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September 30, 2019

ADVICE LETTER 3438-E/2801-G
(San Diego Gas & Electric Company; U 902-M)

ADVICE LETTER 5520
(Southern California Gas Company; U 904-G)

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

**SUBJECT: JOINT INFORMATION ONLY SUBMITTAL -- 2018 SPENDING
ACCOUNTABILITY REPORT OF SAN DIEGO GAS & ELECTRIC AND
SOUTHERN CALIFORNIA GAS COMPANY**

San Diego Gas & Electric Company (SDG&E), on behalf of itself and Southern California Gas Company (SoCalGas), hereby submits to the California Public Utilities Commission (Commission) an Information-only Advice Letter with the 2018 Spending Accountability Report in compliance with the letter from Energy Division (ED) Deputy Executive Director for Energy and Climate Policy, Edward Randolph, dated October 18, 2018 (ED Compliance Letter).

On July 30, 2019, SDG&E and SoCalGas were directed by ED Staff to submit this annual report and all future reports as an information-only advice letter.

BACKGROUND

SDG&E submits this Interim Spending Accountability Report comparing 2018 imputed authorized spending to actual spending (2018 Interim Report). This 2018 Interim Report covers spending authorized in the Test Year (TY) 2016 General Rate Case (GRC) cycle for activities that address safety, reliability, and/or maintenance, consistent with Public Utilities Code (P.U. Code) Section 591. This 2018 Interim Report is timely submitted in accordance with the ED Compliance Letter and ED's August 1, 2019 e-mail granting SDG&E's extension request, which established a September 30, 2019 submission deadline.

INTERIM SPENDING ACCOUNTABILITY REPORT

The SDG&E and SoCalGas Interim Spending Accountability Report for 2018 is included in this submittal as Attachment 1.

EFFECTIVE DATE

This information-only submittal is subject to Energy Division disposition and is classified as Tier 1 (effective pending disposition) pursuant to GO 96-B. SDG&E and SoCalGas respectfully request that this submittal become effective on September 30, 2019, which is the date of this submittal.

PROTEST

In accordance with GO 96-B Section 6.2, this information-only submittal is not subject to protest.

NOTICE

A copy of this submittal has been served on the utilities and interested parties shown on the attached list, including interested parties in A.14-11-003/004 and A.17-10-007/008, by providing them a copy hereof either electronically or via the U.S. mail, properly stamped and addressed.

Address changes should be directed to SDG&E Tariffs by email to SDG&ETariffs@sdge.com.

CLAY FABER
Director – Federal & CA Regulatory



ADVICE LETTER SUMMARY

ENERGY UTILITY



MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)

Company name/CPUC Utility No.: San Diego Gas & Electric Company (U902-M)

Utility type:

ELC GAS WATER
 PLC HEAT

Contact Person: Megan Caulson
Phone #: 858-654-1748
E-mail: MCAulson@sdge.com
E-mail Disposition Notice to: SDGETariffs@sdge.com

EXPLANATION OF UTILITY TYPE

ELC = Electric GAS = Gas WATER = Water
PLC = Pipeline HEAT = Heat

(Date Submitted / Received Stamp by CPUC)

Advice Letter (AL) #: 3438-E/2801-G

Tier Designation: 1

Subject of AL: Joint Information Only Filing -- 2018 Interim Spending Accountability Report of San Diego Gas & Electric Company and Southern California Gas Company

Keywords (choose from CPUC listing): General Rate Case

AL Type: Monthly Quarterly Annual One-Time Other:

If AL submitted in compliance with a Commission order, indicate relevant Decision/Resolution #: D.16-06-054 and D.17-01-012

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: No

Summarize differences between the AL and the prior withdrawn or rejected AL: N/A

Confidential treatment requested? Yes No

If yes, specification of confidential information:

Confidential information will be made available to appropriate parties who execute a nondisclosure agreement. Name and contact information to request nondisclosure agreement/ access to confidential information:

Resolution required? Yes No

Requested effective date: 9/30/19

No. of tariff sheets: 0

Estimated system annual revenue effect (%): N/A

Estimated system average rate effect (%): N/A

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).

Tariff schedules affected:

Service affected and changes proposed¹: N/A

Pending advice letters that revise the same tariff sheets: N/A

¹Discuss in AL if more space is needed.

Protests and all other correspondence regarding this AL are due no later than 20 days after the date of this submittal, unless otherwise authorized by the Commission, and shall be sent to:

CPUC, Energy Division
Attention: Tariff Unit
505 Van Ness Avenue
San Francisco, CA 94102
Email: EDTariffUnit@cpuc.ca.gov

Name: Megan Caulson
Title: Regulatory Tariff Manager
Utility Name: San Diego Gas & Electric Company
Address: 8330 Century Park Court; CP 31D 92123
City: San Diego State: California
Telephone (xxx) xxx-xxxx: (858) 654-1748
Facsimile (xxx) xxx-xxxx:
Email: MCaulson@sdge.com

Name: SDG&E Tariff Department
Title:
Utility Name: San Diego Gas & Electric Company
Address: 8330 Century Park Court; CP 31D 92123
City: San Diego State: California
Telephone (xxx) xxx-xxxx:
Facsimile (xxx) xxx-xxxx:
Email: SDGETariffs@sdge.com

General Order No. 96-B
ADVICE LETTER SUBMITTAL MAILING LIST

cc: (w/enclosures)

<u>Public Utilities Commission</u> <u>Office of Ratepayer Advocates (ORA)</u> R. Pocta <u>Energy Division</u> M. Ghadessi M. Salinas L. Tan R. Ciupagea Tariff Unit	<u>Clean Power Research</u> T. Schmid G. Novotny <u>Davis Wright Tremaine LLP</u> J. Pau <u>Douglass & Liddell</u> D. Douglass D. Liddell <u>Ellison Schneider Harris & Donlan LLP</u> E. Janssen C. Kappel <u>Energy Policy Initiatives Center (USD)</u> S. Anders <u>Energy Regulatory Solutions Consultants</u> L. Medina <u>Energy Strategies, Inc.</u> K. Campbell <u>EQ Research</u> General <u>Goodin, MacBride, Squeri, & Day LLP</u> B. Cragg J. Squeri <u>Green Charge</u> K. Lucas <u>Hanna and Morton LLP</u> N. Pedersen <u>JBS Energy</u> J. Nahigian <u>Keyes & Fox, LLP</u> B. Elder <u>Manatt, Phelps & Phillips LLP</u> D. Huard R. Keen <u>McKenna, Long & Aldridge LLP</u> J. Leslie <u>Morrison & Foerster LLP</u> P. Hanschen <u>MRW & Associates LLC</u> General	<u>NLine Energy</u> M. Swindle <u>NRG Energy</u> D. Fellman <u>Pacific Gas & Electric Co.</u> M. Lawson M. Huffman Tariff Unit <u>RTO Advisors</u> S. Mara <u>SCD Energy Solutions</u> P. Muller <u>Shute, Mihaly & Weinberger LLP</u> O. Armi <u>Solar Turbines</u> C. Frank <u>SPURR</u> M. Rochman <u>Southern California Edison Co.</u> K. Gansecki <u>TerraVerde Renewable Partners LLC</u> F. Lee <u>TURN</u> M. Hawiger <u>UCAN</u> D. Kelly <u>US Dept. of the Navy</u> K. Davoodi <u>US General Services Administration</u> D. Bogni <u>Valley Center Municipal Water Distr</u> G. Broomell <u>Western Manufactured Housing Communities Association</u> S. Dey <u>Interested Parties</u> A.14-11-003 A.14-11-004 A.17-10-007 A-17-10-008
<u>CA Energy Commission</u> B. Penning B. Helft <u>Advantage Energy</u> C. Farrell <u>Alcantar & Kahl LLP</u> M. Cade K. Harteloo <u>AT&T</u> Regulatory <u>Barkovich & Yap, Inc.</u> B. Barkovich <u>Braun & Blaising, P.C.</u> S. Blaising D. Griffiths <u>CA Dept. of General Services</u> H. Nanjo <u>California Energy Markets</u> General <u>California Farm Bureau Federation</u> K. Mills <u>California Wind Energy</u> N. Rader <u>City of Poway</u> Poway City Hall <u>City of San Diego</u> F. Ortlieb B. Henry L. Azar Y. Lu D. Heard <u>Clean Energy Renewable Fuels, LLC</u> P. DeVille		

San Diego Gas & Electric Advice Letter 3438-E/2801-G
Southern California Gas Advice Number 5520

September 30, 2019

ATTACHMENT 1

SDG&E and SOCAL GAS 2018 INTERIM SPENDING ACCOUNTABILITY REPORT



Southern California Gas Company and San Diego Gas & Electric Company
2018 Interim Spending Accountability Report

September 30, 2019

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1. INTRODUCTION

In compliance with the letter from Energy Division (ED) Director, Edward Randolph, dated October 18, 2018 (ED Compliance Letter), Southern California Gas Company (SoCalGas) and San Diego Gas & Electric Company (SDG&E) (collectively, the Utilities) submit this Interim Spending Accountability Report comparing 2018 imputed authorized spending to actual spending (2018 Interim Report). This 2018 Interim Report covers spend authorized in the Test Year (TY) 2016 General Rate Case (GRC) cycle for activities that address safety, reliability, and/or maintenance, consistent with Public Utilities Code (P.U. Code) Section 591. This 2018 Interim Report is timely filed in accordance with the ED Compliance Letter and ED's August 1, 2019 email granting the Utilities' extension request, which established a September 30, 2019 submission deadline.

A. Background

On November 14, 2013, the California Public Utilities Commission (Commission) opened Rulemaking (R.) 13-11-006, *Order Instituting Rulemaking to Develop a Risk-Based Decision-Making Framework to Evaluate Safety and Reliability Improvements and Revise the Rate Case Plan for Energy Utilities* (the Risk OIR). The purpose of the Risk OIR was to incorporate a risk-based decision-making framework into the Rate Case Plan (RCP) for the energy utilities' GRCs, in which utilities request funding for safety-related and other activities.

SoCalGas and SDG&E filed their respective TY 2016 GRC applications on November 14, 2014,¹ prior to the issuance of D.14-12-025. On July 1, 2016, the Commission issued D.16-06-054, addressing the Utilities' TY 2016 GRC and related matters; the decision also ordered the Utilities to provide interim accountability reports on a limited set of risk mitigation projects for spending in the years 2014 through 2016. Pursuant to D.16-06-054 and D.17-01-012, the Utilities submitted their first interim spending accountability report for years 2014 and 2015 on June 30, 2017,² and on October 6, 2017, the Utilities submitted their second

¹ See Application (A.) 14-11-003/004 (cons.). On December 26, 2014, the two applications were consolidated.

² Investigation (I.) 16-10-015/016 (cons.), Compliance Filing of The Interim Spending Accountability Report of San Diego Gas & Electric Company and Southern California Gas Company (filed June 30, 2017).

interim spending accountability report, which, among other things, updated the first report to include 2016 spending.³

The ED Compliance Letter stated that the Utilities have followed the Commission orders noted above, based on ED's review of the Utilities' interim reports (pursuant to D.16-06-054) for years 2014 through 2016, and found in the ED Compliance Letter that, to the extent consistent with its authority, found that the Utilities have followed the Commission orders noted above.⁴ In addition, the ED Compliance Letter stated, "[t]he Energy Division directs the Utilities to each file an Interim Risk Spending Accountability Report for the 2017 reporting period by December 31, 2018."⁵ ED further directed the Utilities to serve these reports on the service list of the TY 2016 GRC proceedings (A.14-11-003/-004) and instructed them about what to include in the 2017 Interim Report.

Based on the ED Compliance Letter, the Utilities evaluated what was included in the scope of the 2017 Interim Report and what warranted variance explanations. The Utilities have applied that same methodology for determining this for this 2018 Interim Report, as further discussed in Section 1.c. below.

In this 2018 Interim Report, the Utilities include the following required information, as directed in the ED Compliance Letter for 2017:⁶

- (1) a list of the "programs"⁷ authorized or in effect during 2018 that were associated with a safety or reliability risk category as well as workpapers associated with a maintenance activity;
- (2) the imputed authorized and actual spending for 2018 and the difference in dollars and in percentage;
- (3) variance explanations for those workpapers that meet ED's criteria for explanation;

³ A.17-10-007/008 (cons.), Test Year 2019 General Rate Case Application (filed October 6, 2017) at Appendix A. *See also* A.17-10-007/008, SoCalGas/SDG&E Direct Testimony of Jamie K. York (Compliance) (October 6, 2017), Ex. SCG-45/SDG&E-44/York at Appendix C.

⁴ ED Compliance Letter at pp. 1-2.

⁵ *Id.* at p. 2.

⁶ *Id.* at pp. 2-3 (paraphrased in part for readability). The ED Compliance Letter provided guidance on the 2017 Interim Spending Accountability Report. Because no contrary guidance has been received from ED, the Utilities are providing the same information for the 2018 report as well.

⁷ In the GRC, the Utilities include both Operations and Maintenance (O&M) and Capital workpapers. O&M workpapers consist of one or more cost centers. Similarly, Capital workpapers comprise one or more budget codes. For purposes of this 2018 Interim Report, the Utilities are defining "program" as directed in the ED Compliance Letter as GRC workpapers.

- (4) if a variance explanation is warranted, also include:
 - a. a description of each workpaper;
 - b. location in the TY 2016 GRC where the workpaper is described;
 - c. location in the TY 2019 GRC where the workpaper is described;
 - d. a list of projects that were canceled or deferred within each workpaper;
 - e. a list of projects which were not presented in the TY 2016 GRC but were taken up; and
 - f. if applicable, the regulatory account where the spending for each workpaper is recorded, the 2018 year-end balance, and the disposition of any cost recovery request; and
- (5) total company authorized spending for 2018, categorized into O&M and capital workpapers.

ED's criteria for determining what spending requires a variance explanation is as follows:⁸

- a. SDG&E – Electric:
 - i. Expense: A difference of at least \$5 million, or a percentage difference of at least 20% subject to a minimum difference of \$2.5 million.
 - ii. Capital: A difference of at least \$10 million, or a percentage difference of at least 20% subject to a minimum difference of \$5 million.
- b. SDG&E – Gas:
 - i. Expense: A difference of at least \$2.5 million, or a percentage difference of at least 20% subject to a minimum difference of \$0.5 million.
 - ii. Capital: A difference of at least \$5 million, or a percentage difference of at least 20% subject to a minimum difference of \$1 million.
- c. SoCalGas:
 - i. Expense: A difference of at least \$5 million, or a percentage difference of at least 20% subject to a minimum difference of \$1 million.
 - ii. Capital: A difference of at least \$10 million, or a percentage difference of at least 20% subject to a minimum difference of \$2 million.
- d. SDG&E/SoCalGas Shared:
 - i. Expense: A difference of at least \$5 million, or a percentage difference of at least 20% subject to a minimum difference of \$1 million.
 - ii. Capital: A difference of at least \$10 million, or a percentage difference of at least 20% subject to a minimum difference of \$2 million.

When developing the 2017 and 2018 Interim Reports, the Utilities met with ED on several occasions to discuss scope and content. The format and content provided herein

⁸ ED Compliance Letter at pp. 2-3.

incorporates feedback from those discussions. Pursuant to agreements with ED, the Utilities' ultimately filed the 2017 Interim Report on February 28, 2019.⁹

During meetings leading up to the filing of this 2018 Interim Report, ED ultimately agreed to extend the 2018 Interim Report due date for both utilities to September 30, 2019, and also to consolidate the reports for both Utilities. In addition, Energy Division asked the Utilities to indicate the impact of the variances on safety and reliability. Given data complications, the time required to develop the information, and the fact that the requirement was explicitly excluded from accountability reports until 2020,¹⁰ the Utilities explained that such information would not be included in this report. Comments from ED on the 2017 Interim Report remain pending.

This 2018 Interim Report covers the TY 2016 GRC cycle, for which the Utilities filed applications before the risk-informed GRC framework was adopted, and during which the Utilities have undertaken the process of implementing this framework. Accordingly, the 2017 and 2018 Interim Reports reflect a transitional time period and are in compliance with the above-noted directives. The 2017 and 2018 Interim Reports thus do not reflect the Utilities' comprehensive safety risk showing presented in their Risk Assessment and Mitigation Phase (RAMP) Report or the Utilities' respective TY 2019 GRC Applications, nor the framework under which the Utilities developed that showing. Accountability reporting subject to the new risk-informed GRC framework requirements for the Utilities is not anticipated to occur until 2020.¹¹

B. General Rate Case Cycles of the Utilities

The Utilities file GRC applications with the Commission seeking authorization of a revenue requirement to recover the reasonable costs forecasted to incur in the test year, and a

⁹ Email from Mr. Michael Zelazo, Energy Division, dated December 11, 2018.

¹⁰ D.19-04-020, at 45 (“As discussed in Section 4.4, we require the IOUs to include in their annual Safety Performance Metrics reports a general description of how their risk mitigation activities and risk spending are meeting their RAMP and GRC goals for managing and minimizing safety risks. This is a reasonable approach that meets the general requirements of D.14-12-025. We therefore decline to also require this explanation in the RSARs.”).

¹¹ D.19-04-020, at OP 8, sets a different timeline for submitting the annual accountability reports. The Utilities' first post-RAMP accountability reports will be submitted on March 31, 2020, after their 2019 GRC test year.

mechanism for adjusting the revenue requirement annually during the post-test years,¹² for a total GRC period that typically spans three years. A revenue requirement is the amount of money the Utilities are allowed to recover from their customers through rates.¹³

The final outcome of a GRC is a Commission-approved test year revenue requirement comprising O&M and capital-related funding for the forecast years that compound annually up to the test year. Additionally, a post-test year mechanism is approved generally for escalation on the test-year revenue requirement. These approvals may or may not be the same as originally presented by the Utilities.

To illustrate the GRC cycles, the diagram below demonstrates the Utilities' last two GRC cycles as well as the Utilities' TY 2019 GRC application filed on October 6, 2017.

Diagram 1: GRC Cycles of SoCalGas and SDG&E¹⁴

¹² For years 2 and 3 of the GRC cycle, referred to as post-test years or attrition years, the Utilities also propose a post-test year mechanism. Ultimately, the GRC decision will prescribe how to adjust the test year revenue requirement for inflation and other factors that may affect costs, such as additional capital projects between test years.

¹³ Generally, the Utilities' GRCs are presented in direct, base year dollars and converted into a test year revenue requirement using a ratemaking model, the Results of Operation (RO) model. The process by which the RO model converts the direct, base year dollars into a test year revenue requirement includes the escalation of costs (converting base year dollars into test year nominal dollars), intercompany billings between the Utilities, applying overheads (such as benefits) to capital projects, and converting the capital forecasts into capital-related costs (depreciation, taxes, and return).

¹⁴ Exhibit references herein refer to utility exhibit numbers as listed on their respective websites.

2012 GRC Proceeding					
Base Year	2009				
Forecast Year	2010				
Forecast Year	2011				
Test Year	2012	2016 GRC Proceeding			
Post-Test Year	2013	Base Year	2013		
Post-Test Year	2014	Forecast Year	2014		
Post-Test Year	2015	Forecast Year	2015	2019 GRC Proceeding	
		Test Year	2016	Base Year	2016
		Post-Test Year	2017	Forecast Year	2017
		Post-Test Year	2018	Forecast Year	2018
				Test Year	2019
				Post-Test Year	2020
				Post-Test Year	2021

As noted above, this Interim Report compares 2018 imputed authorized to actual spending. Diagram 1 illustrates that 2018 figures were authorized by the Commission during the TY 2016 GRC proceeding in D.16-06-054 through the approval post-test year ratemaking mechanism. However, 2018 amounts were also forecasted in the TY 2019 GRC proceeding as a means to develop the Utilities’ test year request.

Further, the Utilities are presenting this 2018 Interim Report in direct dollars. Direct dollars are the input into the revenue requirement, but are not the revenue requirement itself, which is authorized in a GRC decision. In addition to direct dollars, the Utilities also present their balanced programs in this report (*e.g.*, Transmission Integrity Management Program (TIMP), Distribution Integrity Management Program (DIMP), and Storage Integrity Management Program (SIMP)) on a revenue requirement basis, because the Utilities report on and manage to the authorized revenue requirement levels, not the direct spending. At ED’s request, the Utilities are presenting the balanced programs herein in both direct dollars and on the regulatory account basis.

C. Determination of Safety, Reliability and Maintenance-Related Programs

Senate Bill (SB) 549¹⁵ became effective on January 1, 2018, and added P.U. Code 591 which requires “an electrical or gas corporation to annually notify the [public utilities] commission . . . of each time since that notification was last provided that capital or expense revenue authorized by the commission for maintenance, safety, or reliability was redirected by the electrical or gas corporation to other purposes.”¹⁶

As discussed with ED, this 2018 Interim Spending Report includes a listing of all programs¹⁷ authorized or in effect during 2018 that were associated with a safety or reliability risk category¹⁸ as well as programs associated with a maintenance¹⁹ activity. Therefore, in-scope workpapers for SDG&E include electric distribution, electric generation, electric and fuel procurement, gas distribution, gas transmission, customer services, information technology including cyber security, support services, administrative and general, and SDG&E’s balanced programs including the DIMP, TIMP, Tree Trimming Program and SDG&E’s New Environmental Regulatory Balancing Account (NERBA). The variance explanations for these workpapers is attached hereto as Attachment A.

Similarly, in-scope workpapers for this 2018 Interim Spending Report for SoCalGas include gas distribution, gas transmission, gas storage, gas procurement, customer services, information technology including cyber security, support services, administrative and general, and SoCalGas’ balanced programs including DIMP, TIMP, SIMP, Research, Development and Demonstration (RD&D) and SoCalGas’ NERBA. The variance explanations for these workpapers are attached hereto as Attachment B.

¹⁵ SB 549, Stats. 2017-2018, Ch. 284 (Cal. 2017).

¹⁶ P.U. Code § 591(a).

¹⁷ Programs are defined as workpaper categories for expense items (e.g. 1ED011.000 – Electric Regional Operations) and as budget codes for capital expenditures (e.g. 13247 FiRM – Phases 1 & 2). *See* ED Compliance Letter at p. 2, n. 2.

¹⁸ Categories include, but are not limited to: (1) Infrastructure Integrity, Physical Security and Environmental; (2) Cyber Security and Customer Data Privacy; (3) Wildfires; (4) System Reliability; and (5) Public & Employee Safety, Disaster Recovery. *Id.* at p. 2, n. 3.

¹⁹ *Id.* p. at 2, n. 4. These are activities associated with expensed and capitalized work related to Federal Energy Regulatory Commission Accounts 510-515, 528-532, 541-545, 551-554, 568-574, 576, 590-598, 830-837, 843, 861-869, 885-895, 932 and 935.

D. Derivation of Authorized Dollars

	2018 Imputed Authorized Total Direct O&M²⁰	2018 Imputed Authorized Total Direct Capital	2018 Authorized Total Rev Req²¹
SoCalGas	1,358,093	724,245	2,324,293

²⁰ The tables presented herein reflect the corrected 2018 imputed authorized amounts as described in footnote 21 in the 2017 Interim Spending Accountability Report served on February 28, 2019.

²¹ AL 4990, AL 5075, AL 5238. The 2018 authorized revenue requirement (Rev Req) is computed by taking the authorized base margin and miscellaneous revenue from D.16-06-054 plus the attrition increases, which is calculated by applying the approved factor of 3.5% to the 2017 authorized base margin (and also updated for cost of capital per D.17-07-005).

	2018 Imputed Authorized Direct O&M²²	2018 Imputed Authorized Direct Capital	2018 Authorized Total Rev Req²³
SDG&E	964,040	643,141	1,877,876

For the majority of the workpaper categories covered in Attachments A and B of this report, the “authorized” amounts are imputed authorized funding values for those workpapers that are fully or partially requested to address safety, reliability, and/or maintenance risks.²⁴ In the GRC, after the test year revenue requirement has been established, the attrition year revenue requirement is based on an approved post-test year mechanism, which is applied to the total base margin. D.16-06-054 and D.16-09-043 authorized the TY 2016 revenue requirement for the Utilities with attrition increases of 3.5% for 2017 and 2018.²⁵ To derive the 2018 imputed authorized O&M, 2016 adopted expenses, which were presented in base year (BY) 2013 dollars, were escalated to 2016 dollars based on the adopted labor and non-labor escalation rates.²⁶ The authorized 3.5% attrition factor was then applied to this expense level to derive the 2017 imputed authorized O&M and then the authorized 3.5% attrition factor was again applied to the 2017 imputed authorized O&M to derive the 2018 imputed authorized.

In the TY 2016 GRC, specific capital project forecasts were approved for assets forecasted to be placed in-service in years 2014-2016 to establish the test-year rate base and the capital-related revenue requirement (*i.e.* depreciation, tax, and return) for TY 2016. The post-

²² For the reason stated in footnote 19, SDG&E’s tables presented herein reflect corrected 2018 imputed authorized total direct O&M.

²³ AL 2917-E/AL 2490-G, AL 2917-E-B/AL 2490-G-B, AL 2544-G, AL 3028-E, AL 2989-E, AL 2638-G, and AL 3167-E. The 2018 authorized Rev Req is computed by taking the authorized base margin and miscellaneous revenue from D.16-06-054 / D.16-09-043 plus the attrition increases, which is calculated by applying the approved factor of 3.5% to the 2017 authorized base margin. This number is also updated for cost of capital per D.17-07-005 and adjustments for Energy Innovation Center (AL 3221-E/2671-G), Palomar Energy Center Enhancement Projects (AL 3317-E), and SONGS Marine Mitigation and Workers’ Compensation revenue requirement adopted in SCE’s TY 2018 decision (D.19-05-020) (AL 3383-E).

²⁴ The Commission-approved final GRC decisions do not always provide authorized figures by project or activity, which may be needed for accountability reporting.

²⁵ D.16-06-054 at pp. 229 and 282.

²⁶ The Utilities presented the O&M expenses in direct nominal dollars (*i.e.*, 2018 authorized is in 2018 dollars). The authorized escalation factors used to calculate the direct nominal dollars were approved in D.16-06-054 and discussed on pp. 160-161 (SDG&E) and 269-270 (SoCalGas).

test year revenue requirement increases are then calculated by applying a 3.5% factor to the total base margin component of the revenue requirement. As such, there are no explicitly authorized capital expenditures, by project/workpaper, in the post-test years for the TY 2016 GRC. For purposes of this report, the Utilities imputed a proxy value for 2018 authorized capital expenditures by taking a three-year average of the escalated capital spending for the years 2014 through 2016 and then applying the authorized attrition increases to this amount. The Utilities believe this is the most reasonable methodology to derive the authorized figures for capital expenditures, because it normalizes the direct capital spending assumptions from the forecast years.

For the balanced programs, in addition to expressing these programs on a direct dollar basis, this report presents O&M and capital in revenue requirement terms because the programs are tracked on a revenue requirement basis, as required by the annual advice letter filings. Reviewing balanced programs in these terms, rather than in nominal direct dollars, reflects more accurately how the Utilities manage these programs and track costs. The Utilities attempt to manage balanced programs within the authorized revenue requirement for the entire GRC cycle and not within an individual spending year. While O&M and capital spend, including the timing of capital becoming rate base, are building blocks in creating an authorized revenue requirement, it is the authorized revenue requirement itself that Utilities are measured against financially. Further, and as described above, GRCs establish and authorize test year revenue requirements to which an attrition year mechanism or escalator is applied to build attrition year revenue requirements.

2. SUMMARY OF REPORT VARIANCES BY COMPANY

Non-Balanced Reportable Totals for SDG&E

	2018 Actuals	2018 Imputed Authorized	\$ Variance	% Variance
SDG&E Direct Capital	648,244	569,304	78,940	14%
SDG&E Direct O&M	405,107	508,739	(103,632)	(20)%
SDG&E Direct Total	1,053,351	1,078,043	(24,692)	(2)%

Non-Balanced Reportable Totals for SoCalGas

	2018 Actuals	2018 Imputed Authorized	\$ Variance	% Variance
SoCalGas Direct Capital	720,237	580,770	139,467	24%
SoCalGas Direct O&M	607,684	717,563	(109,879)	(15)%
SoCalGas Direct Total	1,327,921	1,298,333	29,588	2%

3. OVERVIEW OF 2018 INTERIM SPENDING ACCOUNTABILITY REPORT

The 2018 Interim Report provides summary explanations of variances between actual and imputed authorized spending derived from SoCalGas and SDG&E’s 2016 GRC (2016 GRC). While the 2018 Interim Report provides simple and accessible explanations of the variances, some variance explanations cannot tell the whole story. Certain underlying themes and issues run throughout many of these variance explanations. As such, SoCalGas and SDG&E provide this overview for the 2018 Interim Report to expand on some of the variances between their 2018 direct recorded expenditures and the 2018 imputed authorized direct expenses from the 2016 GRC, in those instances where further detail may provide better insight and understanding to the Commission.

In this overview, SoCalGas and SDG&E expand on four particular themes and topics from the 2018 variance explanations: (1) how safety is a consideration throughout the variances, (2) effects of the method of ratemaking, (3) challenges in reflecting labor, and (4) variances that require additional explanation (specifically, IT, Gas Transmission, Gas Distribution, Electric Distribution, and AMI).²⁷ SoCalGas and SDG&E provide the following additional explanations to aid the Commission on the variances included herein.

A. Safety

First, safety is a core value and a foremost consideration at SoCalGas and SDG&E. Safety is a major factor in any operational decision, and the decisions leading to the variances discussed in this 2018 Interim Report often enhanced overall programmatic safety. In addition,

²⁷ The Utilities note that some of these topics were discussed in the 2017 Interim Report. For those duplicated topics the discussion here is streamlined in some areas to avoid repetition and supplemented in others to provide additional useful information.

SoCalGas and SDG&E expect compliance from all employees with our many regulatory requirements, including those concerning safety, reliability and maintenance. SoCalGas and SDG&E's efforts to enhance and improve safety motivates many of the decisions underlying the variances included in the 2018 Interim Report.

