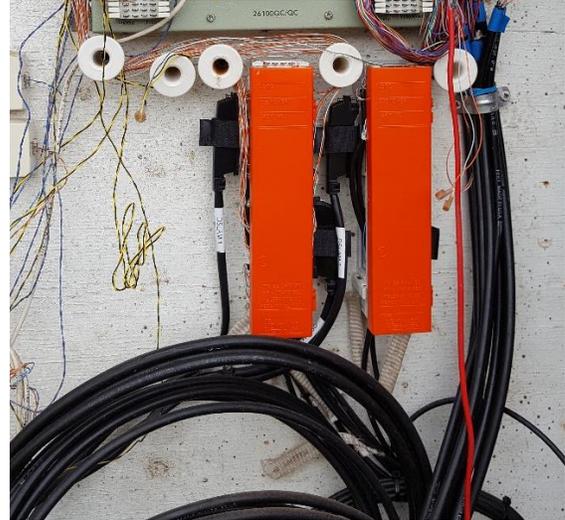


Figure 10: Resident of West Columbus 66 Block

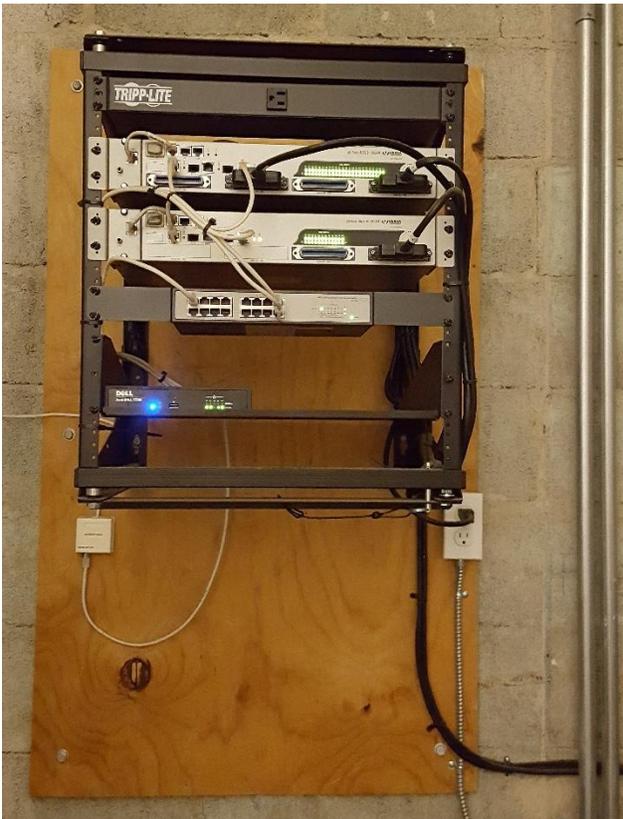


Figure 11: Residence at Old Town Kern MDF Room

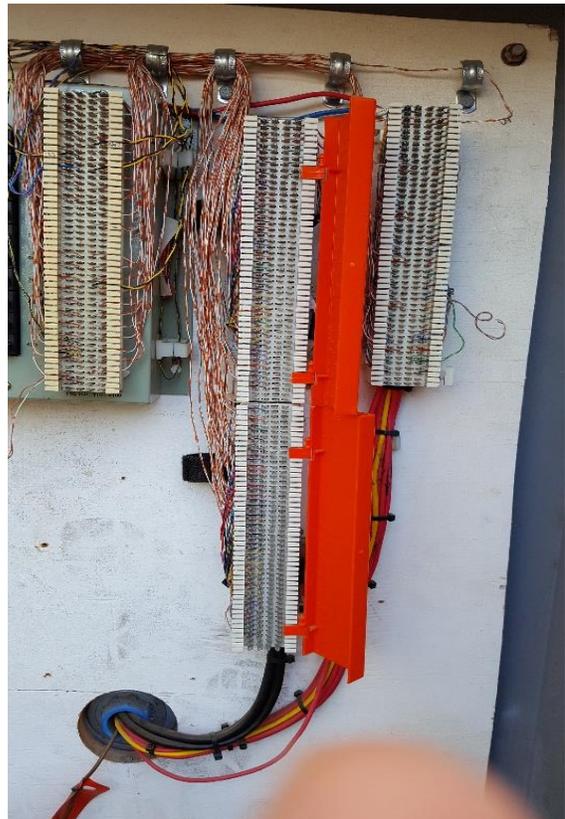
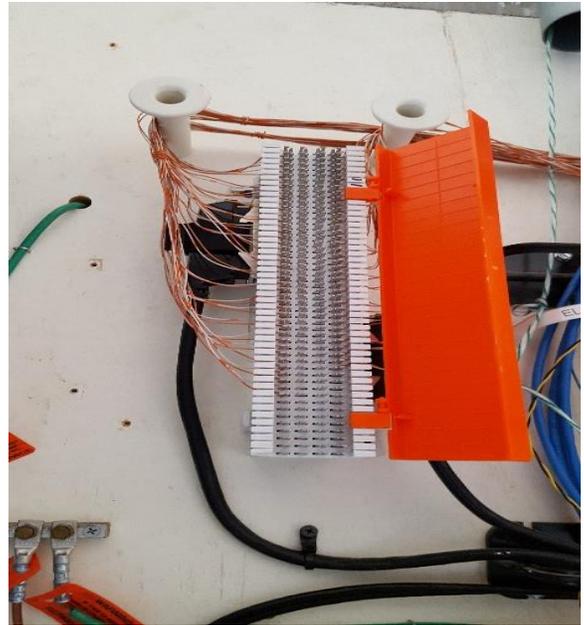


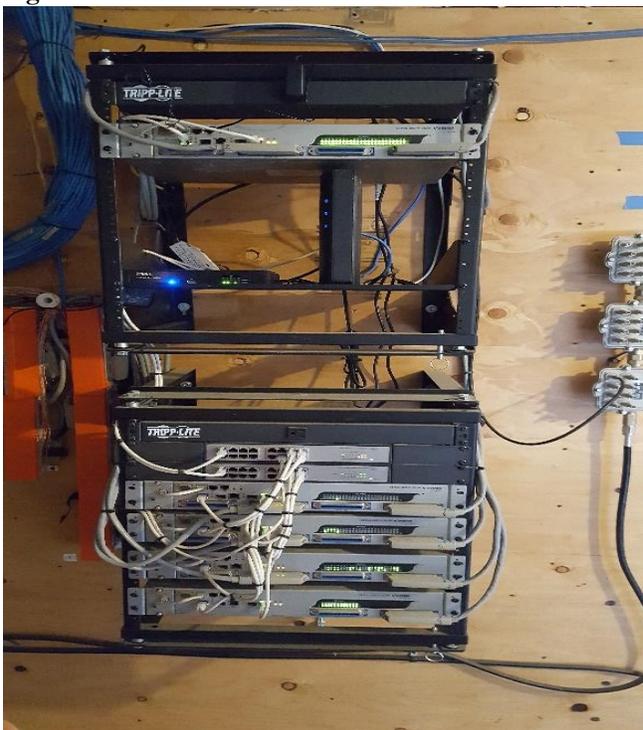
Figure 12: Residence at Old Town Kern 66 Block



**Figure 13: Baker Street MDF Room**



**Figure 14: Baker Street 66 Block**



**Figure 15: Green Gardens MDF Room**



**Figure 16: Green Gardens 66 Block**



Figure 6: Plaza Tower & Annex MDF Room



Figure 7: Plaza Tower Annex WAP

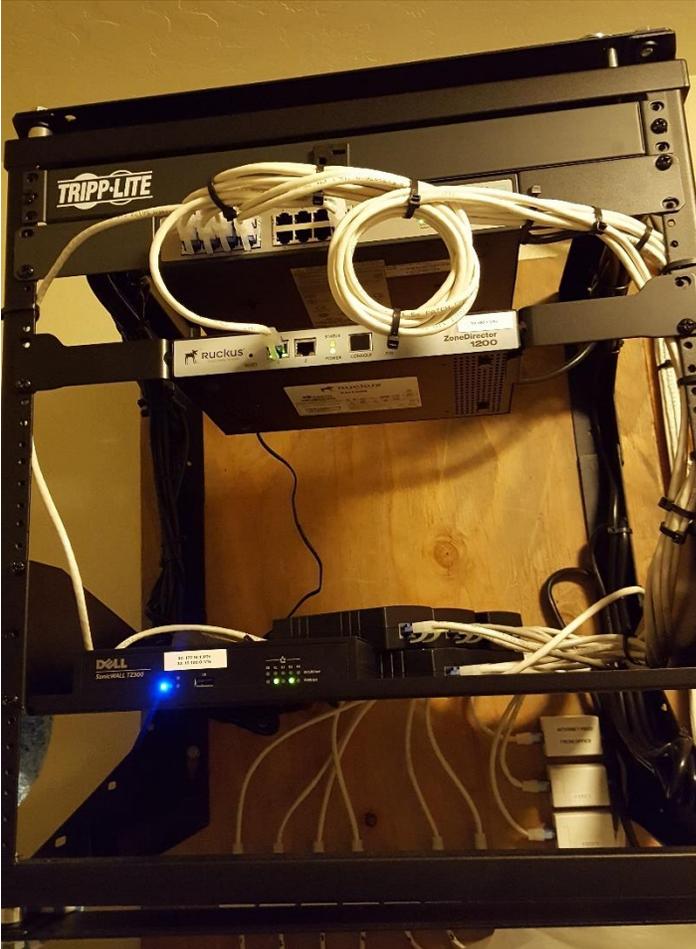


Figure 19: Pinewood Glen MDF Room



Figure 20: Pinewood Glen WAP



Figure 21: Park Place Apartments MDF Room

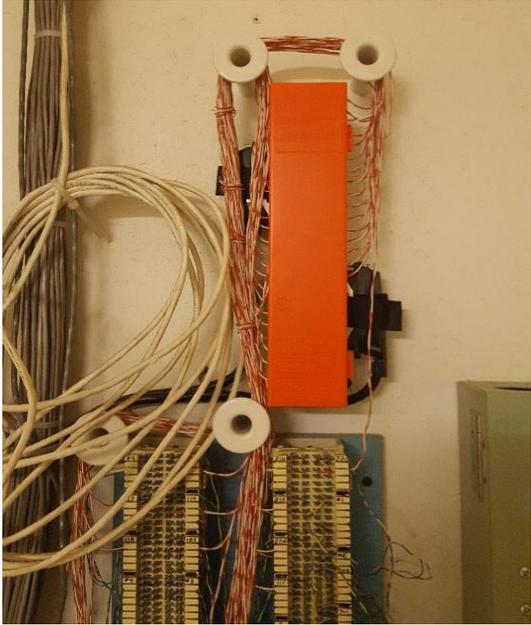


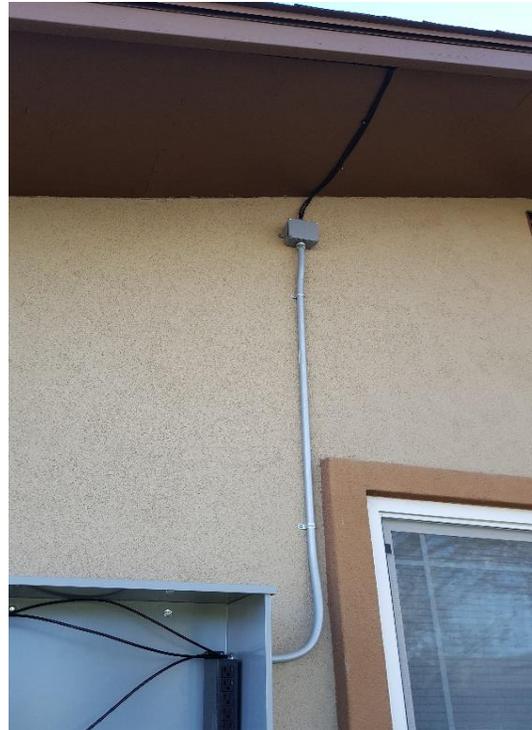
Figure 22: Park Place Apartments 66 Block



