

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

Application of San Diego Gas & Electric Company (U902M) for Review of its Safety Model Assessment Proceeding Pursuant to Decision 14-12-025	Application 15-05-002 (Filed May 1, 2015)
And Related Matters	Application 15-05-003 Application 15-05-004 Application 15-05-005 (Consolidated)
<b>(NOT CONSOLIDATED)</b>	
Application of San Diego Gas & Electric Company (U902M) for Authority, Among Other Things to Update its Electric and Gas Revenue Requirement and Base Rates Effective on January 1, 2019.	Application 17-10-007 (Filed October 6, 2017)
And Related Matters	Application 17-10-008 (Filed October 6, 2017)

**(REVISED) RISK SPENDING ACCOUNTABILITY REPORT OF  
SAN DIEGO GAS & ELECTRIC COMPANY (U 902 M) AND  
SOUTHERN CALIFORNIA GAS COMPANY (U 904 G) FOR 2019**

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June 26, 2020

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SAN DIEGO GAS & ELECTRIC COMPANY (U 902 M) AND  
SOUTHERN CALIFORNIA GAS COMPANY (U 904 G) FOR 2019**

In compliance with Decision (D.) 19-04-020, Safety Model Assessment Proceeding Phase Two Decision Adopting Risk Spending Accountability Report Requirements and Safety Performance Metrics For Investor-Owned Utilities (“S-MAP Phase Two Decision”), San Diego Gas & Electric Company (“SDG&E”) and Southern California Gas Company (“SoCalGas”) submit this Risk Spending Accountability Report (“2019 RSAR”).<sup>1</sup> This 2019 Report covers spend authorized in the Test Year (“TY”) 2019 General Rate Case (“GRC”) cycle for activities that address safety, reliability, and/or maintenance, consistent with Public

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<sup>1</sup> In compliance with Decision (D.) 19-04-020, the S-MAP Phase Two Decision, this 2019 RSAR is being filed and served on Application (A.) 17-10-007/008 (cons.), the GRC at the time of filing and that approved the risk spending, and also the current RAMP proceeding; it is also being served on the California Public Advocate’s Office. D.19-04-020 (issued May 6, 2019) at Ordering Paragraph 8, p. 64.

Utilities Code Section 591. The Report was timely filed in accordance with D.19-04-020, the S-MAP Phase Two Decision, however, errors in formatting and certain numbers were subsequently identified and this report corrects those issues.

Respectfully submitted on behalf of SoCalGas and  
SDG&E,

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Southern California Gas Company and San Diego Gas & Electric Company  
2019 Risk Spending Accountability Report

Original Submission March 31, 2020

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## 1. INTRODUCTION

In compliance with Decision (D.) 19-04-020, Safety Model Assessment Proceeding Phase Two Decision Adopting Risk Spending Accountability Report Requirements and Safety Performance Metrics For Investor-Owned Utilities (S-MAP Phase 2 Decision), Southern California Gas Company (SoCalGas) and San Diego Gas & Electric Company (SDG&E) (collectively, the Utilities) timely submit this annual Risk Spending Accountability Report (RSAR) comparing 2019 imputed authorized spending to actual spending (2019 RSAR).<sup>1</sup> This 2019 RSAR addresses spend authorized in D.19-09-051, the Decision Addressing the Test Year (TY) 2019 General Rate Cases (GRCs) of SoCalGas and SDG&E (2019 GRC Decision) for activities that address safety, reliability, and/or maintenance, consistent with California Public Utilities Code (P.U. Code) Section (§) 591 and the S-MAP Phase 2 Decision.

This 2019 RSAR addresses the test year, or first year, of the 2019 GRC cycle, where the Utilities' applications were filed before the S-MAP Phase 2 Decision RSAR requirements were adopted. Accordingly, this is a transitional report with respect to presenting the information adopted in the S-MAP Phase 2 Decision when certain aspects of the requirements were not authorized in the 2019 GRC Decision in a manner that comports with such requirements.

The 2019 RSAR is organized as follows:

- **Section 1 Introduction** – briefly introduces the report.
  - **Section 1.A. Procedural Background** – describes previous events that lead to this report.
  - **Section 1.B. Overview of General Rate Cases and 2019 Cycle** – describes the basics of GRCs and the GRC cycle applicable for this report.
- **Section 2 Presentation of 2019 Risk Spending Accountability Report** – provides foundational information to consider when reviewing this 2019 RSAR.
  - **Section 2.A. Summary of Reporting Requirements** – puts forth the requirements subject to this report adopted in the S-MAP Phase 2 Decision.

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<sup>1</sup> In compliance with D.14-12-025 and the S-MAP Phase 2 Decision, this 2019 RSAR is being filed in and served on Application (A.) 17-10-007/008 (cons.), the “applicable GRC proceeding in which funding for the risk mitigation activities and spending was authorized,” (see D.14-12-025 at 46) and on Investigation (I.) 19-11-010/-011 (cons.), the “most recent RAMP/GRC at the time of its filing” (S-MAP Phase 2 Decision at 45).

- **Section 2.B. Key Parameters and Considerations Underlying the Report** – discusses assumptions that inform this report.
- **Section 2.C. Identification of Safety, Reliability, and Maintenance-Related Programs** – describes the areas in scope of this report.
- **Section 2.D. Derivation of Authorized Dollars** – explains how the authorized dollars from the 2019 GRC Decision were derived for this report.
- **Section 3 Overview of 2019 Risk Spending Accountability Report Results** – provides the high-level results and a summary of the variance explanations of the report.
- **Attachment A SDG&E** – presents tables providing authorized, actual, work units, variance explanations, program descriptions, and testimony references.
- **Attachment B SoCalGas** – presents tables providing authorized, actual, work units, variance explanations, program descriptions, and testimony references.

#### **A. Procedural 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. On December 4, 2014, the Commission adopted D.14-12-025 in the Risk OIR establishing, as part of its risk-informed decision-making framework, annual verification reports – one of which is the Risk Spending Accountability Report.<sup>2</sup> According to the Commission, the Risk Spending Accountability Report will “compare the utility’s GRC projected spending for approved risk mitigation projects to the actual spending on those projects, and to explain any discrepancies

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<sup>2</sup> D.14-12-025 also established the Risk Mitigation Accountability Report to compare projected and actual risk mitigation benefits (*see* D.14-12-025 at 12 and 44). Another element of this Risk Mitigation Accountability Report is addressed in the Utilities’ Safety Performance Metrics Report, which will be separately filed on or before March 31, 2020 pursuant to the S-MAP Phase 2 Decision.

between the two.”<sup>3</sup> These annual verification reports will “improve utility accountability of ratepayer money spent on risk mitigation.”<sup>4</sup>

To implement the verification reporting requirements, in D.16-06-054, the decision approving the TY 2016 GRCs of SoCalGas and SDG&E (2016 GRC Decision), the Commission ordered the Utilities to file interim RSARs for years 2014 through 2016 on a limited set of risk mitigation projects.<sup>5</sup> The basis for requiring these interim reports was “for the Commission and the Applicants to gain some familiarity and understanding with these reporting requirements during the TY 2016 GRC cycle, and to obtain the necessary data and metrics on safety, risk mitigation and accountability established by the framework in D.14-12-025.”<sup>6</sup> While the Commission ordered these interim RSARs for the Utilities, it also recognized that these reporting requirements would be refined in either future S-MAP, RAMP, and/or GRC proceedings.<sup>7</sup> These interim RSARs for years 2014-2016 were timely submitted by SoCalGas and SDG&E.

In September 2017, Senate Bill (SB) 549<sup>8</sup> was signed into law, effective on January 1, 2018. SB 549 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.”<sup>9</sup> Prior to the effective date of SB 549, RSARs had been limited to reporting on risk mitigation activities related to safety and/or reliability. SB 549 broadened the scope of reportable items to safety, reliability, and/or maintenance.<sup>10</sup>

To implement the requirements of SB 549 and in an effort to standardize future RSARs, in 2018 the RSAR requirements were further examined in Phase 2 of the S-MAP. Here, Energy Division issued a Proposal for Standardized Reporting and Outline (Staff Proposal) recommending revised reporting requirements. A workshop was held on the Staff Proposal and parties to the proceeding submitted formal comments.<sup>11</sup>

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<sup>3</sup> D.14-12-025 at 44.

<sup>4</sup> D.14-12-025, Findings of Fact 27 at 52.

<sup>5</sup> D.16-06-054, Ordering Paragraph (OP) 11 at 331-332, and at 39-41.

<sup>6</sup> D.16-06-054 at 39.

<sup>7</sup> D.16-06-054 at 41.

<sup>8</sup> SB 549, Stats. 2017-2018, Ch. 284 (Cal. 2017).

<sup>9</sup> P.U. Code § 591(a).

<sup>10</sup> See D.19-04-020 at 9.

<sup>11</sup> *Id.* at 7.



Concurrently with the examination of revised RSAR requirements in the S-MAP Phase 2, Energy Division’s Director Edward Randolph issued a letter to SoCalGas and SDG&E, dated October 18, 2018 (ED Compliance Letter). The ED Compliance Letter confirmed compliance with the accountability report-related requirements adopted in the 2016 GRC Decision for the interim 2014-2016 RSARs and directed additional interim RSARs subject to updated requirements. These interim RSARs for years 2017 and 2018 were timely filed and included, for the first time, reporting on the risk showing from the 2016 GRC as well as other safety, reliability, and maintenance activities, consistent with SB 549.

In April 2019, the S-MAP Phase 2 Decision adopted RSAR requirements<sup>12</sup> that, for SoCalGas and SDG&E, apply “starting with its 2019 RSAR filing (due March 31, 2020)”<sup>13</sup> for spending authorized in the 2019 GRC Decision. A list of the requirements applied for this 2019 RSAR are discussed in Section 2.A.

#### **B. Overview of General Rate Cases and the 2019 Cycle**

The Utilities file GRC applications with the Commission seeking a revenue requirement (comprised of O&M and capital-related funding) to become effective on January 1 of the test year. The Utilities typically put forth these requests in direct, base year dollars by forecasting values in workpapers, which are groups of organizational-based O&M cost centers and capital budget codes. These direct dollar forecasts also include various risk mitigation activities and projects that are supported by witnesses. The forecasts are converted into a test year revenue requirement. After the submission and thorough review of the evidentiary record, the Commission authorizes a revenue requirement to recover the reasonable costs forecasted to be incurred in the test year, and a mechanism for adjusting the revenue requirement annually during the post-test years.<sup>14</sup> A revenue requirement is the amount of money the Utilities are allowed to

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<sup>12</sup> *Id.* Attachment 2.

<sup>13</sup> *Id.* at 46.

<sup>14</sup> The years between a utility’s GRC test years are referred to as post-test years or attrition years. The revenue requirements for the attrition years are generally determined through a post-test year mechanism. Ultimately, the GRC decision will prescribe the mechanism for 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.

recover from their customers through rates.<sup>15</sup> The Commission authorizations may or may not be the same as originally presented by the Utilities in their respective GRC applications.

SoCalGas and SDG&E filed their TY 2019 GRC Applications on October 6, 2017.<sup>16</sup> Among other things, the Utilities' Applications included requests related to mitigating their key safety risks and integrated the results from their RAMP filed on November 30, 2016 (2016 RAMP). The Utilities included testimony in the 2019 GRC Application providing a roadmap of the RAMP risks to witness area<sup>17</sup> and a summary of GRC witnesses sponsoring RAMP costs,<sup>18</sup> testimony that explained the RAMP to GRC integration process,<sup>19</sup> and explicitly identified the RAMP-related items in the testimony of the witness sponsoring those forecasted costs.

The 2019 GRC Decision was approved by the Commission on September 26, 2019, nearly ten months into the test year. The 2019 GRC Decision states,

[t]he adopted revenue requirement and PTY increases for SDG&E will provide the necessary funds to allow it to operate its electric and natural gas transmission and distribution system safely and reliably and to fulfill customer service functions at reasonable rates.

For SoCalGas, the adopted revenue requirement and PTY increases will provide the necessary funds to allow it to operate its natural gas transmission, gas distribution, and gas storage systems safely and reliably and to fulfill customer service functions at reasonable rates.<sup>20</sup>

Further, while SoCalGas and SDG&E endeavored to “isolate the RAMP activity, to allow the reader to see the dollar request in GRC workpapers,”<sup>21</sup> the 2019 GRC Decision stated that the “RAMP portion in Applicants' requests is not presented as separate and distinct from the non-RAMP portions” and “in many instances our decision is not based on risk mitigation but rather on standard GRC methods.”<sup>22</sup> Based on this, the 2019 GRC Decision does not necessarily

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<sup>15</sup> The Utilities' GRCs direct, base year dollar forecasts are 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).

<sup>16</sup> Exhibit references herein refer to utility exhibit numbers as listed on their respective websites.

<sup>17</sup> A.17-10-007/-008 (cons.), Ex. SCG-02-R/SDG&E-02-R, Chapter 1 (Day) at Appendix A.1.

<sup>18</sup> *Id.* Ex. SCG-02-R/SDG&E-02-R, Chapter 1 (Day) at Appendix A.2.

<sup>19</sup> *See Id.*, Ex. SCG-02-R/SDG&E-02-R, Chapter 3 (York).

<sup>20</sup> D.19-09-051 at 3-4.

<sup>21</sup> A.17-10-007/-008 (cons.), Ex. SCG-02-R/SDG&E-02-R, Chapter 3 (York) at JKY-6.

<sup>22</sup> D.19-09-051 at 22.

authorize RAMP activities by line item details. Thus, in this 2019 RSAR, some imputing was needed.

Furthermore, on January 16, 2020, the CPUC adopted a decision in the Risk OIR, D.20-01-002 (RCP Decision), extending the GRC cycle for each large California investor-owned utility (IOU) from three to four years. To facilitate the transition from a three to four-year GRC cycle for the IOUs, the RCP Decision “direct[s] SoCalGas and SDG&E to request two additional attrition years (2022 and 2023) in their petition for modification of D.19-09-051.”<sup>23</sup> Thus, the RCP Decision revised the length of SoCalGas’ and SDG&E’s 2019 GRC cycle from 2019-2021 to 2019-2023. The petition for modification (PFM) of the 2019 GRC Decision to set attrition year increases for 2022 and 2023 will be filed by SoCalGas and SDG&E as soon as practicable, consistent with the RCP Decision.