The variances are replete with such decisions. For example, SDG&E's Electric Distribution Construction Services incurred lower than forecasted O&M expenses resulting from a change in scope related to the Fire Risk Mitigation (FiRM) program, which resulted in a shift from O&M to capital related activities to mitigate risk (reflected in the Safety & Risk Management group of capital activities being higher than authorized). The replacement of overhead conductors with relatively high failure rates, which is primarily a capital expenditure became a higher priority than O&M survey and engineering work. SDG&E analyzes and evaluates fire-related data to determine if there are observable trends that can be linked with current climate change phenomena. For example, between January 1, 2018 and December 16, 2018, 6,266 fires were reported by CalFire across the state of California with a burn area totaling 876,131 acres. This is a decrease of 16 fires from the same period in 2017, but an increase of 554,474 acres burned and stands at 375% of the 5-year averages of fires and acres burned with 2017's acreage being 111% of the five-year averages. While these numbers are heightened by dry conditions produced by well-below average rainfall statewide during the winter of 2017-2018, data ranging back to 1984 across San Diego County confirms that the number of high fire potential days each year has increased since the early 2000s. These trends are projected to continue as a combination of climate-related factors leads to increases in both fire season duration and severity through the end of the century. Based on these trends and other evidence, SDG&E determined prioritizing replacement of overhead conductors would be more effective at reducing risk.

As a second example, as part of enhanced leak detection and remediation activities, SoCalGas identified safety enhancement opportunities that included replacing existing infrastructure instead of engaging in ongoing repairs. The *Replacements* budget code in SoCalGas' Gas Transmission operating group is one budget code where this occurred. Over the last few years, regulatory changes such as updates to comply with General Order (GO) 112 and SB 1371 have increased leak detection frequency and response. SoCalGas has responded to

these changes. Where appropriate, SoCalGas has addressed identified leaks through pipeline replacement activities, which lead to higher capital and reduced O&M expenditures.

B. Variances Resulting from Forecast Methodology

California's ratemaking approach is predicated on forecasts that can lead to variances. Thus, many variances outlined in the 2018 Interim Report are the result of aspects inherent in the use of a forecasted test year methodology, a methodology that has been in place in California for several decades. There may be a need to reprioritize during a cycle for a variety of reasons and projects may be performed earlier or later in a cycle, resulting in variances from the forecasts. The Commission has explicitly recognized that "new programs or projects may come up, others may be cancelled, and there may be reprioritization. *This process is expected and is necessary* for the utility to manage its operations in a safe and reliable manner."²⁸ It is for these reasons that "utilit[ies] [are] allowed the flexibility to reprioritize the authorized funds in order to ensure safe and reliable operations."²⁹ And, the Commission recognizes that utilities are incentivized to operate efficiently.³⁰ Accordingly, SoCalGas and SDG&E are allowed to re-prioritize spending as needed within and between O&M and capital categories. This is captured in variances based on a variety of causes.

A number of variances included herein were caused at least in part by changes during a cycle. For example, there can be changes to local, state or federal regulations over the three-year cycle which necessitate changes. SoCalGas' TY 2016 GRC application was developed and filed prior to promulgation of new gas storage federal (Pipeline and Hazardous Materials Safety Administration's (PHMSA) Interim Final Rule (IFR)) and state (Department of Oil, Gas, and Geothermal Resources' (DOGGR) California Underground Gas Storage) regulations which

²⁸ D.11-05-018 at 27 (emphasis added).

²⁹ Energy Division, Safety-Related Spending Accountability Report for Southern California Edison (May 2017) at p. 10, *available at*

http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Safety/SCESafety-RelatedSpending.pdf (Safety Report); *see also* Resolution E-4464 (May 10, 2012) at 7 ("Under GRC ratemaking, the utilities are given an authorized revenue requirement to manage various parts of their utility business. Recognizing that the utilities may need to re-prioritize spending and spend more or less in a particular area of their business, the Commission affords them substantial flexibility to decide how much to spend in any particular area.").

³⁰ Safety Report at p. 3 (noting that "Utilities have an incentive to spend less than their expensed spending budget, because any unspent expense boosts the company's net income by that amount.").

informed SoCalGas' 2018 O&M and capital activities.³¹ Consequently, SoCalGas created a separate Gas Underground Storage O&M program, *Storage Risk Management*, to address non-refundable costs related to support new, incremental, aboveground gas storage monitoring, data management, compliance and audit support activities. Furthermore, SoCalGas' 2018 spending in *Wells* and *Pipelines* in Underground Storage Capital reflects a focus on well safety, integrity, reliability and affordability. SoCalGas prioritized plug and abandonment of wells and workover enhancements on existing wells over drilling new or replacement wells to expeditiously validate the safety and integrity of existing wells and cost effectively maintain facility injection and withdrawal capabilities.³² New DOGGR regulations also required a primary and secondary well barrier construction, and SoCalGas began proactively implementing these changes in its *Storage Integrity Management Program (SIMP)* to meet the regulation requirements before they were approved in June of 2018.³³ SoCalGas' focus on well safety and integrity is reflected in its accelerated pace of well baseline integrity assessments and conversion to primary and secondary well barrier construction in its *SIMP capital* and *SIMP O&M* program areas. Complementing and adjusting to these well construction requirements created additional, necessary, and higher than anticipated storage pipeline capital costs in *Pipelines* capital to reconfigure the lateral lines connected to the wells for SoCalGas.

³¹ The PHMSA IFR was published on December 19, 2016, which among other things, adopts American Petroleum Industry (API) Recommended Practice 1171, *Functional Integrity of Natural Gas Storage in Depleted Hydrocarbon Reservoirs and Aquifer Reservoirs*, as a mandatory regulation. PHMSA began to regulate downhole portions of underground gas storage thereafter and the IFR added reporting requirements for underground gas storage facilities. The DOGGR issued Emergency Regulations for Underground Gas Storage effective February 5, 2016 and followed thereafter with its' California Underground Gas Storage Regulations made effective October 1, 2018 (14 CCR §1726), which required, among other things, field-specific Risk Management Plans, Emergency Response Plans, additional data requirements, well integrity inspection requirements, well construction requirements, and monitoring requirements.

³² Typically, drilling a new or replacement well is a costlier activity than plug and abandonment or workover activity for an existing well, however it requires well rig resources all the same.

³³ On July 8, 2016, the Department of Conservation publicly released pre-rulemaking draft regulations for California Underground Gas Storage in the Division of Oil, Gas, and Geothermal Regulations (DOGGR) that included a requirement for a primary and secondary well barrier construction in the California Code of Regulations §1726.5(a)(1). This regulation was approved by the Office of Administrative Law (OAL) on June 28, 2018, and made effective as of October 1, 2018.

SDG&E and SoCalGas' GRC forecast presentations may also vary from recorded presentations due to workpapers consisting of cost centers³⁴ as well as accounting for shared services and direct billing that may be impacted by organizational changes throughout the GRC cycle. For example, several of the Information Technology variance explanations reference the fact that dollars may have been authorized in one workpaper in the TY 2016 GRC; however, the organization and consequently the workpaper structure in the TY 2019 GRC were much different. This can be seen in the variance explanation for IT Applications NSS, which says "Costs forecasted in other areas were recorded in this area. For example, a cost center supporting customer service functions was forecasted as shared but recorded as non-shared."

SDG&E's *Replacements of Mains & Services* experienced higher than anticipated costs based on new information becoming available during a cycle. Those costs were a result of emergent projects to replace the aging vintage steel distribution systems in the Bay Park, Vista Campana and Stream View Drive developments. These areas experienced a large volume of recent leaks necessitating a reprioritization of projects to provide the required pipe replacement in these areas. These replacements mitigate the risk to public safety from corrosion leakage or pipe degradation by proactively prioritizing and increasing the replacement of vintage steel pipe.

The forecast structure also creates situations where a variance might appear because work was completed in a prior year or is planned (or delayed) for a future year. For example, projects are performed earlier or later in a cycle, resulting in the appearance of variances. This was the case with SoCalGas' Gas Transmission Measurement & Regulation (M&R) stations, in which the pace of work was accelerated to synergize with ongoing PSEP work to reduce impacts to the public and for cost efficiencies that could be realized through coordinating these activities. Another example is budget code New Pipelines on SDG&E's Gas Transmission. The completion of Carlsbad Energy Center was originally forecasted to be completed by 2016, so its delay resulted in variances in 2017 and 2018. Lastly, within the SDG&E Electric Distribution Capital group there was an overall variance of -10%. However, there are numerous specific workpapers that show a variance of plus or minus 100%. Although many of these do not meet

³⁴ SDG&E and SoCalGas were ordered to file their GRCs by cost center in D.08-07-046 Ordering Paragraph (OP) 22 at 106.

the variance threshold, the numbers paint an unusual picture without the knowledge that many of the line items were completed in previous years or are planned for future years.

In summary, the forecasted test-year methodology requires utilities to reprioritize throughout GRC cycles. Many variances included herein are driven, at least in part, by the pressures created by this aspect of managing a utility in California.

C. Labor

Third, programs with variances based on changes in labor can be challenging to fully capture. Retirements, re-prioritizations, talent searches, and the need for appropriate training and qualifications can all impact recorded labor costs. While SoCalGas and SDG&E work to factor such changes into their GRCs, several variances noted in this 2018 Interim Report reflect the ongoing and unpredictable nature of people movement.

Labor costs and challenges underlie several decreased O&M expenses. For any particular instance where labor is a contributing factor to a variance, it is usually a combination of causes which lead to the variance. Employees can unexpectedly retire, move to other positions within the companies, or move to other employment opportunities outside of the companies. As unemployment rates drop, there are presumably fewer potential employees to fill openings. Replacing employees is generally not a simple task. It takes time to find a new employee, especially where unique qualifications are sought such as highly skilled pipeline and electrical system workers. Finally, fewer employees might be needed in certain areas because of technological improvements or because new tools are provided which assist tasks such as the elimination of most manual meter reading activities due to the implementation of AMI at SoCalGas. While all of these labor issues do not occur for every project where there is a negative variance in O&M expenses, they are often a factor, even where they might not be significant enough to be mentioned in a variance explanation.

D. Particular Operating Units and Groups of Programs

In addition to the foregoing broader issues, several operating units are worth discussing separate from their variance descriptions. These groups demonstrate how solely looking at the numbers and variances might not capture the entire picture for why investment was reprioritized.

i. SDG&E and SoCalGas IT

The IT systems of SDG&E and SoCalGas experienced changes in 2017, which led to broad unanticipated variances that continued to impact prioritization of IT investments. In April of 2017, there was a multiple-day system outage.³⁵ The outage affected virtually all IT systems (e.g. customer experience, field operations, etc.). Following this outage and others in 2017, both SDG&E and SoCalGas reassessed IT system capabilities and determined to reprioritize IT by substantially increasing capital to improve system reliability which also resulted in lower O&M spending. Significant investments in IT infrastructure were made during this period, which focused on upgrading servers and storage capabilities as well as beginning the build out of a new disaster recovery site. During this period, the enterprise licensing for the Microsoft Office 365 suite was updated as well.

While these substantial changes were ongoing, SDG&E also had to build out changes driven by regulations that were not anticipated. The Residential Time of Use rates pilot continued along with system preparation for full default in 2019, resulting in a significant system change. Technology obsolescence also impacted investments such as the telecom industry sunsetting 3G technology support and moving to 4G. This has required upgrades to impacted field network devices.

SoCalGas' IT operating group was substantially impacted by IT outages, requiring enhanced spending on capital that was not anticipated in the original forecasts or authorized levels.

ii. Gas Transmission

SoCalGas' Gas Transmission group experienced notable capital variances that resulted from various drivers. One significant contributor to this variance was the ramp up in scope of projects under budget code for Compressor Stations. The amount forecasted in the TY 2016 GRC for the Compressor Modernization projects in Blythe and Ventura was based on preliminary Rough Order of Magnitude (ROM) estimates and limited scope-of-work. The

³⁵ A.17-10-007, Revised SDG&E Direct Testimony of Christopher R. Olmsted (Information Technology) (December 2017), Ex. SDG&E-24-R/Olmsted at CRO-6:11 – CRO-7:4; A.17-10-008, SoCalGas Direct Testimony of Christopher R. Olmsted (Information Technology) (October 6, 2017), Ex. SCG-26/Olmsted at CRO-7:1-16.

refined scope development for Blythe Compressor Modernization Project was a result of findings and recommendations from the Front-End Engineering Design. Similarly, the scope for the Ventura Compressor Modernization Project is also being refined through a Front-End Engineering Design. Another driver of the variance is the addition of the Honor Rancho Compressor Modernization Project, which was not forecasted in the TY 2016 GRC. Upon completion, these projects will foster operational reliability and will deliver environmental benefits with a measurable reduction of criteria air pollutants. SoCalGas' Gas Transmission group exceeded authorized capital due in part to unforeseen pipeline replacement work associated with the Montecito Storm, acceleration of work on M&R stations, and development of the scope-of-work related to the compressor station projects. In addition, SoCalGas' Gas Transmission group experienced an overall negative variance in O&M due to capitalization or deferral of activities and projects that were originally forecasted as O&M, in addition to the termination of the City of Long Beach pipeline lease. One related example of O&M reduction is deferring the replacement and testing emission reduction catalyst on large compressor systems in advance of changes that are anticipated to occur in air quality regulations. These changes include the sunseting of SCAQMD Reclaim Program which will require a major retrofit of engine emission control systems at multiple facilities over a five-year period, which includes not just a historical replacement in-kind program, but a retesting that will need to be partially funded through O&M.

iii. Gas Distribution

The Gas Distribution operating groups at both companies experienced variances that resulted from broader drivers. SDG&E's Gas Distribution group exceeded authorized funding levels for both O&M and capital, mostly as a result of higher costs from increased third-party work, increases in pipeline maintenance and compliance activities, reprioritizations resulting in additional projects to upgrade the aging steel pipe infrastructure, and higher construction costs due to stricter municipality working rules. For SDG&E, some of the overarching O&M increases were driven by expansion in the service territory. For example, there was an increase in requests to Locate & Mark as additional digging occurred and required pipelines to be marked for new construction and infrastructure work. Pipeline maintenance increased as new construction, landscaping, renovations, replacing aging infrastructure, and other third-party work

grew. Higher than forecasted pipeline maintenance costs occurred due to stricter city construction regulations, resulting in greater duration and complexity of pipeline repairs. These factors, coupled with increasing leak repair costs of vintage steel and early vintage (Aldyl-A) plastic pipe, accounted for much of the increased O&M work. On the capital side, there were higher than anticipated costs related to safety improvements and upgrading the aging infrastructure. An increase in the number of new and renewed cathodic protection (CP) anode bed stations necessary to provide CP system-wide protection for an aging pipeline infrastructure, an enhanced CP system design adding longer CP station life, and restraints imposed by municipality street restoration work, contributed to increased construction costs. In addition, SDG&E spent more than forecasted due to a system-wide project to enhance CP protection to stranded steel pipeline segments. More leaks were detected that required more extensive remediation, leading to increased costs. Regulator station improvements were needed for older equipment to meet current safety requirements, including providing a safer working space for maintenance.

SoCalGas' Gas Distribution operating group spent less than authorized for both O&M and capital due to lower staffing levels than forecasted in management and support roles, organizational changes that shifted labor for training and Operator Qualification activities to other groups such as Gas Operations System Integrity, as well as reprioritization of capital spending from pressure betterments and regulator stations to new business and service replacement work associated with leaks. Some field activities had significant cost increases due to an increase in units of work and/or an increase in requirements such as the leak inventory reduction and incremental USA tickets. This includes Locate & Mark, Service Maintenance, Main Maintenance, Measurement and Regulation and Cathodic Protection. Likewise, some capital activities also experienced significantly higher costs. This includes New Business, Service Replacements, Abandonments, and Field Capital Support. As discussed above for SDG&E, SoCalGas was impacted by expansion in the service territory, increased construction work in the public right-of-way, an aging infrastructure, and increased leak repair/remediation requirements.

iv. SDG&E Electric Distribution

The Electric Distribution Operation Group at SDG&E experienced variances due to a variety of different factors. As SDG&E continued its focus on Safety and Risk Management activities, expenditures were re-prioritized to allow for the expansion or acceleration of the activities, as described, designed to improve safety for SDG&E employees, contractors, and the public while decreasing the risk of wildfires in the service territory. Additionally, lower than forecasted customer requests resulted in lower expenditures needed to support customer growth.

Reduced expenditures in O&M were primarily related to change in scope related to the Fire Risk Mitigation (FiRM) program and thus resulted in a shift from O&M to capital related activities. Also, the reduced need for maintenance and repair of substations resulting from visual inspections and preventative diagnostic testing which are dependent upon time-based maintenance cycles that vary from year to year. The lower spend was then re-prioritized to the Emergency Management Workpaper Group which includes the expansion of the Fire Science and Climate Adaptation Department. The Fire Science and Climate Adaptation Department manages one of the largest utility weather networks in the country and shares its resources with local and state first responder teams. Additionally, the Fire Coordination function has shifted from the Construction Services Workpaper Group and into the Emergency Management Workpaper Group, to align with similar activities supporting Emergency Management Operations in preparing for and responding to emergency events.

Variances in capital expenditures were primarily driven by the expansion of distributed generation resulting in fewer customer requests for New Business and Capacity/Expansion projects. The decrease to the O&M expenditures in the Construction Services Workpaper Group is offset by the increase to the capital expenditures for the FiRM program, which can be seen in aggregate of the FiRM budget codes. To mitigate risk, the replacement of conductors with relatively high failure rates (which is primarily a capital expenditure) became the highest priority. Additional efforts to mitigate risk can be seen in the re-prioritization of dollars from various categories into the Safety and Risk Management Category of projects, which resulted in higher expenditures compared to the forecast.

v. SoCalGas AMI

The SoCalGas AMI project had an impact on many variances because it broadly affected many areas within the company. This was true for 2017 and is also true for 2018 spending. Field and Meter Reading, Customer Contact Center, and Human Resources were all impacted directly by the implementation of AMI. As described in the TY 2016 GRC testimony of Mr. Rene Garcia,³⁶ the SoCalGas forecasts presented business operations, processes, and practices without AMI deployment. Each GRC witness impacted by AMI deployment put forth testimony excluding operational costs and anticipated benefits as presented in SoCalGas' separate AMI Application (A.08-09-023), approved in D.10-04-027. Hence, TY 2016 GRC forecasts assumed continuing operations without AMI in all impacted business areas. O&M benefits achieved or attributed to AMI, as defined in the benefit per meter mechanism authorized in D.10-04-027 and established in SoCalGas' AL 4110, have been included in AMI revenue requirements and were therefore excluded from TY 2016 GRC estimated expenses.

The AMI regulatory account captures all costs and benefits through 2018. As a result, the 2018 Imputed Authorized dollar amounts in this report do not reflect the net benefits attributed to AMI implementation, whereas the 2018 Recorded Actuals do reflect those net benefits.

³⁶ A.14-11-004, Direct Testimony of Rene F. Garcia (Advanced Metering Infrastructure Policy) (July 2014), Ex. SCG-39/Garcia at RFG-1:5-17.

**ATTACHMENT A – SDG&E’s 2018 INTERIM SPENDING ACCOUNTABILITY
REPORT**

1. SDG&E ELECTRIC

A. SDG&E Electric Distribution

i. SDG&E Electric Distribution O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Electric Distribution	97,605	115,931	(18,326)	-16%	
Asset Management	877	-	877	100%	
Reliability & Capacity	274	695	(422)	-61%	
Construction Services	6,431	17,675	(11,245)	-64%	Yes
Distribution Ops EGIM	1,100	2,258	(1,158)	-51%	
Electric Distribution Operations	16,177	15,664	513	3%	
Kearny Operations Services	1,177	2,178	(1,001)	-46%	
Grid Operations	704	169	535	315%	
Project Management	911	917	(7)	-1%	
Electric Regional Operations	37,726	40,279	(2,552)	-6%	
Skills & Compliance Training	2,713	4,561	(1,847)	-41%	
Service Order Team (SOT)	165	788	(622)	-79%	
Substation C&O	3,338	7,618	(4,280)	-56%	Yes
System Protection	1,654	1,944	(291)	-15%	
Distribution and Engineering	2,751	1,712	1,039	61%	
Troubleshooting	7,282	9,150	(1,868)	-20%	
Vegetation Management (Pole Brushing)	3,895	4,746	(851)	-18%	
Major Projects	508	162	345	213%	
Technology Utilization	989	1,705	(717)	-42%	
Compliance & Asset Management	2,878	3,019	(141)	-5%	
Tech Solutions & Reliability	2,481		2,481	100%	
Emergency Management	3,575	690	2,885	418%	Yes

ii. SDG&E Electric Distribution O&M Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Construction Services	Lower than forecasted expenses due to a reprioritization of efforts related to the Fire Risk Mitigation (FiRM) program that led to a shift from O&M-intensive activities to Capital-intensive activities. At the time of the TY2016 GRC forecast, FiRM had planned to do a large-scale O&M survey and engineering analysis on the overhead lines and structures within the High-Risk Fire Areas (HRFA). However, as the project ramped up, the primary risk reduction activity of replacing overhead conductors with known high failure rates, which was primarily a capital activity, became the priority over the analysis.		
Substation C&O	Lower than forecasted maintenance and repair of substations. The annual cost to maintain substations is variable and influenced by the results of visual inspections and preventative diagnostic testing. Some preventative maintenance activities are dependent on time-based maintenance cycles that vary from year to year. Additionally, SDG&E has instituted a condition-based maintenance program on certain substation equipment that allows SDG&E to complete required maintenance based on current asset health rather than time-based cycles.		
Emergency Management	Higher than forecasted 2018 actuals were due to the expansion of the Fire Science & Climate Adaptation teams within the Emergency Management workpaper group. Specifically, the Meteorology team now manages one of the largest utility weather networks in the country and its function has grown considerably since its move to Emergency Management in 2015. Additionally, the Fire Coordination function was moved out of the 2016 Construction Contract Management workpaper group and into Emergency Management.		

iii. **SDG&E Electric Distribution O&M Workpaper Descriptions and GRC Testimony Locations**

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Electric Distribution	Construction Services	1ED002.000	Construction Services provides oversight of all construction performed by Contractors on Electric Distribution. This is to ensure that all work is built to SDG&E Safety Standards and in accordance with current contracts following General Order (G.O.) 95 and 128 codes. The O&M portion of the work conducted by Construction Services; locating services; streetlight maintenance; graffiti abatement; and transformer installs/removals and O&M associated with capital construction. The Contracting group is responsible for all jobs administered by Construction Services. This includes the management of all job packages, such as data management, permit verification, environmental releases, purchase orders and negotiation of start and end dates. Additionally, the group interfaces with Supply Management to aid in processing jobs that meet the criteria and constitute bid work therefore requiring request for proposals. Construction Services also oversees the Aviation Services function within SDG&E. Additionally, Construction Services also includes the group that is responsible for fire coordination and prevention.	SDG&E-10 JTW-47 to JTW-50	SDG&E-15-2R WHS-9 to WHS-12, WHS-53 to WHS-55
Electric Distribution	Substation Construction and Operations (C&O)	1ED015.000	The Substation Construction & Maintenance and associated support organizations are responsible for the installation and maintenance of 140 distribution substations on the SDG&E system. This section also installs and maintains the control functions of approximately 1,300 overhead and underground distribution field devices. Compliance with SDG&E	SDG&E-10 JTW-34 to JTW-37	SDG&E-15-2R WHS-9 to WHS-12, WHS-53 to WHS-55

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			maintenance programs, CPUC and other regulatory programs, and health and safety programs critical to the safe and efficient installation, maintenance and reliability of all distribution electrical facilities is managed and implemented within the Substation Construction and Maintenance section.		
Electric Distribution	Emergency Management	1HR001.000/ 1ED027.000	Emergency Management comprises three groups: Emergency Services, Meteorology, and Fire Coordination and Prevention. Emergency Services provides planning and guidance for responding in anticipation of, response to, or following an incident. Emergency Services effectively and efficiently supports the Company's ability to prevent, prepare for, respond to, and recover from incidents regardless of cause, size, or complexity. SDG&E's Meteorology provides daily reports that are critical to making real-time operating decisions, in order to safely manage and operate the electric system, on a 24-hours a day, seven-days per week basis. SDG&E's Fire Coordination and Prevention team consists of individuals who possess broad expertise in a variety of firefighting disciplines, from wildland fire control and municipal fire departments, to aerial firefighting operations.	SDG&E-24 SEE-4 to SEE-5	SDG&E-15-2R WHS-9 to WHS-12, WHS-79 to WHS-88

iv. SDG&E Electric Distribution Capital Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria
Electric Distribution Capital Total	400,820	444,425	(43,604)	-10%	
New Business Total	51,652	61,289	(9,637)	-16%	
Electric Meters & Regulators	3,343	2,408	936	39%	
Electric Distribution Easements	1,647	2,341	(694)	-30%	
OH Residential NB	551	738	(187)	-25%	
OH Non-Residential NB	780	709	72	10%	
UG Residential NB	8,784	8,054	730	9%	
UG Non-Residential NB	5,340	5,572	(231)	-4%	
New Business Infrastructure	6,844	13,277	(6,433)	-48%	Yes
New Service Installations	8,117	6,511	1,606	25%	
Customer Requested Upgrades and Services	13,465	14,787	(1,322)	-9%	
Transformer & Meter Installations	2,780	6,469	(3,689)	-57%	
Sustainable Community Energy Systems		424	(424)	-100%	
Capacity/Expansion Total	11,739	25,739	(14,000)	-54%	
Field Shunt Capacitors	484	612	(129)	-21%	
Reactive Small Capital Projects	463	2,079	(1,616)	-78%	
Mira Sorrento 138/12kv Substation	445	2,477	(2,032)	-82%	
Salt Creek Substation & New Circuits	559	1,608	(1,050)	-65%	
Jamacha-New 12kv CKT. 1090	168		168	100%	
Ocean Ranch 69/12kv Substation	5,836		5,836	100%	Yes
Station C - Remove from Service	2		2	100%	
San Ysidro- New 12kv Circuit 1202		279	(279)	-100%	
C1161 BD - New 12kv Circuit	1	493	(491)	-100%	
Substation 12kv Capacitor Upgrades	(1,880)	1,678	(3,558)	-212%	
C917, CC: New 12kv Circuit	(32)	556	(588)	-106%	
C1259, MAR: New 12kv Circuit	1,565		1,565	100%	

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria
C1282 LC - New Circuit	(7)	8	(16)	-187%	
Poseidon – Cannon Substation Modification	1	3,840	(3,839)	-100%	
C1023 LI New 12kv Circuit & Reconductor C354	1,447		1,447	100%	
Camp Pendleton 12kv Service	112	62	50	80%	
C100, OT: 12kv Circuit Extension	4		4	100%	
C1440 Grant Hill New 12kv Circuit	74		74	100%	
Substation Security Proj Under \$500k	31		31	100%	
Wabash Canyon Sub 60/12kv Bank 32	2,309		2,309	100%	
Distribution System Capacity Improvement	641	2,276	(1,635)	-72%	
Rancho Carmel-3rd Bank & Cir 937 & 938	1		1	100%	
Jamul - New Substation	(1,001)		(1,001)	100%	
Narrows Substation R	(12)		(12)	100%	
C1243, RMY: Ol-Recond Along Ortega Hwy	(5)		(5)	100%	
C350, LI: Reconductor & Voltage Regulation		194	(194)	-100%	
C1049, CSW: New 12kv Circuit		866	(866)	-100%	
Middletown 4kv Substation RFS		273	(273)	-100%	
Tl633-Overhead Reconductor	27		27	100%	
C108, B: 12 Kv Circuit Reconfiguration		139	(139)	-100%	
C176 Po: Reconductor		246	(246)	-100%	
C1243, RMV: Reconductor		503	(503)	-100%	
C1288, MSH: New 12kv Circuit		341	(341)	-100%	
C1090, JM: New 12kv Circuit		5,463	(5,463)	-100%	Yes
C1120, BQ: New 12kv Circuit		1,137	(1,137)	-100%	
GH New 12kv Circuit		608	(608)	-100%	
San Mateo Sub Rebuild	505		505	100%	
DER Integration Total	(212)		(212)	100%	
Smart Transformers	(212)		(212)	100%	

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria
Equip/Tools/Misc Total	2,728	1,154	1,574	136%	
Electric Distribution Tools/Equipment	2,728	1,154	1,574	136%	
Franchise Total	15,586	29,719	(14,132)	-48%	
Electric Dist. Street/Hwy Relocations	5,612	6,175	(563)	-9%	
City of San Diego Surcharge Prog (20SD)	9,974	23,543	(13,569)	-58%	Yes
Mandated Total	36,648	40,517	(3,869)	-10%	
Corrective Maintenance Program (CMP)	13,171	10,037	3,134	31%	
CMP UG Switch Replacement & Manhole Repair	6,191	11,359	(5,168)	-45%	Yes
Replacement of Live Front Equipment	512	780	(268)	-34%	
Avian Protection	0	1,773	(1,773)	-100%	
Distributed Generation Interconnect. Pro	(7)		(7)	100%	
Pole Replacement and Reinforcement	16,775	16,568	207	1%	
Doe Switch Replacement	5		5	100%	
Tl6906 Mesa Rim Loop-In	1		1	100%	
Materials Total	15,943	21,781	(5,838)	-27%	
Transformers	15,943	21,781	(5,838)	-27%	Yes
Overhead Pools Total	99,318	110,078	(10,760)	-10%	
Local Engineering Pool - Ed Pool	78,262	88,759	(10,497)	-12%	Yes
Local Engineering Pool - Substation Pool	13,225	11,469	1,756	15%	
Department Overhead Pool	775	3,855	(3,080)	-80%	
Contract Admin Pool	7,055	5,995	1,060	18%	
Reliability/ Improvements Total	71,404	88,879	(17,476)	-20%	
Distribution Substation Reliability	1,922	1,451	471	32%	
Management of OH Dist. Service	7,015	8,740	(1,725)	-20%	
Management of UG Dist. Service	3,456	3,814	(358)	-9%	
Replacement of Underground Cables	10,293	12,905	(2,612)	-20%	
Capital Restoration of Service	9,191	4,649	4,542	98%	