Figure 23: Village Park Apartments MDF Room with DSLAM, Firewall, Switch, Modem, and 66 Block



**Figure 84: Homer Harrison Outdoor MDF Closet**



**Figure 95: Homer Harrison Outdoor Cabling**



**Figure 106: Homer Harrison WAP**



**Figure 117: Homer Harrison Outdoor IDF**



Figure 128: Quincy St. Apartment Outdoor MDF Closet



Figure 29: Quincy St. Apartment WAP

### **Recommended Corrections:**

During the site visit of the above eleven sites, the staff made the following recommendations and asked for a corrective action plan with the Public Housing Representative.

- All eleven sites need a redlined engineering design document from the network vendor for the Housing Authority of the County of Kern records and their future references
- Must obtain the Installation checklist from the network vendor to know the sequence of tasks or activities conducted during the network deployment that can be used by the Public Housing Representative entity for their future reference
- Upgrade ISP bandwidth at all the AB1299 grant awarded sites, with the design calculation provided by staff and network vendor during the site visit to meet grants minimum internet speed requirements
- At West Columbus site, staff advised to either relocate an outdoor MPOE enclosure to a safer location where there's no dust or cover the vent with some filter to evade from the dust getting inside the outdoor enclosure. See picture in [Figure 9](#)
- At Homer Harrison and Quincy Street Apartment sites, staff recommended a correction to the grantee and the network vendor to have a shelf mounted inside the outdoor MDF enclosures and stack the network equipment on top of those shelves to evade overheating of network equipment and start malfunctioning during extreme weather conditions. It would also provide better ventilation between the network equipment. See pictures in [Figure 24](#) and [Figure 28](#)
- For the percentage of Uptime reporting on the quarterly reports, ensure to maintain 99% or above
- Check WAP signal quality and troubleshooting using a Wi-Fi Analyzer tool to maintain QoS
- Do a routine health check on the network devices such as, reboot the ISP modem, Router, Switch, Firewall, WAPs as needed, to clear any cached data which will temporarily disrupt the malware and aid the potential identification of infected devices
- Advised when enabled remote management settings on the devices, make sure to secure with strong passwords and encryption enabled
- All Network devices should be upgraded to the latest available software and versions of firmware to evade any slowness to the internet speed

## Satellite Affordable Housing Associates

Date of visit: March 4, 2019

Staff visited this grantee for the following three sites, were not the part of the original plan neither any of these sites identified as low-performance or problematic site. It was a random pick to check on the performance, O&M and deployment workmanship by the grantee and their network vendor but found that all the three sites were well operated and maintained.

- Lakeside Senior Apartments
- Valdez Plaza
- Satellite Central

The staff did an active survey by walking all the three sites and followed the 'site visit checklist', to ensure the installation and engineering details were meeting the industry standards to deliver Quality of Service (QoS). The below pictures [Figure 30](#) through [Figure 39](#), captured by the staff during the site walk, found that the grantee's network vendor did follow the required standards during the deployment of all the three sites. Staff also noticed that the grantee has been maintaining the sites well post-deployment, with few operational misses, which staff recommended to the grantee to take note (see below the recommendation section for more details).

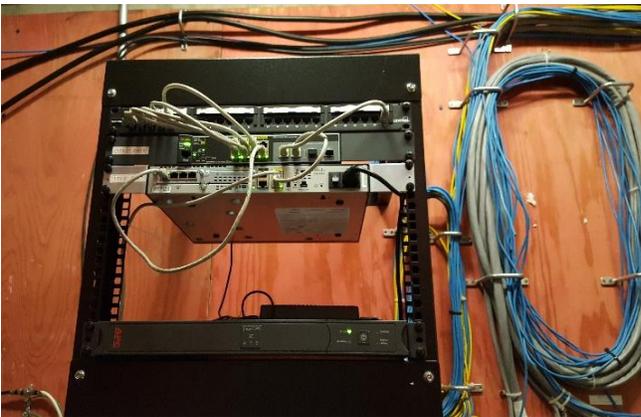


Figure 30: Lakeside Senior Apartments MDF Room

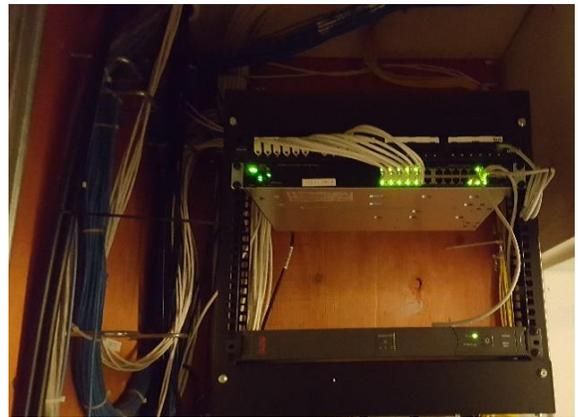


Figure 31: Lakeside Senior Apartments MDF Room

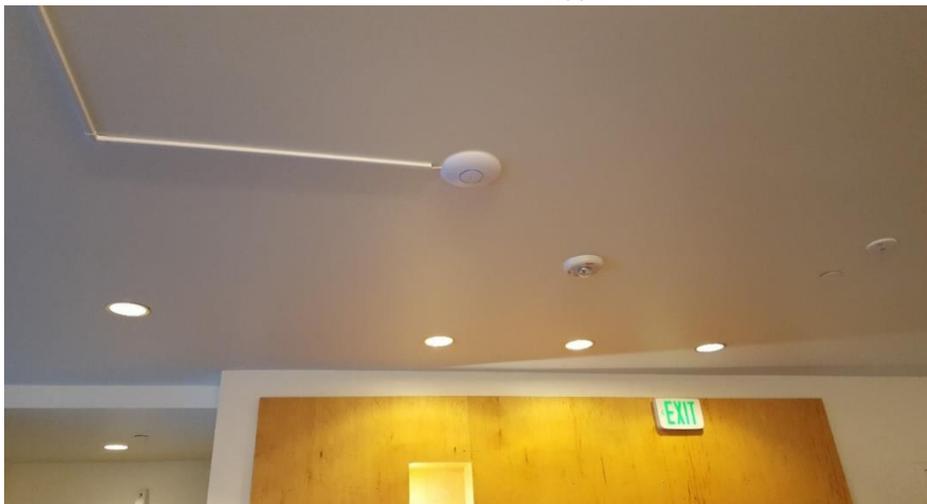


Figure 132: Lakeside Senior Apartments WAP



Figure 143: Valdez Plaza MDF Room



Figure 154: Valdez Plaza MDF Room



Figure 165: Valdez Plaza WAP



Figure 176: Valdez Plaza WAP



Figure 187: Satellite Central MDF Room



Figure 198: Satellite Central MDF Room



Figure 209: Satellite Central WAP

### **Key Observations:**

Below listed are the key observations by the staff during the site visit of the above three sites.

- Blueprint for the above sites was available but detailed Network Engineering & Design documentation and Installation checklist were not available
- The currently subscribed ISP bandwidth was adequate to meet the grants minimum internet speed requirement at all the three project sites
- For all the sites grantee had a contract with the network vendor for operations and maintenance (O&M) and quarterly performance reporting
- Indoor and Outdoor wiring and cables were run through proper conduits but WAPs were not labeled
- Multiple CalSPEED tests were conducted at all the three sites and the test results meet grant's minimum internet speed requirement

### **Recommended Corrections:**

During the site visit of the above three sites, the staff made the following recommendations and asked for a corrective action plan with the Public Housing Representative.

- All three sites need a redlined engineering design document from the network vendor for Satellite Affordable Housing Associates records and their future references
- Must obtain the Installation checklist from the network vendor to know the sequence of tasks or activities conducted during the network deployment that can be used by the Public Housing Representative entity for their future reference
- For the percentage of Uptime reporting on the quarterly reports, ensure to maintain 99% or above
- Check WAP signal quality and troubleshooting using a Wi-Fi Analyzer tool to maintain QoS
- Do a routine health check on the network devices such as, reboot the ISP modem, Router, Switch, Firewall, WAPs as needed, to clear any cached data which will temporarily disrupt the malware and aid the potential identification of infected devices
- Advised when enabled remote management settings on the devices, make sure to secure with strong passwords and encryption enabled
- All Network devices should be upgraded to the latest available software and versions of firmware to evade any slowness to the internet speed

### **Banneker Homes**

Date of visit: March 11, 2019

Staff visited this grantee for the following low-performance project sites and found that the site was maintained well but was lacking a few operational guidelines to improve the internet services performance and user experience.

- Banneker Homes Apartments

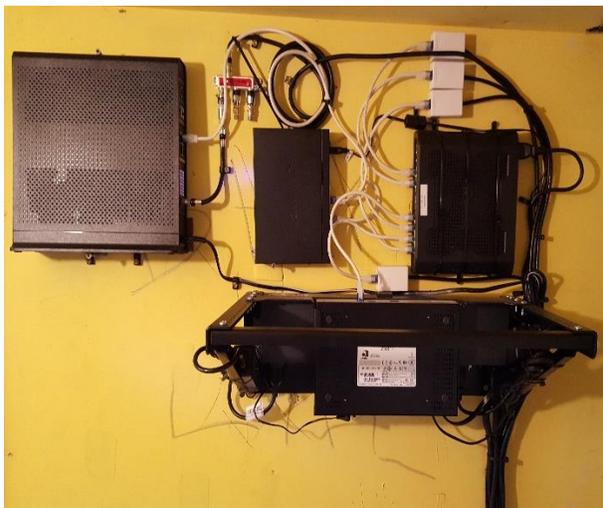
The reason mentioned by the Public Housing Account/Asset Manager for not able to submit a quarterly report timely was because it was missed on their part. Staff advised the grantee to have a calendar reminder to follow-up with their network vendor every quarter before the deadline date approaches for all their AB1299 grant awarded completed projects. The grantee had a five-year post project completion reporting contract signed by their network vendor to support operations and maintenance (O&M) of the network and provide timely quarterly reports as per grant requirements.