To illustrate the GRC cycle relevant for this 2019 RSAR, the diagram below shows the Utilities’ current TY 2019 GRC cycle for the TY 2019 GRC Application and reflecting the RCP Decision.

**Diagram 1: TY 2019 GRC Cycle of SoCalGas and SDG&E**

<b>2019 GRC Proceeding</b>	
Base Year	2016
Forecast Year	2017
Forecast Year	2018
<b>Test Year</b>	<b>2019</b>
Post-Test Year	2020
Post-Test Year	2021
Post-Test Year	2022
Post-Test Year	2023

**Note:** Revenue requirements for 2022 and 2023 have not yet been established and will be addressed through a forthcoming PFM of the 2019 GRC Decision.

## **2. PRESENTATION OF 2019 RISK SPENDING ACCOUNTABILITY REPORT**

This section provides foundational information, such as the underlying assumptions and key parameters, to consider when reviewing this 2019 RSAR.

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<sup>23</sup> D.20-01-002 at 52.

## A. Summary of Reporting Requirements

The reporting requirements applicable to this 2019 RSAR were adopted in the S-MAP Phase 2 Decision.<sup>24</sup> The requirements and a roadmap to where each requirement has been met in this Report as summarized in the table below.

<b>RSAR Reporting Requirements</b>	<b>Roadmap of Compliance in 2019 RSAR with Reporting Requirements</b>
Develop a list of programs ( <i>i.e.</i> , one list as an appendix to the report) that include activities relating to safety, reliability or maintenance authorized or in effect during the record period. The list should be separated into risk mitigation programs identified in the RAMP and other programs related to safety, reliability or maintenance presented in the GRC application.	The methodology used to determine the programs in scope is described in Section 2.C below.
Report the authorized and actual spending for each program in the record period and the difference in dollars (actual less authorized) and in percent (actual less authorized, divided by authorized).	Attachments A and B have tables dedicated to providing this information.
Explain the difference between authorized and actual spending for the GRC programs chosen using the selection criteria specific to SoCalGas and SDG&E.	Where applicable, a variance explanation has been provided in Attachments A and B.
Provide a description of the program and references to testimony.	Attachments A and B have tables dedicated to providing this information.
Report on authorized activities and actual safety activities performed, for each program, using, where available “work units” as the unit of reporting.	Where available, work units have been provided in Attachments A and B.
Group the GRC programs by the general lines of business as presented in the GRC in which the funding request for the record period was authorized.	Attachments A and B provide the required information by line of business and GRC witness area.
Divide programs into expense and capital programs.	Attachments A and B have different tables for O&M and Capital.
Include a separate section in the report, if a balancing account or memorandum account tracks any portion of a program, to discuss the	Balanced programs have a dedicated section in Attachments A and B.

<sup>24</sup> D.19-04-020, Attachment 2.

cost recovery of the actual expenditures for the program.	
Include the total company authorized spending for the record period categorized into expense and capital programs.	See Section 3.

The S-MAP Phase 2 Decision also adopted a definition of “program” for purposes of the RSAR for SoCalGas and SDG&E<sup>25</sup> as follows:

**SDG&E and SoCalGas:** Expensed programs are defined at the workpaper level, which may contain one or more cost centers. Capital programs are defined at the budget code level, which may aggregate workpaper groups that share the same budget code.

In addition, the S-MAP Phase 2 Decision adopted selection criteria for SoCalGas and SDG&E for spending and work units as follows:

**Work Units:** Deviation between authorized work units and performed work units is equal to or greater than 20%.

**Spending:**

*SoCalGas*

- GRC expensed items: A variance of at least \$5 million, or a percentage variance of at least 20% subject to a minimum variance of \$1 million.
- Capital programs: A variance of at least \$10 million, or a percentage variance of at least 20% subject to a minimum variance of \$2 million.

*SDG&E – Electric Operations and Other Reportable Areas*

- GRC expensed items: A variance of at least \$5 million, or a percentage variance of at least 20% subject to a minimum variance of \$2.5 million.
- Capital programs: A variance of at least \$10 million, or a percentage variance of at least 20% subject to a minimum variance of \$5 million.

*SDG&E – Gas Operations*

- GRC expensed items: A variance of at least \$2.5 million, or a percentage variance of at least 20% subject to a minimum variance of \$0.5 million.

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<sup>25</sup> D.19-04-020, Attachment 2 at 3.

- Capital programs: A variance of at least \$5 million, or a percentage variance of at least 20% subject to a minimum variance of \$1 million.

## **B. Key Parameters and Considerations Underlying the Report**

SoCalGas and SDG&E present this 2019 RSAR by company, further divided into the line of business (*e.g.*, electric, gas, other), by program (*i.e.*, O&M workpaper and Capital budget code as described in Section 2.A above), and by RAMP and non-RAMP activities. For the activities, if work units are available, they are provided. In the event the selection criteria for spending and/or work units are met,<sup>26</sup> an explanation is provided along with the description of the program and cites to the 2019 GRC testimony. There is a separate section for balanced programs.

The Utilities are presenting this 2019 RSAR in direct dollars. Direct dollars are the input into the revenue requirement calculations, but not the revenue requirement itself. For those programs recorded to balancing accounts, the 2019 RSAR presents such programs in both direct dollars and on a revenue requirement basis, in accordance with the S-MAP Phase 2 Decision.<sup>27</sup>

### **i. Units**

As discussed in Section 1, the Utilities' respective 2019 GRC applications were filed before the S-MAP Phase 2 Decision RSAR requirements were adopted. Specifically, the requirement in the S-MAP Phase 2 Decision to include work units where available in the 2019 RSAR is problematic given that, in most cases, no work units were presented in the Utilities' 2019 GRC showing and were therefore not authorized in that manner. Accordingly, reporting authorized and actual work units, when work units were not explicitly authorized presents a challenge. For the purposes of this report, the Utilities provide actual units, but did not impute authorized units. In other instances, particularly for O&M programs, there were multiple units of measurement. Said differently, there were too many activities within a program to accurately provide a single, representative work unit. These items are addressed by the Utilities as applicable in Attachments A and B.

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<sup>26</sup> In response to SDG&E and SoCalGas' request for clarification of applying the variance selection criteria, Energy Division provided this guidance in an email dated February 14, 2020, "We have reviewed pages 41-43 of D.19-04-020 and believe that you should apply the selection criteria and explanations for all GRC programs as well as the risk mitigation programs, where work unit data is available. *That is to say that you will only need to provide greater details for the unitized risk mitigation programs.*"

<sup>27</sup> D.19-04-020, OP 10 at 65-66.

## ii. RAMP

The 2019 RSAR utilizes the 2016 RAMP (I.16-10-015/016) that was integrated into the 2019 GRC. Since that time, a more quantitative risk methodology and framework for RAMP and GRC filings was approved by the Commission in D.18-12-014. This 2019 RSAR does not reflect the methodology that was adopted in D.18-12-014.

For purposes of integrating the 2016 RAMP into the GRC, a variety of approaches were required, depending upon the activity. For example, the Utilities presented mappings of their 2016 RAMP risks to GRC witness areas<sup>28</sup> and a summary of RAMP costs by GRC witness area.<sup>29</sup> However, a mapping of each RAMP activity to GRC witness area was not included. Consistent with their presentation in the GRC, within an O&M and capital program in this 2019 RSAR, the Utilities (where necessary) provide the RAMP details by RAMP risk (e.g., Aviation Incident or Catastrophic Damage Involving Third Party Dig-Ins) rather than as the mitigation activity was designated in the 2016 RAMP Report.

However, for other areas, “for presentation purposes in this GRC,”<sup>30</sup> RAMP activities that span multiple witness areas (e.g., records management training) to a “limited number of GRC witnesses”<sup>31</sup> or a single workpaper. In these instances, the presentation does not match where the costs are recorded and thus creates variances between the RAMP imputed authorized and actuals.

As discussed above in Section 1.B, the 2019 GRC Decision did not explicitly authorize RAMP activities differently from non-RAMP activities. Instead, the 2019 GRC Decision assessed and authorized funding for the Utilities in many instances based on “standard GRC methods, such as the quality of the forecast, counterarguments by intervenors, and whether a given showing met the burden of proof.”<sup>32</sup> This therefore made it difficult to identify or impute authorized amounts for some RAMP mitigation activities, especially at a granular activity level. Similarly, the Utilities do not necessarily track costs by RAMP mitigation activity or risk. Rather, the Utilities record costs to O&M cost centers and to various capital budget codes, aligned with their GRC presentations. Accordingly, assumptions were needed to impute actuals

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<sup>28</sup> A.17-10-007/-008 (cons.), Ex. SCG-02-R/SDG&E-02-R, Chapter 1 (Day) at Appendix A.1

<sup>29</sup> *Id.*, at Appendix A.2.

<sup>30</sup> A.17-10-007/-008 (cons.), Ex. SCG-02-R/SDG&E-02-, Chapter 3 (York) a JKY-3.

<sup>31</sup> *Id.*, JKY-4.

<sup>32</sup> D.19-09-051 at 22.

at the RAMP mitigation activity level. The fact that such assumptions were required also supports the Utilities providing RAMP in this 2019 RSAR at a higher level, by RAMP risk rather than by RAMP activities.

Based on the foregoing, the 2019 RSAR reflects a transitional approach for presenting the above-noted Commission directives. The Utilities will continue to work with Energy Division staff and the S-MAP technical working group (as needed) regarding additional details for future reports.

### **iii. Timing of the TY 2019 GRC Decision**

As discussed in Section 1.B above, the Utilities' test year was 2019 in which rates approved in the 2019 GRC Decision were expected to become effective beginning on January 1, 2019. The 2019 GRC Decision was approved by the Commission on September 26, 2019, far past January 1. The Commission has recognized that proposed decisions (PD), and thus final decisions, in GRCs are subject to delays: "the PD is rarely completed and issued by the 90-day statutory deadline."<sup>33</sup> Accordingly, the Commission recently made some changes to the RCP in an effort to "greatly improve our ability to produce timely GRC decisions following a fair administrative hearing process, on a schedule that provides predictable outcomes for the utilities and the stakeholders in the regulatory compact: investors and customers."<sup>34</sup>

Given that this 2019 GRC was a litigated proceeding, there was a high degree of uncertainty with the outcome. In the interim (*i.e.*, before a decision was approved), the Utilities were managing their business under their previously authorized levels from their TY 2016 GRC, while at the same time addressing safety-related issues that emerged. The regulatory lag in receiving a GRC decision and the time when the GRC decision was anticipated to be effective, resulted in variances since the authorized levels from the 2019 GRC were unknown.

Now that the outcome of the 2019 GRC Decision is known, the Utilities are executing on the programs discussed during the 2019 GRC proceeding. While some programs may have been slow to start and others planned during 2020 may be impacted further by the Covid-19 pandemic, the Utilities intend to manage such programs over the 2019 GRC cycle.

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<sup>33</sup> D.20-01-002 at 26.

<sup>34</sup> *Id.*, at 26.



#### iv. Reprioritization

The Utilities recognize that they may need to re-prioritize funding to address critical matters that arise during the GRC cycle. Such differences in authorized programs will be shown in future RSARs. 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.”<sup>35</sup> 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.”<sup>36</sup> Reprioritizing spending also allows utilities to “[r]espond to immediate or short-term crises outside of the RAMP and GRC process,”<sup>37</sup> in accordance with Commission directive. As the Commission has stated: “RAMP and GRCs...are not designed to addresses immediate needs; the utilities have responsibility for addressing safety regardless of the GRC cycle.”<sup>38</sup> Accordingly, SoCalGas and SDG&E are allowed to re-prioritize spending as needed. This is captured in variances based on a variety of causes. In summary, the forecasted test-year methodology permits utilities to reprioritize funds throughout GRC cycles. Many variances included herein are driven, at least in part, by the pressures created by this aspect of safely and reliably managing a utility in California.

#### C. Identification of Safety, Reliability, and Maintenance-Related Programs

In accordance with the S-MAP Phase 2 Decision, this 2019 RSAR includes a listing of all programs<sup>39</sup> authorized or in effect during 2019 that were associated with RAMP,<sup>40</sup> justified on

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<sup>35</sup> D.11-05-018 at 27 (emphasis added).

<sup>36</sup> Energy Division, *Safety-Related Spending Accountability Report for Southern California Edison* (May 2017) (Safety Report) at 10, available at

[http://www.cpuc.ca.gov/uploadedFiles/CPUC\\_Public\\_Website/Content/Safety/SCESafety-RelatedSpending.pdf](http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Safety/SCESafety-RelatedSpending.pdf); 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.”).

<sup>37</sup> D.18-04-016 at 6, citing n.7 (D.16-08-018 at 152).

<sup>38</sup> D.18-04-016 at 6, citing n.7 (D.16-08-018 at 152).

<sup>39</sup> 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 D.19-04-020, Attachment 2 at 3.

<sup>40</sup> 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 2, Section III.

the basis of safety and/or reliability, and programs associated with a maintenance<sup>41</sup> activity. Therefore, in-scope workpapers for SDG&E include electric distribution, electric generation, electric and fuel procurement, gas distribution, gas transmission, gas engineering, gas system integrity, customer services, information technology including cyber security, support services, administrative and general, and SDG&E's balanced programs including the Gas Distribution Integrity Management Program (DIMP), Gas Transmission Integrity Management Program (TIMP), Tree Trimming, electric distribution overhead pools, and SDG&E's Wildfire Mitigation Plan Memorandum Account (WMPMA). The variance explanations for these workpapers is attached hereto as Attachment A.