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria
Distribution Substation Projects Strategic	(5)		(5)	100%	
Rebuild Pt Loma Substation	3,542		3,542	100%	
Emergency Transformer & Switchgear	33	301	(268)	-89%	
Remove 4kv Subs. From Service		2,274	(2,274)	-100%	
Telegraph Canyon- 138/12kv Bank & C1226	549	1,154	(605)	-52%	
Substation Security		779	(779)	-100%	
Advanced Energy Storage		960	(960)	-100%	
Install Scada On Line Capacitors	205		205	100%	
Wireless Fault Indicators	437		437	100%	
Sewage Pump Station Rebuilds	1,938	1,449	489	34%	
Sunnyside 69/12kv Rebuild		692	(692)	-100%	
Tl600 - Reliability Pole Replacements	4		4	100%	
Advanced Ground Fault Detection	10		10	100%	
Condition Based Maintenance Program	244	4,367	(4,122)	-94%	
Rebuild Kearny 69/12kv Substation	7,167	8,189	(1,022)	-12%	
New Vine 69/12kv Substation	5,821		5,821	100%	Yes
Streamview 69/12kv Sub Rebuild-Pre Eng	634		634	100%	
Poway Substation Rebuild	271		271	100%	
Microgrid Systems for Reliability	1,293	6,502	(5,209)	-80%	Yes
Substation Scada Expansion-Distribution	157		157	100%	
C1448, MTO: New 12kv Circuit	(31)		(31)	100%	
Tl690A	77		77	100%	
Scada Head-End Replacement	4,115		4,115	100%	
RTU Replacement Project RMS900	2,142		2,142	100%	
Avocado Sub 69kv Rebuild	(11)		(11)	100%	
San Marcos Sub Rebuild 69kv & 12kv	(5)		(5)	100%	
Substation Mod to Support Flsr	1,212		1,212	100%	

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria
Tee Modernization Program	2,173		2,173	100%	
Energized Test Yard	278		278	100%	
Advanced Energy Storage Upgrades	400		400	100%	
High Risk Switch Replacement Project	49		49	100%	
Street Light Modernization	171		171	100%	
Jacumba Microgrid	42		42	100%	
Distribution Circuit Reliability Construction	2,508	8,817	(6,309)	-72%	Yes
Power Quality Program	68	160	(92)	-58%	
Replace Obsolete Substation Equipment	2,460	4,425	(1,966)	-44%	
Transmission Infrastructure Improvements	17		17	100%	
Rebuild Pt Loma 69/12kv Substation		4,210	(4,210)	-100%	
Vista 4kv Substation RFS		339	(339)	-100%	
Advanced Technology		12,701	(12,701)	-100%	Yes
Underground in Fire Threat Zone	14		14	100%	
Scada Expansion-Distribution	110		110	100%	
Aerial Marking for Safety	26		26	100%	
Tl6975 Escondido - San Marcos	6		6	100%	
Tl13835 Wood to Steel	1		1	100%	
Rancho Santa Fe C1001 Wire Down MIT	63		63	100%	
Rose Canyon Tl617 Tap Removal	10		10	100%	
New Downtown 69/12kv Substation	13		13	100%	
Tl676-Mission to Mesa Heights Reconductor P	1,137		1,137	100%	
Tl697 San Luis Rey Wood to Steel	10		10	100%	
Tl6912 Wood to Steel Pole Replace	164		164	100%	
Tl674A Del Mar Reconfigure/Tl666D RFS	4		4	100%	
Safety & Risk Management Total	71,651	46,767	24,884	53%	
SDG&E Weather Instrumentation Install		152	(152)	-100%	

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria
Powerworkz		218	(218)	-100%	
C1215- Fire Risk Mitigation Project		22	(22)	-100%	
Fire Risk Mitigation (Firm) - Phases 1 And 2	50,919	13,083	37,836	289%	Yes
C441-Pole Loading Study/Fire Risk Mitigation		30	(30)	-100%	
Fire Risk Mitigation (Firm) - Phase 3	789	29,364	(28,575)	-97%	Yes
SF6 Switch Replacement	6,425	3,793	2,632	69%	
Rancho Santa Fe Sub Fire Hardening	5,026		5,026	100%	Yes
Fire Threat Zone Adv Protect & Scada Upg	1,067		1,067	100%	
Meteorology-Fire Behavior Modeling	362		362	100%	
Mobile Command Trailers (MCT)	20		20	100%	
Long Span Safety Project	252		252	100%	
Twin Engine Helicopter	3,622		3,622	100%	
SDG&E Meteorology Supercomputer	22		22	100%	
Distribution Aerial Marking and Lighting		106	(106)	-100%	
Accelerated Pole Loading	2,592		2,592	100%	
Wire Safety Enhancement (WISE)	32		32	100%	
Meteorology - Situational Awareness App	524		524	100%	
Transmission/ FERC Driven Projects Total	24,363	18,502	5,861	32%	
Elec Trans Line Reliability Projects	2,370	713	1,658	233%	
Elec Trans Line Relocation Projects	8	40	(32)	-80%	
Orange County Long Range Plan	3,979		3,979	100%	
Relocate South Bay Substation		645	(645)	-100%	
Eco Substation		606	(606)	-100%	
Fiber Optic for Relay Protect & Telecom	112	2,349	(2,237)	-95%	
Cleveland National Forest Power Line Replacement Projects	15,329	2,385	12,944	543%	Yes
TL 637 CRE-ST Wood to Steel		655	(655)	-100%	
Tl6914 Los Coches-Loveland Wood to Steel		1,770	(1,770)	-100%	

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria
TL13821 & 28-Fanita Junction Enhance		247	(247)	-100%	
Los Coches Substation 138/69kv Rebuild	395		395	100%	
TL663 Mission To Kearny Reconductor	63	6	56	881%	
TL664-Wood to Steel	155		155	100%	
Los Coches Rebuild 138/69/12kv Substation		3,911	(3,911)	-100%	
TL13833 Wood to Steel		32	(32)	-100%	
TL670 Mission to Clairemont Reconductor		1	(1)	-100%	
TL631 Reconductor Project		818	(818)	-100%	
Loop TL674 Into Del Mar and RFS TL666D		448	(448)	-100%	
TL 695B Reconductor		176	(176)	-100%	
Cleveland National Forest Power Line Replacement Projects		3,700	(3,700)	-100%	
Mission 230kv Rebuild	1,952		1,952	100%	

v. **SDG&E Electric Distribution Capital Variance Explanations**

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
New Business			
New Business Infrastructure	Lower than forecasted customer growth rates, as well as closing out of refundable contracts, which provided credits resulting in lower than forecasted spend.		
Capacity/Expansion Projects			
C1090, JM: New 12kV Circuit	The project was completed in 2016 and therefore there was no spend in 2017. The original in-service date was forecasted to be 8-31-15 as shown in TY2016 SDG&E-09-CWP-R page 202.		
Ocean Ranch 69/12KV Substation	This project was an emergent activity that was not anticipated during the TY2016 GRC. The purpose of this project is to build an ultimate 120MVA substation. The new substation will assist with meeting the electric distribution load growth and reliability limitations.		This project was an emergent activity that was not anticipated during the TY2016 GRC.
Franchise			
City of San Diego Surcharge Prog (20SD)	Lower than forecasted demand from the City of San Diego due to the timing of city approval of construction projects. Unused funds in this workpaper remain available to the city in future years and as such the variance does not impact ratepayers.		
Mandated			
CMP UG Switch Replacement & Manhole Repair	Lower than forecasted activities due to the unplanned increase in the Capital Restoration of Service replacement work (BC 236). Replacements, as described here, allow SDG&E to potentially mitigate risk by restoring and maintaining the integrity of its		

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
	electric infrastructure. SDG&E remains in compliance with GO 165.		
Materials			
Transformers	Lower than forecasted number of new transformers and transformer replacements is variable and dependent on factors, such as responding to required remediations identified during inspections and the amount of new business activity.		
Overhead Pools			
Local Engineering Pool – Elect Dist Pool	Forecasted general overhead pool activity costs were directly recorded in projects throughout the electric distribution capital portfolio.		
Reliability/Improvements			
Advanced Technology	Dollars authorized for this activity were re-prioritized to other emergent activities.		
Distribution Circuit Reliability Construction	Lower than forecasted replacement activities due to higher than forecasted replacement work in the Capital Restoration of Service (BC 236). Replacement activities, as described here, are designed to mitigate risk by improving electric system reliability.		
New Vine 69/12kV Substation	This project was an emergent activity that was not anticipated during the TY2016 GRC. This project, as described, is designed to mitigate risk by increasing reliability and adding capacity to the downtown San Diego area, which includes the airport.		This project was an emergent activity that was not anticipated during the TY2016 GRC.
Microgrid Systems for Reliability	The project was completed in March 2018. This project was awarded a California Energy Commission (CEC) grant and the underspend in 2018 was due to timing of invoices to the CEC.		

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Safety & Risk Management			
Fire Risk Mitigation (FIRM) - Phase 3	See related variance explanation below in FiRM phase 1 and phase 2.		
Fire Risk Mitigation (FIRM) - Phases 1 and 2	Higher than forecasted capital spend due to the change in approach for the FiRM program where capital overhead conductor replacement activities were prioritized over O&M survey and engineering activities as seen in the O&M Construction Services variance explanation. This system hardening project, as described, is designed to mitigate wildfire-related risk.		
Rancho Santa Fe Sub Fire Hardening	This project was an emergent activity that was not anticipated in the TY2016 GRC. The purpose of this project is to replace aging equipment and improve distribution reliability, as well as fire hardening the substation. The Rancho Santa Fe substation and most of its distribution circuits are located in the High Fire Threat District (HFTD) Tier 2 boundary or the Wildland Urban Interface (WUI) and are surrounded by dense vegetation.		This project was an emergent activity that was not anticipated during the TY2016 GRC.
Transmission/FERC Driven Projects			
Cleveland National Forest (CNF) Power Line Replacement Projects	The Distribution portion of the CNF project was accelerated to match Transmission activity levels. As described, acceleration of this project is designed to further mitigate risk by hardening infrastructure in high risk fire areas.		

vi. **SDG&E Electric Distribution Capital Workpaper Descriptions and GRC Testimony Locations**

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Electric Distribution	2190	New Business Infrastructure	<p>This project is required to extend new underground distribution systems to new non-residential electric customers. In accordance with the rules for the sale of electric energy, filed with and approved by the CPUC, electric facilities must be provided to qualified applicants.</p> <p>The specific details regarding the New Business Infrastructure project are found in capital workpapers. See SDG&E-09-CWP at section 00219 – New Business Infrastructure.</p>	SDG&E-09 JDJ-77 to JDJ-78	SDG&E-14-R AFC-63 to AFC-64
Electric Distribution	13285A	C1090, JM: New 12kV Circuit	<p>The purpose of this project is to provide capacity for the new Jamul Casino Resort estimated to add 9.5MW to existing Jamacha (JM) C75 in 2015, and this new business load will cause 90% overload issue on C75. New Jamacha C1090 is designed to serve the new business load and eliminate high load issues on Jamacha C75 and C524.</p> <p>These forecasted capital expenditures support the goal of enhancing safety maintaining system reliability, by replacing wood poles with steel poles, by eliminating the overloads when the new business customer connects to the distribution system, and by installing two new switches to assist with transferring load.</p>	SDG&E-09 JDJ-52 to JDJ-53	N/A
Electric Distribution	52530	Ocean Ranch 69/12KV Substation	The purpose of this project is to build an ultimate 120MVA substation. The new substation will assist with meeting the electric distribution load growth and reliability limitations.	N/A	SDG&E-14-R AFC-23 to AFC-24
Electric Distribution	2130	City of San Diego Surcharge	This project converts overhead facilities to underground based on requirements and negotiated agreement with the City of San Diego (commonly referred to as the “surcharge program”). This project	SDG&E-09 JDJ-61 to JDJ-62	SDG&E-14-R AFC-39

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
		Program (20SD)	<p>provides replacement of existing overhead electric facilities with new underground electric facilities (transmission and distribution), in accordance with Resolution E-3788. Replacement is effected at the request of the City of San Diego. This is a separate and distinct program unrelated to the Rule 20A program (budget 210). All expenses associated with this program will be reimbursed to SDG&E by the city from the proceeds of a surcharge collected from each electric meter account in the city of San Diego, thus this project is ratepayer and rate base neutral.</p> <p>These forecasted capital expenditures support the goals of safety and reliability, because aged infrastructure is replaced with new facilities when conversions are done.</p>		
Electric Distribution	2890	CMP UG Switch Replacement & Manhole Repair	<p>The purpose of this project is to replace or remove underground and overhead switches and to repair underground structures, all of which impact system integrity and employee and public safety.</p> <p>These forecasted capital expenditures support the goals of enhancing safety, maintaining system reliability and maintaining regulatory compliance, by ensuring overhead and underground electric distribution facilities are maintained in accordance with State regulations.</p>	SDG&E-09 JDJ-63 to JDJ-65	SDG&E-14-R AFC-47 to AFC-48
Electric Distribution	2140	Transformers	<p>This project is required to provide distribution transformers necessary to operate and maintain the electric distribution system. This blanket project is required to purchase transformers, supplying new and replacement equipment and maintaining inventory at each electric distribution service center.</p> <p>These forecasted capital expenditures support the majority of the</p>	SDG&E-09 JDJ-69 to JDJ-70	SDG&E-14-R AFC-55 to AFC-56

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			goals for Electric Distribution. Transformers are used in the majority of the categories of work.		
Electric Distribution	9010	Local Engineering Pool - ED Pool	<p>The Local Engineering - ED Pool consists of planners, designers and engineers, and support personnel who research, analyze, and design the facilities needed to serve customers. These persons address the engineering needs for new services, facilities relocations, overhead-to-underground conversions, capacity, and reliability projects. These persons also address the interaction with internal and external customers in preparing a work order package for construction. This pool includes the costs that will be allocated to electric distribution capital activities.</p> <p>These forecasted capital expenditures support the goals of enhancing safety, maintaining adequate reliability levels, and compliance with federal, state and local regulations.</p>	SDG&E-09 JDJ-83 to JDJ-85	SDG&E-14-R AFC-69 to AFC-70
Electric Distribution	10261E	Advanced Technology	<p>This project portfolio's focus is on reliable grid management. SDG&E needs to manage the grid to maintain compliance with Rule 2 standards of service while customers increasingly adopt new technologies to meet their own needs that require connection to the grid. Customer's photovoltaic systems, electric vehicle (EV) charging facilities, and other choices are introducing a new complexity into grid operations. To reliably manage the grid, SDG&E needs grid sensing and situational awareness technologies and grid management tools.</p> <p>These forecasted capital expenditures support the goal of enhancing system reliability.</p>	SDG&E-09 JDJ-102 to JDJ-105	N/A

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Electric Distribution	932400	Distribution Circuit Reliability Construction	<p>This project provides funds for the addition of equipment necessary to improve service reliability of electric customers and maintain corporate reliability standards. This budget supports construction of projects that include installation of fuses, OH and UG manual switches, SCADA service restorers, SCADA switches, overhead fault indicators, overhead line extensions and circuit reconductoring for improving electric system reliability. The electric service reliability will deteriorate in the absence of comprehensive remedial solutions offered by these projects; also, electric reliability performance is negatively impacted by system deficiencies and aging infrastructure.</p> <p>These forecasted capital expenditures support the goal(s) of the SCADA initiative program or SCADA. This will provide faster isolation of faulted electric distribution circuits (feeders & branches), resulting in faster load restoration when system disturbances occur. Furthermore, preventing equipment deterioration will promote SDG&E's ability to meet reliability expectations of electric customers.</p>	SDG&E-09 JDJ-114 to JDJ-115	SDG&E-14-R AFC-106 to AFC-107
Electric Distribution	132430	New Vine 69/12kV Substation	This budget provides funding to construct a new 69/12 kV substation with an ultimate capacity of 120 MVA in the downtown San Diego area. The project is currently under construction and will serve the downtown and outlying areas in San Diego once completed. The project will also add tie capacity and increase reliability to the existing substations in the area.	N/A	SDG&E-14-R AFC-97 to AFC-98
Electric Distribution	142430	Microgrid Systems for Reliability	Microgrid projects allow pockets of the distribution system to be isolated from the rest of the system when a disturbance or contingency situation occurs and to utilize localized generation	SDG&E-09 JDJ-112 to JDJ-114	SDG&E-14-R AFC-130 to AFC-131

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			resources to keep that pocket in service until the problem with the distribution system can be resolved. By leveraging various new technologies and resources, as well as adding, hardening, and reconfiguring key infrastructure, the newly enhanced Microgrid will become more flexible and automated for increased Microgrid capabilities.		
Electric Distribution	142470	Fire Risk Mitigation (FiRM) - Phase 3	<p>In 2013, SDG&E combined the fire hardening efforts with a program designed to address pole loading issues, creating a program called the Fire Risk Mitigation (FiRM) program. FiRM is aggressively addressing fire risk by hardening critical areas, by replacing antiquated line elements, by utilizing advanced technology, and by improving facilities to adequately handle known local weather conditions. FiRM is being broken into multiple phases, with the scope of work varying within each phase.</p> <p>These forecasted capital expenditures support the goal of enhancing safety, reliability, and risk management by hardening critical areas, replacing antiquated line elements, utilizing advanced technology, and improving system ability to adequately handle known local weather conditions. This program will strengthen the overhead electric system in fire prone areas, resulting in improved reliability.</p>	SDG&E-09 JDJ-128 to JDJ-129	Combined with Ph 1 & Ph 2 in 13247
Electric Distribution	13247A/132470	Fire Risk Mitigation (FiRM) - Phases 1 and 2	<p>In 2013, SDG&E combined the fire hardening efforts with a program designed to address pole loading issues, creating a program called the Fire Risk Mitigation (FiRM) program. FiRM is aggressively addressing fire risk by hardening critical areas by replacing antiquated line elements, utilizing advanced technology, and safeguarding facilities from known local weather conditions. FiRM is being broken into multiple phases, with the scope of work varying within each phase.</p>	SDG&E-09 JDJ-123 to JDJ-124	SDG&E-14-R AFC-111 to AFC-112

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			These forecasted capital expenditures support the goal of enhancing safety, reliability, and risk management by hardening critical areas, replacing antiquated line elements, utilizing advanced technology, and improving system preparedness for known local weather conditions. This program will strengthen the overhead electric system in fire prone areas, resulting in improved reliability.		
Electric Distribution	152460	Rancho Santa Fe Sub Fire Hardening	Rancho Santa Fe Substation is over 40 years old with the 4kv, 12kV, and 69kV constructed from the mid-1960s to the mid-1970s. It is the only substation serving the Rancho Santa Fe area and located in a fire threat zone. This substation serves several critical customers, including several communications companies and water facilities which all have critical pumping facilities. The purpose of this project is to replace aging equipment, improve distribution reliability, and fire harden the substation.	N/A	SDG&E-14-R AFC-114 to AFC-115
Electric Distribution	13282A/81 650	Cleveland National Forest (CNF) Power Line Replacement Projects	<p>This budget is required as part of an agreement with CNF to replace aging overhead infrastructure with new overhead and underground facilities. As part of the renewal of our Master Special Use Permit with CNF, SDG&E agreed to rebuild overhead power lines by replacing them with new overhead and underground facilities.</p> <p>These forecasted capital expenditures, as described, are designed to support the goal of enhancing safety, reliability, and risk management by replacing aged overhead power lines, located within high risk fire areas, with new, hardened overhead facilities, and in some cases with new underground facilities.</p>	SDG&E-09 JDJ-127 to JDJ-128	SDG&E-14-R AFC-143 to AFC-144

B. SDG&E Electric Generation

i. SDG&E Electric Generation O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Electric Generation	34,456	58,955	(24,499)	-42%	
Generation - Plant – Admin	244	182	63	34%	
Generation Plant Miramar	1,920	2,515	(595)	-24%	
Generation Plant Palomar	17,502	25,306	(7,804)	-31%	Yes
Resource Planning	52	1,145	(1,094)	-95%	
SVP - Power Supply		748	(748)	-100%	
Generation Plant Desert Star	13,503	26,298	(12,795)	-49%	Yes
Generation Plant Cuyamaca Peak	640	1,263	(623)	-49%	
VP - Generation & Resource Planning		439	(439)	-100%	
Resource Planning Director	596	1,060	(464)	-44%	

ii. SDG&E Electric Generation O&M Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Generation Plant Palomar	One third of the cost for the Palomar inspection outage expected for 2018 was requested in the TY2016 GRC, so that over the entire 3-year cycle, the full cost would be collected from ratepayers. Also, lower outage expenditures occurred in 2016-2018 due to the lower turbine run hours, which will move some outage costs to 2019 – 2021.	The steam turbine portion of the Palomar outage occurred in 2019. The hot-gas path portion of the overhaul is now expected to take place in 2020, as the combustion turbines have been running fewer hours than forecasted in the TY 2016 GRC. Outage frequency tends to be principally driven by run hours. Although major maintenance activities are performed less frequently due to lower run hours,	

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
		increases in plant cycling and turbine starts tend to impact outage costs due to increased wear and tear, which will move some outage costs to 2019-2021.	
Generation Plant Desert Star	<p>Lower than forecasted operating run hours of the combustion and steam turbines.</p> <p>One third of the cost for a minor inspection outage scheduled for 2017 was requested in the TY2016 GRC base year, so that over the entire 3-year cycle, the full cost would be collected from ratepayers. Also, lower outage expenditures were caused primarily due to the lower run hours of the turbines in 2016 – 2018 that will move some outage costs to 2019 – 2021.</p>	The Desert Star outages are now expected to take place in 2020 and 2021 as the combustion turbines have been running fewer hours than were forecasted in the TY 2016 GRC. Outage frequency tends to be principally driven by run hours. Although major maintenance activities are performed less frequently due to lower run hours, increases in plant cycling and turbine starts tend to impact outage costs due to increased wear and tear and this is expected to move outage costs to 2019-2021.	

iii. SDG&E Electric Generation O&M Workpaper Descriptions and GRC Testimony Locations

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Electric Generation	Generation Plant Palomar	1EG003.000	<p>Generation Plant Palomar encompasses the operation and maintenance of the Combined Cycle Generating Plant at Palomar Energy Center (PEC).</p> <p>The PEC maintenance program supports the company’s goals of safety and reliable system operation. The maintenance program is based on reliability centered</p>	SDG&E-11 CSL-13 to CSL-15	SDG&E-16 DAB-18 to DAB-19

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			maintenance practices, designed to ensure the safe, reliable operation of the facility over its lifetime. Maintenance activities are designed and scheduled based on a variety of factors including manufacturer recommendations, operating history, predictive techniques, past experience, subject matter expert input, and industry best practice.		
Electric Generation	Generation Plant Desert Star	1EG006.000	<p>Generation Plant Desert Star encompasses the operation and maintenance of the combined Cycle Generating Plant at Desert Star Energy Center (DSEC).</p> <p>The DSEC maintenance program supports the company's goals of safety and reliable system operation. The maintenance program is based on reliability centered maintenance practices, designed to ensure the safe, reliable operation of the facility over its lifetime. Maintenance activities are designed and scheduled based on a variety of factors including manufacturer recommendations, operating history, predictive techniques, past experience, subject matter expert input, and industry best practice.</p>	SDG&E-11 CSL-15 to CSL-18	SDG&E-16 DAB-19 to DAB-20

iv. SDG&E Electric Generation Capital Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Electric Generation	6,141	12,810	(6,670)	-52%	
CPEP Operational Enhancements	469	749	(280)	-37%	
DSEC Operational Enhancements	1,075	5,988	(4,913)	-82%	
Generation Capital Tools & Test Eqpt.	85		85	100%	
MEF Operational Enhancements	1,001	977	24	2%	
PEC Operational Enhancements	3,400	4,680	(1,280)	-27%	
Ramona Solar Plant Oper Enhance	110		110	100%	
Capital Tools & Test Equipment		415	(415)	-100%	

v. SDG&E Electric Generation Capital Variance Explanations

No variance explanation is required for this category, because no variance met the selection criteria.

C. SDG&E Electric Generation Capital Workpaper Descriptions and GRC Testimony Locations

i. No workpaper mapping is required for this category, because no variance met the selection criteria.

D. Electric and Fuel Procurement

i. SDG&E Electric and Fuel Procurement O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Electric & Fuel Procurement	7,939	9,975	(2,036)	-20%	
Long Term Procurement	1,829	2,803	(974)	-35%	
Trading & Scheduling	2,057	3,378	(1,321)	-39%	
Mid and Back Office	4,054	3,794	259	7%	

ii. SDG&E Electric and Fuel Procurement O&M Variance Explanations

No variance explanation is required for this category, because no variance met the selection criteria.

iii. SDG&E Electric and Fuel Procurement O&M Workpaper Descriptions and GRC Testimony Locations

No workpaper mapping is required for this category, because no variance met the selection criteria.

4. SDG&E GAS

A. SDG&E Gas Distribution

i. SDG&E Gas Distribution O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Gas Distribution	27,896	24,775	3,120	13%	
Field O&M - Other Services	385	100	285	284%	
Field O&M - Leak Survey	1,798	1,432	366	26%	
Field O&M - Locate & Mark	5,031	2,859	2,172	76%	Yes
Field O&M - Main Maintenance	3,005	2,245	759	34%	Yes
Field O&M - Service Maintenance	1,620	1,427	193	14%	
Field O&M - Tools Fittings & Materials	950	1,294	(344)	-27%	
Field O&M - Electric Support	188	828	(640)	-77%	Yes
Field O&M - Supervision & Training	3,471	2,869	602	21%	Yes
Asset Management	1,072	2,109	(1,037)	-49%	Yes
Measurement & Regulation	4,763	3,948	815	21%	Yes
Cathodic Protection	2,041	2,140	(99)	-5%	
Operations Management & Training	3,572	3,525	48	1%	

ii. SDG&E Gas Distribution O&M Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Field O&M - Locate & Mark	The variance is due to a higher than forecasted number of USA tickets and number of standbys required for city infrastructure emergencies. This growth included spending for surveillance and basic Locate & Mark activities.		
Field O&M - Main Maintenance	The variance is due to a higher than forecasted volume of pipeline maintenance activities and stricter city regulations resulting in greater duration and complexity of repairs.		
Field O&M – Electric Support	The variance is due to an accounting change, which now reflects these charges directly to the electric cost center “client.” Historically, support costs for the electric field activities (traffic control, miscellaneous electric facility maintenance requiring a gas crew) were charged to gas accounts.		
Field O&M – Supervision & Training	The variance is due to a restructuring of construction crews, which required additional training in support of emergency response for risk reduction and improved public safety. Additionally, an increase in training expense resulted from implementing an expanded Operator Qualification program for Gas Distribution.		
Asset Management	Resources forecasted as O&M for the Gas Geographic Information System & Services (GGISS) group were allocated to capital expense to align with the actual capital work performed by the GGISS work group.		