The staff did an active survey by walking through the site and followed the ‘site visit checklist’, to ensure the installation and engineering details were meeting the industry standards to deliver Quality of Service (QoS). Below pictures *Figure 40* through *Figure 42*, captured by the staff during the site walk, found that the grantee’s network vendor did follow the required standards during the deployment. Staff also noticed that the grantee has been maintaining the site well post-deployment, with few operational misses, which staff recommended to the grantee to take note (see below the recommendation section for more details).

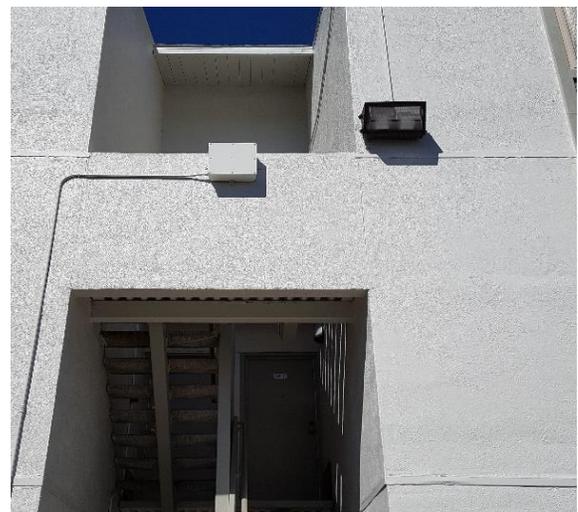
**Key Observations:**

Below listed are the key observations by the staff during the site visit of the above site.

- Blueprint for the above site was available but detailed Network Engineering & Design documentation and Installation checklist were not available
- The currently subscribed ISP bandwidth was adequate to meet the grants minimum internet speed requirement
- For the above site grantee had a contract with the network vendor for operations and maintenance (O&M) and quarterly performance reporting
- Indoor and Outdoor wiring and cables were run through proper conduits
- All outdoor units and network equipment such as WAPs, Repeaters, MDFs, IDFs on this site was properly enclosed, weather protected and secured
- At one area of an apartment building, test results were poor and didn’t meet the minimum internet speed requirement
- Multiple CalSPEED tests were conducted and the test results meet grant’s minimum internet speed requirement, except one location on the site where signals were good but didn’t meet the minimum internet speed requirement



**Figure 40: Banneker Homes Apartments MDF Room**



**Figure 41: Banneker Homes WAP and cabling**



**Figure 212: Banneker Homes Apartments WAP and cabling**

**Recommended Corrections:**

During the site visit of the above site, the staff made the following recommendations and asked for a corrective action plan with the Public Housing Representative.

- The site needs a redlined engineering design document from the network vendor for the Banneker Homes Apartment records and their future references
- Must obtain the Installation checklist from the network vendor to know the sequence of tasks or activities conducted during the network deployment that can be used by the Public Housing Representative entity for their future reference
- Rework on the coverage map or interference issue at the low internet speed area and come up with a new heatmap to add or adjust the WAP and/or Repeater signals covering that area. During this process ensure to consider the concrete walls with steel bar reinforcements, being the building is historic
- Check frequency in the poor download speed area, if needed enforce the single band i.e. 2.4 GHz instead of 5 GHz. Check for interference too, as 2.4 GHz is the most used band
- For the percentage of Uptime reporting on the quarterly reports, ensure to maintain 99% or above
- Put a calendar reminder for timely reporting on this project and all other AB1299 grant projects
- To check WAP signal quality and troubleshooting use Wi-Fi Analyzer tool to maintain QoS
- Do a routine health check on the network devices such as, reboot the ISP modem, Router, Switch, Firewall, WAPs as needed, and clear any cached data so it will temporarily disrupt the malware and aid the potential identification of infected devices
- Advised when enabled remote management settings on the devices, make sure to secure with strong passwords and encryption enabled
- All Network devices should be upgraded to the latest available software and versions of firmware to evade any slowness to the internet speed

## Concerned Citizens of Los Angeles

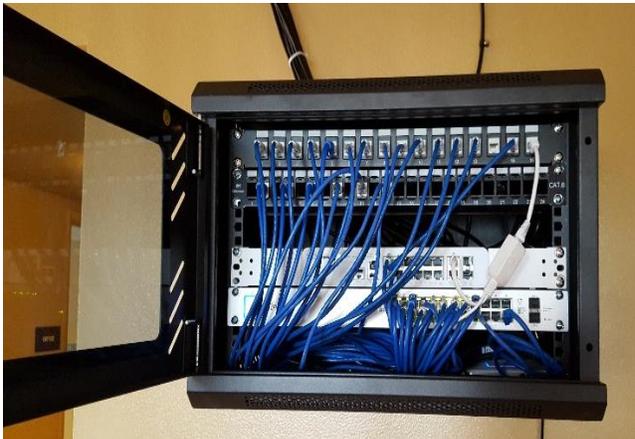
Date of visit: March 12, 2019

Staff visited this grantee for the following two problematic sites and found that the sites were completely redesigned and rebuilt with new network equipment. Grantee decided in 2018 to replace their old network vendor (Manchester Technologies), who did not design, deploy and maintain the network well. Grantee used their funds to rebuild the network and contracted a new network vendor (Subrigo International), who is also an ISP for this grantee for all their Public Housing properties. Grantee subscribed from this ISP an internet bandwidth of 1GB symmetric Upstream and Downstream speed on both the visited sites.

- Central Avenue Village Square Apartments
- Gwen Bolden Manor Apartments

The staff did an active survey by walking above two sites and followed the 'site visit checklist', to ensure the installation and engineering details were meeting the industry standards to deliver Quality of Service (QoS). Below pictures *Figure 43* through *Figure 48*, captured by the staff during the site walk, found that the grantee's network vendor did follow the required standards during the deployment on both the sites. Staff also noticed that the grantee has contracted network vendor for operations and maintenance (O&M) post-deployment and has been maintaining both sites well.

CalSPEED tests were conducted at multiple locations on both the project sites and found that it was meeting grant requirements. Staff was impressed with ISP internet speed of 1GB symmetric upstream and downstream bandwidth, and residential units availing ~40 MB symmetric internet speed and well-secured WAP SSID with unique password protection maintained by Public Housing staff for their residents at both the sites.



**Figure 223: Central Ave Village Square Apartment MDF Room**



**Figure 234: Central Ave Village Square Apt. Cabling to WAP**



Figure 245: Central Ave Village Square Apt. WAP



Figure 256: Central Ave Village Square Apt. WAP



Figure 267: Gwen Bolden Manor Apt. MDF Room



Figure 278: Gwen Bolden Manor Apt. WAP

### **Key Observations:**

Below listed are the key observations by the staff during the site visit of the above two sites.

- Network Engineering & Design documentation, Blueprint and Installation checklist were available
- The currently subscribed ISP bandwidth was very impressive 1 GB symmetric and it's more than adequate to meet the grants minimum internet speed requirement for both the project sites
- For both, the sites grantee had a contract with the network vendor, who is also an internet service provider, for operations and maintenance (O&M) and quarterly performance reporting
- Indoor and Outdoor wiring and cables were run through proper conduits
- All outdoor units and network equipment such as WAPs, Repeaters, MDFs, IDF's on both the sites were properly enclosed, weather protected and secured
- All the WAPs on the two sites were well secured and password protected
- Multiple CalSPEED tests were conducted on both sites. The test results exceeded grant's minimum internet speed requirement and the speed was very impressive ~40 GB asymmetric

### **Recommended Corrections:**

During the site visit of the above two sites, the staff made the following recommendations and asked for a corrective action plan with the Public Housing Representative.

- Both the sites need a redlined engineering design document from the network vendor for the Concerned Citizens of Los Angeles records and for their future references. Which network vendor during the site walk promised to provide to the grantee and to the staff all the required documents
- Must obtain the Installation checklist from the network vendor to know the sequence of tasks or activities conducted during the network deployment that can be used by the Public Housing Representative entity for their future reference
- For the percentage of Uptime reporting on the quarterly reports, ensure to maintain 99% or above
- Add a calendar reminder to submit quarterly reports timely for all the AB1299 grant projects
- To check WAP signal quality and troubleshooting use Wi-Fi Analyzer tool to maintain QoS
- Do a routine health check on the network devices such as, reboot the ISP modem, Router, Switch, Firewall, WAPs as needed, and clear any cached data so it will temporarily disrupt the malware and aid the potential identification of infected devices
- Advised when enabled remote management settings on the devices, make sure to secure with strong passwords and encryption enabled
- All Network devices should be upgraded to the latest available software and versions of firmware to evade any slowness to the internet speed

### **Community Housing Works**

Date of visit: March 13, 2019

Staff visited this grantee for the following three problematic and low-performance sites and found that one of the three sites was non-operational, and another site had a coverage issue. So, only one side of the three was operational with no issues.

- Manzanita (Cypress Cove)
- Cedar Nettleton
- Mission Cove Seniors

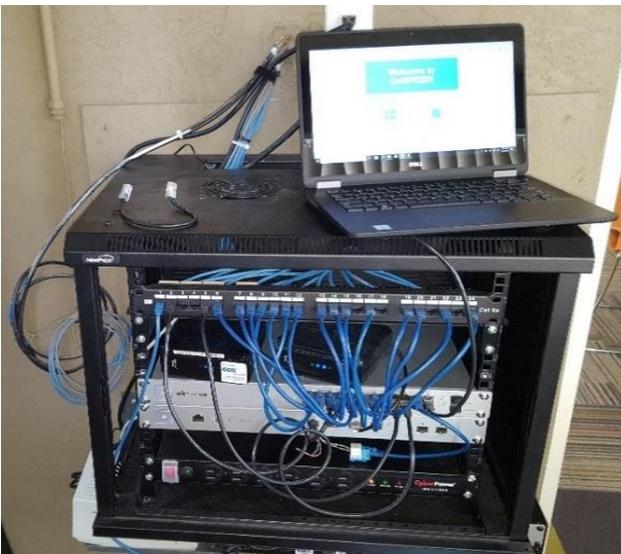
The initial reasons mentioned by the Public Housing IT Manager for low-performance reporting of the sites Manzanita and Mission Cove Seniors was due to the radio issues but for Cedar Nettleton site mentioned that it has to be updated on their portal to pull the stats and network controller need to reboot.

The staff did an active survey by walking above three sites and followed the 'site visit checklist', to ensure the installation and engineering details were meeting the industry standards to deliver Quality of Service (QoS). Below pictures *Figure 49* through *Figure 58*, captured by the staff during the site walk, found that the grantee's network vendor did not follow the required standards during the deployment on one of the three sites, that is Cedar Nettleton site. Staff also noticed that the grantee had no contract with network vendor for operations and maintenance (O&M) post-deployment and has been maintaining all the three sites of their own with minimal knowledge of product and technology.