In this 2019 RSAR, SDG&E presents its wildfire mitigation-related programs differently than how it was authorized in the 2019 GRC Decision. Subsequent to SDG&E filing its 2019 GRC Application on October 6, 2017, SB 901 was enacted in 2018 requiring SDG&E to submit an annual wildfire mitigation plan (WMP) to provide comprehensive information on SDG&E's efforts to mitigate wildfire risk.<sup>42</sup> Pursuant to SB 901, on February 6, 2019, SDG&E submitted its first WMP (2019 WMP),<sup>43</sup> which the Commission subsequently approved in D.19-05-039. Following approval of the 2019 WMP, SDG&E filed an advice letter to establish memorandum accounts to record costs associated with implementing the WMP.<sup>44</sup>

In the 2019 WMP, SDG&E put forth programs and strategies with the "goal of minimizing the probability that the various components of SDG&E's electric system might become the original or contributing source of ignition of a wildfire."<sup>45</sup> Some of the programs and strategies in the 2019 WMP were also forecasted in the 2019 GRC. As SDG&E explained in the 2019 WMP, "Many (but not all) of the programs and activities described in this Plan have

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<sup>41</sup> *Id.* at 2, Section IV. 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.

<sup>42</sup> The initial requirement to submit annual wildfire mitigation plans was set forth in SB 901, P.U. Code § 8386(b). This P.U. Code section was subsequently amended by Assembly Bill (AB) 1054.

<sup>43</sup> R.18-10-007, San Diego Gas & Electric Company's Wildfire Mitigation Plan (February 6, 2019). The 2019 WMP is available at <https://www.sdge.com/sites/default/files/regulatory/R.18-10-007%20SDG%26E%20Wildfire%20Mitigation%20Plan.pdf>

<sup>44</sup> SDG&E Advice Letter 3454-E/2817-G (filed October 31, 2019, effective May 30, 2019). SDG&E also established the Fire Risk Mitigation Memorandum Account (FRMMA) via Advice Letter 3333-E (effective January 16, 2019) in compliance with the applicable law at that time to track costs incurred for fire risk mitigation that are not otherwise covered in revenue requirements.

<sup>45</sup> 2019 WMP at 5.

been included in and will be funded through SDG&E's GRC rates.... There may be programs in the Plan for which SDG&E has revised its assumptions and cost forecasts compared to the 2019 GRC."<sup>46</sup> Therefore, refinements, continuations, and/or enhancements to certain wildfire mitigation programs were reflected in the 2019 WMP. As an example, the Pole Risk Mitigation and Engineering (PRiME) program was presented in the 2019 GRC as a program associated with the Electric Infrastructure Integrity risk. However, in implementing PRiME, SDG&E is focusing on the poles in its High Fire Threat District first and thus categorizing it as related to the risk of Wildfire. Accordingly, in this 2019 RSAR, programs presented in the 2019 WMP are shown as such and are categorized as Wildfire consistent with the 2019 WMP; however, due to timing, not all those WMP programs are included as RAMP. Further, SDG&E includes in this 2019 RSAR the wildfire-related programs in the Electric Distribution section herein consistent with how the programs were authorized in the 2019 GRC Decision. Subsequent to the GRC authorization, wildfire-related activities are subject to memorandum account treatment pursuant to statute and therefore, SDG&E is also including the balances of the WMPMA and disposition thereof in the Balanced section of this 2019 RSAR.

Similarly, in-scope workpapers for this 2019 RSAR for SoCalGas include gas distribution, gas transmission, gas engineering, gas system integrity, gas major projects, gas storage, pipeline safety enhancement program (PSEP), underground storage, gas procurement, customer services, information technology including cyber security, support services, administrative and general, and SoCalGas' balanced programs including DIMP, TIMP, Gas Storage Integrity Management Program (SIMP), and Research, Development and Demonstration (RD&D). The variance explanations for these workpapers are attached hereto as Attachment B.

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<sup>46</sup> *Id.*, at 83.

**D. Derivation of Authorized Dollars**

	<b>2019 Imputed Authorized Direct O&amp;M<sup>47</sup></b>	<b>2019 Imputed Authorized Direct Capital</b>	<b>2019 Authorized Total Rev Req<sup>48</sup></b>
<b>SDG&amp;E</b>	\$1,003,977	\$1,146,978	\$1,987,571

	<b>2019 Imputed Authorized Total Direct O&amp;M<sup>49</sup></b>	<b>2019 Imputed Authorized Total Direct Capital<sup>50</sup></b>	<b>2019 Authorized Total Rev Req<sup>51</sup></b>
<b>SoCalGas</b>	\$1,556,250	\$1,517,288	\$2,767,635

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.<sup>52</sup> The O&M and capital expenditures in 2019 were specifically authorized in the TY 2019 GRC. The dollars presented by the witnesses in testimony and workpapers were stated in base year 2016 dollars, however, for purposes of this report, the Utilities have presented the information in direct nominal dollars using the authorized escalation factors.

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.

<sup>47</sup> Excludes officer compensation per D.19-09-051, OP 11 and 12 at 778-779.

<sup>48</sup> Test Year 2019 revenue requirement authorized in D. 19-09-051 is adjusted to exclude officer compensation per OP 11 and 12, at 778-779.

<sup>49</sup> Excludes officer compensation per D.19-09-051, OP 11 and 12, at 778-779.

<sup>50</sup> Includes PSEP projects adopted in the Post-Test Year model in D.19-09-051.

<sup>51</sup> Test Year 2019 revenue requirement authorized in D. 19-09-051 is adjusted to exclude officer compensation per OP 11 and 12, at 778-779.

<sup>52</sup> The Commission-approved final GRC decisions do not always provide authorized figures by project or activity, which may be needed for accountability reporting.

In compliance with Ordering Paragraph 5 of D.16-08-003, SoCalGas for the first time, incorporated PSEP project forecasts into the TY 2019 GRC. In the 2019 GRC Application, SoCalGas presented detailed O&M and capital estimates to complete proposed PSEP pressure test, replacement and valve project work. In direct testimony, SoCalGas PSEP witness Rick Phillips described that 2019 O&M cost forecasts were normalized and not reflective of actual 2019 projected spend.

Because 2019 will be a transition year as PSEP is incorporated into the GRC process, forecasted costs for 2019 do not reflect the level of forecasted spend in the post-test years. Therefore, the PSEP TY 2019 O&M forecast has been normalized to reflect the forecasted total level of O&M expenditures over the 2019 – 2021 GRC period.<sup>53</sup>

SoCalGas anticipated that actual O&M expenses would significantly differ from the normalized forecast and much of the 2019 PSEP O&M variance is a result of the normalization.

### 3. OVERVIEW OF 2019 RISK SPENDING ACCOUNTABILITY REPORT RESULTS

#### A. Summary of Report Variances by Company

Non-Balanced Reportable Totals for SDG&E

	2019 Actuals	2019 Imputed Authorized	\$ Variance	% Variance
SDG&E Direct Capital	317,311	537,455	(220,144)	-41%
SDG&E Direct O&M	429,969	466,239	(36,270)	-8%
<b>SDG&amp;E Direct Total</b>	<b>747,280</b>	<b>1,003,694</b>	<b>(256,414)</b>	<b>-26%</b>

Non-Balanced Reportable Totals for SoCalGas

	2019 Actuals	2019 Imputed Authorized	\$ Variance	% Variance
SoCalGas Direct Capital	822,243	1,063,037	(240,794)	-23%
SoCalGas Direct O&M	666,740	801,031	(134,291)	-17%
<b>SoCalGas Direct Total</b>	<b>1,488,983</b>	<b>1,864,068</b>	<b>(375,086)</b>	<b>-20%</b>

<sup>53</sup> A.17-10-007/-008 (cons.), Ex. SCG-15-R (Phillips) at RDP-A-21.

**B. Summary of RAMP Variances by Company<sup>54</sup>**

i. SDG&E O&M RAMP Variances by GRC Witness Area

<b>GRC Witness Area</b>	<b>SDG&amp;E Exhibit Number</b>	<b>2019 RAMP Actuals</b>	<b>2019 Imputed Authorized RAMP</b>	<b>RAMP \$ Variance</b>	<b>RAMP % Variance</b>
Accounting and Finance	SDG&E-31	-	535	(535)	-100%
Corporate Center - Gen Admin	SDG&E-26	2,425	2,664	(239)	-9%
CS – Field	SDG&E-17	5,534	5,268	266	5%
CS - Information & Technologies	SDG&E-19	2,380	7,234	(4,854)	-67%
CS - Office Operations	SDG&E-18	965	1,020	(55)	-5%
Cyber Security	SDG&E-25	9,259	8,217	1,042	13%
Electric Distribution	SDG&E-15	89,730	100,240	(10,510)	-10%
Electric Generation & Songs	SDG&E-16	15	44	(29)	-66%
Gas Distribution	SDG&E-04	15,418	15,810	(392)	-2%
Gas System Integrity	SDG&E-05	-	1,445	(1,445)	-100%
Gas Transmission	SDG&E-06	1,634	210	1,424	678%
Human Resources	SDG&E-30	3,467	3,933	(466)	-12%
Real Estate & Facilities	SDG&E-22	3,176	3,814	(638)	-17%
TIMP & DIMP	SDG&E-11	9,069	11,758	(2,689)	-23%
<b>Total SDG&amp;E RAMP O&amp;M</b>		<b>143,071</b>	<b>162,192</b>	<b>(19,121)</b>	<b>-12%</b>

<sup>54</sup> D.19-04-020, Attachment 2, Table 1 at 5.

ii. SDG&E O&M RAMP Variances by RAMP Chapter<sup>55</sup>

<b>RAMP Chapter</b>	<b>RAMP Risk Description</b>	<b>2019 Actuals</b>	<b>2019 Imputed Authorized</b>	<b>\$ Variance</b>	<b>% Variance</b>
<b>SDG&amp;E-01</b>	Wildfires Caused by SDG&E Equipment	50,480	39,930	10,550	26%
<b>SDG&amp;E-02</b>	Catastrophic Damage Involving Third Party Dig-Ins	4,795	4,009	786	20%
<b>SDG&amp;E-03</b>	Employee, Contractor, and Public Safety	43,015	50,216	(7,201)	-14%
<b>SDG&amp;E-04</b>	Distributed Energy Resources – Safety and Operational Concerns	59	80	(21)	-26%
<b>SDG&amp;E-05</b>	Major Disturbance to Electrical Service (e.g., Blackout)	0	0	0	0%
<b>SDG&amp;E-06</b>	Fail to Black-start	15	44	(29)	-66%
<b>SDG&amp;E-07</b>	Cyber Security	9,259	8,217	1,042	13%
<b>SDG&amp;E-08</b>	Aviation Incident	395	440	(45)	-10%
<b>SDG&amp;E-09</b>	Workplace Violence	4,963	5,105	(142)	-3%
<b>SDG&amp;E-10</b>	Catastrophic Damage Involving High-Pressure Gas Pipeline Failure	9,316	5,546	3,770	68%
<b>SDG&amp;E-11</b>	Unmanned Aircraft System Incident	277	174	103	59%
<b>SDG&amp;E-12</b>	Electric Infrastructure Integrity	6,702	21,318	(14,616)	-69%
<b>SDG&amp;E-13</b>	Records Management	1,067	9,188	(8,121)	-88%
<b>SDG&amp;E-14</b>	Climate Change Adaptation	325	432	(107)	-25%
<b>SDG&amp;E-16</b>	Catastrophic Damage Involving Medium-Pressure Gas Pipeline Failure	9,352	15,143	(5,791)	-38%
<b>SDG&amp;E-17</b>	Workforce Planning	3,052	2,349	703	30%
<b>Total SDG&amp;E RAMP O&amp;M</b>		<b>143,071</b>	<b>162,192</b>	<b>(19,121)</b>	<b>-12%</b>

<sup>55</sup> This revised chart supersedes the same table included in SDG&E’s 2019 Safety Performance Metrics Report at page 32.

iii. SDG&E Capital RAMP Totals by GRC Witness Area

<b>GRC Witness Area</b>	<b>SDG&amp;E Exhibit Number</b>	<b>2019 RAMP Actuals</b>	<b>2019 Imputed Authorized RAMP</b>	<b>RAMP \$ Variance</b>	<b>RAMP % Variance</b>
Cyber Security	SDG&E-25	2,177	5,445	(3,268)	-60%
Electric Distribution	SDG&E-14	237,278	366,713	(129,435)	-35%
Facilities/Other	SDG&E-22	5,254	6,958	(1,705)	-24%
Gas Distribution	SDG&E-04	16,941	68,930	(51,989)	-75%
Gas Transmission	SDG&E-07	136	1,911	(1,776)	-93%
Information Technology	SDG&E-24	11,804	6,646	5,158	78%
TIMP/DIMP	SDG&E-11	46,744	55,444	(8,700)	-16%
<b>Total SDG&amp;E RAMP Capital</b>		<b>320, 333</b>	<b>512,047</b>	<b>(191,714)</b>	<b>-37%</b>



iv. SDG&E Capital RAMP Totals by RAMP Chapter<sup>56</sup>

<b>RAMP Chapter</b>	<b>RAMP Risk Description</b>	<b>2019 Actuals</b>	<b>2019 Imputed Authorized</b>	<b>\$ Variance</b>	<b>% Variance</b>
<b>SDG&amp;E-01</b>	Wildfires Caused by SDG&E Equipment	153,253	174,892	(21,639)	-12%
<b>SDG&amp;E-02</b>	Catastrophic Damage Involving Third Party Dig-Ins	6	290	(284)	-98%
<b>SDG&amp;E-03</b>	Employee, Contractor, and Public Safety	19,385	16,770	2,616	16%
<b>SDG&amp;E-04</b>	Distributed Energy Resources – Safety and Operational Concerns	0	0	0	0%
<b>SDG&amp;E-05</b>	Major Disturbance to Electrical Service (e.g., Blackout)	0	0	0	0%
<b>SDG&amp;E-06</b>	Fail to Black-start	(102)	0	(102)	-100%
<b>SDG&amp;E-07</b>	Cyber Security	2,177	5,445	(3,268)	-60%
<b>SDG&amp;E-08</b>	Aviation Incident	218	0	218	100%
<b>SDG&amp;E-09</b>	Workplace Violence	3,158	4,547	(1,389)	-31%
<b>SDG&amp;E-10</b>	Catastrophic Damage Involving High-Pressure Gas Pipeline Failure	5,510	6,437	(927)	-14%
<b>SDG&amp;E-12</b>	Electric Infrastructure Integrity	71,904	181,032	(109,128)	-60%
<b>SDG&amp;E-13</b>	Records Management	6,646	6,646	(0)	0%
<b>SDG&amp;E-16</b>	Catastrophic Damage Involving Medium-Pressure Gas Pipeline Failure	58,177	115,988	(57,812)	-50%
<b>Total SDG&amp;E RAMP Capital</b>		<b>320,333</b>	<b>512,047</b>	<b>(191,714)</b>	<b>-37%</b>