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Measurement & Regulation	The variance was driven by two issues: (1) stricter rules for construction in municipality streets have required expanded traffic control requirements, larger crew sizes and crew overtime requirements (due to construction limited to after-hours); and (2) a large onetime expense was incurred to replace cellular equipment on distribution system electronic pressure monitors (EPM)s, to upgrade from 3G to 4G cellular system equipment, as required by the cellular network provider.		

iii. SDG&E Gas Distribution O&M Workpaper Descriptions and GRC Testimony Locations

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas Distribution	Field O&M - Locate & Mark	1GD000.002	<p>Locate and Mark is the process mandated by 49 CFR 192.614 (Damage prevention program) and the California One Call Law (Government Code section 4216), where the owner of underground facilities, when notified by the Underground Service Alert One-Call Center of a planned excavation, must respond within two working days and mark the location of those underground facilities that are in conflict with the planned excavations.</p> <p>This workpaper is in scope of the report because locate and mark activities, as described, are designed to mitigate damage by third party excavators that can</p>	SDG&E-04 FBA-18 to FBA-20	SDG&E- 04-R GOM-36 to GOM-39

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			interrupt gas service and pose a risk to public and employee safety.		
Gas Distribution	Field O&M - Main Maintenance	1GD000.003	<p>Main maintenance includes investigating and repairing leaks in distribution mains and moving, lowering, and raising short sections of gas distribution mains, vaults, and related structures.</p> <p>This workpaper is in scope of the report because main maintenance activities, as described, are designed to mitigate risks associated with hazards to public safety, infrastructure integrity and system reliability.</p>	SDG&E-04 FBA-20 to FBA-23	SDG&E-04-R GOM-39 to GOM-41
Gas Distribution	Field O&M – Electric Support	1GD000.006	<p>Recorded to this workgroup is the labor and non-labor expense incurred by Gas Distribution crews that have been specifically trained to provide traffic control and construction support services for Electric Distribution crews during inspections under the Corrective Maintenance Program and general construction activities.</p> <p>This category includes costs for activities designed to mitigate public safety risks.</p>	SDG&E-04 FBA-27 to FBA-28	SDG&E-04-R GOM-45 to GOM-47
Gas Distribution	Field O&M – Supervision & Training	1GD000.007	<p>Supervision and Training includes employee field skills training, field supervision and management, and miscellaneous expenses related to SDG&E’s gas operations.</p> <p>This category includes costs for activities designed to mitigate employee safety risks.</p>	SDG&E-04 FBA-28 to FBA-31	SDG&E-04-R GOM-47 to GOM-50

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas Distribution	Asset Management	1GD001.000	<p>Asset Management is the evaluation of the condition of the distribution system. This includes maintaining asset records, identifying corrective maintenance solutions, and coordinating with field personnel on completion and recording of O&M activities.</p> <p>This workpaper is in scope of the report because the maintenance of gas distribution system records is a critical risk mitigation measure designed to mitigate hazards to public and employee safety, infrastructure integrity, and to the reliable delivery of natural gas to SDG&E customers.</p>	SDG&E-04 FBA-45 to FBA-52	SDG&E-04-R GOM-57 to GOM-62
Gas Distribution	Measurement & Regulation	1GD002.000	<p>Recorded to the M&R workgroup are labor and non-labor expenses for inspection and maintenance of distribution regulator stations, valve maintenance, meter set inspections, electronic instrumentation maintenance, company CNG station maintenance, and meter removals for accuracy checks to maintain compliance with GO 58-A.</p> <p>This category includes costs for activities designed to mitigate infrastructure integrity risks.</p>	SDG&E-04 FBA-31 to FBA-38	SDG&E-04-R GOM-50 to GOM-53

iv. SDG&E Gas Distribution Capital Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance	% Variance	Meets Variance Criteria?
Gas Distribution	76,021	41,168	34,853	85%	
Cathodic Protection	3,553	849	2,704	319%	Yes
CNG Station Upgrades	52		52	100%	
Code Compliance	2,295	418	1,877	449%	Yes
Distribution Easements	28	47	(19)	-40%	
Local Engineering	13,040	5,428	7,612	140%	Yes
Meter and Regulator Materials	4,054	8,336	(4,282)	-51%	Yes
New Business	16,111	10,519	5,592	53%	Yes
Pipe Relocations - Franchise and Freeway	6,392	4,511	1,881	42%	Yes
Pressure Betterment	238	2,172	(1,934)	-89%	Yes
Regulator Station Improvements and Other	3,316	545	2,771	508%	Yes
Replacements of Mains & Services	13,462	2,548	10,914	428%	Yes
System Minor Additions, Relocations and Retirements	3,912	3,264	647	20%	
Tools and Equipment	1,177	2,159	(982)	-45%	
Cathodic Protection System Enhancement	8,392	372	8,019	2153%	Yes

v. SDG&E Gas Distribution Capital Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Cathodic Protection	The variance is due to installation of a higher than forecasted number of new and renewed cathodic protection (CP) stations and		

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
	an increased cost per station due to municipality constraints, enhanced design and higher construction, permit and paving costs.		
Code Compliance	The variance is due to an acceleration of planned work, causing a higher than forecasted volume of code compliance work such as sites identified for barrier post installations. In addition, a larger number of inoperable valves were replaced in 2018 than in prior years, and a more than forecasted number of EPMs (electronic pressure monitors) were installed.		
Local Engineering	The variance is due to a higher overall level of capital construction activity, causing a higher than forecasted level of local engineering work. Local Engineering provides funding for a broad range of services to support Gas Distribution field capital asset construction.		
Meter and Regulator Materials	Fewer meters and regulators were purchased than forecasted, as existing inventories were utilized more than forecasted.		
New Business	The variance is attributed to a higher than forecasted level of activity, due to the Sycuan Casino high pressure extension project.		Sycuan Casino High Pressure Extension Project
Pipe Relocations - Franchise and Freeway	The variance is attributed to a higher than forecasted level of activity, due to the Mid Coast MTD Trolley pipeline relocation project.		Mid Coast MTD Trolley pipeline relocation project.
Pressure Betterment	Some pressure betterment project work was rescheduled to allow capacity for higher priority work, such as repairing leaks and completing compliance activities.	The following projects were rescheduled to a later year: Castlerock Regulator Station & Backtie; North Citracado Parkway Extension. The	

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
		following project was cancelled: Torrey Meadows Drive Bridge Conduit.	
Regulator Station Improvements and Other	The variance is due to emergent regulator station work, causing a higher than forecasted level of activity. This project was originally forecasted as a simple regulator station compliance upgrade but became a complex capacity and reliability improvement project, after careful analysis of the gas system.		Regents Road regulator station.
Replacements of Mains & Services	The variance is due to a higher than forecasted level of activity for emergent leak repair and replacement work in three areas, to mitigate corrosion leakage and pipe degradation of aging steel pipe.		Bay Park; Streamview Drive; Vista Campana.
Cathodic Protection System Enhancement	CP System Enhancement provides funding in conjunction with the CP funding for the installation or renewal of CP system assets to improve the application of CP-to-steel pipelines. The variance is attributed to the implementation of a system-wide project to provide cathodic protection to “stranded steel pipeline assets,” causing higher than forecasted costs. These activities maintain CP assets and mitigate risk related to high-pressure and medium-pressure distribution pipelines.		The Stranded Steel Asset Project, protection for valves and stranded segments.

vi. **SDG&E Gas Distribution Capital Workpaper Descriptions and GRC Testimony Locations**

Witness Area	Capital Workpaper or Prime Budget Code #	Workpaper Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas Distribution	005090	Cathodic Protection	<p>This budget code includes expenditures associated with the installation of new and replacement CP systems and equipment in accordance with state and federal pipeline corrosion control standards.</p> <p>This category includes costs for activities, as described, designed to mitigate infrastructure integrity risks.</p>	SDG&E-04 FBA-82 to FBA-85	SDG&E-04-R GOM-91 to GOM-94
Gas Distribution	005070	Code Compliance	<p>This budget code provides funds for upgrades or additions to facilities to ensure compliance with minimum federal safety standards for gas pipelines, 49 CFR 192 and General Order 112-F.</p> <p>This category includes costs for activities, as described, designed to mitigate public safety risks.</p>	SDG&E-04 FBA-77 to FBA-80	SDG&E-04-R GOM-84 to GOM-88
Gas Distribution	009020	Local Engineering	<p>This work category provides the labor and non-labor funding for a broad range of services to support Gas Distribution field capital asset construction. Certain costs are incurred by capital projects that originate from central activities which are subsequently distributed to those capital projects. Costs include technical planning, project management, and engineering activities.</p> <p>This category includes costs for activities, as described, designed to mitigate system reliability risks.</p>	SDG&E-04 FBA-89 to FBA-93	SDG&E-04-R GOM-99 to GOM-103

Witness Area	Capital Workpaper or Prime Budget Code #	Workpaper Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas Distribution	005020	Meter and Regulator Materials	<p>This budget code provides for the capital material expenses for purchasing new residential, commercial, and industrial gas meters and pressure regulators.</p> <p>This category includes costs for activities, as described, designed to mitigate infrastructure integrity risks.</p>	SDG&E-04 FBA-66 to FBA-67	SDG&E-04-R GOM-75 to GOM-77
Gas Distribution	005000	New Business	<p>The New Business Budget Code provides for changes and additions to the existing gas distribution system to connect new residential, commercial, and industrial customers. This includes installations of gas mains and services, meter sets, and the associated regulator stations necessary to provide service to the customer.</p> <p>This category includes costs for activities, as described, designed to mitigate system reliability risks.</p>	SDG&E-04 FBA-61 to FBA-63	SDG&E-04-R GOM-71 to GOM-73
Gas Distribution	005050	Pipe Relocations - Franchise and Freeway	<p>This budget code provides funding for the required relocation of existing gas facilities when necessitated by public improvements. Generally, the work involves a change in alignment or elevation of existing gas pipelines and associated facilities and is driven by local and state agency requirements.</p> <p>This category includes costs for activities, as described, designed to mitigate public safety risks.</p>	SDG&E-04 FBA-71 to FBA-72	SDG&E-04-R GOM-80 to GOM-82

Witness Area	Capital Workpaper or Prime Budget Code #	Workpaper Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas Distribution	005030	Pressure Betterment	<p>Recorded in this budget code are expenditures for Gas Distribution pressure betterment projects performed on an on-going basis to maintain system reliability and service to all customers. Pressure betterment projects are performed in areas where there is insufficient capacity or pressure to meet load growth.</p> <p>This category includes costs for activities, as described, designed to mitigate system reliability risks.</p>	SDG&E-04 FBA-68 to FBA-69	SDG&E-04-R GOM-77 to GOM-79
Gas Distribution	005100	Regulator Station Improvements and Other	<p>This budget code provides funding for small capital projects that improve safety, provide required code compliance, and improve gas system performance or reliability through the replacement of aging gas pipeline system operating equipment.</p> <p>This category includes costs for activities, as described, designed to mitigate infrastructure integrity risks.</p>	SDG&E-04 FBA-85 to FBA-89	SDG&E-04-R GOM-94 to GOM-98
Gas Distribution	005080	Replacements of Mains & Services	<p>Funding in this budget code is required to address compliance requirements for the elimination of potentially hazardous conditions due to leaking or relatively poor performing gas pipelines. This budget code provides for the replacement of poor performing gas distribution system pipelines.</p> <p>This category includes costs for activities, as described, designed to mitigate infrastructure integrity risks.</p>	SDG&E-04 FBA-80 to FBA-81	SDG&E-04-R GOM-88 to GOM-91

Witness Area	Capital Workpaper or Prime Budget Code #	Workpaper Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas Distribution	125510	Cathodic Protection System Enhancement	<p>Budget code 125510 provides funds to enhance and improve SDG&E's CP system in addition to the cathodic protection work performed in budget code 005090. This budget code tracks projects specifically associated with creating dedicated high-pressure and medium-pressure distribution pipeline CP systems.</p> <p>This category includes costs for activities, as described, designed to mitigate infrastructure integrity risks.</p>	SDG&E-04 FBA-82 to FBA-85	SDG&E-04-R GOM-91 to GOM-94

B. SDG&E Gas Engineering

i. SDG&E Gas Engineering O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Gas Engineering		150	(150)	-100%	
Gas Engineering		111	(111)	-100%	
Codes & Standards		39	(39)	-100%	

ii. SDG&E Gas Engineering Variance Explanations

No variance explanation is required for this category, because no variance met the selection criteria.

iii. SDG&E Gas Engineering O&M Workpaper Descriptions and GRC Testimony Locations

No workpaper mapping is required for this category, because no variance met the selection criteria.

C. SDG&E Gas Transmission

i. SDG&E Gas Transmission O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Gas Transmission	4,951	5,518	(568)	-10%	
Gas System Integrity	81	331	(251)	-76%	
Public Awareness	81	331	(251)	-76%	
Gas Transmission	4,870	5,187	(317)	-6%	
Pipeline O&M	1,697	1,415	282	20%	
Compressor Station O&M	3,123	3,651	(528)	-14%	
Transmission Field Technical Services	49	121	(72)	-59%	

a. SDG&E Gas Transmission O&M Variance Explanations

No variance explanation is required for this category, because no variance met the selection criteria.

b. SDG&E Gas Transmission O&M Workpaper Descriptions and GRC Testimony Locations

No workpaper mapping is required for this category, because no variance met the selection criteria.

c. SDG&E Gas Transmission Capital Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Gas Transmission	9,088	7,744	1,344	17%	
Cathodic Protection	290	236	54	23%	
Auxiliary Equipment	30		30	100%	
Capital Tools	18	125	(107)	-86%	

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Compressor Stations	2,288	3,370	(1,082)	-32%	Yes
Land Rights	3	23	(20)	-89%	
Local Engineering Pool	194	153	41	27%	
M&R Stations	988	1,289	(301)	-23%	
New Pipelines	4,055	605	3,450	571%	Yes
Relocations		354	(354)	-100%	
Replacements	1,222	1,589	(366)	-23%	

d. SDG&E Gas Transmission Capital Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Compressor Stations	The variance is due to the need to further refine the scope of the Moreno Compressor Modernization Project, leading to the deferral of detailed engineering design and an extension of the schedule.	Moreno Compressor Modernization Project	
New Pipelines	Construction of Carlsbad Energy Center Project was delayed to 2018 due to the implementation of the enhanced material traceability process.		

e. SDG&E Gas Transmission Capital Workpaper Descriptions and GRC Testimony Locations

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas Transmission	004x5	Compressor Stations	The Compressor Stations budget code includes costs associated with the installation and replacement of compressor station equipment used in operating the transmission system. The nature of compressor station operation requires consistent maintenance and replacement of key engine components and controls equipment to maintain the reliability and safety of the facility.	SDG&E-06 RKS-22 to RKS-23	SDG&E-07-R JGT-13 to JGT-15
Gas Transmission	004x1	New Pipelines	<p>This cost category includes: cost forecasts for the installation of new Gas Transmission facilities to serve a new electric peaker plant in Carlsbad, California (the NRG Joint-venture Utility Electric Generator at Carlsbad); costs associated with the design and installation of new Transmission pipelines to serve new customer loads and/or to improve the ability to move natural gas to points of critical need at adequate pressure (New Pipelines – Blanket W.O. projects); and billed capital to provide for payment for non-shared engineering and planning services provided to SDG&E by SoCalGas (New Transmission Pipelines Billed – Capital).</p> <p>This category includes costs for activities, as described, designed to mitigate system reliability risks.</p>	SDG&E-06 RKS-15 to RKS-17	SDG&E-07-R JGT-9 to JGT-10

5. SDG&E OTHER

A. SDG&E Customer Services

i. SDG&E Customer Services O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Customer Services	61,592	81,333	(19,741)	-24%	
Customer Services - Office Operations	21,180	25,719	(4,539)	-18%	
Advanced Metering Ops	7,109	9,637	(2,528)	-26%	Yes
Credit & Collections	2,461	3,251	(790)	-24%	
CCC Operations	8,963	10,123	(1,160)	-11%	
CCC Support	2,647	2,707	(60)	-2%	
CS - Information & Technologies	19,781	30,205	(10,424)	-35%	
Residential Services	4,806	6,755	(1,949)	-29%	Yes
C&I Services	2,985	6,286	(3,301)	-53%	Yes
Communications, Marketing, Research, & Web	7,161	13,946	(6,784)	-49%	Yes
Customer Programs, Pricing and Other Office	4,829	3,219	1,610	50%	Yes
Customer Services – Field	20,630	25,409	(4,779)	-19%	
Customer Services Field – Operations	13,966	16,847	(2,881)	-17%	
Customer Services Field – Supervision	1,009	1,704	(695)	-41%	
Customer Services Field – Dispatch	3,128	3,452	(324)	-9%	
Customer Services Field – Support	2,527	3,406	(878)	-26%	

ii. **SDG&E Customer Services O&M Variance Explanations**

WP Activity Description	Variance Explanation	Projects/Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2016 GRC
Customer Services - Office Operations			
Advanced Metering Ops	<p>Lower than forecasted staffing level during some portion of 2018.</p> <p>Resources forecasted for O&M activities were shifted to emergent capital work.</p> <p>Savings were achieved through Fueling our Future (FOF) initiatives.</p>		<p>Emergent capital projects to maintain and enhance the smart meter network.</p> <p>FOF initiatives were not contemplated in the TY 2016 GRC.</p>
CS - Information & Technologies			
C&I Services	<p>Forecasts included resources for commercial outreach and a fire safety outreach program; however, expenses for these resources were recorded in Customer Programs and Electric Distribution due to organizational realignment. This realignment also resulted in some organizational efficiencies.</p> <p>Lower than forecasted staffing level during some portion of 2018.</p>		
Communications, Marketing, Research, & Web	<p>Lower than forecasted costs for rate education, customer surveys and research, due to the utilization of lower cost communication channels.</p> <p>Lower than forecasted staffing level during some portion of 2018.</p>	Incremental customer research deferred to 2019.	

WP Activity Description	Variance Explanation	Projects/Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2016 GRC
Customer Programs, Pricing and Other Office	Resources forecasted in A&G, Customer Services, C&I Services, Customer Assistance and Residential Products & Services areas were recorded in Customer Programs as a result of organizational changes.		
Residential Services	<p>Forecasts included Low Income/Customer Assistance and Residential Products and Services activities, however, expenses were recorded in Customer Programs due to an organizational realignment. Partially offset by the expansion of Electric Clean Transportation group, and Customer Privacy activities forecasted in Customer Programs, were recorded in Residential Services due to an organizational realignment.</p> <p>Lower than forecasted staffing level during some portion of 2018.</p>		The Electric Clean Transportation group expanded beyond the TY 2016 authorized levels in support of state policy goals to reduce greenhouse gas emissions and in support of Senate Bill 350.

iii. **SDG&E Customer Services O&M Workpaper Descriptions and GRC Testimony Locations**

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Customer Services - Office Operations	Advanced Metering Ops	100000.000/ 100001.000	<p>AMO supports the delivery of customer services on premises, responds to customer inquiries, resolves customer problems, and ensures safe, accurate, and reliable metering for all of SDG&E's 2.26 million electric meters, covering all of San Diego County and South Orange County.</p> <p>This workpaper is in scope of the spending accountability report due to the FERC maintenance and safety-related activities, as described, designed to mitigate safety risks.</p>	SDG&E-14 BMB-10 to BMB-18	SDG&E-18 JDS-9 to JDS-18
CS - Information & Technologies	C&I Services	100009.000/ 11N002.000	<p>C&I Services provides education and communication materials on energy rates, tariff services, safety, and regulatory information to all business customers through various outreach channels. C&I Services uses research and a collaborative process to identify and provide value to its customers and seeks to continuously improve the quality and content of its outreach and support activities. To effectively meet the wide and growing array of customers' complex energy needs, SDG&E delivers customer services through a team of highly trained and specialized customer contact personnel. C&I Services' activities are broken down into three functional areas: Small & Medium Business Account Management, Large Customer Account Management, and Customer Services Staff Support.</p> <p>Safety and Critical Event Support coordinates the safety education and outreach efforts to support all business customers. As a result of the wildfires in 2007, the winter storms in 2010, and the more active earthquake activity,</p>	SDG&E-14 BMB-72 to BMB-81	SDG&E-19 LCD-20 to LCD-26

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			<p>SDG&E identified a growing need to help its customers be better informed and prepared to respond to emergency situations regarding their energy service.</p> <p>This workpaper is in scope of the spending accountability report due to activities, as described, designed to mitigate wildfire risk.</p>		
CS - Information & Technologies	Communications, Marketing, Research, & Web	100010.000/ 11N003.000	<p>The Customer Communications, Research and Web expenses cover the costs associated with developing and implementing mass outreach communications, providing oversight and management of the SDG&E web site, providing oversight of the development of outreach materials, conducting qualitative and quantitative research, engaging customers through social media channels, and providing key services through mobile application development and management.</p> <p>This workpaper is in scope of the spending accountability report due to the safety messaging in customer communications and on the web.</p>	SDG&E-14 BMB-82 to BMB-102	SDG&E-19 LCD-27 to LCD-44
CS - Information & Technologies	Customer Programs, Pricing and Other Office (CP&P)	100011.000/ 11N004.000	<p>CP&P is primarily responsible for administering the Demand Response Reliability Programs as mandated by the CPUC and have been approved for collection through rates. In addition, CP&P acquires customer information for data bases, demographics, and cost studies, provides analytical and technical support for various regulatory filings, and sponsors events within the new construction industry to encourage safe, efficient, and economical use of the utility's service.</p> <p>The three additional groups added to CP&P include an</p>	SDG&E-14 BMB-102 to BMB-111	SDG&E-19 LCD-44 to LCD-49

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			<p>Office of Customer Privacy, a Project Management Office (or “Customer Services PMO”), and a Business Integration group. The additional groups support the growing needs of our customers.</p> <p>This workpaper is in scope of the spending accountability report due to Customer Privacy being authorized in this work group in TY2016 (Geier/Schneider DLG-6 to DLG-7 TY 2016 Risk Chapter 3) in addition to 2017 NGAT costs being recorded here.</p>		
CS - Information & Technologies	Residential Services	100008.000/ 11N001.000	<p>The Residential Customer Services (RCS) represents a department formed in 2012 with the objective of centralizing key functional groups that deliver, manage or support residential customers. ESA Program Natural Gas Appliance Testing (NGAT) or carbon monoxide (CO) testing, is a safety-related program for Customer Assistance’s ESA Program participants. SDG&E conducts CO testing on homes weatherized through the ESA Program in accordance with the Statewide Energy Savings Assistance Program Installation Standards and the Statewide Energy Savings Assistance Program Policy and Procedures Manual.</p> <p>This workpaper is in scope of the spending accountability report due to Customer Privacy 2017 costs being reported here. Also, in TY2016, the NGAT activity was authorized in the Residential Customer Service work group, whereas in TY2019, the NGAT activity 2017 costs are reported under the Customer Programs, Pricing and Other Office work group. The NGAT activity, as described, is designed to mitigate customer safety risk.</p>	SDG&E-14 BMB-60 to BMB-72	SDG&E-19 LCD-9 to LCD-20

B. SDG&E Information Technology

i. SDG&E Information Technology O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Information Technology (incl. Cybersecurity)	67,518	87,062	(19,544)	-22%	
Cybersecurity	11,692	6,283	5,409	86%	
Information Security	796	423	372	88%	
Director - Information Security	1,961	396	1,564	395%	Yes
Security Engineering	1,362	1,586	(224)	-14%	
Security Operations	3,119	2,441	679	28%	
Information Security Contracts	2,398	422	1,976	468%	Yes
IT Security NSS	122	201	(78)	-39%	
Director IT Infrastructure	1,933	779	1,154	148%	Yes
Informational Security Program	-	35	(35)	-100%	
Information Technology	55,826	80,779	(24,953)	-31%	
IT Leadership Subtotal	1,007	1,975	(968)	-49%	
VP Information Technology	236	1,003	(766)	-76%	
SVP & CITO	771	972	(201)	-21%	
Application Services Subtotal	15,302	24,563	(9,261)	-38%	
Director - Application Services	342	1,162	(820)	-71%	
IT Applications NSS	14,060	19,982	(5,922)	-30%	Yes
Software Dev - Work Meas Systems	545	333	212	64%	
Software Dev - Work Meas & Electric Syst	-	1,459	(1,459)	-100%	Yes
Field Force Program Delivery Team	108	1,004	(895)	-89%	
IT Opex Enterprise Training and CC	-	292	(292)	-100%	
IT Portfolio Management	247	331	(84)	-25%	
Infrastructure Subtotal	13,144	27,807	(14,663)	-53%	

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Network Communication Services Director	31	1,226	(1,195)	-97%	Yes
Infrastructure Eng & Ops Director	384	1,384	(1,000)	-72%	
Infrastructure Program Office	80	569	(490)	-86%	
Project Management Office-NCS	-	602	(602)	-100%	
Infrast Prgrm Office	244	409	(165)	-40%	
IT Telecom PMO	52	-	52	100%	
IT Vendor Management Office	439	-	439	100%	
IT Infrastructure NSS	2,393	1,405	988	70%	
Telecom Field Voice	1,545	3,996	(2,451)	-61%	Yes
Client Technology & Depot Services	1,019	1,609	(590)	-37%	
Enterprise Server Group	-	66	(66)	-100%	
Middleware and Internet Engineering	1,776	2,250	(474)	-21%	
Storage and Administration	-	28	(28)	-100%	
Enterprise Operations	1,706	2,068	(362)	-17%	
Server Management	422	1,553	(1,131)	-73%	Yes
Unix Server Group	-	77	(77)	-100%	
IT Network Field - LAN/WAN Voice	-	606	(606)	-100%	
IT Network Hardware Software Maintenance	-	887	(887)	-100%	
Enterprise Command Center	348	3,656	(3,308)	-90%	Yes
Wintel Server Group	-	70	(70)	-100%	
Project Improvement Office-NCS	714	1,984	(1,269)	-64%	Yes
Service Delivery – NCS	1,067	750	318	42%	
Service Development Program Management	196	474	(278)	-59%	
Solutions Architecture	289	630	(341)	-54%	
SDG&E Network Integration	-	15	(15)	-100%	
SCG Network Integration	-	2	(2)	-100%	

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Voice Enterp Support	168	836	(668)	-80%	
Client Tech Svcs	-	619	(619)	-100%	
Network Engineering	268	-	268	100%	
Enterprise Modeling Test Team	-	36	(36)	-100%	
Database / IT&OTI Contracts Subtotal	15,849	15,530	319	2%	
Database Contracts Maintenance	3,370	-	3,370	100%	Yes
IT&OTI Contracts SS	10,331	10,438	(107)	-1%	
Software Dev - Database Administrator	2,147	5,092	(2,945)	-58%	Yes
Network/Telecom Services and Voice Subtotal	10,525	10,904	(380)	-3%	
Network/Telecom Services	7,419	9,417	(1,997)	-21%	Yes
Voice Leased Circuits	1,124	749	375	50%	
Managed Service Voice Enterprise	1,981	739	1,243	168%	Yes

ii. SDG&E Information Technology O&M Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Cybersecurity Total	Due to industrywide emergent cybersecurity threats not anticipated during TY2016, additional support was required for Information Security.		
Director - Information Security	The variance is primarily due to including some operational costs in this cost center that were forecasted within the infrastructure area, as well as increased industrywide cyber threats, which required more support.		

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Information Security Contracts	The variance is driven by increased industrywide cyber threats, which required more support, including IT security contracts.		
Director IT Infrastructure	Actuals incurred in 2018 that were forecasted in another cost center.		
Information Technology Total	Information Technology had reduced O&M due to higher capital expenditures to meet regulatory requirements and shifted O&M funding to higher priority operational needs.		
Application Services Subtotal			
IT Applications NSS	Increased regulatory requirements shifted work to capital for Customer Care projects such as Residential TOU, Community Choice Aggregation and GRC Phase 2.		
Software Dev - Work Meas & Electric Syst	Increase in capital work, such as the SDG&E Work Mgmt Enhancement project, shifted work from O&M.		
Infrastructure Subtotal			
Network Communication Services Director	Costs forecasted in this area were recorded to cost centers in other areas.		
Telecom Field Voice	Capital contracts replaced O&M maintenance costs.		
Server Management	Reorganized as part of IT Service Optimization with additional employee reductions and began transitioning to an outsourced support model.		
Enterprise Command Center	Reorganized as part of IT Service Optimization with additional employee reductions and began transitioning to an outsourced support model.		

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Project Improvement Office-NCS	Reorganized as part of IT Service Optimization with additional employee reductions and began transitioning to an outsourced support model.		
Database / IT&OTI Contracts Subtotal			
Database Contracts Maintenance	Offset by contract costs in Software Dev - Database Administrator.		
Software Dev - Database Administrator	Offset by contract costs in Database Contracts Maintenance.		
Network/Telecom Services and Voice Subtotal			
Network/Telecom Services	Activities forecasted in Network/Telecom Services were recorded in Managed Service Voice Enterprise.		
Managed Service Voice Enterprise	Activities forecasted in Network/Telecom Services were recorded in Managed Service Voice Enterprise.		

iii. SDG&E Information Technology O&M Workpaper Descriptions and GRC Testimony Locations

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Information Technology	Director – Information Security	2100-3763 / 2100-3763, 2100-3976	Activities include department level management for Information Security, including Security Engineering, Security Operations, IT regulatory compliance, and IT security maintenance contracts, enterprise-wide.	SDG&E-19- R-A SJM-19 to SJM-20	SDG&E-24- R GW-25 to GW-27

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			This category includes costs for activities, as described, designed to mitigate cyber security risks.		
Information Technology	Information Security Contracts	2100-3781	This cost center contains all IT Security Contracts, including system-wide hardware and software maintenance agreements. This category includes costs for activities, as described, designed to mitigate cyber security risks.	SDG&E-19-R-A SJM-19 to SJM-20	SDG&E-25 GW-25 to GW-27
Information Technology	Director IT Infrastructure	2100-3814	Activities include department level management for Customer Intelligence and Analytics, Business Intelligence, Enterprise Architecture, and other support areas. This category includes costs for activities, as described, designed to mitigate infrastructure risks.	SDG&E-19-R-A SJM-19 to SJM-20	SDG&E-25 CRO-14 to CRO-15
Information Technology	IT Applications NSS	1IT001.000	IT Applications support the development, implementation and maintenance of computer software utilized by customers, employees and/or vendor partners. This category includes costs for activities, as described, designed to mitigate reliability risks.	SDG&E-19-R-A SJM-12 to SJM-13	SDG&E-24-R CRO-11
Information Technology	Software Dev - Work Meas & Electric Syst	2100-3093 / N/A	This cost center supports Geographic Information System (GIS) and Computer-Aided Design (CAD) Applications services for both SDG&E and SoCalGas. This category includes costs for activities, as described, designed to mitigate reliability risks.	SDG&E-19-R-A SJM-16 to SJM-17	N/A

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Information Technology	Network Communication Services Director	2100-3095	<p>Activities include department level management for plan, design, build, implementation and management of system-wide network and telecommunications infrastructure.</p> <p>This category includes costs for activities, as described, designed to mitigate reliability risks.</p>	SDG&E-19-R-A SJM-17 to SJM-19	SDG&E-24-R CRO-14 to CRO-15
Information Technology	Telecom Field Voice	2100-0207	<p>This cost center is responsible for the installation and maintenance of telecom equipment including Private Branch Exchanges (PBXs), microwave, data and mobile radio services across the SDG&E service territory, including Corporate Center (parent).</p> <p>This category includes costs for activities, as described, designed to mitigate reliability risks.</p>	SDG&E-19-R-A SJM-17 to SJM-19	SDG&E-24-R CRO-14 to CRO-15
Information Technology	Server Management	2100-3334	<p>This Operations support group is responsible for providing coverage and maintainability for distributive UNIX class servers at prime locations.</p> <p>This category includes costs for activities, as described, designed to mitigate infrastructure risks.</p>	SDG&E-19-R-A SJM-17 to SJM-19	SDG&E-24-R CRO-14 to CRO-15
Information Technology	Enterprise Command Center	2100-3502	<p>The Enterprise command center organization provides operation system-wide services to ensure network/telecom availability for all related business applications and services that are dependent upon voice, data, microwave, etc. category of communication services.</p> <p>This category includes costs for activities, as described, designed to mitigate reliability risks.</p>	SDG&E-19-R-A SJM-17 to SJM-19	SDG&E-24-R CRO-14 to CRO-15

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Information Technology	Project Improvement Office-NCS	2100-3683	Preventative maintenance activities on network and telecom infrastructure. This cost center is responsible for the design and implementation of computing infrastructure projects for Local Area and Wide Area networks and voice systems that link all company facilities. This category includes costs for activities, as described, designed to mitigate reliability risks.	SDG&E-19-R-A SJM-17 to SJM-19	SDG&E-24-R CRO-14 to CRO-15
Information Technology	Database Contracts Maintenance	N/A / 2100-3916	This cost center provides maintenance and enhancement support for system wide database administration. This category includes costs for activities, as described, designed to mitigate reliability risks.	N/A	SDG&E-24-R CRO-14 to CRO-15
Information Technology	Software Dev - Database Administrator	2100-3091	This cost center provides maintenance and enhancement support for system wide database administration. This category includes costs for activities, as described, designed to mitigate reliability risks.	SDG&E-19-R-A SJM-16 to SJM-17	SDG&E-24-R CRO-14
Information Technology	Network/Telecom Services	2100-3106	Provides system-wide leased lines for transmission of voice and data information for utilities and affiliates including circuits, trunks, long distance, remote access, and vendor costs for billing analysis. This category includes costs for activities, as described, designed to mitigate reliability risks.	SDG&E-19-R-A SJM-17 to SJM-19	SDG&E-24-R CRO-14 to CRO-15
Information Technology	Managed Service Voice Enterprise	2100-3884	This cost center is for the monthly vendor payments for the managed services of system-wide voice support costs.	SDG&E-19-R-A SJM-17 to SJM-19	SDG&E-24-R CRO-14 to CRO-15

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			This category includes costs for activities, as described, designed to mitigate reliability risks.		

iv. SDG&E Information Technology Capital Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Information Technology	115,189	38,989	76,200	195%	
Software-Customer Care Mandated	30,513	103	30,411	29618%	Yes
Software-Utility Operations Mandated	10,863	-	10,863	100%	Yes
Hardware-Utility Operations Mandated	243	-	243	100%	
Infrastructure-Hardware Capacity	-	2,345	(2,345)	-100%	Yes
Network/Telecom-Hardware Capacity	817	-	817	100%	
Software-Utility Operations Capacity	(53)	-	(53)	100%	
Infrastructure-Hardware Reliability	6,321	218	6,104	2802%	Yes
Network/Telecom-Hardware Reliability	15,414	2,193	13,221	603%	Yes
Software-Utility Operations Reliability	30,431	3,853	26,577	690%	Yes
Hardware-Utility Operations Reliability	18,653	-	18,653	100%	Yes
SG Anomaly Detection	1,388	-	1,388	100%	
Demand Response Mgmt System (DRMS)	464	-	464	100%	
Cyber-Asset, Identity, Access Mgmt-SW	123	-	123	100%	
Cyber-Sit Aware & Incident Response-SW	6	-	6	100%	
Cyber-Sit Aware & Incident Response-HW	7	-	7	100%	
Software-Utility Operations/Strategic	-	298	(298)	-100%	

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
OpEx 20/20	-	5,999	(5,999)	-100%	Yes
GridComm	-	11,045	(11,045)	-100%	Yes
IT Smart Grid – Software	-	11,570	(11,570)	-100%	Yes
IT Smart Grid – Hardware	-	1,366	(1,366)	-100%	

v. SDG&E Information Technology Capital Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Information Technology	Increased capital expenditures due to environment recovery efforts of multi-day data center outage, end of life technology replacement, and increase in regulatory requirements that are outside of this proceeding.		
Software-Customer Care Mandated	The primary variance driven by regulated projects that are out of scope of the spending accountability report for safety, reliability, and/or maintenance.		
Software-Utility Operations Mandated	Variance mainly driven by OpEx 20/20 activity forecasted to a different budget code but recorded to Software-Utility Operations Mandated. Additional variance due to spending on FERC requirements to share rate information and on CAISO Meter Data Settlement and other requirements.		
Infrastructure-Hardware Capacity	End of life desktop/laptop devices that required replacement were forecasted in this workpaper but recorded to Hardware-Utility Operations Reliability.		