CalSPEED tests were conducted at multiple locations on all the three project sites and found that it was not meeting the grant's minimum internet speed requirement on two of the sites i.e. Manzanita (WAPs were not accessible) and Cedar Nettleton (poor coverage and spotty network connectivity).

Staff also found subscribed ISP internet speed at all the three locations was not adequate as per the design calculations to cater minimum internet speed to the number of residential units to meet grant requirements.

At Manzanita Apartments a.k.a. Cypress Cove staff found that the project site was problematic and not in operations. When staff requested for Engineering Design documents, to understand the site network architecture and topology, with Community Housing Works (CHW) IT Manager the response was negative. As per CHW IT Manager, CHW terminated the contract immediately after deployment without taking proper transition. Staff was told that CHW terminated the contract with the network vendor, as CHW thought could operate the network without network vendor support. Also, staff found on this site that the subscribed ISP bandwidth was not adequate to meet the grant's minimum internet speed requirement per resident. The staff did the active survey on this site and found that neither the staff's phone device nor IT Manager's phone device was latching to any of the wireless access points (WAPs) with a provided password by the CHW IT Manager. On further investigating into the issue staff found from the IT Manager that CHW did not have the correct password nor the access to radio units, POE switches, and WAPs. After observing all these issues at the site, the staff decided to abort this site visit and went back to the CHW site office to help this grantee to bring the site back to operations. The staff then took the details of the network vendor from the CHW IT Manager to call the network vendor and request for support. Fortunately, the staff knew this network vendor, it was Innovative IT. On a call with network vendor and CHW IT Manager, staff requested to network vendor to iron out the old differences and support the grantee to bring back the network to operations and transition the engineering design documentation for the grantee's future reference. The network vendor agreed with staff and assured to support the grantee immediately to bring the network back to live for this site. Staff left this site stating to the grantee that the site should be up in running ASAP to comply with the grant requirements. See below pictures, [Figure 49](#) through [Figure 50](#), which were captured by staff during a site walk which found that the grantee has followed the standards during deployment but was problematic and non-operational.



**Figure 289: Manzanita (Cypress Cove) MDF Room**



**Figure 50: Manzanita (Cypress Cove) Sectorial Antenna**

At Cedar Nettleton Apartments staff found that the project site had a spotty network connection with poor coverage. When staff requested for Engineering Design documents, to understand the site network architecture and topology, with Community Housing Works (CHW) IT Manager the response was negative. As per CHW IT Manager, CHW terminated the contract in between the deployment without taking proper transition and gave a contract to another networking vendor. Staff was told that CHW terminated the contract with the first network vendor, thinking the CHW IT team could design better but ended up hiring

another networking vendor. The heatmap generated by the new network vendor for this site shows that the coverage area was not properly mapped with the WAPs to ensure proper coverage for all the residential units. The staff did an active survey on this site followed the site survey checklist and conducted few CalSPEED tests, as per the heatmap provided by the grantee, pointed out the coverage gaps to CHW IT Manager. CalSPEED tests either completely failed or the speed was very bad and not meeting the grant's speed requirement. Staff recommended to the grantee to redo the heatmap and redline the design to adjust the WAPs, repeaters, and radios accordingly to improve the coverage so that all the residential units can avail the minimum internet speed as per grant's requirement. Also, staff found on this site that the subscribed ISP bandwidth was not adequate to meet the grant's minimum internet speed requirement per resident. Staff left this site stating to the grantee that the site should fix the coverage gaps ASAP to comply with the grant requirements. See below pictures, *Figure 51* through *Figure 54*, which were captured by the staff during the site walk, which found that the grantee has followed the standards during deployment but was low performance.



Figure 51: Cedar Nettleton MDF Room

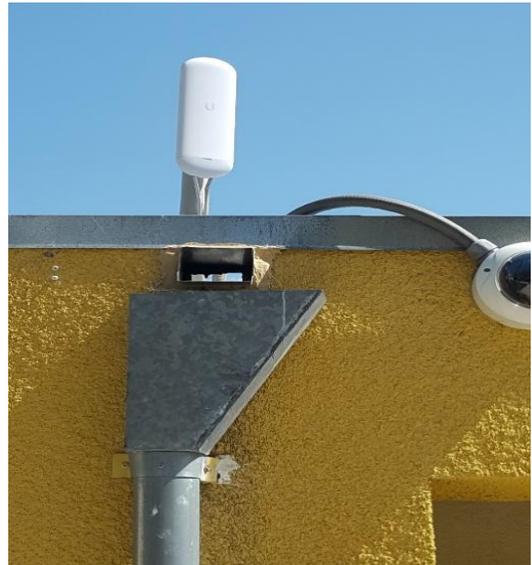


Figure 292: Cedar Nettleton Nano Cell WAP

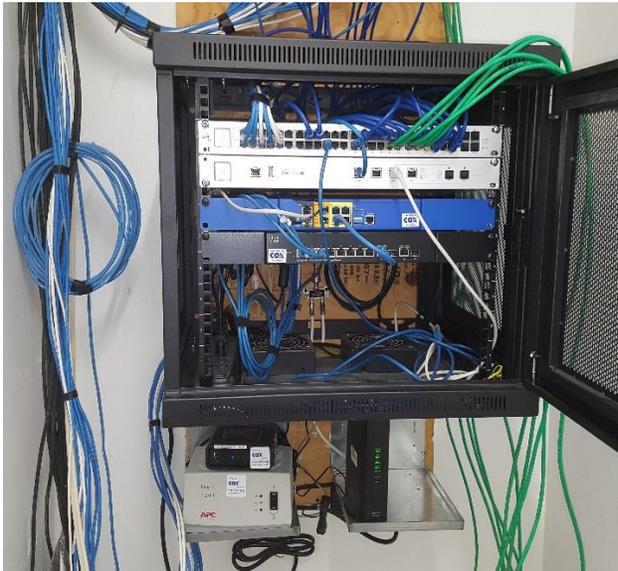


Figure 303: Cedar Nettleton Nano Cell WAP

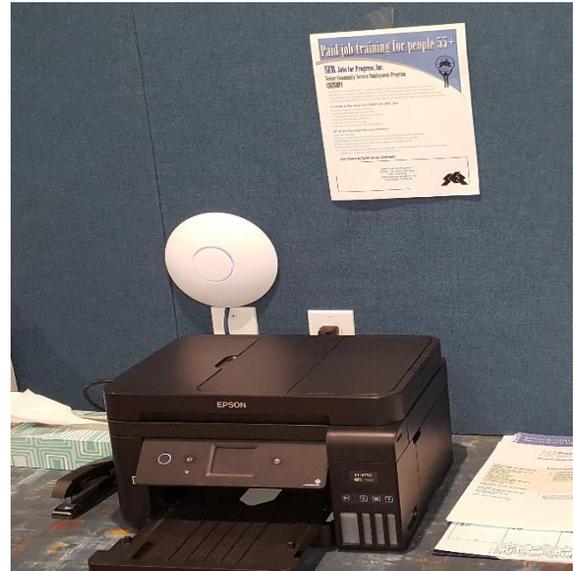


Figure 314: Cedar Nettleton Nano Cell WAP

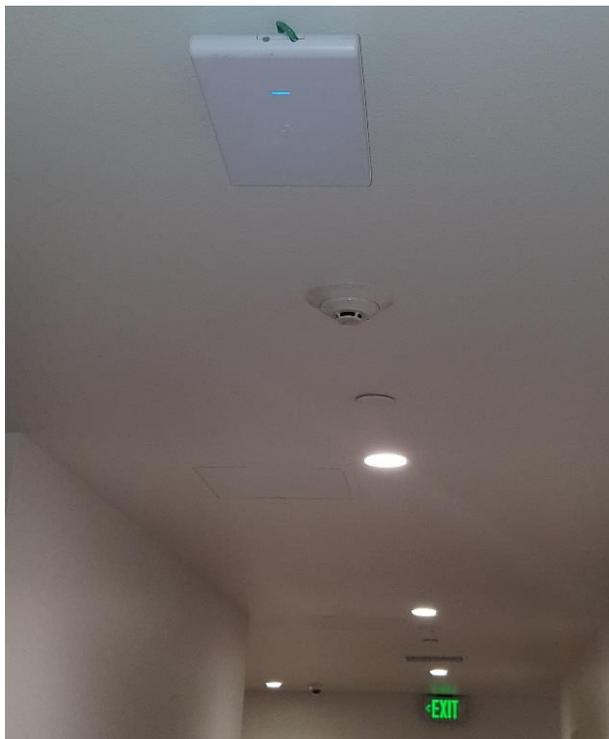
At Mission Cove, Senior Apartments staff found that the project site had good coverage and well maintained. But when staff requested for Engineering Design documents, to understand the site network architecture and topology, with Community Housing Works (CHW) IT Manager the response was negative. CalSPEED tests conducted at multiple locations and were meeting the grant's minimum speed requirement. Staff found on this site that the subscribed ISP bandwidth was not adequate to meet the grant's minimum internet speed requirement per resident all the time. See below pictures, *Figure 55* through *Figure 58*, which were captured by the staff during the site walk, which found that the grantee has followed the standards during deployment but was low performance.



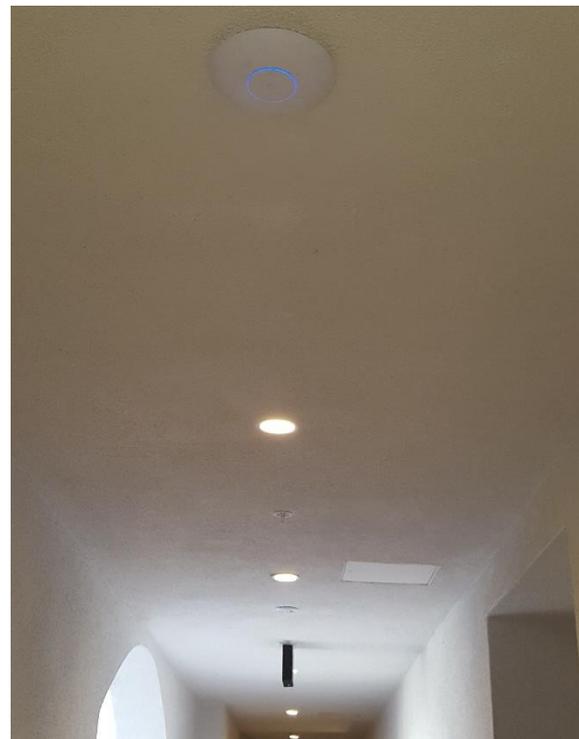
**Figure 325: Mission Cove Senior MDF Room**



**Figure 336: Mission Cove Senior WAP in a Lab**



**Figure 347: Mission Cove Senior WAP**



**Figure 358: Mission Cove Senior WAP**

### **Key Observations:**

Below listed are the key observations by the staff during the site visit of the above three site visits.