<sup>56</sup> This revised chart supersedes the same table included in SDG&E’s 2019 Safety Performance Metrics Report at page 34.

v. SoCalGas O&M RAMP Variances by GRC Witness Area

GRC Witness Area	SoCalGas Exhibit Number	2019 RAMP Actuals	2019 Imputed Authorized RAMP	RAMP \$ Variance	RAMP % Variance
Accounting and Finance	SCG-33	-	937	(937)	-100%
Advanced Metering	SCG-17	554	497	57	11%
Corporate Center - Gen Admin	SCG-28	3,392	4,561	(1,169)	-26%
CS - Field & Meter Reading	SCG-18	64,223	62,841	1,382	2%
CS - Information	SCG-20	2,106	2,923	(817)	-28%
CS - Office Operations	SCG-19	1,722	2,758	(1,036)	-38%
Cyber Security	SCG-27	505	763	(258)	-34%
Environmental	SCG-25	2,467	2,814	(347)	-12%
Fleet & Facilities	SCG-23	563	1,122	(559)	-50%
Gas Control & Sys Ops/Planning	SCG-13	5,239	6,163	(924)	-15%
Gas Distribution	SCG-04	54,302	64,973	(10,671)	-16%
Gas Engineering	SCG-09	493	2,194	(1,701)	-78%
Gas Major Projects	SCG-08	95	1,516	(1,421)	-94%
Gas System Integrity	SCG-05	5,813	20,092	(14,279)	-71%
Gas Transmission	SCG-06	19,748	9,964	9,784	98%
Human Resources	SCG-32	1,081	13,730	(12,649)	-92%
Pipeline Safety Enhancement Plan	SCG-15	8,900	60,582	(51,682)	-85%
TIMP & DIMP	SCG-14	120,237	92,741	27,496	30%
Underground Storage	SCG-10	19,140	29,745	(10,605)	-36%
<b>Total SoCalGas RAMP O&amp;M</b>		<b>310,581</b>	<b>380,917</b>	<b>(70,336)</b>	<b>-18%</b>

vi. SoCalGas O&M RAMP Variances by RAMP Chapter<sup>57</sup>

<sup>57</sup> This revised chart supersedes the same table included in SoCalGas's 2019 Safety Performance Metrics Report at page 30.

<b>RAMP Chapter</b>	<b>RAMP Risk Description</b>	<b>2019 Actuals</b>	<b>2019 Imputed Authorized</b>	<b>\$ Variance</b>	<b>% Variance</b>
<b>SCG-01</b>	Catastrophic Damage Involving Third Party Dig-Ins	14,101	23,163	(9,062)	-39%
<b>SCG-02</b>	Employee, Contractor, Customer, and Public Safety	81,471	98,689	(17,218)	-17%
<b>SCG-03</b>	Cyber Security	505	763	(258)	-34%
<b>SCG-04</b>	Catastrophic Damage Involving High-Pressure Gas Pipeline Failure	112,686	125,367	(12,681)	-10%
<b>SCG-05</b>	Workplace Violence	3,269	2,498	771	31%
<b>SCG-06</b>	Physical Security of Critical Gas Infrastructure	216	2,276	(2,060)	-91%
<b>SCG-07</b>	Workforce Planning	675	6,433	(5,758)	-90%
<b>SCG-08</b>	Records Management	4,812	13,373	(8,561)	-64%
<b>SCG-09</b>	Climate Change Adaptation	388	1,632	(1,244)	-76%
<b>SCG-10</b>	Catastrophic Damage Involving Medium-Pressure Gas Pipeline Failure	77,467	81,957	(4,490)	-5%
<b>SCG-11</b>	Catastrophic Event Related to Storage Well Integrity	14,990	24,766	(9,776)	-39%
<b>Total SoCalGas RAMP O&amp;M</b>		<b>310,581</b>	<b>380,917</b>	<b>(70,336)</b>	<b>-18%</b>

vii. SoCalGas Capital RAMP Variances by GRC Witness Area

<b>GRC Witness Area</b>	<b>SoCalGas Exhibit Number</b>	<b>2019 RAMP Actuals</b>	<b>2019 Imputed Authorized RAMP</b>	<b>RAMP \$ Variance</b>	<b>RAMP % Variance</b>
Cyber Security	SCG-27	18,219	25,688	(7,469)	-29%
Facilities/Other	SCG-23	1,669	679	990	146%
Gas Distribution	SCG-04	12,913	12,087	827	7%
Gas Engineering	SCG-09	2,588	2,540	48	2%
Gas Major Projects	SCG-08	-	29,307	(29,307)	-100%
Gas Transmission	SCG-07	6,260	13,022	(6,762)	-52%
Information Technology	SCG-26	27,380	36,601	(9,221)	-25%
PSEP	SCG-15	66,003	131,027	(65,024)	-50%
TIMP/DIMP	SCG-14	227,579	243,273	(15,693)	-6%
Underground Storage	SCG-10	95,213	128,540	(33,327)	-26%
<b>Total SoCalGas RAMP Capital</b>		<b>457,824</b>	<b>622,763</b>	<b>(164,939)</b>	<b>-26%</b>

viii. SoCalGas Capital RAMP Variances by RAMP Chapter

<b>RAMP Chapter</b>	<b>RAMP Risk Description</b>	<b>2019 Actuals</b>	<b>2019 Imputed Authorized</b>	<b>\$ Variance</b>	<b>% Variance</b>
<b>SCG-01</b>	Catastrophic Damage Involving Third Party Dig-Ins	328	0	328	100%
<b>SCG-02</b>	Employee, Contractor, Customer, and Public Safety	6,863	2,597	4,265	164%
<b>SCG-03</b>	Cyber Security	18,219	25,688	(7,469)	-29%
<b>SCG-04</b>	Catastrophic Damage Involving High-Pressure Gas Pipeline Failure	178,136	304,381	(126,245)	-41%
<b>SCG-05</b>	Workplace Violence	1,669	679	990	146%
<b>SCG-06</b>	Physical Security of Critical Gas Infrastructure	361	9,052	(8,691)	-96%
<b>SCG-08</b>	Records Management	33,577	43,853	(10,276)	-23%
<b>SCG-09</b>	Climate Change Adaptation	506	2,716	(2,210)	-81%
<b>SCG-10</b>	Catastrophic Damage Involving Medium-Pressure Gas Pipeline Failure	123,360	107,522	15,839	15%
<b>SCG-11</b>	Catastrophic Event Related to Storage Well Integrity	94,806	126,277	(31,471)	-25%
<b>Total SoCalGas RAMP Capital</b>		<b>457,824</b>	<b>622,763</b>	<b>(164,939)</b>	<b>-26%</b>

**ATTACHMENT A – SDG&E’s 2019 RISK SPENDING ACCOUNTABILITY REPORT**

# 1. SDG&E ELECTRIC

## A. SDG&E Electric Distribution

### i. SDG&E Electric Distribution O&M Variances

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Electric Distribution		138,824	137,728	1,097	1%		Unless noted below, units not available for this Witness Area because there is no single number of like units that would be comparable year over year				
Reliability & Capacity	Non-RAMP	208	283	(75)	-26%						
Reliability & Capacity	Improved modeling tools for DER's	59	80	(21)	-26%		1 Software license	1 Software license	0	0%	
<b>Sub-Total Reliability &amp; Capacity</b>		<b>267</b>	<b>363</b>	<b>(96)</b>	<b>-26%</b>						
Construction Services	Non-RAMP	768	929	(161)	-17%						
Construction Services	Contractor Safety Review	663	802	(139)	-17%						
Construction Services	System Hardening and Grid Modernization	2,360	2,853	(493)	-17%		See capital programs				
Construction Services	Workforce Planning	15	18	(3)	-17%		5 Training modules				
<b>Sub-Total Construction Services</b>		<b>3,806</b>	<b>4,602</b>	<b>(796)</b>	<b>-17%</b>						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Distops Enterprise Geographic Information System Standards	Non-RAMP	1,200	284	916	322%						
Distops Enterprise Geographic Information System Standards	Records Management	0	1,077	(1,077)	-100%		See program Asset Management, RAMP activity Annual records management compliance				
<b>Sub-Total Distops Enterprise Geographic Information System Standards</b>		<b>1,200</b>	<b>1,362</b>	<b>(162)</b>	<b>-12%</b>						
Electric Distribution Operations	Non-RAMP	18,243	18,540	(297)	-2%						
Electric Distribution Operations	Workforce Planning	26	30	(4)	-13%		9 Operators trained				
Electric Distribution Operations	Records Management	0	2,167	(2,167)	-100%		See program Asset Management, RAMP activity Annual records				



WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
							management compliance				
<b>Sub-Total Electric Distribution Operations</b>		<b>18,269</b>	<b>20,736</b>	<b>(2,467)</b>	<b>-12%</b>						
Kearny Operations Services	Non-RAMP	1,493	2,136	(643)	-30%						
Grid Operations	Non-RAMP	619	607	12	2%						
Grid Operations	Workforce Planning	4	4	0	0%		21 Engineers in training				
<b>Sub-Total Grid Operations</b>		<b>623</b>	<b>611</b>	<b>12</b>	<b>2%</b>						
Project Management	Non-RAMP	2,042	1,361	680	50%						
Electric Regional Operations	Non-RAMP	13,337	10,968	2,369	22%						
Electric Regional Operations	Safety Policies & Programs	18,157	20,234	(2,077)	-10%		53,300 Employee hours in safety meetings				
Electric Regional Operations	Aviation Safety	395	440	(45)	-10%		1 Aviation Safety Management System	1 Aviation Safety Management System	0	0%	
Electric Regional Operations	Distribution Switch Maintenance Program	1,001	1,115	(114)	-10%		420 Switches inspected				

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Electric Regional Operations	Employee Records Management training course	38	42	(4)	-9%		170 Trainings completed				
Electric Regional Operations	Workforce Planning	1,054	1,174	(120)	-10%		12 Apprentice Linemen	Unable to impute			
Electric Regional Operations	Inspection and Preventative Maintenance	0	1,179	(1,179)	-100%						
<b>Sub-Total Electric Regional Operations</b>		<b>33,982</b>	<b>35,153</b>	<b>(1,171)</b>	<b>-3%</b>						
Skills & Compliance Training	Non-RAMP	1,681	2,095	(414)	-20%						
Skills & Compliance Training	Ongoing maintenance programs	2,371	2,954	(583)	-20%		112 Classes				
<b>Sub-Total Skills &amp; Compliance Training</b>		<b>4,052</b>	<b>5,049</b>	<b>(997)</b>	<b>-20%</b>						
Service Order Team (SOT)	Non-RAMP	1,877	173	1,704	984%						
Substation C&O	Non-RAMP	3,939	4,822	(882)	-18%						
Substation C&O	Conditioned Base Maintenance (CBM) – Distribution	256	313	(57)	-18%		5 CBM monitors replaced	15 CBM monitors replaced	(10)	-67%	Yes

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Sub-Total Substation C&amp;O</b>		<b>4,195</b>	<b>5,135</b>	<b>(939)</b>	<b>-18%</b>						
System Protection	Non-RAMP	2,165	1,950	216	11%						
System Protection	Replace failed SCADA remote terminal units (RTU's)	64	58	6	10%		5 RTU's replaced	7 RTU's replaced	(2)	-29%	Yes
System Protection	Workforce Planning	8	7	1	14%		143 Hours job shadowed	125 Hours job shadowed	18	14%	
<b>Sub-Total System Protection</b>		<b>2,237</b>	<b>2,015</b>	<b>223</b>	<b>11%</b>						
Distribution and Engineering	Non-RAMP	559	412	147	36%						
Distribution and Engineering	Safety Policies & Programs	1,535	868	667	77%		485 Published updates to standards				
Distribution and Engineering	Workforce Planning	388	220	168	76%		4,836 Hours of training	4,108 Hours of training	728	18%	
Distribution and Engineering	Records Management	0	43	(43)	-100%		See program Asset Management, RAMP activity Annual records management compliance				
<b>Sub-Total Distribution and Engineering</b>		<b>2,482</b>	<b>1,543</b>	<b>940</b>	<b>61%</b>						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Asset Management	Utility Asset Management (Non-WMP)	660	2,342	(1,682)	-72%		See program Utility Asset Management - (WMP)				
Asset Management	Annual records management compliance	391	901	(510)	-57%		90 records and information management	Unable to impute			
<b>Sub-Total Asset Management</b>		<b>1,051</b>	<b>3,243</b>	<b>(2,192)</b>	<b>-68%</b>						
Troubleshooting	Non-RAMP	7,096	8,465	(1,370)	-16%						
Regional Public Affairs	Non-RAMP	1,252	1,825	(573)	-31%						
Major Projects	Non-RAMP	376	112	264	236%						
Major Projects	Contractor Safety Program	20	6	14	233%						
<b>Sub-Total Major Projects</b>		<b>396</b>	<b>118</b>	<b>278</b>	<b>236%</b>						
Technology Utilization	Non-RAMP	1,165	1,326	(162)	-12%						
Compliance Management	Non-RAMP	1,540	2,520	(980)	-39%						
Compliance Management	Records Management	0	545	(545)	-100%		See program Asset Management, RAMP activity				