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Infrastructure-Hardware Reliability	Emergent needs due to end of life technology.		
Network/Telecom-Hardware Reliability	Emergent needs due to end of life technology.		
Software-Utility Operations Reliability	Emergent needs due to end of life technology and remaining compliant with regulation changes		
Hardware-Utility Operations Reliability	Response to significant infrastructure outage and end of life desktop/laptop devices that required replacement forecasted in Infrastructure-Hardware Capacity.		
OpEx 20/20	Activities forecasted in this budget code were recorded to Software-Utility Operations Mandated.		
GridComm	The GridComm project was completed prior to 2017 as forecasted in the TY 2016 GRC workpapers. See SDG&E-19-CWP-R, budget code 10874.		
IT Smart Grid – Software	The IT SmartGrid - Software was completed prior to 2017 as forecasted in the TY 2016 GRC workpapers. See SDG&E-19-CWP-R, budget code 10875.		

vi. **SDG&E Information Technology Capital Workpaper Descriptions and GRC Testimony Locations**

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Information Technology	811	Software-Customer Care Mandated	<p>Applications support the development, implementation and maintenance of computer software utilized by customers, employees and/or vendor partners. Projects included in this budget code are mandated by the CPUC and are related to customer service applications.</p> <p>This category includes costs for activities, as described, designed to mitigate reliability risks.</p>	SDG&E-19 SJM-21 to SJM-30	SDG&E-24-R CRO-16 to CRO-31
Information Technology	813	Software-Utility Operations Mandated	<p>Applications support the development, implementation and maintenance of computer software utilized by customers, employees and/or vendor partners. Projects included in this budget code are mandated by the CPUC and are related to enterprise-wide software applications in support of utility operations.</p> <p>This category includes costs for activities, as described, designed to mitigate reliability risks.</p>	SDG&E-19 SJM-21 to SJM-30	SDG&E-24-R CRO-16 to CRO-31
Information Technology	817	Infrastructure-Hardware Capacity	<p>IT Infrastructure supports the design, implementation and operation of the company's computing infrastructure. Projects included in this budget code are related to enterprise-wide infrastructure in support of capacity expansion.</p> <p>This category includes costs for activities, as described, designed to mitigate reliability risks.</p>	SDG&E-19 SJM-21 to SJM-30	SDG&E-24-R CRO-16 to CRO-31

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Information Technology	827	Infrastructure-Hardware Reliability	<p>IT Infrastructure supports the design, implementation and operation of the company's computing infrastructure. Projects included in this budget code are related to enterprise-wide hardware.</p> <p>This category includes costs for activities, as described, designed to mitigate reliability risks.</p>	SDG&E-19 SJM-21 to SJM-30	SDG&E-24-R CRO-16 to CRO-31
Information Technology	829	Network/Telecom-Hardware Reliability	<p>IT Infrastructure supports the design, implementation and operation of the company's computing infrastructure, includes both hardware and software. Projects included in this budget code are related to enterprise-wide telecommunication investments.</p> <p>This category includes costs for activities, as described, designed to mitigate reliability risks.</p>	SDG&E-19 SJM-21 to SJM-30	SDG&E-24-R CRO-16 to CRO-31
Information Technology	833	Software-Utility Operations Reliability	<p>Applications support the development, implementation and maintenance of computer software utilized by customers, employees and/or vendor partners. Projects included in this budget code are related to enterprise-wide software applications in support of utility operations.</p> <p>This category includes costs for activities, as described, designed to mitigate reliability risks.</p>	SDG&E-19 SJM-21 to SJM-30	SDG&E-24-R CRO-16 to CRO-31

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Information Technology	834	Hardware-Utility Operations Reliability	<p>IT Infrastructure supports the design, implementation and operation of the company's computing infrastructure. Projects included in this budget code are related to enterprise-wide hardware investments in support of utility operations.</p> <p>This category includes costs for activities, as described, designed to mitigate reliability risks.</p>	SDG&E-19 SJM-21 to SJM-30	SDG&E-24-R CRO-16 to CRO-31
Information Technology	7864	OpEx 20/20	Project includes several enhancements necessary to complete remaining CPD deployments. Activities include training, data conversion, system configuration, and storm period support, including defect resolution.	SDG&E-19 SJM-21 to SJM-30	N/A
Information Technology	10874	GridComm	This program supports various Smart Grid initiatives aimed at automating operations previously performed by manual field inspection. Process automation requires new and updated telecommunications to carry field asset status back to the data center. GridComm program scope consists of implementing telecommunications in 4 areas: 1) Low Power Communications Network; 2) Substation 8 Communications; 3) Field Broadband Connections; and 4) SCADA Optimization.	SDG&E-19 SJM-21 to SJM-30	N/A

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Information Technology	10875	IT Smart Grid - Software	<p>Applications and sensors that support the development, implementation and maintenance of solutions utilized by customers, employees and/or vendor partners. Projects included in this budget code modernize and protect the Electric Grid through various software, hardware, communications, and security technologies.</p> <p>This category includes costs for activities, as described, designed to mitigate reliability risks.</p>	SDG&E-19 SJM-21 to SJM-30	N/A

C. SDG&E Support Services

i. SDG&E Support Services O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Support Services	32,647	49,024	(16,376)	-33%	
Environmental Services	4,276	7,683	(3,407)	-44%	
Environmental	3,725	6,286	(2,561)	-41%	Yes
Environmental Lab Operations	552	1,397	(845)	-61%	
Real Estate, Land Services & Facilities	28,371	41,341	(12,970)	-31%	
SDG&E Facility Operations	7,411	6,441	970	15%	
Land Services	550	684	(134)	-20%	
SDG&E Rents	15,974	18,211	(2,237)	-12%	
Real Estate Planning	912	673	239	35%	

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Headquarters Rent, Facilities Maintenance & Utilities	1,360	12,706	(11,346)	-89%	Yes
Facilities & Capital Programs – Admin	127	201	(74)	-37%	
Real Estate Resources	204	828	(625)	-75%	
Facilities Operations South Manager	935	892	43	5%	
RB Data Center & Annex	898	704	194	28%	

ii. SDG&E Support Services O&M Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Environmental Services			
Environmental	<p>Unforecasted efficiencies resulting from Fueling Our Future (FOF) initiatives that resulted in reduced contractor or consultant usage and other efficiencies.</p> <p>Forecasts included HazMat service calls; however, expenses were recorded in the cost centers that requested the service.</p> <p>Lower than forecasted staffing levels during some portion of 2018.</p>		FOF initiatives were not contemplated in the TY 2016 GRC.

Real Estate, Land Services & Facilities			
Headquarters Rent, Facilities Maintenance & Utilities	TY 2016 GRC forecast included costs that were billable to Sempra Headquarters for rent and facilities maintenance. Due to an accounting change, expenses are now directly recorded at Sempra Corporate Center.		

iii. SDG&E Support Services O&M Workpaper Descriptions and GRC Testimony Locations

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Environmental Services	Environmental	1EV000.000 / 2100-0206 /2100-3022	The compliance activities in this cost category include management of hazardous waste and Treatment Storage and Disposal Facility (TSDF) operations, oversight of daily environmental compliance activities, and permits and support for compliance with all operations and maintenance activities relating to the Sunrise Powerlink, and its associated facilities, to ensure compliance with the environmental permitting for that project.	SDG&E-18 RSP-4, RSP-11 to RSP-13	SDG&E-23 NCC-8 to NCC-13
Real Estate, Land Services & Facilities	Headquarters Rent, Facilities Maintenance & Utilities	2100-0708 / 2100-3029	Corporate Real Estate administers the lease payments and manages the Sempra Energy Headquarters building (HQ) on behalf of Sempra Energy. Through affiliate billing orders, all rents and associated costs are directly charged to the Corporate Center and affiliates that occupy the building. For TY 2016, Corporate Rents included the lease for Sempra Energy's new building at 488 8th Avenue, San Diego, CA.	SDG&E-17 JCS-17 to JCS-21, JCS-12 to JCS-13	SDG&E-22 RDT-25

iv. SDG&E Support Services Capital Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Support Services	40,985	24,168	16,818	70%	
Real Estate, Land Services & Facilities	40,985	24,168	16,818	70%	
Structures & Improvements	3,651	2,535	1,116	44%	
Safety/Environmental	351	5,901	(5,550)	-94%	Yes
Security Systems Blanket	1,953	438	1,515	346%	
Infrastructure/Reliability Blanket	9,017	6,011	3,006	50%	Yes
Remodel/Relocate/Reconfigure Blanket	4,562	5,872	(1,310)	-22%	
Business Unit Expansion Blanket	19,873	2,611	17,262	661%	Yes
Archibus System	1,452	459	993	216%	
Land Blanket	126	339	(214)	-63%	

v. SDG&E Support Services Capital Variance Explanations

WP Activity Description	Variance Explanation	Projects/Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2016 GRC
Real Estate, Land Services & Facilities			
Safety/Environmental	Forecasts included costs to address evolving storm water treatment and discharge regulations that did not materialize or were not onerous, resulting in lower project demand. These costs are balanced in the New Environmental Balancing Account (NERBA).	R-NERBA MS4 Blanket Water Quality Mitigation	

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2016 GRC
Infrastructure/Reliability Blanket	SDG&E implemented a significant remodel of its Grid Control Center to improve electric service reliability. This project was not planned prior to the filing of SDG&E's TY2016 GRC application in 2014.		Transmission Energy Management System Modernization
Business Unit Expansion Blanket	Consistent with its strategy to consolidate multiple office facilities in the centrally located Kearny Mesa area of San Diego, SDG&E vacated existing leases and completed tenant improvements at the newly leased Greencraig facility. This project was not planned prior to filing SDG&E's TY2016 GRC application in 2014.		Greencraig Tenant Improvements

vi. SDG&E Support Services Capital Workpaper Descriptions and GRC Testimony Locations

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Real Estate, Land Services & Facilities	00703x, 187830	Safety/ Environmental	This budget funds building and system modifications, site upgrades, and other facility improvements necessary to comply with safety and environmental code or regulations, or implement best practices designed to mitigate risk to the environment or safety of employees or the public. Small projects under \$1 million are bundled, when possible, for economies of scale in sourcing. These projects vary year to year based on changes to existing or proposed new regulations. Common project types covered in this budget code are improvements to meet storm water management regulations. Storm water compliance includes physical changes to the site including drainage control, curbs and berms, coverings to manage the flow of storm water and other best management practices. Concrete pads, hazardous waste storage and	SDG&E- 17 JCS-24 to JCS-25	SDG&E- 22 RDT-30 to RDT- 31

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			<p>other requirements, designed to mitigate environmental risk, are covered in this blanket. Safety projects vary in nature, but can include communication systems, fall protection, or other improvements designed to mitigate employee safety risk. Underground storage tank compliance issues and enhanced vapor recovery system upgrades to the fueling systems are also included.</p> <p>This category includes costs for activities, as described, designed to mitigate safety risks.</p>		
Real Estate, Land Services & Facilities	167710, 00708x, 147580, 167660, 167700, 08735A, 13749A, 187780	Infrastructure/ Reliability Blanket	<p>This budget funds building facility infrastructure to support basic building operations, as well as requirements specific to the business unit operations and initiatives. Projects include replacement of systems and major equipment affecting reliability, comfort and safety of employees at numerous sites throughout the portfolio. Common project types covered in this budget code are: Chillers, Boilers, Air Handlers, heating, ventilation and air conditioning (HVAC) Replacements, Generators, uninterruptable power systems (UPS) systems, Electrical Distribution Systems and Computer Room Infrastructure.</p> <p>This budget also funds replacement of existing computer room air conditioning units (CRACs) that are beyond their useful life with new units that will operate from the facility's chilled water plant and funds the addition of redundant UPS modules to keep pace with the anticipated server growth in the data center facility.</p> <p>This category includes costs for activities, as described, designed to mitigate electrical service reliability risks.</p>	SDG&E-17 JCS-27, JCS-30 to JCS-32	SDG&E-22 RDT-33 to RDT-34, RDT-40 to RDT-42, RDT-44 to RDT-45

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Real Estate, Land Services & Facilities	00710x, 177720, 187760	Business Unit Expansion Blanket	<p>The purpose of this blanket is to fund building and facility expansions and improvements that are necessary to adequately support growing corporate business objectives and initiatives. The projects identified include master planning, expansion, relocation, building construction and facility consolidation projects at various company buildings/facilities.</p> <p>These projects, as described, are designed to satisfy current and future space requirements to appropriately house employees and provide expanded workspace and storage capacities to keep pace with company growth.</p>	SDG&E-17 JCS-28 to JCS-29	SDG&E-22 RDT-35 to RDT-37

D. SDG&E Administrative & General

i. SDG&E Administrative & General O&M Variances

WP Activity Level	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Administrative & General	70,504	76,016	(5,513)	-7%	
Accounting & Finance, Legal, Regulatory Affairs, External Affairs	486	619	(133)	-22%	
Operation Cost Center-USS-Controllers-Business Controls	486	619	(133)	-22%	
Compensation & Benefits	161	349	(188)	-54%	
Health Benefits - Emp Assistance Program	161	349	(188)	-54%	
Corporate Center – General	59,253	62,735	(3,482)	-6%	
SECC Outside Services Employees - F923.1	59,253	62,735	(3,482)	-6%	
Human Resources Dept, Safety, LTD & WC	7,618	9,507	(1,889)	-20%	
Safety, Wellness and Disability Services	1,227	1,649	(423)	-26%	

WP Activity Level	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Organizational Effectiveness	1,899	2,078	(180)	-9%	
Offices of the CEO and President	2,700	2,589	111	4%	
SDG&E Field Safety	899	2,657	(1,758)	-66%	Yes
Safety Programs SDG&E	557		557	100%	
Employee Assistance Program (EAP) and Wellness Programs	336	533	(197)	-37%	
Risk Management	2,986	2,806	180	6%	
Risk Management	2,083	2,806	(723)	-26%	
VP Enterprise Risk Management	201		201	100%	
Operations Risk Management SDG&E	702		702	100%	

ii. SDG&E Administrative & General O&M Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Human Resources Dept, Safety, LTD & WC			
SDG&E Field Safety	Lower than forecasted training costs due to the change in scope of the driver training program. In addition, resources forecasted in this area were recorded in multiple HR and Corporate Pension & Benefits cost centers due to organizational realignments.	Vehicle Technology Program was cancelled in Safety, with Fleet resuming the search for an appropriate device program to address needs. Fleet is piloting "REVEAL" vehicle technology in 2019.	

iii. **SDG&E Administrative & General O&M Workpaper Descriptions and GRC Testimony Locations**

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Human Resources Dept, Safety, LTD & WC	SDG&E Field Safety	2100-0214	<p>The (Operations Safety)/Field Safety department interprets and advises field operations regarding safety-related rules and regulations and provides reviews of potential legislation that would impact field operations. Field Safety plays an important role in support of field safety compliance audits, providing major program support, communications, management, and statistical analysis.</p> <p>This workpaper is in scope of the report due to the group's work in the areas of safety compliance and regulation.</p>	SDG&E-24 SEE-18 to SEE-20	SDG&E-30 TT-30 to TT-31

6. **SDG&E BALANCED PROGRAMS – DIMP, TIMP, TREE TRIMMING AND NERBA**

A. **SDG&E Balanced Programs Direct O&M Costs**

i. **SDG&E Balanced Program Direct O&M Variances**

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Total Balanced	36,266	41,147	(4,881)	-12%	
Electric Distribution	27,319	27,153	167	1%	
Vegetation Management (Tree Trimming)	27,319	27,153	167	1%	
Gas Engineering	7,607	12,827	(5,220)	-41%	
TIMP	6,134	6,072	62	1%	
DIMP	1,473	6,755	(5,282)	-78%	Yes

Support Services	1,339	1,168	172	15%
RNERBA - Environmental Fees - Electric Refundable	412	436	(24)	-6%
RNERBA - Environmental Fees - Gas Refundable	928	732	196	27%

ii. SDG&E Balanced Programs Direct O&M Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
DIMP	DIMP is managed to the revenue requirement over the GRC authorized (2016 – 2018) cycle and not on an individual year basis. Therefore, individual year expenditures may vary from the authorized amount and also between overall capital and O&M expenditures. The overall program metrics were met, while maintaining historical cost levels. Over the GRC cycle, DIMP accounts were within authorized.		

iii. SDG&E Balanced Programs Direct O&M Workpaper Descriptions and GRC Testimony Locations

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
TIMP & DIMP	DIMP	1TD000.001	Pipeline and Hazardous Material Safety Administration’s (PHMSA) purpose for DIMP is to enhance pipeline safety by having operators identify and reduce pipeline integrity risks specifically for distribution pipelines. As noted by PHMSA, DIMP requires activities beyond those required by traditional regulation. SDG&E therefore has created individualized DIMP activities such as the Distribution Risk Evaluation and Monitoring System (DREAMS) that are above and beyond its core regulatory requirements. It has also created another individualized DIMP activity called Gas Infrastructure Protection Project (GIPP).	SDG&E-07 MTM-13 to MTM-18	SDG&E-11 MTM-16 to MTM-21

B. SDG&E Balanced Programs Direct Capital

i. SDG&E Balanced Programs Direct Capital Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Balanced	36,342	15,268	21,075	138%	
DIMP	34,057	9,432	24,624	261%	Yes
TIMP	2,286	5,835	(3,550)	-61%	Yes

ii. SDG&E Balanced Programs Direct Capital Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
DIMP	DIMP is managed to the revenue requirement over the GRC authorized (2016 - 2018) cycle and not on an individual year basis. Therefore, individual year expenditures may vary from the authorized amount and also between overall capital and O&M expenditures. For 2018 the mileage replaced as part of the early vintage replacement program (Aldyl-A) was higher than the average forecast as the program continues to ramp-up, which results in higher capital expenditure levels. For the GRC cycle, DIMP accounts were within authorized.		
TIMP	TIMP is managed to the revenue requirement over the GRC authorized (2016 - 2018) cycle and not on an individual year basis. Therefore, individual year expenditures may vary from the authorized amount and also between overall capital and O&M expenditures. The assessment project load and remediation required for the year was lower than anticipated.		

iii. **SDG&E Balanced Programs Direct Capital Workpaper Descriptions and GRC Testimony Locations**

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
TIMP & DIMP	095460	DIMP	Pipeline and Hazardous Material Safety Administration's (PHMSA) purpose for DIMP is to enhance pipeline safety by having operators identify and reduce pipeline integrity risks specifically for distribution pipelines. As noted by PHMSA, DIMP requires activities beyond those required by traditional regulation. SDG&E therefore has created individualized DIMP activities such as the Distribution Risk Evaluation and Monitoring System (DREAMS) that are above and beyond its core regulatory requirements. It has also created another individualized DIMP activity called Gas Infrastructure Protection Project (GIPP).	SDG&E-07 MTM-20 to MTM-21	SDG&E-11 MTM-24 to MTM-25
TIMP & DIMP	034680	TIMP	This project addresses the regulatory requirements set forth by the implementation of PSIA 2002. All DOT transmission pipeline work generated to address these regulatory requirements. The underlying cost drivers relate to the number of required assessments (In-Line Inspection (ILI), Direct Assessment, and Pressure Test), repairs, and mitigation activities.	SDG&E-07 MTM-18 to MTM-20	SDG&E-11 MTM-22 to MTM-23

C. **SDG&E Balanced Program Regulatory Account 2018 Cumulative Balances**

i. **SDG&E Regulatory Account – DIMPBA**

SDG&E DIMPBA Details Revenue Requirements (\$000) Program Cycle 2016 - 2018 Two-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance

Year 2018						
Beginning Balance	(1,233)					(1,233)
O&M		2,303	6,755	(4,452)		(4,452)
Capital-Related Costs		6,533	855	5,678		5,678
Interest					(23)	(23)
Subtotal ³⁷	(1,233)	8,836	7,610	1,226	(23)	(30)

ii. SDG&E Regulatory Account – Timpba

SDG&E Timpba Details Revenue Requirements (\$000) Program Cycle 2016 - 2018 Two-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
Year 2018						
Beginning Balance	3,462					3,462
O&M		7,066	6,071	995		995
Capital-Related Costs		469	147	322		322
Adjustments ³⁸			3,162	(3,162)		(3,162)
Interest					35	35
Subtotal	3,462	7,535	9,380	(1,845)	35	1,652

³⁷ Ending Balance includes overcollections from the 2012-2015 program cycle.

³⁸ Per AL 2529-G, effective 1/1/18, \$3.162 million of SDG&E's 2012-2015 Timpba under-collection was allocated to SoCalGas.

iii. SDG&E Regulatory Account – Tree Trimming Balancing Account

SDG&E Tree Trimming Balancing Account Details Revenue Requirements (\$000)						
Program Cycle 2016 - 2018						
One-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
Year 2018						
Beginning Balance	(5,338)					(5,338)
O&M		27,718	27,152	566		566
Capital-Related Costs				-		-
Amortization			(2,260)	2,260		2,260
Interest					(78)	(78)
Subtotal	(5,338)	27,718	24,892	2,826	(78)	(2,590)

iv. SDG&E Regulatory Account – NERBA Electric

SDG&E NERBA Electric Details Revenue Requirements (\$000)						
Program Cycle 2016 – 2018						
Two-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
Year 2018						
Beginning Balance	(68)					(68)
O&M		412	436	(24)		(24)
Capital-Related Costs				-		-
Amortization			(344)	344		344
Interest					4	4
Subtotal	(68)	412	92	320	4	256

v. **SDG&E Regulatory Account – NERBA Gas**

SDG&E NERBA Gas Details Revenue Requirements (\$000)						
Program Cycle 2016 - 2018						
Two-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
Year 2018						
Beginning Balance	(70)					(70)
O&M		928	732	196		196
Capital-Related Costs				-		-
Amortization				-		-
Interest					(7)	(7)
Subtotal	(70)	928	732	196	(7)	119

D. SDG&E Balanced Program Regulatory Account Disposition

TIMP & DIMP Disposition

Per D.16-06-054, the TIMPBA and Post-2011 DIMPBA are authorized for the three-year GRC period ending December 31, 2018 or until the effective implementation date of SDG&E's next GRC.

Any over- or under-collected balance at the end of each year within the GRC cycle will be carried over to the following year. For any unspent funds (also referred to as overcollections) at the end of the 2016 GRC cycle, SDG&E will propose in its next GRC proceeding to return the overcollections in rates to customers. However, for any costs in excess of the authorized O&M and capital-related costs (also referred to as undercollections), the costs shall be subject to recovery through a Tier 3 advice letter for amounts up to 35% of the 2016 GRC cycle total revenue requirement. Any amount above the 35% threshold will be subject to recovery through a separate application.

i. SDG&E Regulatory Account – DIMPBA

In its TY 2019 GRC, SDG&E proposed to return to customers the Post-2011 DIMPBA overcollected balance as of December 31, 2018.³⁹

ii. SDG&E Regulatory Account – TIMPBA

- Via AL 2529-G, effective 1/1/2018, SDG&E recovered the undercollection for program cycle 2012-2015.
- Pending AL 2777-G, SDG&E requests authority to recover the undercollection for program cycle 2016-2018.

iii. SDG&E Regulatory Account – Tree Trimming Balancing Account

The TTBA is a one-way balancing account. Pursuant to D.16-06-054, TY 2016 GRC, effective January 1, 2016, the TTBA will continue for the 2016 GRC cycle.

Disposition of the TTBA balance is through SDG&E's regulatory account update filing in October of each year.

- Via AL 2988-E, effective 1/1/2017, SDG&E returned the projected 2016 year-end overcollection
- Via AL 3137-E, effective 1/1/2018, SDG&E returned the projected 2017 year-end overcollection
- Via AL 3291-E, effective 1/1/2019, SDG&E returns the projected 2018 year-end overcollection

³⁹ A.17-10-007, Ex. SDG&E-41 (Jasso) at NGJ-12: 10-11.

iv. SDG&E Regulatory Account – NERBA Electric

The NERBA is a two-way balancing account with the following three subaccounts:

- a. Polychlorinated Biphenyls (PCB) Subaccount
- b. AB 32 Admin Fees Subaccount
- c. Municipal Separate Storm Sewer Systems (MS4) Compliance Subaccount

Disposition of the PCB subaccount balance is through SDG&E’s regulatory account update filing in October of each year.

Disposition of the AB 32 Admin Fees subaccount balance is addressed in SDG&E’s Energy Resource Recovery Account (ERRA) proceeding or in a separate application.

Disposition of the MS4 Compliance subaccount balance is through SDG&E’s regulatory account update filing in October of each year.

v. SDG&E Regulatory Account – NERBA Gas

The NERBA is a two-way balancing account with five subaccounts. The following four subaccounts are funded through the TY 2016 GRC⁴⁰:

⁴⁰ The fifth subaccount is the Natural Gas Leak Abatement Program (NGLAP) Subaccount that is funded outside of the TY2016 GRC and therefore excluded from this report.

- a. AB 32 Admin Fees Subaccount
- b. Subpart W Subaccount
- c. MS4 Compliance Subaccount, and
- d. LDAR Subaccount

Dispositions of these subaccount balances are addressed in connection with SDG&E's annual regulatory account balance update filing or addressed in another proceeding as authorized by the Commission.

- Via AL 2712-G, effective 1/1/2019, SDG&E returns the projected 2018 year-end overcollection of LDAR Subaccount and MS4 Compliance Subaccount.