- Network diagram topology and blueprint were not available for none of the three sites
- Detailed Network Engineering & Design documentation and Installation checklist were also not available for any of the site
- Heatmap for the Cedar Nettleton site was available but need to redo as there are some coverage gaps observed during the site walk
- On all the three sites the currently subscribed ISP bandwidth was not adequate to meet the grants minimum speed requirement, and the design calculation used by the network vendor was not correct
- The Manzanita site was non-operational and did not have the right password to access the Wi-Fi network. So, no CalSPEED test was able to conduct to test the internet speed at this site
- Cedar Nettleton site had spotty coverage and CalSPEED test has failed at bad coverage locations
- Poor operations and maintenance of the Wi-Fi infrastructure by the grantee at Manzanita and Cedar Nettleton site
- None of the proper Wi-Fi tools were found that could help the grantee to troubleshoot their network
- Multiple CalSPEED tests were conducted at Mission Cove Senior Apartment site and all test results passed and meet grant's minimum internet speed requirement

### **Recommended Corrections:**

During the site visit of the above three sites, the staff made the following recommendations and asked for a corrective action plan with the Public Housing Representative.

- All three sites need a redlined engineering design document from the network vendors for the Community Housing Works records and their future references
- Must obtain the Installation checklist from the network vendors to know the sequence of tasks or activities conducted during the network deployment that can be used by the Public Housing Representative entity for their future reference
- The grantee must secure all the Manzanita project site related documents, such as system passwords, provisioning, and configuration files, installation guide, troubleshooting steps, etc. from the network vendor who deployed the network at this site
- After successful completion of the troubleshooting at the Manzanita site, make sure to conduct CalSPEED tests at multiple locations to see if the internet speed is meeting the grant's minimum speed requirement. Capture the test results and submit to the CPUC for review
- Rework on the coverage map at Cedar Nettleton and come up with a new heatmap to mitigate the coverage gaps. During this process ensure to consider the concrete walls with steel bar reinforcements
- After fixing the coverage gap at Cedar Nettleton site, make sure to walk through the Wi-Fi Analyzer to ensure the coverage gap area has a good signal strength. Conduct multiple CalSPEED tests to see, if the coverage gap is fixed and meeting minimum internet speed requirements
- For all the three sites, ISP bandwidth must be adjusted based on design calculations to meet the grant's minimum internet speed requirement per resident
- Check frequency at the poor download speed area, if needed enforce a single band i.e. 2.4 GHz instead of 5 GHz. Also, check for interference as 2.4 GHz is the most used band
- For the percentage of Uptime reporting on the quarterly reports, ensure to maintain 99% or above
- Add a calendar reminder to submit quarterly reports timely for all the AB1299 grant projects

- To check WAP signal quality and troubleshooting use Wi-Fi Analyzer tool to maintain QoS
- Do a routine health check on the network devices such as, reboot the ISP modem, Router, Switch, Firewall, WAPs as needed, and clear any cached data so it will temporarily disrupt the malware and aid the potential identification of infected devices
- Advised when enabled remote management settings on the devices, make sure to secure with strong passwords and encryption enabled
- All Network devices should be upgraded to the latest available software and versions of firmware to evade any slowness to the internet speed

## Integrity Housing

Date of visit: March 14, 2019

Staff visited this grantee for the following two problematic sites and found that the sites were maintained well. The grantee has a five-year post project completion reporting contract signed by their network vendor to maintain the network and provide quarterly reports as per grant requirements. The IT Residence Services Director mentioned the reason for non-reporting the quarterly data for these sites was because it was missed on their part. Staff suggested to the Residence Services Director to have a calendar reminder to follow-up with their network vendor every quarter before deadline date approaches for all their AB1299 grant projects.

- Olivera Senior Apartments (Dudley Street)
- The Orchard (Guest House)

The staff did an active survey by walking above two sites and followed the 'site visit checklist', to ensure the installation and engineering details were meeting the industry standards to deliver Quality of Service (QoS). Below pictures [Figure 59](#) through [Figure 62](#), captured by the staff during the site walk, found that the grantee's network vendor did follow the required standards during the deployment on both the sites. Staff also noticed that the grantee has contracted network vendor for operations and maintenance (O&M) post-deployment and has been maintaining both sites well.

### **Key Observations:**

Below listed are the key observations by the staff during the site visit of the above two sites.

- Blueprint for the above sites was available but detailed Network Engineering & Design documentation and Installation checklist were not available
- The currently subscribed ISP bandwidth was adequate and meets the grant minimum internet speed requirement for both the sites
- For both the sites, the grantee had a contract with the network vendor for operations and maintenance (O&M) and quarterly performance reporting
- Indoor and Outdoor wiring and cables were run through proper conduits and 66 blocks at The Orchard and were wired properly but the face cover to the 66 blocks was missing
- All outdoor units and network equipment such as WAPs, Repeaters, DSLAM, MDFs, IDF's at all the eleven sites were properly enclosed, weather protected and secured
- The network equipment at MPOE was properly racked and functioning normally
- Multiple CalSPEED tests were conducted at both the sites and the test results meet grant's minimum internet speed requirement

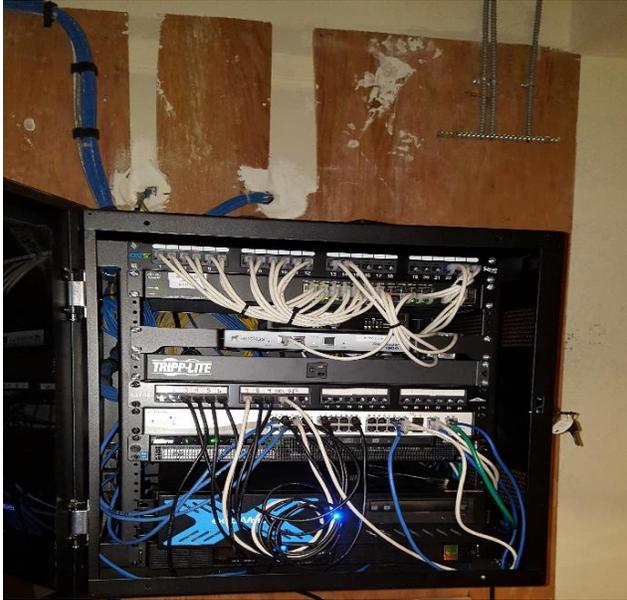


Figure 369: Olivera Senior Apartment MDF Room



Figure 60: Olivera Senior Apartment WAP



Figure 61: The Orchard MPOE/MDF Room

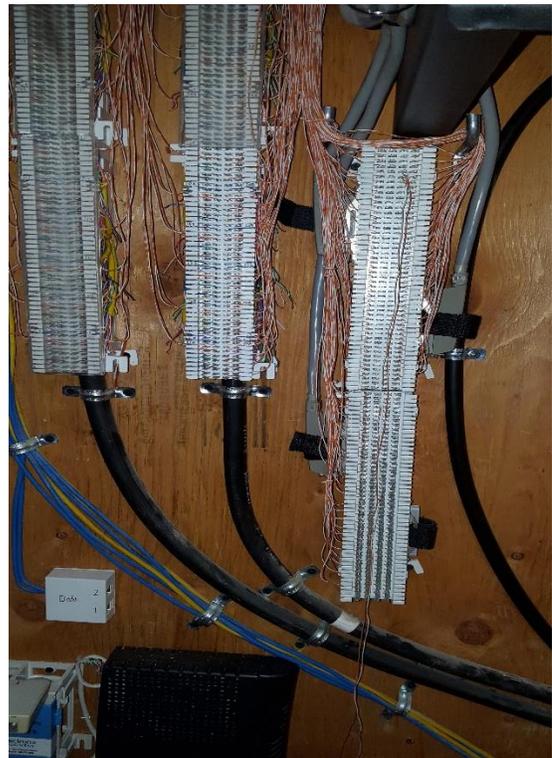


Figure 372: The Orchard MDF Room 66-Block

### **Recommended Corrections:**

During the site visit of the above two sites, the staff made the following recommendations and asked for a corrective action plan with the Public Housing Representative.

- Both the sites need a redlined engineering design document from the network vendor for the Integrity Housing records and their future references
- Must obtain the Installation checklist from the network vendor to know the sequence of tasks or activities conducted during the network deployment that can be used by the Public Housing Representative entity for their future reference
- For the percentage of Uptime reporting on the quarterly reports, ensure to maintain 99% or above
- Add a calendar reminder to submit quarterly reports timely for all the AB1299 grant projects
- To check WAP signal quality and troubleshooting use Wi-Fi Analyzer tool to maintain QoS
- Do a routine health check on the network devices such as, reboot the ISP modem, Router, Switch, Firewall, WAPs as needed, and clear any cached data so it will temporarily disrupt the malware and aid the potential identification of infected devices
- Advised when enabled remote management settings on the devices, make sure to secure with strong passwords and encryption enabled
- All Network devices should be upgraded to the latest available software and versions of firmware to evade any slowness to the internet speed

### **Visionary Home Builders**

Date started investigation: Feb 5, 2019

Date received the rescind grant amount: April 5, 2019

The staff planned to visit the following problematic site but found from the grantee that the site was sold.

- Meadow View Terrace

### **Key Observations:**

Here is the sequence of events with timelines on this project found by the staff.

- Meadow View Terrace property was sold on 5/1/18
- Staff was notified that Meadow View Terrace property sold on 5/15/18
- After discussing with CPUC legal team, staff agreed to reimburse the complete project cost and paid the grantee in full for completion of the project on 5/18/18
- Service was down at Meadow View Terrace since 7/5/18, however, the staff was only made aware after multiple follow-ups with the grantee for the quarterly performance reports for this site

Staff reached out to Visionary Home Builders (VSB) and got ahold of their Chief Operating Officer (COO), who was very cooperative, provided the signed cover page property sale recording document and the realtor's contact information who helped VSB to sell Meadow View Terrace property. When staff asked with VSB COO for a new property owner's direct contact, the response was negative. So, the staff had to go through the realtor to find the contact information of the new property owner. But unfortunately, the telephone number provided by the realtor of the new property owner was unreachable. Staff after trying multiple unsuccessful attempts to reach out to the new owner of Meadow View Terrace on the number provided by the realtor decided to reach again back to the VSB COO to find more details about the asset transfers if any contract signed between VSB and new owner of the Meadow View Terrace property. Staff found from VSB COO that they don't recollect if there were any specific details shared with the new owner of Meadow View

Terrace about the grant requirements or asset transfer. Staff also found, when talking to the VSB COO, that new owner of this property (Meadow View Terrace) is now leasing the apartments at the market rate and is no longer listed as affordable housing.

All the above findings were shared with the CPUC legal team for their guidance and to make the decision, whether to rescind the grant or not. CPUC legal team after reviewing and scrutinizing all the staff's findings did support the Communication Division (CD) decision to rescind the grant. CD management supported the staff recommendation to rescind the full grant amount of \$15,405 and so forth sent the rescind letter to the grantee on 3/11/18. The grantee (Visionary Home Builders) accepted and honored CPUC's decision to rescind the grant and refunded the amount in full to the CPUC, which was received and deposited back to the CASF fund account.