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
							management compliance				
<b>Sub-Total Compliance Management</b>		<b>1,540</b>	<b>3,066</b>	<b>(1,526)</b>	<b>-50%</b>						
Tech Solutions and Reliability	Non-RAMP	2,328	2,137	191	9%						
Tech Solutions and Reliability	Records Management	0	1,379	(1,379)	-100%		See program Asset Management, RAMP activity Annual records management compliance				
<b>Sub-Total Tech Solutions and Reliability</b>		<b>2,328</b>	<b>3,516</b>	<b>(1,188)</b>	<b>-34%</b>						
Emergency Management	Non-RAMP	444	433	11	2%						
Emergency Management	Meteorology Studies and Education	325	432	(107)	-25%		1 Climate vulnerability assessment				
Emergency Management	Emergency Prep Trainings	731	973	(242)	-25%		81 Training sessions for first responders, Incident Response, and EOC				
<b>Sub-Total Emergency Management</b>		<b>1,500</b>	<b>1,837</b>	<b>(338)</b>	<b>-18%</b>						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Sub-Total ED Non-Balanced Workpapers</b>		<b>92,852</b>	<b>103,634</b>	<b>(10,782)</b>	<b>-10%</b>						
Wildfire Mitigation Program	Non-RAMP	21,002	0	21,002	100%	Yes, at the total WP					
Wildfire Mitigation Program	Utility Asset Management - (WMP)	107	1,261	(1,154)	-92%		1 Consultant contract	1 Consultant contract	0	0%	
Wildfire Mitigation Program	Wildfire Communications	2,527	264	2,263	857%		103,031,368 gross impressions				
Wildfire Mitigation Program	Fire Science & Climate Adaptation	4,903	4,202	701	17%						
Wildfire Mitigation Program	UAS Safety Program	277	174	103	59%		1 UAS Safety Management System	1 UAS Safety Management System	0	0%	
Wildfire Mitigation Program	System Hardening and Helo	11,032	11,523	(491)	-4%		12 months of Helo availability; For hardening units, see capital programs	12 months of Helo availability	0	0%	
Wildfire Mitigation Program	Inspection and Preventative Maintenance	2,254	12,197	(9,943)	-82%	Yes, at the total WP	Multiple inspection types result in no single				

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
							unit of measure Preventative maintenance, see capital programs				
Wildfire Mitigation Program	Records Management	0	485	(485)	-100%						
<b>Sub-Total Wildfire Mitigation Program</b>		<b>42,102</b>	<b>30,106</b>	<b>11,996</b>	<b>40%</b>	<b>Yes</b>					
Vegetation Management (Pole Brushing)	Non-RAMP	271	279	(8)	-3%						
Vegetation Management (Pole Brushing)	Safety Policies & Programs	3,564	3,672	(108)	-3%		59,475 Poles brushed	54,706 Poles brushed	4,769	9%	
Vegetation Management (Pole Brushing)	Joint Power Line Inspections with CalFire	36	37	(1)	-3%		0 FTEs utilized	0.3 FTEs utilized	(0.3)	-100%	Yes
<b>Sub-Total Vegetation Management (Pole Brushing)</b>		<b>3,871</b>	<b>3,988</b>	<b>(117)</b>	<b>-3%</b>						
<b>Sub-Total ED Wildfire Mitigation Balanced Programs<sup>1</sup></b>		<b>45,972</b>	<b>34,093</b>	<b>11,879</b>	<b>35%</b>						

<sup>1</sup> Electric Distribution's Vegetation Management (Tree Trimming) workpaper (1ED021.001) was also authorized two-way balancing account treatment in the 2019 GRC Decision. The costs related to the Tree Trimming Balancing Account are not included in these figures. Rather, the Tree Trimming Balancing Account is addressed in the Balanced section of this 2019 RSAR.

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

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Substation C&O – RAMP CBM - Distribution	Does not meet criteria			SDG&E experienced fewer distribution transformer monitor failures than forecasted in 2019. Failures, however, vary from year to year; some years have higher than anticipated failures while other years have lower than anticipated.
System Protection – RAMP Replace failed SCADA remote terminal units (RTU's)	Does not meet criteria			SDG&E experienced less RTU failures than forecasted in 2019. RTU failures, however, vary from year to year; some years have higher than anticipated failures while other years have lower than anticipated.
<b>Balanced Programs</b>				
<b>Memorandum Account – Wildfire Mitigation</b>				
Wildfire Mitigation Program – Non RAMP	After SDG&E filed its GRC Application, Senate Bill 901 required electric corporations, including SDG&E, to annually submit Wildfire Mitigation Plans. There, SDG&E proposed additional wildfire mitigation activities beyond or incremental to those included in the GRC. SDG&E spent funds on these new incremental activities.			Does not meet criteria
Wildfire Mitigation Program – RAMP Inspection and Preventative Maintenance	The variance is primarily attributed to the PRiME program. When the GRC Application was filed, PRiME was designed to reduce the risk of pole failures by performing detailed pole analyses and focusing on pole loading. SDG&E			Does not meet criteria



WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	conducted pilots for PRiME and, as a result, changed the focus of this program to largely pole replacements. This change results in a decrease in O&M repair work and an increase in capital replacement work.			
Wildfire Mitigation Program	See variance explanation for O&M program Wildfire Mitigation Program – Non RAMP.			Does not meet criteria
Vegetation Management (Pole Brushing) – RAMP Joint Power Line Inspections with CalFire	Does not meet criteria			SDG&E offered to train CalFire employees on electrical equipment at the beginning of 2019. CalFire did not have resources available to complete the training. CalFire confirmed there was a county staffing issue, and that the county will provide additional staffing in 2020. SDG&E and CalFire plan to resume these joint inspections in 2020.

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

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Electric Distribution	Substation C&O – RAMP CBM - Distribution	1ED015.000	This program installs and maintains specialized monitoring and communication devices on substation equipment in order to create a data-informed maintenance and replacement process for major substation assets. Distribution transformers (e.g., 69/12 kV) and their associated oil/gas measurements are monitored. If the levels are inadequate, alerts will inform	SDG&E-15-2R WHS-53 to WHS-55

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
			maintenance management of the need for maintenance. This program falls under the Electric Infrastructure Integrity Chapter of the RAMP Report and mitigates safety and reliability risks associated with failing substation equipment. The installation and maintenance of monitoring equipment allows SDG&E to utilize asset health metrics for critical distribution power transformers, allowing for proactive maintenance and/or replacement of these devices based on asset health data.	
Electric Distribution	System Protection – RAMP Replace failed SCADA remote terminal units (RTU's)	1ED017.000	This program proactively replaces SCADA RTU with failed communications or bad sensors, in order to improve data-informed operations of field switches and other equipment. This risk mitigation program falls under the Electric Infrastructure Integrity Chapter of the RAMP Report and mitigates risks to employee safety and system reliability that can be caused by bad information provided by failing RTU equipment.	SDG&E-15-2R WHS-56 to WHS-57
Electric Distribution	Wildfire Mitigation Program	1ED000.000	This workpaper was created for purposes of this Report to provide in a single workpaper for SDG&E's wildfire-related prevention and mitigation O&M activities. While this was not presented in this manner in the 2019 GRC, it is consistent with the GRC activities that are now included in SDG&E's subsequently filed Wildfire Mitigation Plans ( <i>see</i> Rulemaking (R.) 18-10-007).	SDG&E-15-2R Table WS-2 ( <i>see</i> SDG&E-1 Wildfires Caused by SDG&E Equipment), WHS-6 to WHS-9, and WHS-13
Electric Distribution	Vegetation Management (Pole Brushing)	1ED021.000	Pole brushing for SDG&E involves the clearing of flammable brush and vegetation away from SDG&E distribution poles subject to the California Public Resource Code (PRC), section 4292. PRC 4292 is intended to prevent energized electrical hardware from igniting a fire by keeping the area under the subject poles clear of flammable vegetation at all times.	SDG&E-15-2R WHS-66 to WHS-69

iv. **SDG&E Electric Distribution Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Electric Distribution		427,725	634,326	(206,601)	-33%		Unless specified above, units not available for this workpaper because there is no single number of like units that would be comparable year over year.				
Field Shunt Capacitors	Non-RAMP	27	660	(633)	-96%						
Rancho Carmel 3rd Bank & Cir 937 & 938	Non-RAMP	80	0	80	100%						
Mira Sorrento 138/12KV Substation	Non-RAMP	10	0	10	100%						
Ocean Ranch 69/12KV Substation	Non-RAMP	5,919	16,365	(10,446)	-64%	Yes					
Substation 12kV Capacitor Upgrades	Non-RAMP	0	1,038	(1,038)	-100%		0	4 Capacitor banks installed	(4)	-100%	
C1139 Santee - New circuit	Non-RAMP	2	0	2	100%						
Jamacha New Bank & New 12KV Circuit	Non-RAMP	4	5,821	(5,817)	-100%	Yes					
Doheny Desalination 15MW Project	Non-RAMP	0	411	(411)	-100%						
Wabash Canyon Sub 60/12kV Bank 32	Non-RAMP	612	0	612	100%		1 Substation bank	0	1	100%	
Distribution System Capacity Improvement	Non-RAMP	3,288	1,948	1,340	69%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Sub-Total Capacity/Expansion</b>		<b>9,942</b>	<b>26,243</b>	<b>(16,301)</b>	<b>-62%</b>						
Electric Distribution Tools/Equipment	Non-RAMP	1,436	1,166	270	23%						
<b>Sub-Total Equip/Tools/Misc.</b>		<b>1,436</b>	<b>1,166</b>	<b>270</b>	<b>23%</b>						
RAMP Base - Corrective Maint Program (CMP)	Inspection, Repair, Maintenance & Replacement Programs	13,921	12,144	1,777	15%		1,667 Padmount-ed transformers and terminators	1,454 Padmount-ed transformers and terminators	213	15%	
RAMP Base - DOE Switch/Manhole Replacement	Distribution Switch Maintenance Program	8,684	6,113	2,572	42%		390 Manhole and handhole vault repairs and switches	315 Manhole and handhole vault repairs and switches	75	24%	Yes
RAMP Base - Replacement of Live Front Equipment	Live Front Transformer and Terminator Replacement	165	770	(605)	-79%						
Aerial Marking for Safety	Non-RAMP	0	134	(134)	-100%						
RAMP Base -- Annual Pole Reinforcement (Non-WMP)	GO165: Distribution Inspect and Repair program	7,332	8,107	(775)	-10%		511 poles replaced	565 poles replaced	(54)	-10%	
<b>Sub-Total Mandated</b>		<b>30,102</b>	<b>27,268</b>	<b>2,834</b>	<b>10%</b>						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Electric Meters & Regulators	Non-RAMP	3,839	5,166	(1,327)	-26%		22,220 Meters purchased	29,903 Meters purchased	(7,683)	-26%	
Transformers	Non-RAMP	22,706	24,415	(1,710)	-7%		5,017 Transformers purchased	5,395 Transformers purchased	(378)	-7%	
<b>Sub-Total Materials</b>		<b>26,545</b>	<b>29,582</b>	<b>(3,037)</b>	<b>-10%</b>						
Reliability/Improvements Capital Projects	Non-RAMP	1,660	1,764	(104)	-6%						
Management of Overhead Distribution Service	Non-RAMP	6,902	7,125	(223)	-3%						
Management of Underground Distribution Service	Non-RAMP	3,614	3,926	(313)	-8%						
Reactive Small Capital Projects	Non-RAMP	985	2,058	(1,073)	-52%						
RAMP Base - Cable Replacement	Proactive cable replacement	5,404	17,495	(12,091)	-69%	Yes					
RAMP Incremental Capital Restoration of Service	Capital improvements	10,815	12,929	(2,114)	-16%						
Planned Cable Replacements	Non-RAMP	858	0	858	100%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
CMP-D1144756-SCADA	Non-RAMP	6	0	6	100%						
Shadow Ridge-Install 3rd Bank & Cir 937 & 938	Non-RAMP	5	0	5	100%						
SF6 DOE Work	Non-RAMP	278	0	278	100%						
Rebuild Pt Loma Substation	Non-RAMP	113	0	113	100%						
Emergency Substation Equipment	Non-RAMP	1	56	(55)	-98%						
RAMP Incremental - 4 kV Modernization - Distribution	Overhead distribution modernization and hardening	0	4,269	(4,269)	-100%			Unable to impute authorized units			
Clairemont Substation Rebuild	Non-RAMP	(12)	0	(12)	-100%						
Ramp Base - Install SCADA on Line Capacitors	Expand and Maintain Distribution Advanced SCADA infrastructure	206	5,952	(5,746)	-97%	Yes	4 Capacitors	Unable to impute authorized units			
Sewage Pump Station Rebuilds RAMP Incremental	Rebuild and repair aging infrastructure	352	0	352	100%		3 Transformers	0	3	100%	Yes

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
RAMP Base - Weather Station Adv Detection	Advanced Detection	0	1,111	(1,111)	-100%						
RAMP Base - Condition Based Maintenance - Smart Grid	Conditioned Based Monitoring System	572	1,738	(1,166)	-67%		50 Transformers	145 Transformers	(95)	-66%	Yes
Rebuild Kearny 69/12kV Substation	Non-RAMP	2,607	0	2,607	100%		4 Transformers	0	4	100%	
New Vine 69/12KV Substation	Non-RAMP	648	0	648	100%						
Streamview 69/12KV Sub Rebuild-Pre Eng	Non-RAMP	580	56	523	931%						
Poway Substation Rebuild	Non-RAMP	1,351	0	1,351	100%		2 Transformers	0	2	100%	
Rancho Santa Fe Sub Fire Hardening	Non-RAMP	1,315	0	1,315	100%		19 Breakers	0	19	100%	
Vault Restoration	Non-RAMP	0	1,124	(1,124)	-100%						
OIR Worst Circuits	Non-RAMP	0	2,812	(2,812)	-100%						
Morro Hill Substation Rebuild - RAMP Post-Filing	Replaces existing and obsolete infrastructure	0	4,216	(4,216)	-100%						
San Mateo Substation Rebuild (start in 2019)	Non-RAMP	1,226	0	1,226	100%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
SCADA Head-End Replacement	Non-RAMP	4,338	0	4,338	100%						
RTU Replacement Project RMS900	Non-RAMP	155	0	155	100%		34 RTUs	0	34	100%	
Avocado Sub 69KV Rebuild	Non-RAMP	1,029	0	1,029	100%		1 Transformer	0	1	100%	
Substation Mod to Support FLSR	Non-RAMP	43	0	43	100%						
Electric Distribution Grid Analytics	Non-RAMP	0	3,710	(3,710)	-100%						
4kV Modernization	Non-RAMP	542	0	542	100%		1 Substation		1	100%	
New Downtown 69/12kV Substation	Non-RAMP	91	0	91	100%						
Distribution Circuit Reliability Construction - RAMP	Expand and Maintain Distribution Advanced SCADA infrastructure	527	5,563	(5,036)	-91%	Yes	5 Switches	Unable to impute authorized units			
Power Quality Program	Non-RAMP	27	0	27	100%						



WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Replace Obsolete Substation Equipment - RAMP	Substation rebuild/replacements based on operational significance and SDG&E reliability standards	49	17,023	(16,974)	-100%	Yes					
<b>Sub-Total Reliability/Improvements</b>		<b>46,287</b>	<b>92,927</b>	<b>(46,640)</b>	<b>-50%</b>						
SF6 Switch Replacement	Replace with new technology	3,504	7,918	(4,414)	-56%		14 Switches	Unable to impute authorized units			
C589 & C753 Damaged Pole Replacements	Non-RAMP	7	0	7	100%						
Substation Security Proj under \$500K	Non-RAMP	17	0	17	100%						
Meteorology - Fire Behavior Modeling	Non-RAMP	7	0	7	100%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Elect Integrity – RAMP (Non-WMP)	Wire Correction, Switch Replacement and Underground Connector Upgrade Program	177	52,489	(52,312)	-100%	Yes	5 Switches Replaced	Unable to impute authorized units.			
RTU Modernization - RAMP Incremental - SCADA MASTER MODERNIZATION	Modernize Equipment	0	4,159	(4,159)	-100%						
NCW New Bank 32 RAMP Incremental - Undergrounding New Circuits	Undergrounding	0	4,319	(4,319)	-100%						
Rancho Santa Fe C1001 Wire Down Mit	Non-RAMP	(64)	0	(64)	100%						
Mobile Command Trailers (MCT)	Non-RAMP	8	0	8	100%						
Twin Engine Helicopter	Purchase a Twin-Engine Helicopter	218	0	218	100%		3 Communication nodes installed	0	3	100%	Yes
Tee Modernization Program	Non-RAMP	573	6,441	(5,868)	-91%	Yes	60 Tees	Unable to impute authorized units			

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Proactive Dead Front Terminator Deploy	Non-RAMP	12	0	12	100%						
Aerial Mesh Network Expansion	Non-RAMP	141	0	141	100%		4 Communication nodes installed	0	4	100%	
<b>Sub-Total Safety &amp; Risk Management</b>		<b>4,600</b>	<b>75,326</b>	<b>(70,726)</b>	<b>-94%</b>						
Advanced Energy Storage (AES)	Non-RAMP	0	11,241	(11,241)	-100%	Yes					
Borrego Microgrid 2.0	Non-RAMP	61	0	61	100%			-			
AB2868 Energy Storage	Non-RAMP	(58)	0	(58)	-100%						
Safety Enhancements for Battery	Non-RAMP	118	0	118	100%						
<b>Sub-Total DER Integration</b>		<b>121</b>	<b>11,241</b>	<b>(11,120)</b>	<b>-99%</b>						
Elect Transm Line Reliability Projects	Non-RAMP	2,600	1,124	1,476	131%		147 Poles replaced	Unable to impute authorized units			
Transmission Substation Reliability	Non-RAMP	0	111	(111)	-100%						
Orange County Long Range Plan - SOCRE	Non-RAMP	6,021	4,884	1,137	23%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	%	Meets Variance Criteria?
Fiber Optic for Relay Protect & Telecom	Non-RAMP	35	440	(405)	-92%						
TL676-Mission to Mesa Heights Reconductor	Non-RAMP	1,894	0	1,894	100%		1 Distribution underbuilt circuit miles				
Los Coches Substation 138/69kV Rebuild	Non-RAMP	1	0	1	100%		0				
TL663 Mission to Kearny Reconductor	Non-RAMP	342	0	342	100%		0				
TL600 – Reliability Pole Replacements	Non-RAMP	2	0	2	100%		0				
TL674A Del Mar Reconfigure/TL666D RFS	Non-RAMP	1	0	1	100%		0				
TL690A Pendleton South W2S	Non-RAMP	12	0	12	100%		0				
Rose Canyon TL617 Tap Removal	Non-RAMP	2	0	2	100%		0				
Miguel Substation 230kV Rebuild	Non-RAMP	203	0	203	100%						
<b>Sub-Total Transm/FERC Driven Projects</b>		<b>11,113</b>	<b>6,559</b>	<b>4,554</b>	<b>69%</b>						
<b>Sub-Total ED Non-Balanced Projects</b>		<b>130,146</b>	<b>270,311</b>	<b>(140,165)</b>	<b>-52%</b>						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
RAMP Base – Annual Pole Reinforcement (WMP)	GO165: Distribution Inspect and Repair program	10,413	9,404	1,009	11%		726 Poles replaced	656 Poles replaced	70	11%	
RAMP Base - Wireless Fault Indicators	Design and Engineering Approaches	895	4,884	(3,989)	-82%		535 Wireless fault indicators	Unable to impute authorized units			
TL685 Fiber Optics Warner/Santa Ysabel Subs	Non-RAMP	14	0	14	100%		0 Distribution underbuilt circuit miles				
Distribution Circuit Reliability - RAMP Base - FiRM	System Hardening	90,663	64,950	25,713	40%	Yes	1,701 Circuit miles	1,227 Circuit miles	474	39%	Yes
Fire Threat Zone Adv Protect & SCADA Upgrade	Inspection Repair Maintenance & Replacement Programs	4,064	13,496	(9,432)	-70%	Yes	8 Circuits	8 Circuits	0	0%	
Elect Integrity – RAMP (WMP)	Wire Safety Enhancement (WiSE) Program	4,624	6,421	(1,797)	-28%		5.6 Distribution circuit miles	5.1 Distribution circuit miles	0.5	10%	

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Accelerated Pole Loading - RAMP Base	Inspection Repair Maintenance & Replacement Programs	31,327	45,447	(14,120)	-31%	Yes	699 Poles replaced	1,800 Poles replaced	(1,101)	-61%	Yes
HFTD Fuse Replacements	Non-RAMP	3,711	0	3,711	100%		2,490 Fuses replaced	0	2,490	100%	
PSPS Engineering Enhancements	Non-RAMP	1,411	0	1,411	100%		7 Switches	0	7	100%	
HTD Undergrounding	Non-RAMP	194	0	194	100%		1 Circuit miles	0	1	100%	
Meteorology – SDG&E Weather Network	Non-RAMP	632	0	632	100%		70 Weather Stations	0	70	100%	
Meteorology – Fire Science Enhancements	Non-RAMP	315	0	315	100%		47 Registered users	0	47	100%	
Backup Power for Resiliency	Non-RAMP	205	0	205	100%						
SDG&E ENS Enhancements	Non-RAMP	880	0	880	100%		390 Hours of enhancements	0	390	100%	

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
CNF – RAMP	System Hardening	24,943	45,003	(20,061)	-45%	Yes	28 Distribution circuit miles	43 Distribution circuit miles	(15)	-35%	Yes
TL649 Otay-San Ysidro-Border SW Pole Repl - RAMP Incremental	Inspection Repair Maintenance & Replacement Programs	1,362	0	1,362	100%		4 Distribution underbuilt circuit miles	4 Distribution underbuilt circuit miles	0	0%	
TL697 San Luis Rey Wood to Steel - RAMP Incremental	Non-RAMP	1	0	1	100%						
TL6916 Sycamore Canyon to Scripps Wood to Steel	Non-RAMP	0	290	(290)	-100%		0 Distribution underbuilt circuit miles	1 Distribution underbuilt circuit miles	(1)	-100%	
TL694 Wood To Steel	Non-RAMP	0	857	(857)	-100%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
TL698 Monserate - Avocado Wood to Steel	Non-RAMP	57	857	(800)	-93%		0.33 Distribution underbuilt circuit miles	5 Distribution underbuilt circuit miles	(5)	-93%	
<b>Sub-Total WMP Projects (Balanced Costs)</b>		<b>175,711</b>	<b>191,609</b>	<b>(15,898)</b>	<b>-8%</b>						
Local Engineering Pool - Electric Distribution	Non-RAMP	91,555	102,725	(11,170)	-11%	Yes					
Local Engineering Pool - ED RAMP	Works Standards and Methods	1,032	849	183	22%						
<b>Sub-Total Local Engineering Pool – Electric Distribution</b>		<b>92,587</b>	<b>103,574</b>	<b>(10,987)</b>	<b>-11%</b>	<b>Yes</b>					
Local Engineering Pool - Substation	Non-RAMP	2,328	51,296	(48,968)	-95%	Yes					
Department Overhead Pool	Non-RAMP	10,924	7,594	3,330	44%						
Contract Admin Pool - RAMP Base	Administration of Projects performed by Contractors	16,029	9,942	6,087	61%	Yes					
<b>Sub-Total ED Overhead Pools (Balanced Costs)</b>		<b>121,868</b>	<b>172,406</b>	<b>(50,538)</b>	<b>-29%</b>						
<b>Sub-Total ED Balanced Projects</b>		<b>297,579</b>	<b>364,015</b>	<b>(66,436)</b>	<b>-18%</b>						



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

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
<b>Capacity/Expansion Projects</b>				
Ocean Ranch 69/12KV Substation	This substation upgrade was completed consistent with the timing put forth in the 2019 GRC for less funds than authorized.			Does not meet criteria
Jamacha New Bank & New 12kV Circuit	This project was put into service in 2018. Thus, there were less than forecasted costs recorded in 2019.			Does not meet criteria
<b>Mandated</b>				
RAMP Base - DOE Switch/Manhole Replacement	Does not meet criteria			Inspections resulted in higher than forecasted required replacements.
<b>Reliability/Improvements</b>				
Cable Replacements - RAMP	When SDG&E presented this program in the 2019 GRC Application, it was intended to proactively replace underground cable. Since then, however, the scope of this program has changed to now only include reactive work. Variability in cable failures due to			Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	unpredictable weather and system conditions also contributed to the variance.			
RAMP Base - Install SCADA on Line Capacitors	Lower than forecasted costs due to the delayed GRC decision. SDG&E intends to manage this program over the GRC cycle in an attempt to spend at authorized levels.			Does not meet criteria
Sewage Pump Station Rebuilds RAMP Incremental	Does not meet criteria			The transformers that were installed in January 2019 resulted from delayed work scheduled to be completed in 2018.
RAMP Base - Condition Based Maintenance - Smart Grid	Does not meet criteria			Program completed earlier than the forecasted timing put forth in the 2019 GRC.
Distribution Circuit Reliability Construction - RAMP	Lower than forecasted costs due to the delayed GRC decision. SDG&E intends to manage this program over the GRC cycle in an attempt to spend at authorized levels.			Does not meet criteria
Replace Obsolete Substation Equip - RAMP	This program, as described, rebuilds or replaces equipment based on operational significance and reliability standards. Equipment identified for rebuild or replacement in 2019 was lower than the forecasted amount put forth in the 2019 GRC. SDG&E intends to manage this			Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	program over the GRC cycle in an attempt to spend at authorized levels.			
<b>Safety &amp; Risk Management</b>				
Electric Integrity – RAMP (Non-WMP)	Since filing the 2019 GRC Application, SDG&E re-prioritized a portion of the authorized funds from this program to mitigate wildfire-related risk under the WiSE program. Lower than forecasted costs in this program are due to the delayed GRC decision. SDG&E intends to manage this program over the GRC cycle in an attempt to spend at authorized levels.			Does not meet criteria
Twin Engine Helicopter	Does not meet criteria			Three communication nodes were installed in 2019 that were delayed from prior years. Communication nodes provide real time situational awareness information to inform SDG&E operations while the helicopter is in flight.
Tee Modernization Program	Lower than forecasted costs due to the delayed GRC decision. SDG&E intends to manage this program over the GRC cycle in an attempt to spend at authorized levels.			Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
<b>DER Integration</b>				
Advanced Energy Storage	SDG&E delayed spending on AES in 2019 as SDG&E conducted further analysis to identify areas on the distribution system that would benefit from the deployment of advanced energy storage due to excess renewable generation on a circuit. SDG&E intends to move forward with at least one circuit in 2020 and 2021.			Does not meet criteria
<b>Balanced Programs</b>				
<b>Memorandum Account – Wildfire Mitigation</b>				
Distribution Circuit Reliability (FiRM) - RAMP	This system hardening project, as described, is designed to mitigate wildfire-related risk. Higher than authorized capital spend due to the increase of fire hardening projects within the High Fire Threat District (HFTD) to mitigate wildfire risk.			See Dollar Variance Explanation
Fire Threat Zone Adv Protect & SCADA Upgrade	Since filing the 2019 GRC Application, SDG&E has consolidated multiple advanced protection programs and re-prioritized the scope to mitigate wildfire-related risk. SDG&E intends to manage this program over the GRC cycle in an attempt to spend at authorized levels.			Does not meet criteria
Accelerated Pole Loading - RAMP	Beginning in 2019, SDG&E prioritized poles located in the HFTD to be analyzed and replaced if necessary. This program will continue through 2027 as described with prioritization of poles			See Dollar Variance Explanation

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	located in the HFTD to be analyzed and replaced first and then continuing with the remaining poles in the service territory. Note: this program is referred to as Pole Risk Mitigation and Engineering program or PRiME in the 2019 WMP.			
Cleveland National Forest (CNF) Power Line Replacement Projects - RAMP	Construction delays resulting from environmental and permitting issues, as well as limited availability of contractor resources resulted in lower than forecasted costs.			See Dollar Variance Explanation
<b>One-Way Balanced - Overhead Pools</b>				
Local Engineering Pool – Elect Dist Pool	Due to the delay in the final GRC decision, the actual funding was lower than authorized due to less electric distribution capital work being designed compared to the amount forecasted in the GRC Application. Over the GRC cycle, SDG&E intends to manage the program at authorized levels.			
Local Engineering Pool – Substation Pool	The Local Engineering - Substation pool is loaded onto electric distribution substation capital jobs, electric transmission substation capital jobs and gas capital jobs. Due to the delay in the final GRC decision, the actual funding was lower than authorized due to less substation capital work being designed compared to the amount forecasted in the GRC Application. Over the GRC			

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	cycle, SDG&E intends to manage the program at authorized levels.			
Contract Administration Pool – RAMP Base	This program spent more than authorized levels due to two main factors. First, there was an increase in the amount of contractor resources primarily to support the increase of wildfire-related work. Second, SDG&E reimbursed a contractor for an annual insurance payment at a higher than expected level due to upward pressures experienced by the contractor when obtaining the appropriate level of insurance.			