ATTACHMENT B - SOCALGAS' 2018 INTERIM SPENDING ACCOUNTABILITY REPORT

1. SoCalGas Gas Distribution

A. SoCalGas Gas Distribution O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Gas Distribution	146,211	158,677	(12,466)	-8%	
Gas Control & System Operations-Planning	5,775	7,824	(2,049)	-26%	
Gas Scheduling	448	827	(379)	-46%	
Gas Transmission Planning	650	682	(32)	-5%	
Gas Control & SCADA Operation Group – USS	3,266	4,081	(815)	-20%	
Emergency Services	1,411	2,234	(823)	-37%	
Gas Distribution	140,436	150,853	(10,417)	-7%	
Field Services Leadership & Operations Assessment	418	1,542	(1,123)	-73%	Yes
Field O&M - Field Support	17,963	24,624	(6,661)	-27%	Yes
Field O&M - Leak Survey	7,672	9,029	(1,357)	-15%	
Field O&M - Locate & Mark	14,683	13,307	1,376	10%	
Field O&M - Main Maintenance	23,152	21,540	1,612	7%	
Field O&M - Service Maintenance	16,105	11,021	5,084	46%	Yes
Field O&M - Tools Fittings & Materials	7,518	8,345	(827)	-10%	
Asset Management	9,438	11,735	(2,297)	-20%	
Field O&M - Measurement & Regulation	14,643	13,510	1,133	8%	
Field O&M - Cathodic Protection	16,654	15,196	1,458	10%	
Operations Management & Training	8,442	16,064	(7,622)	-47%	Yes
Regional Public Affairs	3,747	4,940	(1,193)	-24%	Yes

B. SoCalGas Gas Distribution O&M Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Gas Distribution			
Field Services Leadership & Operations Assessment	Forecasts included benchmarking project and associated miscellaneous non-labor for the Monitoring and Control Program Assessment and Blueprint Development, however, these expenses were incurred within a balanced program.		
Field O&M – Field Support	Forecast included hiring of administrative advisors and field instructors which were recorded in various other cost centers under Gas Operations System Integrity within Gas Transmission. The variance is due to lower than forecasted staffing level during some portion of 2018		
Field O&M – Service Maintenance	Higher non-labor costs related to service alteration, anodeless (AL) Riser and associated paving due to leakage mitigation activities.		
Operations Management & Training	The variance is due to lower than forecasted staffing level during some portion of 2018 and some costs, such as Operator Qualification, shifting to other organizations.		
Regional Public Affairs	Variance due to lower than forecasted staffing level during some portion of 2018.		

C. SoCalGas Gas Distribution O&M Workpaper Descriptions and GRC Testimony Location

Witness Area	Workpaper Name	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas Distribution	Field Services Leadership & Operations Assessment	2200-0431	Recorded to this cost center are the salary and employee non-labor expenses for the Vice President and his or her assistant for the Field Operations organization. It can also include costs associated with special projects such as benchmarking/assessments that benefit the entire organization. This category includes costs for activities, as described, designed to mitigate public safety risks.	SCG-04-R FBA-76 to FBA-86	SCG-04-R GOM-88 to GOM-90
Gas Distribution	Field O&M – Field Support	2GD000.000	Recorded to the Field Services workgroup are a variety of support services to successfully complete daily Gas Distribution O&M activities. The primary components are: field supervision, clerical support, dispatch operations, off-production time, materials support and removal of abandoned mains. This category includes costs for activities, as described, designed to mitigate employee safety risks.	SCG-04-R FBA-42 to FBA-49	SCG-04-R GOM-62 to GOM-69
Gas Distribution	Field O&M – Service Maintenance	2GD000.004	The work in this workgroup is designed to meet federal (49 CFR 192) and state, (General Order 112-E) pipeline safety regulations and to extend the life of the distribution service pipeline system. Service maintenance work is generally corrective in nature and is required to keep the natural gas system operating safely and reliably. This category includes costs for activities, as described, designed to mitigate infrastructure integrity risks.	SCG-04-R FBA-37 to FBA-42	SCG-04-R GOM-56 to GOM-62

Witness Area	Workpaper Name	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas Distribution	Operations Management & Training	2GD004.000 / 2GD004.000 & 2SI001.000	Operations Management and Training is a critical component of managing the integrity of the pipeline system to prevent and reduce risks. The activities completed within this workgroup are categorized as Operations Leadership, Field Management, Operations Support and Field Technical Skills Training. This category includes costs for activities, as described, designed to mitigate system reliability risks.	SCG-04-R FBA-54 to FBA-69	SCG-04-R GOM-77 to GOM-81 & SCG-05-R OR-24 to OR-33
Gas Distribution	Regional Public Affairs	2GD005.000	Regional Public Affairs' primary focus is supporting field operations through its work with regional and local governments on issues regarding permitting, proposed regulations, franchises, and emergency preparedness and response. This category includes costs for activities, as described, designed to mitigate public safety risks.	SCG-04-R FBA-69 to FBA-75	SCG-04-R GOM-81 to GOM-87

D. SoCalGas Gas Distribution Capital Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Gas Distribution	292,042	293,622	(1,580)	-1%	
Capital Tools	3,110	7,987	(4,877)	-61%	Yes
Cathodic Protection Capital	7,133	8,437	(1,304)	-15%	
Field Capital Support	66,331	57,632	8,698	15%	
Main & Service Abandonments	12,581	4,491	8,090	180%	Yes
Main Replacements	28,250	45,615	(17,365)	-38%	Yes
New Business	64,530	32,464	32,067	99%	Yes

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Pipeline Relocations – Franchise	12,729	22,500	(9,771)	-43%	Yes
Pipeline Relocations – Freeway	745	11,432	(10,687)	-93%	Yes
Regulator Stations	2,590	6,485	(3,895)	-60%	Yes
Remote Meter Reading	3,541	-	3,541	100%	Yes
Service Replacements	43,973	19,620	24,353	124%	Yes
Supply Line Replacements	211	4,541	(4,330)	-95%	Yes
Meters	18,593	28,028	(9,435)	-34%	Yes
Regulators	3,248	9,431	(6,183)	-66%	Yes
Electronic Pressure Monitors (EPMs)	445	1,085	(640)	-59%	
Gas Energy Measurement Systems (GEMS)	565	1,487	922	-62%	
Meter Guards	551	757	(205)	-27%	
Other Distribution Capital Projects	5,455	3,083	2,372	77%	Yes
Pressure Betterments	17,461	28,547	(11,086)	-39%	Yes

E. SoCalGas Gas Distribution Capital Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Capital Tools	Lower than forecasted Capital Tools expenses associated with a delay in procuring and receiving large capital tools.		
Main & Service Abandonments	Higher than forecasted incremental abandonment orders caused by an increase in customer requests for facility abandonments and leak mitigations.		

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Main Replacements	Lower than forecasted main replacements due to reprioritization of other capital projects such as replacement of services.		
New Business	Higher than forecasted number of new business installations driven by customer demand, an increase in labor cost from construction activities, and higher non-labor cost due to increase in meter set installation costs.		
Pipeline Relocations - Franchise	Lower than forecasted municipality and third-party agency demand for relocations of pipeline and related facilities.		
Pipeline Relocations – Freeway	Lower than forecasted third-party agency demand for relocation of pipeline and related facilities at or near Freeways/Highways.		
Regulator Stations	Lower than forecasted activity level due to reprioritization of other capital projects such as replacement of services due to leakage and new business.		
Remote Meter Reading	Costs related to AMI Implementation were not included in the TY2016 GRC forecast.		Curb meter replacements were not forecasted in the TY2016 GRC.
Service Replacements	Higher than forecasted volume of service replacements to address leaks and corrosion. The work in this category includes expenditures associated with routine replacement of isolated distribution service pipelines to maintain system reliability and customer safety. Most service replacement projects are intended to address leakage and pipe corrosion. Furthermore, leaks found on steel services		

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
	may be on pipe that is not under cathodic protection. To correct these leaks, it is sometimes more prudent to replace the entire service, rather than repair the leak and install and maintain cathodic protection on the existing service.		
Supply Line Replacements	Lower than forecasted expenses due to reprioritization of other capital projects such as replacement of services and new business.		
Meters	Lower than forecasted volume of meters purchased.		
Regulators	Lower than forecasted volume of regulators purchased.		
Other Distribution Capital Projects	Higher than forecasted number of valve replacements and other projects necessary to maintain the integrity of the distribution pipeline system as well as increased customer requests for alterations.		
Pressure Betterments	Lower than forecasted expenses due to reprioritization of other capital projects such as replacement of services and new business.		

F. SoCalGas Gas Distribution Capital Workpaper Descriptions and GRC Testimony Locations

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas Distribution	725 and 906	Capital Tools	The Capital Tools work category includes capital expenditures associated with the purchase of tools and equipment used by Gas Distribution field personnel for the inspection, maintenance and	SCG-04-R FBA-133	SCG-04-R GOM-134

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			<p>repair of gas pipeline systems.</p> <p>This category includes costs for activities, as described, designed to mitigate employee safety risks.</p>	to FBA-139	to GOM-138
Gas Distribution	254	Main & Service Abandonments	<p>This work category includes expenditures associated with the abandonment of distribution pipeline mains and services, without the installation of a replacement pipeline.</p> <p>This category includes costs for activities, as described, designed to mitigate public safety risks.</p>	SCG-04-R FBA-104 to FBA-107	SCG-04-R GOM-106 to GOM-108
Gas Distribution	252	Main Replacements	<p>This work category includes expenditures to replace mains operating at 60 psig and below, also referred to as medium-pressure main replacements.</p> <p>This category includes costs for activities, as described, designed to mitigate infrastructure integrity risks.</p>	SCG-04-R FBA-99 to FBA-101	SCG-04-R GOM-101 to GOM-104
Gas Distribution	151	New Business	<p>This work category provides for changes and additions to the existing gas distribution system to connect new residential, commercial and industrial customers.</p> <p>This category includes costs for activities, as described, designed to mitigate system reliability risks.</p>	SCG-04-R FBA-89 to FBA-92	SCG-04-R GOM-93 to GOM-96
Gas Distribution	262	Pipeline Relocations – Franchise	<p>The work in the Pipeline Relocations - Franchise category includes expenditures associated with relocating or altering SoCalGas facilities in response to external requests, as specified under the provisions of SoCalGas' franchise agreements with city and county agencies.</p>	SCG-04-R FBA-116 to FBA-119	SCG-04-R GOM-118 to GOM-120

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			This category includes costs for activities, as described, designed to mitigate public safety risks.		
Gas Distribution	261	Pipeline Relocations – Freeway	<p>The work in the Pipeline Relocations - Freeway category includes expenditures associated with relocating or altering SoCalGas facilities in response to external requests, as specified under the provisions of utility agreements with state and local agencies.</p> <p>This category includes costs for activities, as described, designed to mitigate public safety risks.</p>	SCG-04-R FBA-114 to FBA-116	SCG-04-R GOM-116 to GOM-118
Gas Distribution	265	Regulator Stations	<p>Represented in this work category are expenditures for the upgrade, relocation, and replacement of regulator stations.</p> <p>This category includes costs for activities, as described, designed to mitigate infrastructure integrity risks.</p>	SCG-04-R GOM-107 to GOM-110	SCG-04-R GOM-109 to GOM-112
Gas Distribution	182	Remote Meter Reading	<p>This cost category consists of Customer Services Field (CSF) labor and non-labor capital expenses for curb meter replacements as part of the Planned Meter Changeouts (PMC) associated with the AMI implementation.</p> <p>This category includes costs for activities, as described, designed to mitigate employee safety.</p>	N/A	SCG-04-R GOM-142 to GOM-144
Gas Distribution	256	Service Replacements	The work represented in the Service Replacements category includes expenditures associated with routine replacement of isolated distribution service pipelines to maintain system reliability and to safely deliver gas to the customer, thus designed to mitigate the risks associated with loss of service and public safety.	SCG-04-R FBA-101 to FBA-104	SCG-04-R GOM-103 to GOM-106

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas Distribution	267	Supply Line Replacements	<p>The Supply Line Replacements work category includes expenditures to replace high-pressure distribution pipelines, referred to as "supply lines" at SoCalGas.</p> <p>This category includes costs for activities, as described, designed to mitigate infrastructure integrity risks.</p>	SCG-04-R FBA-97 to FBA-98	SCG-04-R GOM-99 to GOM-100
Gas Distribution	163	Meters	<p>The expenditures included in the Meters work category are for materials, warehouse handling, technical evaluations, and quality assurance for the purchase of small meters, typical of residential and small business applications, and larger meters, typical of non-residential applications.</p> <p>This category includes costs for activities, as described, designed to mitigate system reliability risks.</p>	SCG-04-R FBA-124 to FBA-126	SCG-04-R GOM-126 to GOM-129
Gas Distribution	164	Regulators	<p>The expenditures included in the Regulators capital work category are for the purchase of new installation and replacement regulator materials and technical evaluations.</p> <p>This category includes costs for activities, as described, designed to mitigate infrastructure integrity risks.</p>	SCG-04-R FBA-127 to FBA-129	SCG-04-R GOM-129 to GOM-130
Gas Distribution	270	Other Distribution Capital Projects	<p>The Other Distribution Capital Projects work category covers construction projects not covered under franchise agreements, not related to freeway work, and not covered in other capital budget categories.</p> <p>This category includes costs for activities, as described, designed to mitigate public safety risks.</p>	SCG-04-R FBA-119 to FBA-122	SCG-04-R GOM-121 to GOM-123

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas Distribution	251	Pressure Betterments	<p>This work category records expenditures for Gas Distribution pressure betterment projects performed on a continuing basis to maintain system reliability and service to all customers.</p> <p>This category includes costs for activities, as described, designed to mitigate system reliability risks.</p>	SCG-04-R FBA-92 to FBA-97	SCG-04-R GOM-96 to GOM-99

2. SOCALGAS GAS ENGINEERING

A. SoCalGas Gas Engineering O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Gas Engineering	15,954	24,830	(8,875)	-36%	
Gas Engineering	15,954	24,830	(8,875)	-36%	
Land Services & Right Of Way	2,284	1,809	475	26%	
Planning & Development	78	40	38	95%	
Dir Engineering & Tech Services	357	500	(143)	-29%	
Measure Reg & Control Manager & Special Projects	386	846	(460)	-54%	
Measurement & Design	471	1,475	(1,004)	-68%	Yes
Measurement Technologies	1,293	1,084	208	19%	
Measurement Field Support	822	1,328	(507)	-38%	
Engineering Design Manager	218	493	(275)	-56%	
Materials & Quality	69	1,248	(1,179)	-94%	Yes
Mechanical Design	82	543	(461)	-85%	
Pipeline Design & Gas Standards	522	1,027	(504)	-49%	
Instrument Repair & Field Maintenance Supervision	433	1,164	(731)	-63%	

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
EAC Chemical Section	1,685	2,107	(422)	-20%	
Measure and Red Standards/Mat and BTU Distribution	222	807	(585)	-72%	
High Pressure & Distribution Engineering	518	934	(417)	-45%	
Gas Engineering	6,514	9,424	(2,910)	-31%	Yes

B. SoCalGas Gas Engineering O&M Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Measurement & Design	Resources forecasted for O&M were shifted to support project scoping and drawing development of emergent capital projects plus lower than forecasted staffing level during some portion of 2018.		Compressor station modernization for Moreno and Honor Rancho
Materials & Quality	Resources forecasted for O&M were shifted to support emergent capital and refundable projects.		
Gas Engineering	Forecasted activities in Engineering, however, expenses were recorded in other areas. Lower than forecasted costs due to longer life of catalysts and capitalization of catalyst replacement costs for new assets. Forecasts included safety program costs; however, some expenses were recorded to the Safety Champion Cost Center.		

C. SoCalGas Gas Engineering O&M Workpaper Descriptions and GRC Testimony Locations

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas Engineering	Measurement & Design	2200-0310	<p>The Measurement, Regulation, and Control (MRC) Design group is responsible for the detailed engineering design, planning, policy, equipment standards and consultation activities performed and related to large meter and regulator stations, interstate pipeline interconnections, and pressure protection for pipelines and related automated controls.</p> <p>This category includes costs for activities, as described, to mitigate reliability risks.</p>	SCG-07 RKS-35	SCG-09-R DRH-25 to DRH-26
Gas Engineering	Materials & Quality	2200-0320 / 2200-2022	<p>Regulatory requirements (e.g., 49 CFR 12 Part 192) mandate minimum requirements for the selection and qualification of pipe and components for use in pipelines. This team coordinates assessments of potential and approved suppliers of pipeline materials and products, and tracks supplier quality performance. This team also supports the minimum levels of materials-related information, such as tracking and traceability requirements that are needed to facilitate effective, long-term management of pipeline data used for system integrity, and future O&M decisions.</p> <p>This category includes costs for activities, as described, to mitigate reliability risks.</p>	SCG-07 RKS-30 to RKS-31	SCG-09-R DRH-36 to DRH-37
Gas Engineering	Gas Engineering	2EN000.000 / 2EN002.000	<p>Under the broad category of Gas Engineering, many core engineering activities are performed to maintain safe and reliable operation and support to the Transmission, Storage, Distribution, and Customer Services organizations at SoCalGas.</p> <p>This category includes costs for activities, as described, designed to mitigate climate change adaptation and reliability risks.</p>	SCG-07 RKS-9 to RKS-13	SCG-09-R DRH-12 to DRH-14

3. SOCALGAS GAS TRANSMISSION

A. SoCalGas Gas Transmission O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Gas Transmission	43,366	57,148	(13,783)	-24%	
Major Projects	2,500	2,217	283	13%	
Major Projects	2,500	2,217	283	13%	
Gas System Integrity	9,523	13,023	(3,499)	-27%	
USS - VP Gas System Integrity	90	552	(462)	-84%	
Business Process & Infographics Solutions	309	213	96	45%	
CADD Applications	26	1,187	(1,160)	-98%	Yes
ESS Production Support	438	1,038	(600)	-58%	
Work Management & Databases Development	1,152	2,249	(1,097)	-49%	Yes
Field Technologies	133	405	(271)	-67%	
Gas System Integrity Staff & Programs	154	317	(163)	-51%	
Operator Qualification	1,519	316	1,203	381%	Yes
Pipeline System Construction Policy	879	881	(2)	0%	
Quality & Risk	536	488	48	10%	
Enterprise Geographic Information System (EGIS)	890	2,421	(1,531)	-63%	Yes
Pipeline Safety & Compliance Manager	689	610	80	13%	
Pipeline Safety Oversight	658		658	100%	
Safety Excellence Management System	170	-	170	100%	
Public Awareness	437	1,351	(914)	-68%	
Contract & Maintenance	548	546	2	0%	
Shared Public Awareness Activities	119	449	(331)	-74%	
Damage Prevention Strategies	775		775	100%	
Gas Transmission	31,342	41,908	(10,566)	-25%	

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Director Gas Transmission – USS	187	391	(204)	-52%	
Field Operations Managers – USS	415	470	(55)	-12%	
Technical Services Manager – USS	313	1,080	(767)	-71%	
Pipeline Operations	18,332	25,163	(6,831)	-27%	Yes
Compressor Station Operations	9,371	11,284	(1,913)	-17%	
Technical Services	2,725	3,522	(796)	-23%	

B. SoCalGas Gas Transmission O&M Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
CADD Applications	Resources were re-prioritized to other emergent capital priorities.	The following projects were deferred/ delayed: CADD/AVEVA was deferred to 4 th quarter of 2018 which shifted timeline.	
Work Management & Databases Development	Resources forecasted for O&M activities were shifted to emergent capital priorities. Additional variance due to lower than forecasted staffing level during some portion of 2018 due to the required skill set needed.	The following projects were deferred/delayed: MyProject implementation,	

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
		Work Order Tracking and Portions of Real-Time Monitoring.	
Operator Qualification	Variance due to incorporating expenses into this workpaper from another workpaper (the Gas Distribution witness work paper - Operations Management & Training). Recorded expenses were incurred in the Gas Operation System Integrity witness area instead of the Gas Distribution witness.		
Enterprise Geographic Information System (EGIS)	Resources were re-prioritized to other emergent capital priorities.	The GIS Utility and Pipeline Data Model (UPDM) Medium Pressure implementation was deferred to 2019.	
Pipeline Operations	Variances were due to the partial year termination of the City of Long Beach Pipeline Lease as well as the capitalization of Critical Pipeline Facilities - Security Upgrades and Cathodic Protection (CP) projects that were originally forecasted as O&M. This is in addition to staffing that was forecasted in Pipeline Operations, but ultimately re-organized into other organizations.		

C. SoCalGas Gas Transmission O&M Workpaper Descriptions and GRC Testimony Locations

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas System Integrity	CADD Applications	2200-0303	The CADD Applications cost center includes expenditures for labor and non-labor expenses to support a broad range of computer programs and systems that are not provided by the Company's Information Technology group. This design software solution is utilized to model complex assets in 3D.	SCG-07 RKS-41	SCG-05-R OR-66
Gas System Integrity	Work Management & Databases Development	2200-0306	Expenditures covered in this cost center account for labor and expenses to support the activities associated with the Work Management Systems for Meters & Regulators, System Protection Specialists and Work Order Tracking applications, AutoSol Enterprise System. Also, the cost center supports the Technical Services Group in Miramar (SDG&E); specifically, the Electronic Data Management System and the Cathodic Protection Data Management (CPDM) applications. All of these systems are key operational systems to support field functions to verify pipeline and ancillary facilities continue to be fit for service. This category includes costs for activities, as described, designed to mitigate system reliability risks.	SCG-07 RKS-42 to RKS-43	SCG-05-R OR-63 to OR-64
Gas System Integrity	Operator Qualification	2200-2344	Recorded to this cost center are the labor, employee expense, and non-labor materials and services required to manage the company's Operator Qualification (OQ) program and the compliance of employees who perform OQ covered tasks. This team aims to mitigate the risks associated with personnel that otherwise would not have the appropriate level of qualification to safely complete work on gas pipelines. The department provides technical assistance and support, conducts audits, provides guidance and assistance in the development of new and refresher	SCG-04 FBA-57 to FBA-60	SCG-05-R OR-52 to OR-54

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			<p>training, provides technical support for issues and concerns arising from rule interpretations, provides assistance prior to and during CPUC audits, performs audits on pipeline contractors to verify compliance with the OQ rules, and manages the process to confirm that all impacted employees are evaluated within the required time frame.</p> <p>This category includes costs for activities, as described, designed to mitigate infrastructure integrity risks.</p>		
Gas System Integrity	Enterprise Geographic Information System (EGIS)	2200-2376	<p>The need to gather and harmonize the disparate data sets is being addressed by the synchronization of the GIS system. The high-pressure pipe (maximum operating pressure greater than 60 psi), medium pressure pipe (maximum operating pressure less than or equal to 60 psi), storage field pipe and other above-ground facility pipes exist across multiple GIS and computer aided drafting and design databases and software platforms.</p> <p>This category includes costs for activities, as described, designed to mitigate system reliability risks.</p>	SCG-07 RKS-44 to RKS-45	SCG-05-R OR-65 to OR-66
Gas Transmission	Pipeline Operations	2GT000	<p>The Gas Transmission Pipelines function within Gas Transmission is responsible for the safe day-to-day operation and maintenance of gas transmission pipeline facilities and related infrastructure. This includes operating and maintaining equipment at pipeline receipt points, valve control stations, major customer delivery custody-transfer points, and all associated monitoring, metering, and control facilities, odorization equipment, and real-time operating data telemetry communications between gas facilities and SoCalGas' Gas Control Operations department. Pipeline Operations also performs leak surveys of all transmission pipeline facilities, maintains our rights-of-way,</p>	SCG-05 JLD-6	SCG-06 EAM-9 to EAM-10

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			operates and maintains the cathodic protection systems, conducts surveillance of third-party construction activities around the vicinity of buried pipeline facilities, and performs locate-and-mark services to identify the location of buried facilities.		

D. SoCalGas Gas Transmission Capital Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Gas Transmission				82%	
Auxiliary Equipment				-30%	Yes
Capital Tools				103%	
Cathodic Protection				-44%	Yes
Compressor Stations				71%	Yes
Freeway Relocations				-76%	
Distribution Operations Control Center				100%	
Laboratory Equipment				128%	
Land Rights				60%	
M&R Stations				354%	Yes
New Pipelines				-97%	Yes
Relocations - Private/Franchise				38%	Yes
Replacements				498%	Yes
Storage – Buildings				-100%	
Supervision & Engineering Pool				151%	Yes
Transmission – Buildings				-28%	

E. SoCalGas Gas Transmission Capital Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Auxiliary Equipment	Resources were re-prioritized and a portion of the Wooden Vault Replacements Bulks bundle was deferred.	Wooden Vault Replacements Bulks bundle partially deferred.	
Cathodic Protection	Delays in permits resulted in deferred costs. In addition, scope re-definition and construction equipment delays resulted in deferred costs.		
Compressor Stations	The amount forecasted in the TY2016 GRC did not include the current scope-of-work for Compressor Modernization Projects in Blythe, and Ventura. Upon completion, these projects are intended to provide the necessary operational reliability and resiliency to support SoCalGas' transmission system's operational needs and are intended to result in environmental benefits with measurable reduction of criteria air pollutants.		Honor Rancho Compressor Modernization Project and expansion of the scope-of-work for Blythe and Ventura Compressor Modernization Projects
M&R Stations	Higher than forecasted pace of work to synergize with ongoing PSEP work to reduce invasive construction activity impacts on the public and for cost efficiencies that may be realized through coordinating these activities. In addition, Whitewater Station costs were underestimated and the project was accelerated due to Morongo Easement Renewal.		
New Pipelines	Lower than forecasted actuals due to reprioritization and reallocation of resources to address leak repairs. As a result, the ROW acquisition for the Line 2001 Looping project and North Coast System did not occur as forecasted.	The Line 2001 project was deferred and the North Coastal System project is	

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
		being performed under the broader PSEP program.	
Relocations - Private/Franchise	Several unplanned or deferred projects were completed due to external franchise and easement agreements. These projects incurred costs that were not forecasted in the TY2016 GRC		Relocations for Line 2000, Line 225 Tejon Ranch, and Line 8106 Cuyama
Replacements	Multiple Montecito Storm related work orders were executed in 2018 that were not forecasted. In addition, multiple projects pertaining to leak repairs were executed in 2018 that were not originally forecasted. Higher than forecasted replacement of pipeline segments due to changes to pipeline safety regulations associated with GO-112F and enhanced leak survey practices and technology. Typically, as described, transmission pipelines are replaced in an effort to mitigate public safety and security risks due to either the condition of the existing pipeline or a change in population density near the pipeline (i.e. change in class location) in accordance with 49 CFR Part 192.		
Supervision & Engineering Pool	Higher than forecasted expenditures due to internal engineering work for capital projects, project scoping and drawing package development that was forecasted under Gas Engineering O&M and now has moved to the Supervision & Engineering Pool.		

F. SoCalGas Gas Transmission Capital Workpaper Descriptions and GRC Testimony Locations

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas Transmission	003X9	Auxiliary Equipment	Costs in this category include new installations or upgrades of aging Measurement and Regulation station and pipeline system control and telemetry systems which link with and provide information to, but are not a direct part of, SoCalGas' centralized Gas Control's SCADA computer system.	SCG-07 RKS-81	SCG-07 MAB-28
Gas Transmission	00316	Cathodic Protection	Cathodic Protection includes costs associated with the installation of cathodic protection equipment used to preserve the integrity of transmission pipelines by protecting them from external corrosion. These projects are mandated by federal and state minimum pipeline safety regulations, and as such facilitate the maintenance of adequate cathodic protection on company facilities. Typical expenditures include the replacement of surface anode beds, deep well anodes and/or rectifier systems, installation of new cathodic protection stations, and applying cathodic protection to existing steel mains and service lines.	SCG-07 RKS-75	SCG07 MAB-25
Gas Transmission	003x5	Compressor Stations	The Compressor Stations budget code includes costs associated with the installation and replacement of compressor station equipment used in operating the transmission system. The nature of compressor station operation requires consistent maintenance and replacement of key engine components and controls equipment to maintain the reliability and safety of the facility.	SCG-07 RKS-65 to RKS-75	SCG-07 MAB-16 to MAB-24
Gas Transmission	00308	M&R Stations	This budget category includes local controls and communication devices such as programmable logic controllers, pressure transmitters, Uninterruptable Power Supplies systems, temperature probes, gas quality remote sensors, and communication interfaces/technologies. This equipment is used to	SCG-07 RKS-77 to RKS-81	SCG-07 MAB-26 to MAB-28

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			<p>control the flow of gas in pipelines, valves and regulator stations both locally and through the initiation of remote commands from central Supervisory Control and Data Acquisition (SCADA) system.</p> <p>This category includes costs for activities, as described, designed to mitigate risks associated with the safe and reliable local operation of SoCalGas meter, regulator and valve stations in conformance with DOT and CPUC requirements for the limiting of pipeline and vessel operating pressures.</p>		
Gas Transmission	00301	New Pipelines	<p>The New Pipeline Additions budget category recognizes the need to install new gas facilities to serve new or increased loads or provide natural gas supply reinforcement to an existing area.</p> <p>This forecast includes three large projects and multiple smaller projects to install new pipelines activities, as described, designed to mitigate reliability risks to the SoCalGas transmission system.</p>	SCG-07 RKS-51 to RKS-54	SCG-07 MAB-9 to MAB-10
Gas Transmission	003x4	Relocations - Private/ Franchise	<p>This Budget Code includes costs associated with the modification and relocation of transmission pipelines to accommodate planned private property development, municipal public works and street improvement projects, and other work required due to right-of-way agreements, contract and franchise requirements.</p> <p>This category includes costs for activities, as described, designed to mitigate system reliability risks.</p>	SCG-07 RKS-58 to RKS-65	SCG-07 MAB-13 to MAB-16

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Gas Transmission	003x2	Replacements	Typically, transmission pipelines are replaced to mitigate public safety and security risks due to either the condition of the existing pipeline or a hazardous condition affecting the existing pipeline location. Pipelines with a history of leakage, poor coating, or that are difficult to cathodically protect are routinely evaluated for possible replacement.	SCG-07 RKS-55 to RKS-56	SCG-07 MAB-10 to MAB-13
Gas Transmission	00908	Supervision & Engineering Pool	This budget code provides a pool for Supervision and Engineering charges to be made on a direct basis to this capital category that will then be reassigned to the various budget categories on an indirect basis.	SCG-07 RKS-92 to RKS-93	SCG-09-R DRH-40

4. SOCIALGAS UNDERGROUND STORAGE

A. SoCalGas Gas Underground Storage O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Underground Storage	33,807	36,433	(2,626)	-7%	
Underground Storage	31,471	36,433	(4,963)	-14%	
Storage Risk Management	2,336		2,336	100%	Yes

B. SoCalGas Gas Underground Storage O&M Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Storage Risk Management	<p>Emergent activity beyond the TY2016 GRC forecast to support aboveground monitoring, data management, compliance, and audit support at all the storage fields.</p> <p>This group was created to address additional California Air Resources Board (CARB), DOGGR, and Pipeline and Hazardous Material Safety Administration (PHMSA) regulations and supports the company's goals of safety and compliance.</p>		Support above-ground monitoring, data management, compliance, and audit support at all the storage fields.