### **Recommended Corrections:**

During the entire process for rescinding the grant, staff had the following recommendations and process corrections on this project and future projects to evade from a similar situation.

- Key lessons learned from this project is to keep more frequent communication with the grantees and their network vendors on the project updates
- Timely follow-up on the project milestones and reports with proper questioning back to the grantees on the project findings
- If we see any red flag on the project, as in this case, we were aware of the property being sold, we should make a thorough investigation and if needed do a site visit before releasing the final check to the grantee
- Frequent site visits to all undergoing awarded projects, low-performance, and problematic projects to check on the status and to analyze the project situation better with eyes and ears open while doing a site walk
- During the site visit speak with the property manager(s) and if possible, try to get the testimonies about the internet services and how it is getting benefitted to the Public Housing residents in community upliftment
- Before reimbursing the final payment to the grantee make sure to review all the required site-related project supporting documents, network equipment pictures with surroundings, test results submitted with the project completion report
- For any low-performance and problematic project sites, do a site visit and site walk with the checklist document to ensure the deployment meets the grant requirements as per industry standards
- Follow up with the grantees on all the project inconsistencies found on the milestone report, project completion report, and quarterly reports submitted to the CPUC. If needed, visit the project site and advise the grantee and their network vendor to fix all the inconsistencies observed

### **EAH Housing**

Date of visit: April 23, 2019

Staff randomly picked this grantee to visit the following two sites for one of the network vendors, who deployed the second-highest number of installations for AB1299 grant projects contracted by Public Housing. The network vendor is 'Connected Community Solutions' (CCS), who was contracted by EAH Housing to build the following two sites. Staff visited both the sites to see the deployment workmanship and the quality of deliverables. During the site visit, staff found that the services were maintained remotely by CCS with following observations about Network Engineering and Design documentation, ISP bandwidth subscription recommendations, network security, operation & maintenance (O&M) and low-voltage workmanship quality.

- Casa Adobe
- Rodeo Gateway

During the site visit of the above two sites, staff met Public Housing Network Engineer and followed site visit checklist document during the site walk to ensure the installation and engineering details were meeting the industry standards to deliver Quality of Service (QoS). Staff when requested for installation checklist and network design documentation, Public Housing Network Engineer response was negative. Staff further found that there was no such documentation was made available by their network vendor CCS. Knowing staff visiting the above sites, Public Housing Network Engineer tried to put together a network connectivity diagram with a minimal understanding of the existing network by visually looking into the network devices. Below pictures *Figure 63* through *Figure 72*, captured by the staff during the site walk, found that the grantee's network vendor did not follow the required standards during the deployment on both the sites. Staff also noticed that the grantee has not contracted network vendor for operations and maintenance (O&M) and quarterly reporting post-deployment and has been maintaining both the sites along with other AB1299 grant projects of their own.

CalSPEED tests were conducted at multiple locations on both the project sites and found that it was meeting grant minimum internet speed requirements. But the subscribed ISP bandwidth was not calculated properly, so staff recommended the grantee to recalculate the ISP bandwidth based on the number of residential units with at least 3 devices per resident and adjust it to meet the minimum speed as per the grant's requirement.

### **Key Observations:**

Below listed are the key observations by the staff during the site visit of the above two sites.

- Poor transition between Public Housing Network Vendor and Public Housing Network team on project documentation for both the sites
- Detailed Network Engineering & Design documentation and Installation checklist was not available
- Both the sites were poorly built and did not follow industry standards and best practices
- No Firewall installed in the network to protect the network elements from vulnerability and Public Housing resident's device is prone to the high-security threat from bad actors
- No proper labeling was found at the MPOE, so it's not easy to identify which cable is connected to which WAP or network device
- Single-band 2.4 GHz radio technology used, and it could be highly interference prone
- Poorly wired all indoor and outdoor cables running on the walls and roofs were stapled with no conduits or cable tray ladder used
- On both, the sites ISP bandwidth subscribed were not adequate to meet grants minimum speed requirement and the design calculation used by the network vendor was not correct
- CalSPEED test results conducted at multiple locations on both the sites were meeting minimum internet speed as per grants requirement



Figure 383: Casa Adobe Cabling



Figure 64: Casa Adobe Cabling



Figure 395 Casa Adobe Cabling from MPOE to WAPs

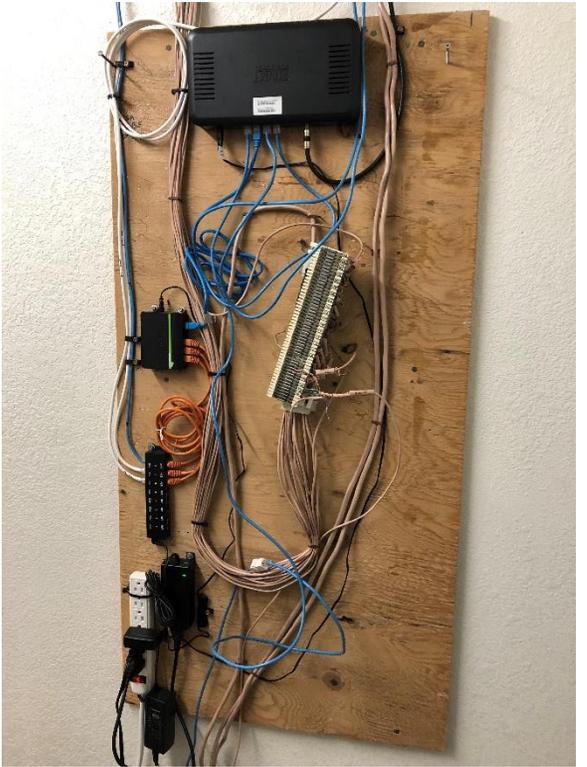


Figure 406: Casa Adobe MPOE



Figure 417: Casa Adobe WAP



Figure 428: Casa Adobe WAP Repeater

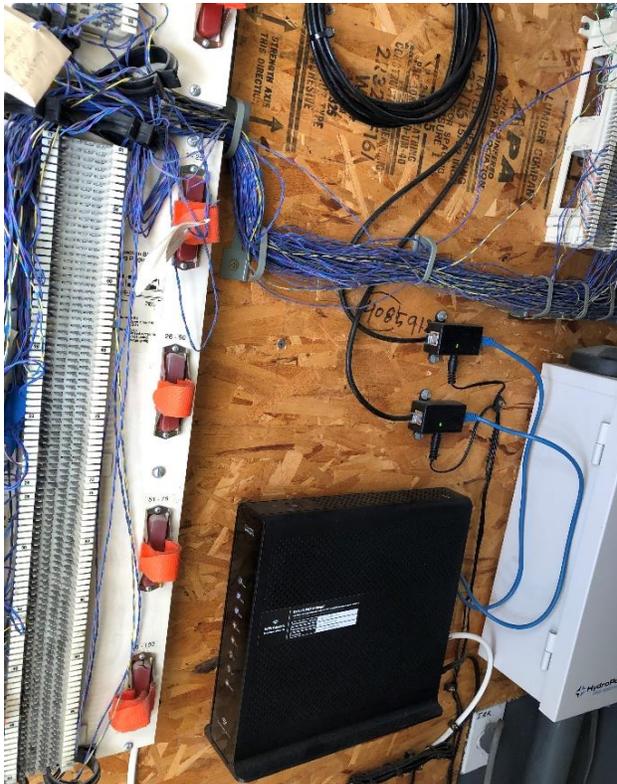


Figure 439: Rodeo Gateway MPOE1



Figure 70: Rodeo Gateway MPOE2



Figure 70: Rodeo Gateway WAP



Figure 441: Rodeo Gateway WAP Repeater

### **Recommended Corrections:**

During the site visit of the above two sites, the staff made the following recommendations and asked for a corrective action plan with the Public Housing Representative.

- Both the sites need a redlined engineering design document for EAH records and their future references
- Must obtain the Installation checklist from the network vendor to know the sequence of tasks or activities conducted during the network deployment that can be used by the Public Housing Representative entity for their future reference
- On both, the sites MPOE and MDF cables connected to the Indoor and Outdoor network equipment should be properly labeled and need to be mapped to soft labeling on the system
- Indoor wiring or cabling on a wall must be cable clipped and not to be stapled. It's prudent to run cables on the overhead tray with properly tie wrapped or through a conduit pipe. Current wiring of Cat6e cables on all the sites was stapled and seen pinched (as shown in the above cabling pictures Figure 63 to 65). This could degrade the network performance and can easily cause wear and tear of the cable
- WAPs and Repeaters should not be hanged to the wall plugs, especially in the hallways or corridors walls, where it can be easily vandalized. It should be either behind the false ceiling or somewhere it can be easily accessible but out of sight
- For any network to be secured should be behind the firewall and staff highly recommend correcting the design by installing a suitable firewall to protect the network and keep Public Housing residents safe from hackers
- For both the visited sites, ISP bandwidth must be adjusted based on design calculations to meet the grant's minimum internet speed requirement per resident
- Check frequency at the poor download speed area, if option available enforce a single band. Try changing the WAP location and check for interference, as 2.4 GHz is the most used band
- For the percentage of Uptime reporting on the quarterly reports, ensure to maintain 99% or above
- Add a calendar reminder to submit quarterly reports timely for all the AB1299 grant projects
- To check WAP signal quality and troubleshooting use Wi-Fi Analyzer tool to maintain QoS
- Do a routine health check on the network devices such as, reboot the ISP modem, Router, Switch, Firewall, WAPs as needed, and clear any cached data so it will temporarily disrupt the malware and aid the potential identification of infected devices

- Advised when enabled remote management settings on the devices, make sure to secure with strong passwords and encryption enabled
- All Network devices should be upgraded to the latest available software and versions of firmware to evade any slowness to the internet speed

## East Bay Asian Local Development Corporation

Date of visit: April 24, 2019

Staff visited this grantee for the following six low performing sites and found only one site was performing well and the rest five sites were either low performing or problematic. Of the six sites, the one which was performing well was Swan's Market site and of the five low-performance or problematic sites, two sites (Marcus Garvey and Slim Jenkins) were non-operational and 3 sites (Giant Road, Madrone and Seven Directions) were low performing.

- Giant Road
- Marcus Garvey
- Slim Jenkins
- Madrone Hotel
- Swan's Market
- Seven Directions

The staff did an active survey by walking above five sites and followed the 'site visit checklist', to ensure the installation and engineering details were meeting the industry standards to deliver Quality of Service (QoS). Below pictures [Figure 73](#) through [Figure 96](#), captured by the staff during the site walk, found that the grantee's network vendor did follow the required standards during the deployment on both the sites. Staff also noticed that the grantee has contracted network vendor for operations and maintenance (O&M) post-deployment and found that the above sites have not been proactively maintained.