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	2019 GRC Testimony Reference
Electric Distribution	052530	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.	SDG&E-14-R AFC-23 to AFC-24
Electric Distribution	162690	Jamacha New Bank & New 12kV Circuit	The purpose of this project is to mitigate a heavily loaded transformer at Jamacha substation and increase the reliability in the area. This will be accomplished by installing new circuit out of Jamacha Substation to balance the load and a new transformer to reduce the loading on the existing heavily loaded transformer.	SDG&E-14-R AFC-29 to AFC-30
Electric Distribution	002890	RAMP Base - DOE Switch/	This budget provides funding to replace or remove underground and overhead switches and to repair underground structures, all of which impact system integrity and employee and public safety. This will allow	SDG&E-14-R AFC-47 to AFC-48

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
		Manhole Replacement	SDG&E to continue to operate distribution equipment and facilities for the safety and well-being of both employees and the general public and to comply with General Order (GO) 95.	
Electric Distribution	002300	Cable Replacements – RAMP	This project provided funding for the proactive replacement of underground cable that was identified to have a high probability of failure based on electric reliability circuit analysis and cable failure data. It is also required to provide quality customer service and reliability to existing customers by proactively replacing failed cable in the underground cable system.	SDG&E-14-R AFC-81
Electric Distribution	112490	RAMP Base - Install SCADA on Line Capacitors	This budget provides funding to convert existing distribution line capacitors to SCADA control in order to provide improved VAR control, and improved system efficiency and operability.	SDG&E-14-R AFC-87 to AFC-88
Electric Distribution	112610	Sewage Pump Station Rebuilds RAMP Incremental	This budget provides funding to rebuild three existing 12/4kV substations that feed City of San Diego-owned sewage treatment and pump station facilities based upon aging infrastructure and the goal of increased reliability.	SDG&E-14-R AFC-89 to AFC-90
Electric Distribution	122660	RAMP Base - Condition Based Maintenance - Smart Grid	This budget provides funding to implement advanced technologies to monitor the health of critical distribution substation assets. SDG&E installs Conditioned Based Maintenance (CBM) monitoring equipment on distribution facilities in SDG&E substations. The CBM project benefits are centered on better understanding the health of assets so that proper maintenance activities are identified and performed as needed to achieve greater asset utilization and longevity of use.	SDG&E-14-R AFC-95 to AFC-96
Electric Distribution	932400	Distribution Circuit Reliability Construction	This project provides funds for the addition of equipment necessary to improve service reliability for electric customers and maintain reliability standards. This budget supports construction of projects that include installation of fuses, overhead and underground manual switches, SCADA service restorers, SCADA switches, overhead fault indicators, overhead line extensions and circuit reconductoring for improving	SDG&E-14-R AFC-106 to AFC-107

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
			electric system reliability.	
Electric Distribution	992820	Replace Obsolete Substation Equip - RAMP	This budget provides funding to improve safety and reliability related to the replacement of obsolete and problematic substation equipment. SDG&E will focus primarily on distribution substation bank transformers and circuit breaker replacements.	SDG&E-14-R AFC-107 to AFC-109
Electric Distribution	162520	Elect Integrity – RAMP (Non-WMP)	Pursuant to proposed incremental capital activities described in the 2016 RAMP, this budget code represents a collection of projects implementing safety risk reduction measures in the Electric Infrastructure Integrity (EII) risk area. Several programs addressing key infrastructure improvement projects across electric distribution, substation, and transmission may be implemented as part of this initiative to proactively address the potential for premature asset failure.	SDG&E-14-R AFC-117 to AFC-119
Electric Distribution	172420	Twin Engine Helicopter	This budget will provide funding to purchase a twin-engine helicopter to provide a more capable aircraft and address safety risks associated with helicopter operations.	SDG&E-14-R AFC-121 to AFC-122
Electric Distribution	172490	Tee Modernization Program	This budget provides funding to improve reliability and reduce safety risk by replacing aging 600A Tee connectors on circuits with multiple historical Tee failures and with high fault current. Tee connector failures have become one of the largest contributors to customer outages in the last few years.	SDG&E-14-R AFC-122 to AFC-123
Electric Distribution	112470	Advanced Energy Storage	Mitigate intermittency and operational problems from renewable energy sources by installing energy storage on distribution circuits that have a high concentration of photovoltaic (PV) systems. Additionally, energy storage will provide benefits such as peak shaving and reactive power support. Energy Storage coupled with advanced inverter functionality allows for 4-quadrant operational support; therefore, enabling Distributed Energy Resource (DER) implementation by way of Photovoltaic (PV) smoothing, voltage control and increasing reliability. Energy Storage and renewable generation may not share the same point of common coupling when installed on a distribution circuit. Therefore, further installation and	SDG&E-14-R AFC-129 to AFC-130



Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
			analysis of AES is needed to determine the effectiveness of PV smoothing and voltage control when the generation and storage are decoupled.	
Electric Distribution	13247A/ 132470	Distribution Circuit Reliability (FiRM) - RAMP	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 through 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.	SDG&E-14-R AFC-111 to AFC-112
Electric Distribution	152590	Fire Threat Zone Adv Protect & SCADA Upgrade	This budget will provide funding to replace aging circuit breakers and/or obsolete electromechanical relays, to create a more comprehensive protection system by taking advantage of newer field technologies under installation by the FiRM project, and to create visibility in fire threat areas with installation of distribution SCADA.	SDG&E-14-R AFC-116 to AFC-117
Electric Distribution	17254A	Accelerated Pole Loading - RAMP	This budget will provide funding to a program designed to ensure poles continue to meet GO 95 standards and locally known conditions (wind), loading safety factors, and clearance criteria as well as other conditions that are known to be a risk.	SDG&E-14-R AFC-123 to AFC-126
Electric Distribution	081650	Cleveland National Forest (CNF) Power Line Replacement Projects - RAMP	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. 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.	SDG&E-14-R AFC-143 to AFC-144

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
Electric Distribution	009010	Local Engineering Pool - ED Pool	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 people address the engineering needs for new services, facilities relocations, overhead-to-underground conversions, capacity, and reliability projects. These people 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. These forecasted capital expenditures support the goals of enhancing safety, maintaining adequate reliability levels, and compliance with federal, state and local regulations.	SDG&E-14-R AFC-69 to AFC-70
Electric Distribution	009040	Local Engineering Pool – Substation	This budget provides funding for the Local Engineering – Substation Pool. This pool consists of planners, designers, engineers and support personnel who research, analyze, and design the facilities needed to serve customers. These people address the engineering needs for substation projects. These people 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 and transmission substation capital activities.	SDG&E-14-R AFC-70 to AFC-72
Electric Distribution	00906A	Contract Administration Pool – RAMP Base	The Contract Administration (CA) pool consists of those expenses necessary for the administration of projects that are performed by contractors for SDG&E. The expenses to this pool consist of labor for Contract Administrators and support personnel, as well as the associated non-labor support costs such as office and field supplies. This pool includes the costs that will be allocated to contracted work.	SDG&E-14-R AFC-73 to AFC-74

**B. SDG&E Electric Generation**

**i. SDG&E Electric Generation O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Electric Generation</b>		36,664	41,070	(4,406)	-11%		Units not available for this Witness Area because there is no single number of like units that would be comparable year over year				
Generation - Plant – Admin	Non-RAMP	246	379	(133)	-35%						
Generation Plant Miramar	Non-RAMP	1,313	2,520	(1,207)	-48%						
Generation Plant Miramar	Maintenance Certification and testing of existing Blackstart Resources	15	22	(7)	-32%						
<b>Sub-Total Generation Plant Miramar</b>		<b>1,328</b>	<b>2,542</b>	<b>(1,214)</b>	<b>-48%</b>						
Generation Plant Palomar	Non-RAMP	19,985	19,712	273	1%						
Electric Project Development	Non-RAMP	1	131	(131)	-100%						
Generation Plant Desert Star	Non-RAMP	13,462	16,282	(2,819)	-17%						
Generation Plant Cuyamaca Peak	Non-RAMP	733	1,131	(397)	-35%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Generation Plant Cuyamaca Peak	Add Blackstart capabilities to the southern part of the SDG&E electric system.	0	22	(22)	-100%						
<b>Sub-Total Generation Plant Cuyamaca Peak</b>		<b>733</b>	<b>1,153</b>	<b>(419)</b>	<b>-36%</b>						
Resource Planning Director	Non-RAMP	908	871	37	4%						

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

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

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

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

**iv. SDG&E Electric Generation Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Electric Generation		12,314	12,971	(657)	-5%		Units are unavailable because these workpapers do not have a single number of like units that would be comparable year over year.				
Generation Capital Tools & Test Eqpt.	Non-RAMP	56	297	(241)	-81%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Miramar	Non-RAMP	975	2,784	(1,809)	-65%						
Palomar Plan Operational Improvements	Non-RAMP	5,751	5,774	(23)	0%						
Desert Star Energy Ctr Oper. Enhance	Non-RAMP	3,579	3,627	(47)	-1%						
Cuyamaca Peak Energy Plant Oper Enhance	Non-RAMP	1,946	489	1,457	298%						
Ramona Solar Plant Oper Enhance	Non-RAMP	6	0	6	100%						

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

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

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

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

**C. Electric and Fuel Procurement**

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

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Electric &amp; Fuel Procurement</b>		7,964	9,349	(1,386)	-15%						
Long Term Procurement	Non-RAMP	1,805	2,389	(584)	-24%		11 FTE	15 FTE	(4)	-27%	
Trading & Scheduling	Non-RAMP	2,070	3,192	(1,122)	-35%		16 FTE	20 FTE	(4)	-20%	
Mid and Back Office	Non-RAMP	4,089	3,769	320	8%		22 FTE	25 FTE	(3)	-12%	

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

**2. SDG&E GAS**

**A. SDG&E Gas Distribution**

**i. SDG&E Gas Distribution O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Gas Distribution</b>		29,345	31,762	(2,417)	-8%		Unless noted, units not available for this Witness Area because there is no single number of like units that would be comparable year over year				
Field O&M - Other Services	Non-RAMP	315	218	97	44%						
Field O&M - Leak Survey	Non-RAMP	0	2	(2)	-100%		0				
Field O&M - Leak Survey	Maintenance	1,868	1,776	92	5%		990 Inspections and Surveys				
Field O&M - Leak Survey	Employee, Contractor, and Public Safety	0	220	(220)	-100%		0				
<b>Sub-Total Field O&amp;M - Leak Survey</b>		<b>1,868</b>	<b>1,998</b>	<b>(130)</b>	<b>-7%</b>						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Field O&M - Locate & Mark	Non-RAMP	495	517	(22)	-4%						
Field O&M - Locate & Mark	Training Locate & Mark Activities, Prevention and Improvements	4,795	3,343	1,452	43%	Yes, at the total WP	150,747 Tickets transmitted				
<b>Sub-Total Field O&amp;M - Locate &amp; Mark</b>		<b>5,290</b>	<b>3,860</b>	<b>1,430</b>	<b>37%</b>	<b>Yes</b>					
Field O&M - Main Maintenance	Non-RAMP	2,210	2,347	(137)	-6%						
Field O&M - Main Maintenance	Safety Policies & Programs	968	1,351	(383)	-28%		842 Projects				
<b>Sub-Total Field O&amp;M - Main Maintenance</b>		<b>3,178</b>	<b>3,698</b>	<b>(520)</b>	<b>-14%</b>						
Field O&M - Service Maintenance	Non-RAMP	1,897	2,025	(128)	-6%						
Field O&M - Tools Fittings & Materials	Non-RAMP	1,219	1,085	134	12%						
Field O&M - Electric Support	Non-RAMP	263	458	(195)	-43%						
Field O&M - Supervision & Training	Non-RAMP	2,311	1,785	525	29%	Yes					



WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Field O&M - Supervision & Training	Safety Policies & Programs	220	2,034	(1,814)	-89%	Yes					
Field O&M - Supervision & Training	Improvements	1,415	346	1,069	309%	Yes					
<b>Sub-Total Field O&amp;M - Supervision &amp; Training</b>		<b>3,946</b>	<b>4,165</b>	<b>(220)</b>	<b>-5%</b>						
Asset Management	Non-RAMP	1,037	1,844	(807)	-44%	Yes					
Asset Management	Maintenance	0	188	(188)	-100%		0				
Asset Management	Operations	39	74	(35)	-47%		192 Standards Reviewed				
Asset Management	Coat or remove affected buried piping in vaults	120	235	(115)	-49%		13 Projects Reviewed				
<b>Sub-Total Asset Management</b>		<b>1,196</b>	<b>2,341</b>	<b>(1,145)</b>	<b>-49%</b>	<b>Yes</b>					
Measurement & Regulation	Non-RAMP	1,965	1,965	0	0%						
Measurement & Regulation	Scheduled monitoring and survey activities	2,664	2,597	67	3%		5798 Compliance components maintained				
<b>Sub-Total Measurement &amp; Regulation</b>		<b>4,629</b>	<b>4,562</b>	<b>67</b>	<b>1%</b>						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Cathodic Protection (CP)	Non-RAMP	332	856	(524)	-61%	Yes, at the total WP					
Cathodic Protection	Requirements for Corrosion Control	1,627	1,627	0	0%		20,845 CP reads				
<b>Sub-Total Cathodic Protection</b>		<b>1,959</b>	<b>2,483</b>	<b>(524)</b>	<b>-21%</b>	<b>Yes</b>					
Operations Management & Training	Non-RAMP	1,883	2,850	(967)	-34%	Yes, at the total WP					
Operations Management & Training	Qualifications of Pipeline Personnel	608	702	(94)	-13%						
Operations Management & Training	Operations	50	97	(47)	-48%						
Operations Management & Training	Operations	22	73	(51)	-70%						
Operations Management & Training	Mandatory employee refresher training programs	748	864	(116)	-13%		996 Employees trained				
Operations Management & Training	Customer Communications & First Responder training	275	283	(8)	-3%		58 First responder, agency, and internal personnel training sessions				
<b>Sub-Total Operations Management &amp; Training</b>		<b>3,586</b>	<b>4,869</b>	<b>(1,283)</b>	<b>-26%</b>	<b>Yes</b>					