C. SoCalGas Gas Underground Storage O&M Workpaper Descriptions and GRC Testimony Locations

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Underground Storage	Storage Risk Management	2US001.000	This cost supports the company's goals of safety and compliance. The non-refundable risk management O&M costs are directly related to the supporting of aboveground monitoring, data management, compliance, and audit support at all the storage fields. This group was organized and resourced to address CARB, DOGGR, and PHMSA regulations.	N/A	SCG-10-R NPN-24

D. SoCalGas Gas Underground Storage Capital Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Gas Storage			2,004	3%	
Auxiliary Equipment			9,785	82%	Yes
Compressor Stations			(1,139)	-11%	
Pipelines			11,994	227%	Yes
Purification Equipment			(7,116)	-67%	Yes
Wells			(11,519)	-31%	Yes

E. SoCalGas Gas Underground Storage Capital Variance Explanation

WP Activity Description	Variance Explanation	Projects/Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2016 GRC
Auxiliary Equipment	<p>Expanded scope of work associated with compliance with new regulations (CPUC General Order 95 Overhead Electric Line Construction), plant electrical and controls systems, and projects negotiated with local agencies to improve emergency response generated higher spend in this category than previously forecasted.</p> <p>GO-95 Section IV, Heavy Wind Loading design criteria requires infrastructure upgrades with new conductors and steel poles to meet operating conditions during high wind conditions, increasing electrical reliability to the storage field.</p>		

WP Activity Description	Variance Explanation	Projects/Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2016 GRC
Pipelines	Higher than forecasted blanket projects for laterals to return wells to service to maintain or regain deliverability after well work, such as reconfiguring piping in association with well work that converts storage wells to tubing flow only for a dual barrier of safety and consistent with guidance from regulator (DOGGR).		
Purification Equipment	Lower than forecasted purification equipment work at the non-Aliso storage fields. Restrictions imposed on the use of the Aliso Canyon storage field has placed additional operational reliance and use on the non-Aliso storage fields resulting in the inability to schedule shut-ins/shutdown of the purification equipment at those facilities to perform work.		
Wells	Lower than forecasted well replacement activity attributed to factors that include SoCalGas' prioritization of well workover and plug/abandonment activity consistent with new DOGGR requirements, as well as accelerated well activities from the previous year (2017).		

F. SoCalGas Gas Underground Storage Capital Workpaper Descriptions and GRC Testimony Locations

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Underground Storage	00419	Auxiliary Equipment	This budget code includes work on various types of field equipment not included in other budget codes such as instrumentation, measurement, controls, electrical, drainage, infrastructure, safety, security, and communications systems.	SCG-06 PEB-51 to PEB-54	SCG-10-R NPN-46 to NPN-51

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			The intent behind the capital expenditure plan is to provide safe, reliable delivery of natural gas to customers and also enhance the integrity, efficiency, and responsiveness of operations while maintaining compliance with applicable regulatory and environmental regulations.		
Underground Storage	00413	Pipelines	<p>This budget category includes costs associated with upgrading or replacing failed field piping and related components.</p> <p>The intent behind the capital expenditure plan is to provide safe, reliable delivery of natural gas to customers and also enhance the integrity, efficiency, and responsiveness of operations while maintaining compliance with applicable regulatory and environmental regulations. For example, if liquid handling pipelines were to fail, gas deliveries may be significantly impacted or sent through metering without complying with standards for water content in pipeline-quality natural gas. Safety equipment in the field also requires clean motive gas for proper operations.</p>	SCG-06 PEB-42 to PEB-47	SCG-10-R NPN-42 to NPN-44
Underground Storage	00414	Purification Equipment	<p>This budget category forecasts costs associated with equipment used primarily for the removal of impurities from, or the conditioning of, natural gas withdrawn from storage. Examples of equipment included in this area are dehydrators, coolers, scrubbers, boilers, pumps, valves, piping, power supply, controls, and instrumentation.</p> <p>The intent behind the capital expenditure plan is to provide safe, reliable delivery of natural gas to customers and also enhance the integrity, efficiency, and responsiveness of operations while</p>	SCG-06 PEB-47 to PEB-50	SCG-10-R NPN-44 to NPN-46

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			maintaining compliance with applicable regulatory and environmental regulations.		
Underground Storage	00412	Wells	<p>This budget category includes costs associated with replacing failed components on existing wells, and the design, drilling and completion of replacement wells for the injection and withdrawal of natural gas and reservoir observation purposes. This includes well workover contractors (major well work), drilling contractors, and component materials such as tubing, casing, valves, pumps, and other down-hole equipment, and well plugging and abandonment.</p> <p>The intent behind the capital expenditure plan is to provide safe, reliable delivery of natural gas to customers and also enhance the integrity, efficiency, and responsiveness of operations while maintaining compliance with applicable regulatory and environmental regulations. For example, leaking tubing strings can become a safety or environmental hazard if not replaced in a timely manner.</p>	SCG-06 PEB-28 to PEB-42	SCG-10-R NPN-35 to NPN-42

5. SOCALGAS GAS ACQUISITION

A. SoCalGas Gas Acquisition O&M Variance

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Gas Procurement	4,271	4,590	(319)	-7%	

B. SoCalGas Gas Acquisition Variance Explanation

No variance explanation is required for this category, because the variance doesn't meet the selection criteria.

C. SoCalGas Gas Acquisition O&M Workpaper Description and GRC Testimony Location

No workpaper mapping is required for this category, because the variance doesn't meet the selection criteria.

6. SOCALGAS OTHER

A. SoCalGas Customer Services

i. SoCalGas Customer Services O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Customer Services	224,398	308,112	(83,714)	-27%	
Customer Services - Field & Meter Reading	162,030	224,365	(62,334)	-28%	
CS Field Staff Manager	1,179	2,276	(1,097)	-48%	Yes
Customer Services Field - Operations	111,554	132,941	(21,387)	-16%	Yes
Customer Services Field - Supervision	12,577	14,901	(2,324)	-16%	
Customer Services Field - Dispatch	11,156	10,159	997	10%	
Customer Services Field - Support	12,336	13,811	(1,475)	-11%	
Meter Reading – Operations	105	35,014	(34,909)	-100%	Yes
Meter Reading – Clerical	12	1,284	(1,272)	-99%	Yes
Meter Reading - Supervision & Training	5	4,665	(4,660)	-100%	Yes
Meter Reading – Support	116	2,847	(2,731)	-96%	Yes
Meter Set Assembly (MSA) Inspection Program	12,992	6,467	6,525	101%	Yes

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Customer Services - Information	19,086	26,454	(7,368)	-28%	
Biofuels and Low-Carbon Resources Market Development	443	757	(314)	-41%	
CI-Customer Assistance	2,528	4,724	(2,196)	-46%	Yes
CI-Customer Engagement & Insights	5,351	8,626	(3,275)	-38%	Yes
CI-Segment Services	9,568	10,593	(1,025)	-10%	
Clean Transportation	1,197	1,755	(558)	-32%	
Customer Services - Office Operations	39,386	53,653	(14,267)	-27%	
CCC – Operations	27,726	38,941	(11,215)	-29%	Yes
CCC – Support	8,509	10,436	(1,927)	-18%	
CS - Other Office Ops	3,152	4,276	(1,125)	-26%	Yes
Customer Services - Technology, Policies, & Solutions	3,897	3,641	255	7%	
Business Strategy and Development	912	1,366	(453)	-33%	
Environmental Affairs	572	743	(171)	-23%	
Environmental Strategy	1,227		1,227	100%	Yes
Planning & Legislative Analysis	196		196	100%	
Policy and Environmental Solutions	988	1,532	(544)	-36%	

ii. SoCalGas Customer Services O&M Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Customer Services - Field & Meter Reading	The TY2016 Customer Services - Field (CS-F) and Meter Reading (MR) forecasting method did not reflect the benefits realized from Advanced Metering Infrastructure (AMI) implementation. As anticipated, AMI resulted in a decrease to CS-F and MR costs. See Exh. SCG-39 TY2016 testimony.		AMI Implementation, MSA-Inspection Program

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
	SoCalGas adjusted the 2018 Imputed Authorized costs for the MSA Inspection Program to align with the TY2019 workpapers (81.5% from CS-F Operations, 7.8% from CS-F Supervision, 10.7% from CS-F Support).		
CS Field Staff Manager	Lower than forecasted costs due to AMI implementation.		AMI Implementation, MSA-Inspection Program
Customer Services Field – Operations	Lower than forecasted order volumes due to AMI implementation.	Incremental Field Technician Service Enhancements and Incremental Technician Training, including refresher training, technician mentoring and job shadowing, and accelerated Operator Qualification training.	AMI Implementation, MSA-Inspection Program
Meter Reading - Operations	Lower than forecasted costs due to AMI implementation.		AMI Implementation, MSA-Inspection Program
Meter Reading - Clerical	Lower than forecasted costs due to AMI implementation.		AMI Implementation, MSA-Inspection Program

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Meter Reading - Supervision & Training	Lower than forecasted costs due to AMI implementation resulted in a reduction of number of forecasted meter readers needed. Supervision and training costs are based on the number of meter readers.		AMI Implementation, MSA-Inspection Program
Meter Reading - Support	Lower than forecasted costs due to AMI implementation.		AMI Implementation, MSA-Inspection Program
MSA Inspection Program	Higher than forecasted costs due to the actual length of time per MSA inspection being greater than the original estimate used for this order type.		AMI Implementation, MSA-Inspection Program
Customer Services – Information (CI)			
CI-Customer Assistance	<p>Lower than forecasted volume of homes treated under the ESA program. SoCalGas' ESA program has been managing to the 2018 annualized program goal of homes treated over the program cycle as set forth in D.16-11-022, and further revised in CPUC Resolution G-3532, and the dispositions approved for Advice Letters 5256/5256-A and 5325.</p> <p>All eligible homes treated through the ESA Program receive Natural Gas Appliance Testing (NGAT) in accordance with the Statewide ESA Program 2017-2020 Cycle Policy and Procedures Manual, revised March 16, 2018.</p>		
CI-Customer Engagement & Insights	Lower than forecasted non-labor costs and cancelled/deferred items described in the next column. Customer Engagement &	Development of business database for research and	

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
	Insights completed safety communications within the authorized funding level.	<p>communication outreach.</p> <p>Incremental social media survey research, and behavioral data collection and analysis.</p> <p>SoCalGas.com website feedback surveys.</p>	
Customer Services - Office Operations			
CCC – Operations	<p>Lower than forecasted customer call volume.</p> <p>Lower than forecasted per call costs.</p> <p>Forecasted activities in CCC Operations; however, expenses were recorded in other areas.</p> <p>Lower than forecasted staffing level during some portion of 2018</p> <p>Lower than forecasted level of service (LOS).</p>	<p>CSF initiative – CSRs offering expanded appliance safety checks.</p> <p>CSR capturing customer preference for future contact.</p> <p>CSRs asking for landlord information on start service orders to help target offerings to renters.</p>	<p>Reduction in CSR call volume related to the decrease in Billing calls due to Advanced Meters;</p> <p>FOF projects.</p> <p>CSRs started collecting customer cell phone numbers to improve customer data information.</p>

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
CS - Other Office Ops	Forecasted activities in CS – Other Office Ops; however, expenses were recorded in other areas. Lower than forecasted staffing level during some portion of 2018 including the elimination of the Senior VP of Customer Services position.		Ramp up of the Customer Data Privacy activities
Customer Services - Technology, Policies, & Solutions			
Environmental Strategy	The majority of the variance is not an actual increase but an artifact of how the costs were presented in the TY2016 GRC. Resources for Environmental Strategy were previously rolled up and forecasted under CS – Policy and Environmental Solutions. The TY2019 GRC now separates the group from Policy and Environmental Solutions and costs are recorded under its own work paper.		

iii. SoCalGas Customer Services O&M Workpaper Descriptions and GRC Testimony Locations

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Customer Services - Field & Meter Reading	CS Field Staff Manager	2200-0942	Costs are associated with management personnel who: develop and implement processes, policies, and procedures, including Gas Standards and Information Bulletins; track, analyze and	SCG-10 SAF-43 to SAF-47	SCG-18-R GRM-54 to GRM-56

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			<p>report operational data; and manage special projects for CS-F operations.</p> <p>This workpaper includes activities, as described, designed to mitigate safety risks.</p>		
Customer Services - Field & Meter Reading	CSF – Operations	2FC001.000	<p>Costs associated with field technicians providing service at customer premises, including gas meter work, establishing and terminating gas service, lighting gas pilot lights, conducting customer appliance checks, investigating reports of gas leaks, investigating customer complaints of high bills, shutting off and restoring gas service for fumigation, responding to structure fires (e.g., to check for gas leakage/shut off gas service) and other emergency incidents, and other related field services for customers.</p> <p>This workpaper includes activities, as described, designed to mitigate safety risks.</p>	SCG-10 SAF-5 to SAF-24	SCG-18-R GRM-10 to GRM-28
Customer Services - Field & Meter Reading	Meter Reading – Operations	2FC005.000 / 2FC006.000	<p>Costs include full- and part-time meter readers who are dispersed across SoCalGas’ operating bases. Meter readers are equipped with MDTs (aka handheld devices) which are used to record customers’ gas consumption. Meter readers capture monthly meter reads at customer premises and read over 68 million meters per year. Data from the meter readers’ MDTs are uploaded each night and transferred to the company’s mainframe computer for processing and billing. Meter readers are also supported by meter reading technicians.</p> <p>This workpaper includes activities, as described, designed to mitigate safety risks.</p>	SCG-10 SAF-34 to SAF-48	SCG-18-R GRM-45 to GRM-47

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Customer Services - Field & Meter Reading	Meter Reading - Clerical	2FC006.000 / 2FC007.000	<p>Costs associated with meter reading clerks that handle the timekeeping, payroll, scheduling of part-time meter readers, and various customer facility record and geographical coding updates necessary for meter reading operations.</p> <p>This workpaper includes activities, as described, designed to mitigate safety risks.</p>	SCG-10 SAF-38 to SAF-39	SCG-18 GRM-47 to GRM-49
Customer Services - Field & Meter Reading	Meter Reading - Supervision & Training	2FC007.000 / 2FC008.000	<p>Costs include meter reading supervisors, meter reading training instructors and meter reading field instructors. Supervisors are distributed across SoCalGas' operating bases from which meter readers work, to supervise, coach and manage the performance of meter reading employees. Training instructors conduct the formal training that is required in order to become a meter reader. Field instructors accompany new meter readers out in the field immediately following their completion of formal training to ensure that newly trained meter readers are capable of safely and accurately performing their jobs out in the field on their own.</p> <p>This workpaper includes activities, as described, designed to mitigate safety risks.</p>	SCG-10 SAF-40 to SAF-41	SCG-18-R GRM-49 to GRM-51
Customer Services - Field & Meter Reading	Meter Reading – Support	2FC008.000 / 2FC009.000	<p>Costs consist of meter reading managers who support meter reading operations and business analysts who support the meter reading technologies, including the daily process to download and upload data to meter reading handheld computers, conduct meter reading route analyses and route realignments, project management, and other reporting and analysis.</p> <p>This workpaper includes activities, as described, designed to mitigate safety risks.</p>	SCG-10 SAF-41 to SAF-42	SCG-18-R GRM-51 to GRM-53

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Customer Services - Field & Meter Reading	MSA Inspection Program	2FC005.000	<p>The Department of Transportation (DOT) Code of Federal Regulations (<i>i.e.</i>, CFR 192.481) generally requires that each MSA be inspected every three years for atmospheric corrosion. Meter readers have historically performed this function, but with the implementation of AMI and the elimination of traditional Meter Reading function, a new group, the CS - Field MSA Inspection Organization, was formed in 2016. This includes costs to perform physical, onsite inspection of each meter set assembly (MSA) to comply with DOT required MSA inspections for atmospheric corrosion, to identify conditions which require remediation by CS - Field Operations and Distribution field employees, and to contact customers to resolve meter access issues.</p> <p>This workpaper includes activities, as described, designed to mitigate safety risks.</p>	SCG-10 SAF-19 to SAF-30	SCG-18-R GRM-38 to GRM-44 SCG-218 GRM-4 to GRM-8
Customer Services - Information	CI-Customer Assistance	2IN002.000	<p>ESA Program NGAT or carbon monoxide (CO) testing, is a safety-related program for Customer Assistance's ESA Program participants. SoCalGas conducts CO testing on homes weatherized through the ESA Program in accordance with the Statewide Energy Savings Assistance Program Installation Standards and the Statewide Energy Savings Assistance Program Policy and Procedures Manual.</p> <p>This workpaper is in scope of the spending accountability report due to the NGAT activity that's designed to mitigate customers' exposure to unsafe levels of carbon monoxide.</p>	SCG-12-R ADA-30 to ADA-37	SCG-20-R ASC-10 to ASC-11, ASC-24 to ASC-27
Customer Services - Information	CI-Customer Engagement & Insights	2IN001.000	Customer Engagement & Insights manages four primary areas: (1) Customer Marketing & Communications; (2) Creative Services; (3) Customer Insights & Analytics; and (4) eServices	SCG-12-R ADA-9 to ADA-30	SCG-20-R ASC-13 to ASC-23

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			<p data-bbox="638 699 797 722">& Data Analysis.</p> <p data-bbox="638 751 1218 1163">The primary functions and objectives of Customer Engagement & Insights are to: Provide proactive communications to customers via mass and targeted channels to build awareness of and improve access to existing and new utility services, programs and resources; Educate customers and stakeholders regarding general topics, including managing gas use and bills, payment options, assistance and rebate programs, service offerings, and natural gas safety; Conduct ongoing quantitative and qualitative research and analyses of customer satisfaction, evaluate and anticipate customer information and service needs and preferences, supporting the development of new customer service options, targeted communications and delivery channels to satisfy those needs; and, to Leverage and expand existing and new e-Channels, (including social media) and communication platforms (such as mobile) to support customer education and awareness building objectives.</p> <p data-bbox="638 1192 1218 1262">This workpaper is in scope of the spending accountability report due to the safety messaging in customer communications and on the web.</p>		

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Customer Services - Office Operations	CCC – Operations	200000.000	<p>CCC-Operations expenses cover the costs of answering customer telephone calls related to Gas Leaks, Service Orders, and Billing and Payments; responding to incoming email from customers; responding to inquiries from socialgas.com website and My Account; processing faxed fumigation orders; and, responding to other customer account related inquiries.</p> <p>CCC-Operations is in scope of the spending accountability report because it is generally the first point of contact for emergencies; as such it provides a critical support role in the safety of the SoCalGas system and the public's well-being.</p>	SCG-11 EDG-10 to EDG-23	SCG-19-R MHB-7 to MHB-9, MHB-11 to MHB-20
Customer Services - Office Operations	CS - Other Office Ops	200006.000	<p>Customer Service Other Office Ops and Technology is comprised of the following groups: (1) The Vice President of Customer Services provides oversight and leadership for all Customer Services activities; (2) Customer Operations Technology (COT) provides business systems support; (3) Customer Service Technology Project Management develops and manages the governance and standards for customer service technology projects, and monitors and reports on project status; (4) Business Planning Client Support works collaboratively with the client organizations to provide comprehensive financial reporting. The group also ensures that client organizations are in compliance with company policies, accounting principles and SOX reporting requirements.</p> <p>This work group is in scope of the spending accountability report due to the TY2016 request to establish a Customer Data Privacy Program to meet CPUC requirements in D. 12-08-045.</p>	SCG-11 EDG-46 to EDG-53	SCG-19-R MHB-43 to MHB-49

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Customer Services - Technology, Policies, & Solutions	Environmental Strategy	2RD002.000	The group's function is to monitor, analyze and determine how the broad range of public policy and legislative issues will affect SoCalGas' customers and operations. The group also develops potential policy alternatives to help protect the interests of natural gas customers with respect to safety, reliability and affordability. The group leads analysis, strategy development and implementation on local sustainability planning and on other local and regional planning initiatives.	SCG-13-R JGR-20 to JGR-28	SCG-21 LLA-20 to LLA-35

B. SoCalGas Information Technology

i. SoCalGas Information Technology O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Information Technology and Cybersecurity	21,536	20,182	1,354	7%	
Information Technology and Cybersecurity Subtotal	11,470	9,704	1,766	18%	
SVP & CITO		136	(136)	-100%	
IT Support	80	370	(290)	-78%	
Director IT SoCalGas Applications	1,237	1,038	199	19%	
SCG GIS & CAD Services	245	321	(76)	-24%	
SCG Software Development – Database	730	1,009	(279)	-28%	
SCG Work Management Services	850	2,178	(1,328)	-61%	Yes
Architecture and Integration – SCG	756		756	100%	
SCG Applications Major Market Services	1,478	1,384	94	7%	
IT Applications NSS	6,094	3,268	2,826	86%	Yes

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Infrastructure Subtotal	10,066	10,477	(412)	-4%	
Director - Computing Infrastructure	123	1,749	(1,626)	-93%	Yes
Enterprise Command Center – SCG	103	218	(115)	-53%	
Business Communication Services – SCG	1,839	114	1,725	1513%	Yes
CI Operations Services SCG	1,527	819	709	87%	
CI Compute Support SCG	619	750	(130)	-17%	
CI Compute Provisioning SCG	179	780	(601)	-77%	
CI Standards	1,277	138	1,139	825%	Yes
IT Telecom PMO	184		184	100%	
Cybersecurity	611	805	(195)	-24%	
IT Infrastructure NSS	3,604	5,105	(1,501)	-29%	Yes

ii. SoCalGas Information Technology O&M Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Information Technology and Cybersecurity			
Applications and Support Subtotal			
SCG Work Management Services	Forecasts included functions performed by “Architecture & Integration – SCG;” however expenses were recorded to a new cost center created post filing.		

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
IT Applications NSS	Costs forecasted in other areas were recorded in this area. For example, a cost center supporting customer service functions was forecasted as shared but recorded as non-shared.		
Infrastructure Subtotal			
Director - Computing Infrastructure	Costs forecasted in this area were recorded to cost centers in other areas.		
Business Communication Services – SCG	The variance is driven by a three-month extension of an existing Microsoft agreement.		
CI Standards	Costs forecasted in other areas were recorded in this area. See IT Infrastructure NSS.		
IT Infrastructure NSS	The 2018 authorized costs for infrastructure related activities were distributed to various disciplines within this category as needs dictated (e.g., April 2017 IT Outage). Overall summation of Infrastructure actuals is within 4% of authorized.		

iii. SoCalGas Information Technology O&M Workpaper Descriptions and GRC Testimony Locations

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Information Technology	SCG Work Management Services	2200-2445	This cost center represents support services for a broad range of client organizations, including Gas Operations/Distribution, Construction and New Business Services. This category	SCG-18-R CRO-12 to CRO-19	SCG-26 CRO-12 to CRO-17

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			includes costs for activities, as described, designed to mitigate reliability risks.		
Information Technology	IT Applications NSS	2IT001.000	The types of systems supported in this area include: customer field operations, routing, scheduling and dispatching. This category includes costs for activities, as described, designed to mitigate reliability risks.	SCG-18-R CRO-12 to CRO-19	SCG-26 CRO-12 to CRO-17
Information Technology	Director - Computing Infrastructure	2200-2406, 2200-2459, 2200-2460 / 2200-2406	Activities include department level management for plan, design, build, implementation and management of system-wide network and telecommunications infrastructure. This category includes costs for activities, as described, designed to mitigate infrastructure risks.	SCG-18-R CRO-12 to CRO-19	SCG-26 CRO-12 to CRO-17
Information Technology	Business Communication Services – SCG	2200-2458	Activities include messaging and network activities for support and maintenance of messaging, infrastructure, including E-mail, Calendaring, Instant Messaging, and SharePoint services on a system-wide basis across Corporate Center, SDG&E and SoCalGas. This category includes costs for activities, as described, designed to mitigate reliability of communications infrastructure risks.	SCG-18-R CRO-12 to CRO-19	SCG-26 CRO-12 to CRO-17
Information Technology	CI Standards	2200-2467	This group is responsible for developing network and computing infrastructure standards, strategies, architectures, and policies which are implemented by various Computing Infrastructure teams. This category includes costs for activities, as described, designed to mitigate infrastructure risks.	SCG-18-R CRO-12 to CRO-19	SCG-26 CRO-12 to CRO-17

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Information Technology	IT Infrastructure NSS	2IT002.000	Infrastructure activities include: preventative maintenance, problem diagnosis and resolution, and service request processing and implementation. This category includes costs for activities, as described, designed to mitigate infrastructure risks.	SCG-18-R CRO-12 to CRO-19	SCG-26 CRO-12 to CRO-17

iv. SoCalGas Information Technology Capital Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Information Technology	117,135	82,678	34,457	42%	
Applications Subtotal	77,020	33,965	43,054	127%	
Applications - Customer Care/Capacity/Expansion	-	1,247	(1,247)	-100%	
Applications - Customer Care/Mandated	-	816	(816)	-100%	
Applications - Customer Care/Reliability/Improvements	13,401	1,230	12,171	990%	Yes
Applications - Utility Operations/Capacity/Expansion	-	106	(106)	-100%	
Applications - Utility Operations/Mandated	27,763	61	27,703	45,547%	Yes
Applications - Utility Operations/Reliability/Improvements	35,855	22,210	13,645	61%	Yes
OpEx 20/20	-	6,681	(6,681)	-100%	Yes
Applications - Utility Operations/Strategic	-	817	(817)	-100%	
Apps - Corp Syst/Reliability	-	797	(797)	-100%	
Infrastructure Subtotal	40,116	48,713	(8,597)	-18%	
Cyber-Asset, Identity, Access Mgmt-SW	3,426	-	3,426	100%	Yes
Cyber-Sit Awareness and Incident Response-SW	4,125	-	4,125	100%	Yes

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Cyber-Sit Awareness and Incident Response-HW	7	-	7	100%	
Cyber-Risk and External Dependency Mgmt	2,531	-	2,531	100%	Yes
Hardware - Utility Operations/Mandated	379	-	379	100%	
Hardware - Utility Operations/Reliability/Improvements	18,414	2,002	16,412	820%	Yes
Infrastructure - Hardware/Capacity	-	5,345	(5,345)	-100%	Yes
Infrastructure - Hardware/Strategic	-	1,682	(1,682)	-100%	
Infrastructure - Hardware/Reliability/Improvements	880	13,467	(12,586)	-93%	Yes
Network/Telecom - Hardware/Reliability/Improvements	10,247	24,818	(14,571)	-59%	Yes
Network/Telecom - Software/Reliability/Improvements	73	-	73	100%	
Network/Telecom - Hardware/Capacity	-	1,399	(1,399)	-100%	
Microwave and Radio Equipment	33	-	33	100%	

v. SoCalGas Information Technology Capital Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Applications Subtotal	Increased efforts to modernize critical platforms that started in 2016 due to degradation of the SAP system to mitigate the risk of system failure.		Critical system enhancements
Applications - Customer Care/Reliability/Improvements	The majority of projects in this category are out of scope of this report. The in-scope items mainly relate to reliability and the variances for these projects are below the variance explanation threshold.		