During the site visit staff met Public Housing Facilities Manager and Vendor Network Engineer was not available for a site walk. When staff requested with the grantee for the network design documentation there was no such documentation made available nor the installation checklist by the grantee's network vendor (Connected Community Solutions).

Staff found that the services were poorly maintained by their network vendor, and Public Housing Facility Manager had a dappled knowledge on where the main point of entries (MOPEs) are located on the property, how much bandwidth subscribed from the ISP at each MPOE, since how long the network was down, and with no information on when the network can be back up in-service and operational.

Also, staff observed that there's no firewall in the network, so all the active network devices are vulnerable and highly prone to security threats. There was NO password protection to access the internet through wi-fi, which makes more vulnerable to the network as well as to the user devices.

Of the above six sites staff observed two sites (Marcus Garvey and Slim Jenkins) were completely down with no ISP nor Wi-Fi connectivity. When staff asked Public Housing Facilities Manager if he was aware of these sites gone down. His response was negative. This shows that their network vendor is neither proactively maintaining the network, which they are supposed to do as per Public Housing Facilities Manager, nor addressing the issues in a time-sensitive manner. Even there's no mechanism built into the networking monitoring software to identify if the ISP services are up or down.

Staff observed that the low voltage work had a poor workmanship quality. Cables from the MPOE to the WAPs were not properly run thru conduits for both indoor and outdoor wiring. Outdoor cabling was exposed to the weather on all the five sites except one site (Swan's Market), which was all indoor and were properly run through conduits. Most of these cables run on the walls didn't follow the industry standards, were stapled with a staple gun and not used cable clamps or conduit pipes. See in the below pictures, [Figure 85](#) through [Figure 87](#) cables are seen pinched.

CalSPEED tests were conducted at multiple locations on all the six project sites and found only one site found meets grant requirements. The subscribed ISP bandwidth was also not calculated properly, and it is way under subscriber, so staff explained to the grantee how to recalculate the data rate to subscribe for ISP bandwidth. The calculation is based on the number of residential units with at least 3 devices per resident and adjusts the data rate to meet the minimum speed as per the grant's requirement.

### **Key Observations:**

Below listed are the key observations by the staff during the site visit of the above six sites.

- Poor handover between Public Housing Network Vendor and Public Housing Facility team with no contract seen for service offering between the grantee and network vendor on post-completion of the project for operations and maintenance (O&M)
- Detailed Network Engineering & Design documentation and Installation checklist was not available
- No network engineer from the vendor was available during the site walk and the Public Housing Facility Manager had minimal knowledge about the network architecture and topology
- Of the six sites visited, one site (Madrone Hotel) has no access to the property. So, they could not test from inside the property. Rest of the five sites visited and walked to check the network performance
- Of the above five sites visited and walked four sites were low performing, non-operational, poorly maintained and built, except one site (Swan's Market)
- Of the above four low-performance and problematic sites, two sites (Marcus Garvey and Slim Jenkins) were completely down and non-operations. The grantee was not aware of these sites being down
- No Firewall installed in the network at none of these six sites, to protect the network elements and resident devices from the hackers/bad actors
- Wi-Fi access was highly unsecured, open-to-all with NO password authentication for the users to access the Wi-Fi network and avail the internet services
- No labeling was found at the MPOEs on all these six sites to show, which cable is connected to what device
- Single-band 2.4 GHz radio technology used, and it could be highly interference prone
- Poorly wired by using a staple gun to run the cables on the dry walls, roofs at both indoor and outdoor, instead of using conduits, cable trays with tie wraps and cable clips
- Some Repeaters and WAPs were installed and plugged on to the wall plug in the hallways, which can be easily tampered
- ISP bandwidth subscribed are not adequate to meet grants minimum speed requirement and the design calculation used by the network vendor was not correct
- Multiple CalSPEED tests were performed on all the six visited sites and the test results on five sites were failed, except at one site i.e. Swan's Market that met grant's requirement