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Applications - Utility Operations/Mandated	Majority of projects with actuals in this budget code are not mandated projects and should have been booked under the Reliability category.		
Applications - Utility Operations/Reliability/Improvements	Actuals for many of the Mandated projects should be recorded here; Microsoft licenses are included in actuals, but they were not planned in the TY2016 GRC.		Critical system enhancements
OpEx 20/20	OpEx project closed and remaining work completed under UO/Reliability/Improvements category.		
Infrastructure Subtotal	In 2017, several system-wide IT outages impacted business operations, with one outage lasting multiple days and affecting several hundred applications/services. As a result, IT capital investments in new data center equipment (e.g., servers, storage) and related labor to implement was required to provide a more reliable computing environment. These incremental investments had not been anticipated as part of the TY2016 GRC.		
Cyber-Asset, Identity, Access Mgmt-SW	Cyber capital was only forecasted in SDG&E capital in TY2016 GRC, but it was directly charged to SCG due to an accounting policy change		
Cyber-Sit Awareness and Incident Response-SW	Cyber capital was only forecasted in SDG&E capital in TY2016 GRC, but it was directly charged to SCG due to accounting policy change.		
Cyber-Risk and External Dependency Mgmt	Cyber capital was only forecasted in SDG&E capital in TY2016 GRC, but it was directly charged to SCG due to an accounting policy change		

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Hardware - Utility Operations/Reliability/Improvements	Consolidation of hardware capital from several categories authorized as part of TY2016 GRC, uplift in actuals due to incremental investments required to address IT related outages.		
Infrastructure - Hardware/Capacity	Work authorized captured in Hardware - UO/Reliability/Improvements.		
Infrastructure - Hardware/Reliability/Improvements	Work authorized captured in Hardware - UO/Reliability/Improvements.		
Network/Telecom - Hardware/Reliability/Improvements	Much of work authorized redeployed to hardware capital investments to address issues identified by IT related outages.		

vi. SoCalGas Information Technology Capital Workpaper Descriptions and GRC Testimony Locations

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Information Technology	774	Applications - Customer Care/ Reliability/ Improvements	Applications support the development, implementation and maintenance of computer software utilized by customers, employees and/or vendor partners. Projects included in this budget code are related to software customer service applications. This category includes costs for activities, as described, designed to mitigate reliability risks.	SCG-18-R CRO-19 to CRO- 34	SCG-26 CRO-17 to CRO- 39

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Information Technology	756	Applications - Utility Operations/ Mandated	<p>Applications support the development, implementation and maintenance of computer software utilized by customers, employees and/or vendor partners. Projects included in this budget code are mandated by the CPUC and are related to enterprise-wide software applications in support of utility operations.</p> <p>This category includes costs for activities, as described, designed to mitigate reliability risks.</p>	SCG-18-R CRO-19 to CRO-34	SCG-26 CRO-17 to CRO-39
Information Technology	776	Applications - Utility Operations/ Reliability/ Improvements	<p>Applications support the development, implementation and maintenance of computer software utilized by customers, employees and/or vendor partners. Projects included in this budget code are related to enterprise-wide software applications in support of utility operations.</p> <p>This category includes costs for activities, as described, designed to mitigate reliability risks.</p>	SCG-18-R CRO-19 to CRO-34	SCG-26 CRO-17 to CRO-39
Information Technology	810	OpEx 20/20	<p>Project includes several enhancements necessary to complete remaining Construction, Planning and Design (CPD) deployments. Activities include training, data conversion, system configuration, and storm period support, including defect resolution.</p> <p>This category includes costs for activities, as described, designed to mitigate reliability risks.</p>	SCG-18-R CRO-19 to CRO-34	N/A
Information Technology	746	Cyber-Asset, Identity, Access Mgmt-SW	IT Infrastructure supports the design, implementation and operation of the company's computing infrastructure, includes both hardware and software. Projects included in this budget code are related to enterprise-wide identity access software.	N/A	SCG-27-R GW-25 to GW-62

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			This category includes costs for activities, as described, designed to mitigate cybersecurity and reliability risks.		
Information Technology	748	Cyber-Sit Awareness and Incident Response-SW	IT Infrastructure supports the design, implementation and operation of the company's computing infrastructure, includes both hardware and software. Projects included in this budget code are related to enterprise-wide cyber security software. This category includes costs for activities, as described, designed to mitigate cybersecurity and reliability risks.	SCG-18-R CRO-19 to CRO-34	SCG-27-R GW-25 to GW-62
Information Technology	759	Cyber-Risk and External Dependency Mgmt	IT Infrastructure supports the design, implementation and operation of the company's computing infrastructure, includes both hardware and software. Projects included in this budget code are related to enterprise-wide cyber security risk management software. This category includes costs for activities, as described, designed to mitigate cybersecurity and reliability risks.	N/A	SCG-27-R GW-25 to GW-62
Information Technology	777	Hardware - Utility Operations/ Reliability/ Improvements	IT Infrastructure supports the design, implementation and operation of the company's computing infrastructure. Projects included in this budget code are related to enterprise-wide hardware investments in support of utility operations. This category includes costs for activities, as described, designed to mitigate reliability risks.	SCG-18-R CRO-19 to CRO-34	SCG-26 CRO-17 to CRO-39
Information Technology	760	Infrastructure - Hardware/ Capacity	IT Infrastructure supports the design, implementation and operation of the company's computing infrastructure. Projects included in this budget code are related to enterprise-wide infrastructure in support of capacity expansion.	SCG-18-R CRO-19 to CRO-34	SCG-26 CRO-17 to CRO-39

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			This category includes costs for activities, as described, designed to mitigate reliability risks.		
Information Technology	770	Infrastructure - Hardware/ Reliability/ Improvements	IT Infrastructure supports the design, implementation and operation of the company's computing infrastructure. Projects included in this budget code are related to enterprise-wide infrastructure in support of utility operations. This category includes costs for activities, as described, designed to mitigate reliability risks.	SCG-18-R CRO-19 to CRO-34	SCG-26 CRO-17 to CRO-39
Information Technology	772	Network/ Telecom - Hardware/ Reliability/ Improvements	IT Infrastructure supports the design, implementation and operation of the company's computing infrastructure, includes both hardware and software. Projects included in this budget code are related to enterprise-wide telecommunication investments. This category includes costs for activities, as described, designed to mitigate reliability risks.	SCG-18-R CRO-19 to CRO-34	SCG-26 CRO-17 to CRO-39

C. SoCalGas Support Services

i. SoCalGas Support Services O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Support Services	28,822	32,759	(3,937)	-12%	

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Environmental Services	4,722	3,999	723	18%	
Environmental	4,722	3,999	723	18%	
Fleet Services & Facility Operations	20,404	22,618	(2,213)	-10%	
Facilities-Monterey Park Manager	2,176	2,477	(302)	-12%	
Facilities GCT	812	1,377	(565)	-41%	
Director	721		721	100%	
Facility Operations ⁴¹	16,696	18,763	(2,067)	-11%	
Supply Management & Supplier Diversity	3,696	6,142	(2,446)	-40%	
Fabrication & Repair	2,337	3,711	(1,374)	-37%	Yes
Meter Shops & Records	1,359	2,431	(1,072)	-44%	Yes

ii. SoCalGas Support Services O&M Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Supply Management & Supplier Diversity			
Fabrication & Repair	Lower than forecasted staffing level during a portion of 2018.		

⁴¹ While developing the 2018 report, SoCalGas discovered Facility Operations were erroneously omitted as a reportable workpaper in the 2017 Interim Spending Accountability Report with 2017 imputed authorized of \$18,129 and 2017 actuals of \$14,799. The 2017 variance of 18.4% and \$3,330 thousand for this workpaper would not have met the selection criteria and therefore no variance explanation would have been required.

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
	<p>A general systemwide operational downturn due to the natural cycle of work resulted in decreased demands for fabricated products. This is a temporary trend.</p> <p>A cyclical decrease of capital tool maintenance and service to field operation construction resulted in a reduction of construction tool repairs from previous year. This is a temporary trend.</p> <p>Factory warranty costs for electronic tools were lower due to cyclical billing and expiration timing. This is a temporary savings; costs are expected to increase for 2019 and beyond.</p>		
Meter Shops & Records	<p>Lower than forecasted staffing level during portions of 2018.</p> <p>Lower than forecasted costs due to increased capital meter repair efforts and continuation of AMI project through 2018.</p>		

iii. SoCalGas Support Services O&M Workpaper Description and GRC Testimony Locations

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Supply Management & Supplier Diversity	Fabrication & Repair	2SS002.000	The Fabrication and Tool Repair Shop provides specialized support to Company operations, as both a supplier of custom materials and tools and as a service provider in the modification and repair of materials and tools. In particular, the Tool Shop provides the specialized machining and fabrication of tools,	SCG-14 RDH-6 to RDH-7	SCG-22- WP pp. 33 to 37

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			materials, and equipment required to support SoCalGas' operations. In many cases, these tools are manufactured specifically for SoCalGas' pipeline system and are not available through an alternative source. The Fabrication and Tool Repair Shop performs periodic maintenance and repair of the gas handling, electronic, and pneumatic tools. This cost area also supports the technical evaluation of new tools.		
Supply Management & Supplier Diversity	Meter Shops & Records	2SS003.000 / 2SS002.000	Meter Shop & Records supports the field requirements for Meters and MTU's such as planned meter changes, high bill investigations, new business, and routine meter changes. The Meter Shop also tests, repairs, and salvages Meters and MTU's previously removed from service. The Meter Records group tracks, reports, and reconciles all activity related to the life cycle of Meters and MTU's.	SCG-14 RDH-7	SCG-22-WP pp. 29 to 32

iv. SoCalGas Support Services Capital Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Support Services	36,504	20,695	15,809	76%	
Infrastructure & Improvements	32,739	20,695	12,044	58%	Yes
Safety & Environmental	3,765		3,765	100%	Yes

v. **SoCalGas Support Services Capital Variance Explanations**

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2016 GRC
Infrastructure & Improvements	The expenditures in this funding category were higher than forecasted due to aging infrastructure requiring additional repairs and replacements.		In addition to the forecasted activities the following are examples of some of the larger emergent projects completed in 2018: Storm Water Replacement Project, Sustainability Projects, and two major facility renovations.
Safety & Environmental	The Safety & Environmental category is new and was not requested in the TY2016 GRC. In the TY2016 GRC, this category would have been included as a part of the Infrastructure & Improvements category. The expenditures in this category were primarily for water pathogen management throughout various SoCalGas locations to ensure safe water supply to SoCalGas facilities.		Water supply testing and treatment at various SoCalGas facilities.

vi. SoCalGas Support Services Capital Workpaper Descriptions and GRC Testimony Locations

Witness Area	Capital Workpaper or Prime Budget Code #	Capital Workpaper or Prime Budget Code Name	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Fleet Services & Facility Operations	006530	Infrastructure & Improvements	The Infrastructure & Improvements forecast funds necessary recurring facility improvements and equipment upgrades to adequately support business operations. The SoCalGas capital renewal program identifies facilities to be repaired or improved, as needed, based on the criticality of the facility, the age of the asset, and the implications for failure to complete the replacement or upgrade. The capital renewal program is based on a systematic management process to plan and budget for known recurring repairs and replacements that extend the life and retain the usable condition of facilities and systems. The requested capital expenditure costs are needed to maintain safety of Company facilities and assets and to support operational needs.	SCG-15 CLH-23 to CLH-26	SCG-23-R CLH-41 to CLH-43
Fleet Services & Facility Operations	006540	Safety & Environmental	The Safety & Environmental request is necessary to comply with mandated American with Disabilities (ADA) improvements to the San Luis Obispo and Santa Barbara facility which will improve customer access and accessibility to this branch office as well as to perform earthquake/seismic retrofits at various facilities throughout the service territory.	N/A	SCG-23-R CLH-47 to CLH-48

D. SoCalGas Administrative & General

i. SoCalGas Administrative & General O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
A&G	89,319	74,832	14,487	19%	
Accounting & Finance, Legal, Regulatory Affairs, External Affairs	986	1,158	(173)	-15%	
Accounting Systems & Compliance	986	1,158	(173)	-15%	
Compensation & Benefits	333	936	(603)	-64%	
Pension & Benefits - Employee Assistance Program	333	936	(603)	-64%	
Corporate Center – General	70,520	49,949	20,571	41%	
SECC Outside Services Employees - F923.1	70,520	49,949	20,571	41%	Yes
Human Resources Dept, Safety, LTD & WC	17,207	21,650	(4,443)	-21%	
SCG President & CEO COO & VP of Human Resources	3,519	4,102	(582)	-14%	
SCG Director HR Services	5,771	5,113	657	13%	
SCG Director Safety Wellness	5,614	9,867	(4,254)	-43%	Yes
SCG Director Org Effectiveness	2,304	2,568	(264)	-10%	
Risk Management	273	1,138	(866)	-76%	
Operations Risk Management-SCG	273	1,138	(866)	-76%	

ii. SoCalGas Administrative & General O&M Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Corporate Center – General			

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
SECC Outside Services Employees - F923.1	Higher than forecasted costs allocated to SoCalGas primarily due to an increase in overall costs for medical plans, post- retirement benefit expenses, and new hires in information technology cybersecurity, infrastructure, governance, and architecture.		
Human Resources Dept, Safety, LTD & WC			
SCG Director Safety Wellness	<p>Lower than forecasted time required for employees to complete Alert Driving program.</p> <p>Forecasts included employee labor for Alert Driving program training however expenses were recorded in the employees' actual work area.</p> <p>Lower than forecasted expense for other proposed incremental programs resulting from re-scoping and cost efficiencies.</p> <p>Forecasts included costs for the Employee Care Services group, however expenses were recorded in HR Services.</p>		

iii. SoCalGas Administrative & General O&M Workpaper Descriptions and GRC Testimony Locations

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Corporate Center - General	SECC Outside Services Employees - F923.1	2SE000.001	<p>Corporate center allocated costs include security services provided to protect corporate assets and employees, security systems, and the Corporate Security (CSS) department. The CSS department is responsible for the development and management of programs and policies for security systems, security investigations, workplace violence avoidance, as well as crisis and security risk management services.</p> <p>Corporate Center function is also actively involved in activities designed to mitigate the identified risk of workplace violence by supporting the planning and incident management investigation as well as programs designed to mitigate the risk event before it occurs. This includes training, investigation, employee awareness, new hire screening, employee assistance, and corporate security activities.</p>	SCG-19 PRW-45 to PRW-53	SCG-28-R MLD-9 to MLD-11
Human Resources Dept, Safety, LTD & WC	SCG Director Safety Wellness	2HR006.000	<p>The Safety, Wellness and Disability Services department is responsible for positioning SoCalGas employees to lead healthy and productive lives. The services provided by the department extend from pre-employment health testing through the end of employment at SoCalGas. Services include: physical & mental wellness education; safety and industrial hygiene education and compliance; incident prevention, analysis and reporting; Workers' Compensation administration; short-term & long-term disability management; leave-of-absence administration; and return-to-work services.</p> <p>This department is integral to the activities designed to mitigate safety risks.</p>	SCG-23-R MLS-17 to MLS-26	SCG-32 MG-25 to MG-30

7. SOCALGAS BALANCED PROGRAMS – DIMP, TIMP, SIMP, RD&D AND NERBA

A. SoCalGas Balanced Programs Direct O&M Expenses

i. SoCalGas Balanced DIMP & TIMP Direct O&M Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
TIMP & DIMP	110,151	108,870	1,281	1%	
DIMP	43,683	47,199	(3,516)	-7%	
TIMP	66,468	61,671	4,797	8%	

ii. SoCalGas Balanced DIMP & TIMP Direct O&M Variance Explanation

No variance explanations are required for this category, because the variances don't meet the selection criteria.

iii. SoCalGas Balanced DIMP & TIMP Direct O&M Workpaper Descriptions and GRC Testimony Locations

No workpaper mapping is required for this category, because the variances don't meet the selection criteria.

iv. SoCalGas Balanced Underground Storage SIMP Direct O&M Variance

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Underground Storage – RSIMP	14,283	6,331	7,952	126%	Yes

v. **SoCalGas Balanced Underground Storage SIMP Direct O&M Variance Explanation**

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
Underground Storage – RSIMP	Higher than forecasted costs resulting from the accelerated pace of RSIMP implementation to more expeditiously enhance safety and validate well integrity, as well as enhanced RSIMP activities. This is in response to direction from regulators and/or new regulations mandating comprehensive well assessments and additional integrity management activities (PHMSA 2016 Interim Final Rule which adopts American Petroleum Institute (API) Recommended Practice (RP) 1171, DOGGR Emergency Regulations 14 CCR §1724.9, Senate Bill 887, and new DOGGR Underground Storage Regulations 14 CCR §1726).		Expanded, new, regulatory requirements driven by PHMSA's Interim Final Rule, DOGGR Emergency Regulations 14 CCR §1724.9, Senate Bill 887, and DOGGR Underground Storage Regulations 14 CCR §1726 drove more prescriptive requirements and additional expenditures associated with regulatory compliance, program management and support, well inspections, workovers, and mitigation costs. These O&M activities included costs for developing new underground storage policies and procedures, additional training, mechanical integrity testing, increased frequency of noise and temperature logging of wells, monitoring plans, risk management plans, data management, regulatory reporting, additional field assessments, leak surveys, valve inspections, and pressure monitoring, including a comprehensive safety review of the Aliso Canyon underground natural gas storage facility.

vi. SoCalGas Balanced Underground Storage SIMP Direct O&M Workpaper Description and GRC Testimony Locations

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Underground Storage	Underground Storage – RSIMP	2US002.000	Primary activities focus on the development, management and support of the Storage Integrity Management Program (SIMP). Support activities include inspection, data collection, analysis, management, and reporting as well as project management; preventive and mitigative measure analysis; technical and engineering support in the areas of corrosion/erosion protection and treatment, metallurgy, pipeline materials specifications and standard operating procedures.	SCG-06 PEB-17 to PEB-24	SCG-10-R NPN-25 to NPN-28

vii. SoCalGas Balanced RD&D Direct O&M Variance

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Customer Services - Technology, Policies, & Solutions	12,539	12,706	(168)	-1%	
R-RD&D Technology Development	12,539	12,706	(168)	-1%	

a. SoCalGas Balanced RD&D Direct O&M Variance Explanation

No variance explanation is required for this category, because the variance doesn't meet the selection criteria.

b. SoCalGas Balanced RD&D Direct O&M Workpaper Description and GRC Testimony Reference

No workpaper mapping is required for this category, because the variance doesn't meet the selection criteria.

viii. SoCalGas Balanced NERBA Direct O&M Variance

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Environmental Services	13,677	6,497	7,181	111%	
NERBA	13,677	6,497	7,181	111%	Yes

ix. SoCalGas Balanced NERBA Direct O&M Variance Explanation

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
NERBA	Higher than forecasted costs resulted from AB32 Administrative fees have increased significantly over the last three years due to the increase in the Common Carbon Cost (CCC) set by the State of California. In addition to the implementation of the CARB Oil and Gas program (new regulation) in January 2018 has led to dramatic and unexpected costs that were not contemplated in the previous authorization		Activities and projects for CARB Oil and Gas initiated in 2018 include (but are not limited to) the following at storage fields and Compressor Stations: Daily Audio Visual inspections, Quarterly Leak Detection and Repair (LDAR) activities, compressor vent stack modifications, compressor vent measurements, pneumatic device measurements, installation of vapor control systems, delay of repair documentation and updated piping and instrumentation diagram drawings for Critical Components identification. Cost for these new activities and projects were not identified in the TY2016 GRC.

x. SoCalGas NERBA Direct O&M Workpaper Description and GRC Testimony Reference

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Support Services	NERBA	2EV000.001 2EV001.001 2EV001.002 2EV001.003 2RF004.001 2US001.000	The costs currently authorized to be recorded to the NERBA include: (i) Assembly Bill 32 (AB32) Administrative Fees; (ii) Municipal Separate Storm Sewer System (MS4) Local Ordinance Compliance; (iii) Subpart W of Part 98 of Title 40 of the Code of Federal Regulations (CFR); (iv) LDAR Impact Program related costs; and (v) implementation of Best Practices of the Natural Gas Leak Abatement Program (NGLAP). The intent of the NERBA is to record costs meeting the following key criteria: (i) uncertainty as to the scope, magnitude and mechanics of the compliance requirements associated with new, proposed or evolving environmental rules or regulations; and (ii) potential for incurring significant incremental costs.	SCG-17 JT-7	SCG-17-R DJ-14

B. SoCalGas Balanced Programs Direct Capital

i. SoCalGas Balanced – DIMP & TIMP Direct Capital Variances

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
DIMP & TIMP	346,788	83,791	262,996	314%	
DIMP	55,545	42,528	113,017	266%	Yes
TIMP - Pipelines by Gas Distribution	7,575	3,677	3,897	106%	Yes
TIMP - Pipelines by Gas Transmission	183,423	37,586	145,837	388%	Yes
TIMP - Capital Tools	245		245	100%	

ii. SoCalGas Balanced – DIMP & TIMP Direct Capital Variance Explanations

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2016 GRC
DIMP	DIMP is managed to the revenue requirement over the GRC authorized (2016-2018) cycle and not on an individual year basis. Therefore, individual year expenditures may vary from the authorized amount and also between overall capital and O&M expenditures. For 2018 the mileage replaced as part of the early vintage replacement program (Aldyl-A & Bare Steel) was higher than the average forecast as the program continues to ramp-up, resulting in higher capital expenditure levels. For the GRC cycle the DIMP accounts overall were within authorized.		
TIMP - Pipelines by Gas Transmission	TIMP is managed to the revenue requirement over the GRC authorized (2016-2018) cycle and not on an individual year basis. Therefore, individual year expenditures may vary from the authorized amount and also between overall capital and O&M expenditures. The primary cause for the variation is the project load which varies each year and the level of remediation that is required is unknown until the actual assessment has been completed. The major contributor in 2018 was the high level of remediation that was required post-assessment. All TIMP assessments and repairs meet applicable compliance deadlines. For the GRC cycle the TIMP accounts overall were within authorized.		
TIMP - Pipelines by Gas Distribution	Same as above.		

iii. SoCalGas Balanced – DIMP & TIMP Direct Capital Workpaper Descriptions and GRC Testimony Locations

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
TIMP & DIMP	003120 & 00276	TIMP	This project addresses the regulatory requirements set forth by the implementation of Pipeline Safety Improvement Act (PSIA) of 2002. All DOT transmission pipeline work generated to address these regulatory requirements will be captured in budget category (BC) 312 for pipelines operated by the Transmission department and (BC) 276 for pipelines operated by the Distribution department.	SCG-08 MTM-21 to MTM-23	SCG-14 MTM-28 to MTM-31
TIMP & DIMP	002770	DIMP	PHMSA’s purpose for DIMP is to enhance pipeline safety by having operators identify and reduce pipeline integrity risks specifically for distribution pipelines. As noted by PHMSA, DIMP requires activities beyond those required by traditional regulation. SoCalGas therefore has created individualized DIMP activities such as the DREAMS that are above and beyond its core regulatory requirements. It has also created another individualized DIMP activity called GIPP.	SCG-08 MTM-23 to MTM-24	SCG-14 MTM-20 to MTM-28

iv. SoCalGas Balanced Underground Storage SIMP Direct Capital Variance

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
SIMP	87,881	11,111	76,770	691%	Yes

v. **SoCalGas Balanced Underground Storage SIMP Direct Capital Variance Explanation**

WP Activity Description	Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2016 GRC
SIMP	Higher than forecasted costs resulting from the accelerated pace of RSIMP implementation to more expeditiously enhance safety and validate well integrity, as well as enhanced RSIMP activities. This is in response to direction from regulators and/or new regulations mandating comprehensive well assessments and additional integrity management activities (PHMSA 2016 Interim Final Rule which adopts American Petroleum Institute (API) Recommended Practice (RP) 1171, DOGGR Emergency Regulations 14 CCR §1724.9, Senate Bill 887, and new DOGGR Underground Storage Regulations 14 CCR §1726).		Expanded, new, regulatory requirements driven by PHMSA's Interim Final Rule, DOGGR Emergency Regulations 14 CCR §1724.9, Senate Bill 887, and DOGGR Underground Storage Regulations 14 CCR §1726 drove more prescriptive requirements and additional expenditures associated with regulatory compliance, program management and support, well inspection, workovers, and mitigation costs. These capital activities primarily comprised of well workovers, installation of new steel tubing, well mitigations (installation of inner strings), and plugging and abandoning wells.

vi. **SoCalGas Balanced Underground Storage SIMP Direct Capital Workpaper Description and GRC Testimony References**

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
Underground Storage	00412U/ 00441	SIMP	SIMP is a proactive, methodical, and structured approach using advanced inspection technologies such as ultra-sonic and neutron type casing logs along with risk management disciplines to address	SCG-06 PEB-39 to PEB-42	SCG-10-R NPN-51 to NPN-57

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2016 GRC Testimony Reference	2019 GRC Testimony Reference
			well integrity issues before they result in unsafe conditions for employees or the public, or become major incidents, and is a prudent operating practice. Safety and/or integrity conditions that are presently unknown may exist within the high pressure above ground pipe laterals and below ground facilities.		

vii. SoCalGas Balanced NERBA Direct Capital Variance

WP Activity Description	2018 Actuals (\$000)	2018 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?
Support Services	288		288	100%	
NERBA	288		288	100%	

a. SoCalGas Balanced NERBA Direct Capital Variance Explanation

No variance explanation is required for this category, because the variance doesn't meet the selection criteria.

c. SoCalGas NERBA Capital Workpaper Description and GRC Testimony References

No workpaper mapping is required for this category, because the variance doesn't meet the selection criteria.

C. SoCalGas Regulatory Account 2018 Cumulative Balances

i. SoCalGas Regulatory Accounts – DIMPBA

SoCalGas DIMPBA Details Revenue Requirements (\$000) Program Cycle 2016 - 2018 Two-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
Year 2018						
Beginning Balance	(14,775)					(14,775)
O&M		44,179	47,198	(3,019)		(3,019)
Capital-Related Costs		20,321	4,481	15,840		15,840
Interest					(192)	(192)
Subtotal	(14,775)	64,500	51,679	12,821	(192)	(2,146)

ii. SoCalGas Regulatory Accounts – TAMPBA

SoCalGas TAMPBA Details Revenue Requirements (\$000) Program Cycle 2016 - 2018 Two-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
Year 2018						
Beginning Balance	(32,172)					(32,172)
O&M		65,488	61,672	3,816		3,816
Capital-Related Costs			1,382	6,124		6,124
Interest					(614)	(614)

Subtotal	(32,172)	72,994	63,054	9,940	(614)	(22,846)
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iii. SoCalGas Regulatory Accounts – SIMPBA

SoCalGas SIMPBA Details Revenue Requirements (\$000) Program Cycle 2016 - 2018 Two-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
Year 2018						
Beginning Balance	22,210					22,210
O&M		14,044	6,331	7,713		7,713
Capital-Related Costs		9,869	368	9,501		9,501
Interest					623	623
Subtotal	22,210	23,913	6,699	17,214	623	40,047

iv. SoCalGas Regulatory Accounts – NERBA

SoCalGas NERBA Details Revenue Requirements (\$000) Program Cycle 2016 - 2018 Two-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
Year 2018						

SoCalGas NERBA Details Revenue Requirements (\$000)						
Program Cycle 2016 - 2018						
Two-Way						
Beginning Balance ⁴²	(263)					(263)
O&M		14,139	6,497	7,642		7,642
Capital-Related Costs						-
Amortization			1,631	(1,631)		(1,631)
Interest					19	19
Subtotal	(263)	14,139	8,128	6,011	19	5,768

v. SoCalGas Regulatory Accounts – RD&D

SoCalGas RD&D Expense Account Details Revenue Requirements (\$000)						
Program Cycle 2016 - 2018						
One-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
Year 2018						
Beginning Balance	(37)					(37)
O&M		12,554	12,707	(153)		(153)
Capital-Related Costs						-
Interest					(73)	(73)
Subtotal	(37)	12,554	12,707	(153)	(73)	(263)

⁴² 2018 Beginning Balance does not tie to the 2017 Ending Balance from the 2017 Accountability report due to the exclusion of non-GRC activities.

D. SoCalGas Balanced Program Regulatory Account Disposition of Cost Recovery

TIMP & DIMP & SIMP (same for all 3 programs)

Per D.16-06-054, the TIMPBA, Post-2011 DIMPBA, and SIMPBA are authorized for the three-year GRC period ending December 31, 2018 or until the effective implementation date of SoCalGas' next GRC.

Any over- or under-collected balance at the end of each year within the GRC cycle will be carried over to the following year. For any unspent funds (also referred to as overcollections) at the end of the TY2016 GRC cycle, SoCalGas and SDG&E will propose in their next GRC proceeding to return the overcollections in rates to customers. However, for any costs in excess of the authorized O&M and capital-related costs (also referred to as undercollections), the costs shall be subject to recovery through a Tier 3 advice letter for amounts up to 35% of the TY2016 GRC cycle total revenue requirement. Any amount above the 35% threshold will be subject to recovery through a separate application.

i. SoCalGas Regulatory Accounts – TIMPBA and DIMPBA

In its TY 2019 GRC, SoCalGas did not forecast year-end 2018 balances and, therefore, did not specifically propose to return any overcollections from the TY2016 GRC cycle to customers because of the uncertainty of whether the unspent funds that existed at the time of the filing of the GRC application would continue to exist at the end of the GRC period. SoCalGas anticipated these overcollections would have been absorbed by costs incurred through the end of the GRC cycle; however, the actual recorded balances for TIMP and DIMP remain overcollected at the end of the GRC cycle. SoCalGas will return these overcollections to customers in connection with its TY 2019 GRC rate implementation.

ii. SoCalGas Regulatory Account – SIMPBA

For SIMP, the balance at the end of 2017 had already exceeded the three-year authorized revenue requirement by \$15.3 million, or 78.7%. Therefore, on February 8, 2018, SoCalGas filed Tier 3 advice letter AL 5253-G,

seeking to recover 35%, or \$6.8 million of the \$19.5 million authorized revenue for the TY2016 GRC cycle. AL 5253 was approved and effective as of January 1, 2019 per Resolution G-3544. SoCalGas will seek recovery of the remaining undercollection through a future request.

iii. SoCalGas Regulatory Account – NERBA

The NERBA is a two-way balancing account with five subaccounts. The following four subaccounts are funded through the TY2016 GRC⁴³:

- a. AB 32 Admin Fees Subaccount

- b. Subpart W Subaccount

- c. MS4 Compliance Subaccount, and
 1. LDAR Subaccount

In each annual October regulatory account balance update advice letter filing, SoCalGas will amortize the projected year-end balance effective January 1 of the following year.

- Via AL 5054-G, effective 1/1/2017, SoCalGas amortized the projected 2016 year-end balances of the AB 32 Admin Fees Subaccount and Subpart W Subaccount.

⁴³ The fifth subaccount is the Natural Gas Leak Abatement Program (NGLAP) Subaccount that is funded outside of the TY2016 GRC and therefore excluded from this report.

- Via AL 5202-G, effective 1/1/2018, SoCalGas amortized the projected 2017 year-end balances of the AB 32 Admin Fees Subaccount and Subpart W Subaccount.
- Via AL 5368-G, effective 1/1/2019, SoCalGas amortizes the projected 2018 year-end balances of the AB 32 Admin Fees Subaccount; Subpart W Subaccount; MS4 Compliance Subaccount; and LDAR Subaccount.

iv. SoCalGas Regulatory Account – RD&D

The RDDEA is a one-way regulatory account. Pursuant to D.16-06-054, TY2016 GRC, effective January 1, 2016, SoCalGas is authorized to continue using this account through the three-year GRC cycle ending December 31, 2018 or until the effective implementation date of SoCalGas' next GRC.

For the current GRC cycle (2016-2018), any over- or undercollected balance at the end of each year within the GRC cycle will be carried over to the following year. For any unspent RD&D funds at the end of the current GRC cycle, SoCalGas will propose in its next GRC proceeding to return the overcollections in rates to customers. Undercollections may not be recovered from ratepayers and shareholders will absorb the balance in the event actual expenses exceed authorized levels.

In its TY 2019 GRC, SoCalGas proposed to return to customers the RDDEA overcollected balance as of December 31, 2018.⁴⁴

⁴⁴ A.17-10-008, Ex. SCG-42 (Yu) at RQY-2: 12-13.