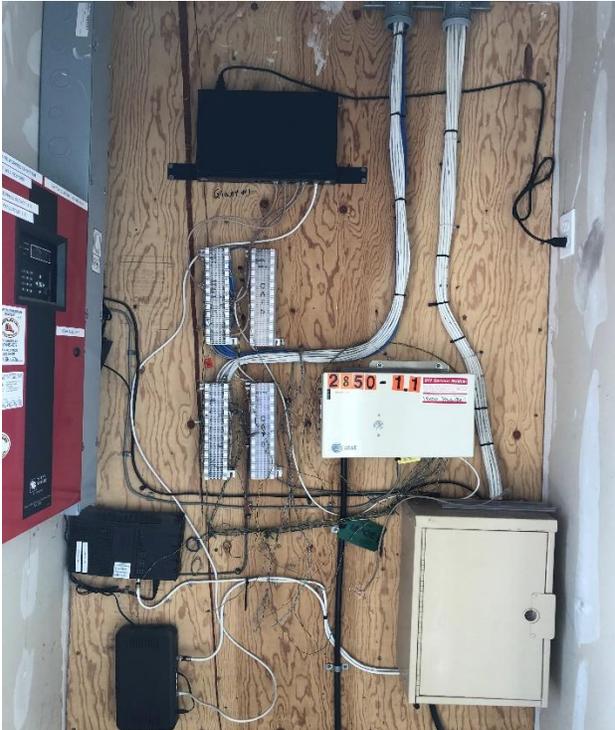


Figure 73: Giant Road MPOE 1A



Figure 74: Giant Road MPOE 1B

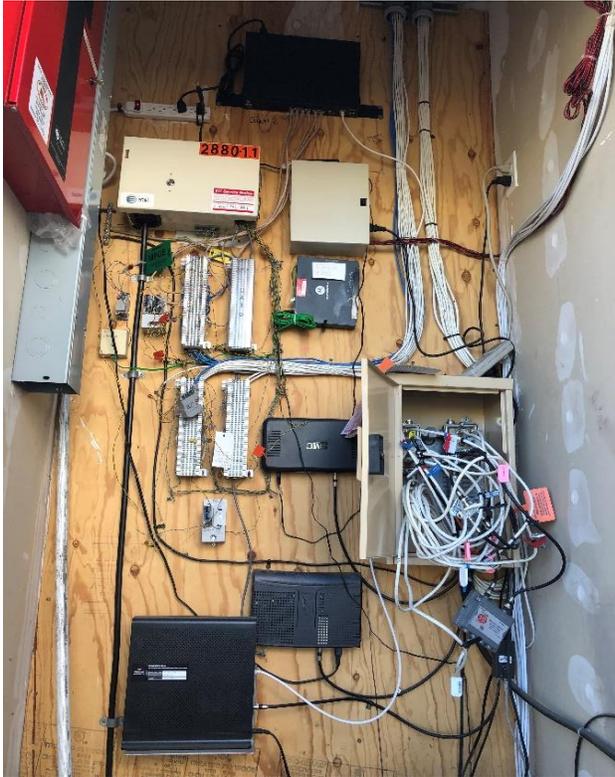


Figure 455: Giant Road MPOE 2



Figure 466: Giant Road MPOE 3



Figure 477: Giant Road MPOE 4



Figure 488: Giant Road MPOE 5



Figure 499: Giant Road WAP inside the Apartment



Figure 80: Marcus Garvey MPOE



Figure 81: Marcus Garvey WAP

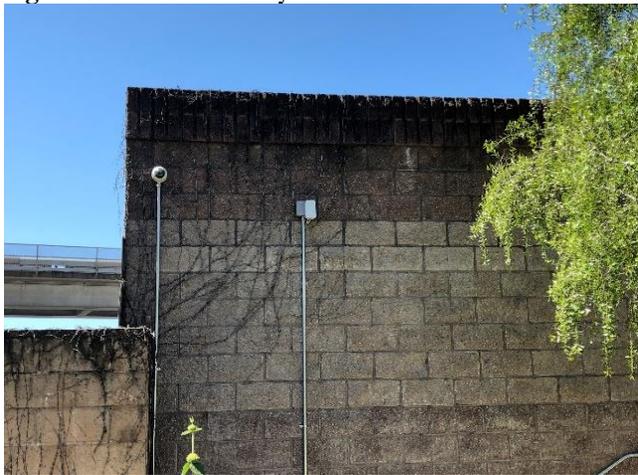


Figure 502: Marcus Garvey WAP



Figure 513: Marcus Garvey WAP



Figure 524: Slim Jenkins MPOE



Figure 535: Slim Jenkins Cabling



Figure 546: Slim Jenkins Cabling



Figure 557: Slim Jenkins WAP

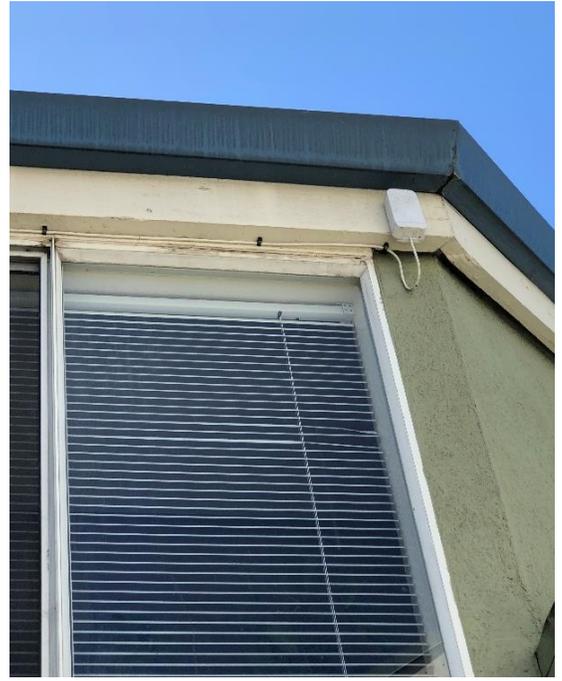


Figure 568: Slim Jenkins WAP

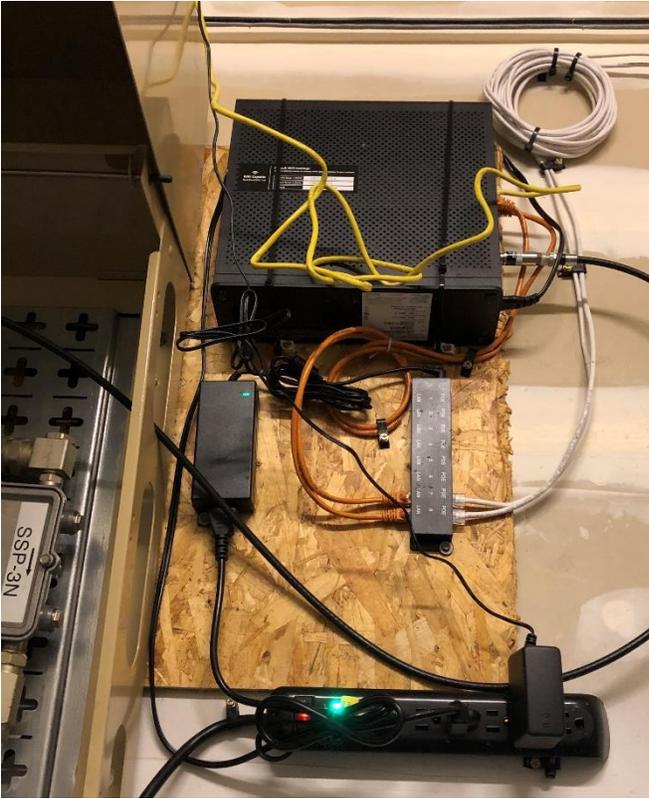


Figure 579: Swan's Market MPOE



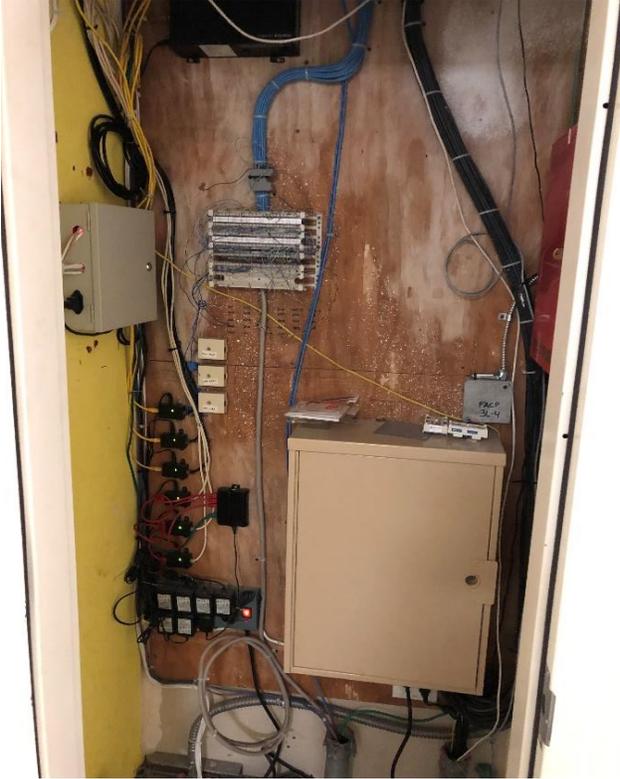
Figure 90: Swan's Market WAP



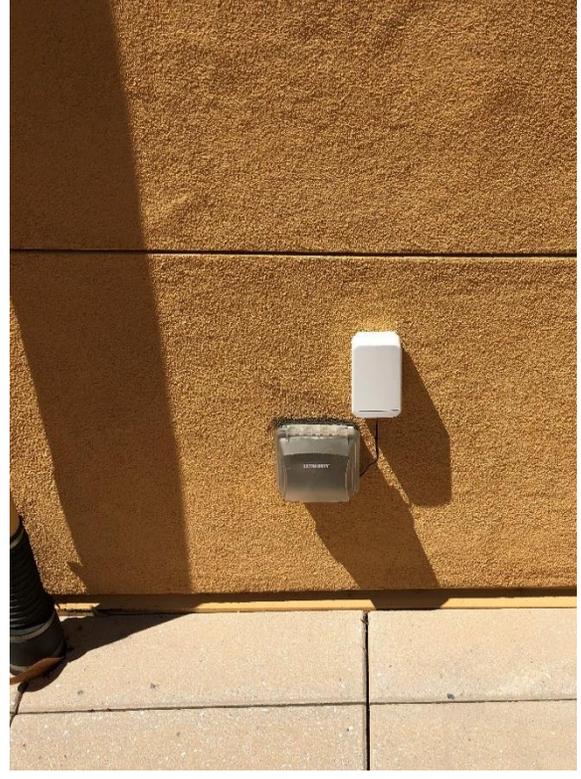
Figure 91: Swan's Market WAP and Cabling



Figure 582: Swan's Market WAP in the hallway



**Figure 593: Seven Directions MPOE**



**Figure 604: Seven Directions WAP in the walkway**



**Figure 615: Seven Directions WAP**



**Figure 626: Seven Directions WAP in the walkway**

## **Recommended Corrections:**

During the site visit of the above six sites, the staff made the following recommendations and asked for a corrective action plan with the Public Housing Representative.

- All the six sites need a redlined engineering design document for East Bay Asian Local Development Corporation records and their future references
- Must obtain the Installation checklist from the network vendor to know the sequence of tasks or activities conducted during network deployment and can be used by the Public Housing Representative entity for their future reference
- At all the six sites MPOE and MDF cables connected to the Indoor and Outdoor network equipment should be properly labeled and need to be mapped to soft labeling on the system
- Indoor wiring or cabling on a wall must be cable clipped and not to be stapled. It's prudent to run cables on the overhead tray with properly tie wrapped or through a conduit pipe. Current wiring of Cat6e cables on all the four low-performance and problematic sites were seen stapled and pinched (as shown in the above cabling pictures). This could degrade the network performance and can easily cause wear and tear of the cable
- Outdoor wiring or cabling on walls and rooftops must be protected from extreme weather conditions, by running the cables through a proper conduit. Current outdoor Cat5/6 cables are directly exposed to the weather conditions and some were even seen running off the roof drain without proper weather protection sleeves or conduit
- Outdoor wiring and WAP installation need to follow industry best practices and standards, such as drip looping the cable to avoid rainwater to enter into the WAP or Repeater, protect WAP or Repeater from direct weather exposure by installing in a shade or in the proper weatherproof case or enclosure, though WAPs and Repeaters were installed out of sight but should be easy accessible for troubleshooting, physical reset and replacing devices etc.
- WAPs and Repeaters should not be hanged to the wall plugs, especially in the hallways or corridors walls, where it can be easily vandalized. It should be either behind the false ceiling or somewhere it can be easily accessible but out of sight
- For any network to be secured should be behind the firewall and staff highly recommend correcting the design by installing a suitable firewall to protect the network and keep Public Housing residents safe from hackers
- For all the above-visited sites, ISP bandwidth must be adjusted based on design calculations to meet the grant's minimum speed requirement per resident
- Check frequency at the poor download speed area, if option available enforce a single band. Try changing the WAP location and check for interference, as 2.4 GHz is the most used band
- For the percentage of Uptime reporting on the quarterly reports, ensure to maintain 99% or above
- To check WAP signal quality and troubleshooting use the Wi-Fi Analyzer tool to maintain Quality of Service (QoS)
- Do a routine health check on the network devices such as, reboot the ISP modem, Router, Switch, Firewall, WAPs as needed, and clear any cached data so it will temporarily disrupt the malware and aid the potential identification of infected devices
- Advised when enabled remote management settings on the devices, make sure to secure with strong passwords and encryption enabled
- On all the visited sites highly recommended to secure the Public Housing residents Wi-Fi network with a password and share with residents to annulled from general public usage and potential threats
- All Network devices should be upgraded to the latest available software and versions of firmware to evade any slowness to the internet speed

# Conclusion

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Overall, at the end of the twenty-five initially identified low-performance and/or problematic site visits, staff experienced a real working environment for all these CASF BPHA projects. During these site visits, staff found that of the twenty-five low-performance or problematic sites only the below six sites were either low-performance or problematic. The rest of the nineteen sites were meeting the minimum speed requirements with few observations and recommendations.

1. The Fairfax Hotel
2. The Stanford Hotel
3. Banneker Homes Apartments
4. Manzanita (Cypress Cove)
5. Cedar Nettleton
6. Meadow View Terrace

In addition to the above-identified low-performance and/or problematic sites, staff randomly picked the following two grantees a couple of project sites for comparison on the project O&M performance, internet services speed and workmanship. The network vendors for these two grantees were different than the above-identified twenty-five low-performance and/or problematic sites network vendors.

1. EAH Housing
2. East Bay Asian Local Development Corporation

Staff found on EAH Housing projects, installation workmanship, engineering design, and internet services speed were well maintained and operated by the grantee's network vendor.

Further, staff found on East Bay Asian Local Development Corporations (EBALDC) projects, installation workmanship, engineering design, and internet services speed were poorly operated and maintained by the grantee's network vendor. Some project sites of EBALDC were in an atrocious condition and non-operational. Also, all the projects built by this network vendor had no firewall or internet security protection designed in the network. Staff further checked and visited a few other Public Housing SB 745 grant awarded projects, which were engineered and built by this network vendor, found that they too did not have a firewall in the network and with no internet security protection built-in.

These site visits provided staff an opportunity to meet in person with the grantees and their network vendors, who supported the grantees to install, maintain and report performance stats on all these awarded projects. The staff took this opportunity of a site visit to guide the grantee and their network vendor, with staff's telecom engineering skills and techniques to operate and maintain all their project sites better.

Staff during an active survey of all the above sites with Public Housing Representative and their network vendor investigated the site performance issues and made recommendations based on critical findings, which are jotted under key observations. Staff used a site visit checklist document to capture some of the following key observations, such as – workmanship, installation checklist, documentation, subscribed ISP internet bandwidth at MPOE and its design calculation, whether meeting or not grant's minimum internet speed requirement, etc.

Staff found none of the grantees had an engineering design documentation from their network vendor for their future reference. None of the grantees and their network vendor followed proper industry guidelines, standard practices, processes, and tools while building the Wi-Fi network.

Staff requested a corrective action plan from the grantees for the six, and also EBALDC low-performance and problematic project sites to redline engineering design documents based on the findings and take a corrective measure immediately. Engineering design, such as – redesign the network using heatmap applications to find a better RF coverage, use Wi-Fi Analyzer to measure signal strength and troubleshooting interference, rearrange the cables on the ladder cable tray, run cables through conduits, use cable clips and label them. Staff also recommended to the grantee and their network vendor to mount a customize rack inside outdoor MDF and IDF outdoor cabinets, so that the network equipment can be stacked properly for heat dissipation and airflow. And other key operational and maintenance tips were provided to improve the network and internet service performance.

For the missed quarterly reports and timely non-submission of the reports from some of the identified twenty-five project sites, staff did find that it was an unintentional human miss. So, staff advised the grantees to put a calendar reminder on their email or phone to submit the quarterly reports on-time.

After these site visits, staff saw good progress in-service performance, maintenance, and reporting. Most of the grantees started following staff recommendations and taking corrective measures to improve the QoS, such as upgrading the ISP bandwidth as per the design calculation, timely submitting quarterly reports, prompt action addressing network failures, routine network health check, secure design documents from the network vendors for future reference, etc.

Staff also received some testimonies from the Public Housing grantees about their client stories regarding this grant AB1299 program and how it is beneficial to the residents for their upliftment  
<https://cs.cpuc.ca.gov/otcs/livelink.exe/properties/309687549>

## ADDITIONAL PROGRAM MATERIALS

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Additional site visit materials can be found on Content Server click here:

<https://cs.cpuc.ca.gov/otcs/livelink.exe?func=ll&objId=268242597&objAction=browse&viewType=1>