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

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Field O&M - Locate & Mark	The variance is due to 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.			Does not meet criteria
Field O&M – Supervision & Training	The variance is due to the risk mitigation of traffic control being spread over the respective compliance O&M cost groups rather than collected in this workpaper. An increase in training expenses resulting from continued implementation of an expanded operator qualification program for Gas Distribution.			Does not meet criteria
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.			Does not meet criteria
Cathodic Protection	Many Cathodic Protection Compliance projects became larger in scale due to changes in municipality requirements thereby moving these projects from O&M to Capital.			Does not meet criteria
Operations Management & Training	Forecasted positions are not expected to be filled until 2020. In addition, projected training module development costs occurred earlier than forecasted.			Does not meet criteria

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

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	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 interrupt gas service and pose a risk to public and employee safety.</p>	SDG&E-04-R GOM-36 to GOM-39
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&amp;E’s gas operations.</p> <p>This category includes costs for activities designed to mitigate employee safety risks.</p>	SDG&E-04-R GOM-47 to GOM-50
Gas Distribution	Asset Management	1GD001.000	Asset Management is the evaluation of the condition of the distribution system. This includes maintaining asset records, identifying corrective maintenance solutions, and coordinating	SDG&E-04-R GOM-57 to GOM-62

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
			<p>with field personnel on completion and recording of O&amp;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&amp;E customers.</p>	
Gas Distribution	Cathodic Protection	1GD003.000	<p>Cathodic Protection is the inspection, evaluation, and monitoring of the CP system on SDG&amp;E's steel distribution pipelines, remediation of CP areas that are found out of tolerance, and preventive measures to avoid areas out of tolerance to maintain and operate the system in accordance with state and federal regulations.</p> <p>This workpaper is in scope of the report because the maintenance of the CP system will minimize corrosion of steel pipelines and reduce the risk to the public from leakage of gas.</p>	SDG&E-04-R GOM-53 to GOM-57
Gas Distribution	Operations Management & Training	1GD004.000	<p>Operations Management &amp; Training includes leadership and operations support providing vision and guidance to the organization responsible for gas distribution, maintaining distribution construction standards; evaluating new field technologies, and assisting with field training and managing the Operator Qualification program.</p> <p>This category is in scope since it includes costs for leadership, training and qualification designed to mitigate employee and public safety risks through ensuring a qualified and safe workforce.</p>	SDG&E-04-R GOM-62 to GOM-68

iv. **SDG&E Gas Distribution Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Gas Distribution</b>		<b>56,763</b>	<b>110,069</b>	<b>(53,306)</b>	<b>-48%</b>		Unless noted, units not available for this Witness Area because there is no single number of like units that would be comparable year over year.				
New Business	Non-RAMP	7,284	8,780	(1,497)	-17%		1,535 projects	Unable to impute authorized units			
New Business – RAMP	Odorization of gas	0	51	(51)	-100%						
<b>Sub-Total New Business</b>		<b>7,284</b>	<b>8,831</b>	<b>(1,548)</b>	<b>-18%</b>						
System Minor Additions, Relocations, & Retirements	Non-RAMP	3,761	3,905	(144)	-4%		303 projects	Unable to impute authorized units			
System Minor Additions, Relocations, & Retirements - RAMP	Locate and Mark	6	275	(269)	-98%		303 Tickets	Unable to impute authorized units			
<b>Sub-Total System Minor Additions, Relocations, &amp; Retirements</b>		<b>3,767</b>	<b>4,180</b>	<b>(413)</b>	<b>-10%</b>						
Meters and Regulator Materials	Non-RAMP	5,685	8,241	(2,556)	-31%	Yes, at total WP	31,843 meters/ regulators purchased	Unable to impute authorized units			

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Pressure Betterment	Non-RAMP	13	1,918	(1,905)	-99%	Yes, at total WP	1 project	Unable to impute authorized units			
Easements	Non-RAMP	37	43	(6)	-14%						
Franchise Relocations	Non-RAMP	4,666	7,541	(2,875)	-38%	Yes	58 Projects	Unable to impute authorized units			
Tools and Equipment	Non-RAMP	2,798	2,143	655	31%						
Tools and Equipment	Training props	114	368	(254)	-69%						
<b>Sub-Total Tools and Equipment</b>		<b>2,912</b>	<b>2,511</b>	<b>401</b>	<b>16%</b>						
Code Compliance	Non-RAMP	1,452	1,328	123	9%						
Replacements of Mains and Services (Combine with RAMP)	Non-RAMP	0	465	(465)	-100%		0	Unable to impute authorized units			
Replacements of Mains and Services - RAMP1	Early Vintage Steel Replacement	1,795	8,356	(6,561)	-79%	Yes	3 mi replaced	Unable to impute authorized units			

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Replacements of Mains and Services - RAMP2	Early Vintage Threaded Main Removal	0	8,356	(8,356)	-100%	Yes	0 mi replaced	Unable to impute authorized units			
Replacements of Mains and Services - RAMP3	Pipeline Observations (Standby)	0	15	(15)	-100%		0 Projects	Unable to impute authorized units			
Replacements of Mains and Services - RAMP4	Leak Repair	9,247	1,184	8,063	681%	Yes	334 projects	Unable to impute authorized units			
Replacements of Mains and Services - RAMP5	EPOCH Planned Replacement of Pipe	0	2,939	(2,939)	-100%	Yes	0 mi replaced	Unable to impute authorized units			
<b>Sub-Total Replacements of Mains and Services</b>		<b>11,042</b>	<b>21,314</b>	<b>(10,272)</b>	<b>-48%</b>	<b>Yes</b>					
Cathodic Protection	Non-RAMP	4,976	2,202	2,774	126%	Yes	52 projects	Unable to impute authorized units			
Regulator Station Improvements and Other	Non-RAMP	417	862	(446)	-52%		4 projects	Unable to impute authorized units			
Regulator Station Improvements and Other – RAMP	Improvements	0	8,913	(8,913)	-100%	Yes, at total WP	0 couplings removed	Unable to impute authorized units			



WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Regulator Station Improvements and Other - RAMP	Improvements	0	10,495	(10,495)	-100%	Yes, at total WP	0 oil drips removed	Unable to impute authorized units			
Regulator Station Improvements and Other - RAMP	Improvements	0	8,734	(8,734)	-100%	Yes, at total WP	0 buried vault pipes repaired or replaced	Unable to impute authorized units			
<b>Sub-Total Regulator Station Improvements and Other</b>		<b>417</b>	<b>29,004</b>	<b>(28,588)</b>	<b>-99%</b>	<b>Yes</b>					
GD Local Engineering Pool	Non-RAMP	8,735	1,974	6,762	343%	Yes, at total WP					
GD Local Engineering Pool	Local Engineering overhead costs associated with large RAMP proposed projects	1,988	8,797	(6,809)	-77%	Yes, at total WP					
GD Local Engineering Pool	Improvements to Cathodic Protection reliability	33	3,789	(3,756)	-99%	Yes, at total WP					

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
GD Local Engineering Pool	Safety policies and Programs	127	3,569	(3,442)	-96%	Yes, at total WP					
GD Local Engineering Pool	Gas standards review	58	60	(2)	-3%						
GD Local Engineering Pool	Operational QA/QC	2,037	337	1,700	504%	Yes, at total WP					
<b>Sub-Total GD Local Engineering Pool</b>		<b>12,978</b>	<b>18,526</b>	<b>(5,548)</b>	<b>-30%</b>	<b>Yes</b>					
Cathodic Protection System Enhancement	Non-RAMP	0	1,737	(1,737)	-100%	Yes, at total WP					
Cathodic Protection System Enhancement - RAMP	Cathodic Protection	1,536	2,693	(1,157)	-43%	Yes, at total WP	39 projects	Unable to impute authorized units			
<b>Sub-Total Cathodic Protection System Enhancement</b>		<b>1,536</b>	<b>4,430</b>	<b>(2,894)</b>	<b>-65%</b>	<b>Yes</b>					

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

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Meter and Regulator Materials	The variance was due to lower than forecasted purchases of meters and regulators as existing inventories were used at a greater level than forecasted.			Does not meet criteria
Pressure Betterment	Some pressure betterment project work was deferred to allow for higher priority work, such as leak repairs and compliance activities to be completed.	<u>Projects deferred:</u> N. Citracado Parkway extension; Rancho Santa Fe Road back tie; San Dieguito Drive back tie; Via Vera Cruz bridge casing.		Does not meet criteria
Pipe Relocations - Franchise and Freeway	The variance is attributed to relocation projects involving the City of San Diego being deferred as a result of a disagreement within the franchise obligations. These projects have been deferred to 2020.	<u>Projects deferred:</u> 70 <sup>th</sup> and Montezuma relocation; Drover Street relocation; Madrone Street relocation		Does not meet criteria
Replacements of Mains & Services - RAMP – Early Vintage Steel Replacement	The variance is associated with new programs that will be managed over the GRC cycle to align with the total authorized levels. Therefore, individual year expenditures may vary from the annual imputed authorized amounts.	Early vintage steel replacement program - miles deferred		Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Replacements of Mains & Services - RAMP – Early Vintage Threaded Main Removal	The variance is associated with new programs that will be managed over the GRC cycle to align with the total authorized levels. Therefore, individual year expenditures may vary from the annual imputed authorized amounts.	Early vintage threaded main replacement program - miles deferred		Does not meet criteria
Replacements of Mains & Services - RAMP – Leak repairs	The variance is due to higher than forecasted number of leak repairs and an increased cost per repair due to municipality constraints, enhanced design and higher construction, permit and paving costs.			Does not meet criteria
Replacements of Mains & Services - RAMP – EPOCH planned risk ranked replacement of pipe	The variance is associated with new programs that will be managed over the GRC cycle to align with the total authorized levels. Therefore, individual year expenditures may vary from the annual imputed authorized amounts.	Pipeline segments planned for replacement deferred		Does not meet criteria
Replacements of Mains & Services – Total Workpaper	The variances at the individual RAMP activity levels - described above, contribute to the variance at the total workpaper level.			Does not meet criteria
Cathodic Protection – Non-RAMP	The variance is due to installation of higher than forecasted number of new and renewed cathodic protection (CP) stations and an increased cost per station due to municipality constraints, enhanced design and higher construction, permit and paving costs.			Does not meet criteria
Regulator Station Improvements and Other	The variance is associated with new programs that will be managed over the GRC cycle to align with the total authorized	Programs for replacement of Dresser couplings,		Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	levels. Therefore, individual year expenditures may vary from the annual imputed authorized amounts.	oil drip piping components, and buried piping in vaults deferred.		
GD Local Engineering Pool	Lower than forecasted level of local engineering (LE) work due to lower overall level of capital construction activity. LE provides funding for a broad range of services to support Gas Distribution field capital asset construction			Does not meet criteria
Cathodic Protection System Enhancement	The non-RAMP resources were reallocated to RAMP activities, and the forecast RAMP activities were deferred to year 2020	Defer multiple steel renewal projects serving the Plaza de Balboa Park, San Diego		Does not meet criteria

**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	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-R GOM-75 to GOM-77

Witness Area	Capital Workpaper or Prime Budget Code #	Workpaper Activity Description	GRC Workpaper Description	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-R GOM-77 to GOM-79
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-R GOM-80 to GOM-82
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-R GOM-88 to GOM-91

Witness Area	Capital Workpaper or Prime Budget Code #	Workpaper Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
Gas Distribution	005090	Cathodic Protection	<p>The Cathodic Protection 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 (49 C.F.R. § 192, Subpart I–Requirements for Corrosion Control and GO 112-F).</p> <p>This category includes costs for the installation of the CP assets that will minimize corrosion of steel pipelines and reduce the risk to the public from leakage of gas</p>	SDG&E-04-R GOM-91 to GOM-94
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-R GOM-94 to GOM-98
Gas Distribution	009020	Local Engineering Pool	<p>The Local Engineering Pool work category provides the labor and non-labor funding for a broad range of services to support Gas Distribution field capital asset construction. This budget code represents the forecasted costs associated with the Gas Distribution Local Engineering Pool.</p> <p>The Local Engineering Pool is composed of three cost categories: technical planning, project management, and engineering activities.</p>	SDG&E-04-R GOM-99 to GOM-102
Gas Distribution	125510	Cathodic Protection System Enhancement	<p>Budget code 125510 provides funds to enhance and improve SDG&amp;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-R GOM-91 to GOM-94

**B. SDG&E Gas Engineering**

**i. SDG&E Gas Engineering O&M Variances**

The Gas Engineering witness did not sponsor any O&M costs in the TY 2019 GRC.

**ii. SDG&E Gas Engineering Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Gas Engineering		495	303	192	63%	Units are unavailable because these workpapers do not have a single number of like units that would be comparable year over year.					
GT Land Rights	Non-RAMP	0	128	(128)	-100%						
GT Auxiliary Equipment	Non-RAMP	129	20	109	534%						
GT Capital Tools	Non-RAMP	110	61	49	80%						
GT Auxiliary Equipment	Non-RAMP	0	11	(11)	-100%						
GT Supervision & Engineering Pool	Non-RAMP	256	83	174	210%						

**iii. SDG&E Gas Engineering Variance Explanations**

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

**iv. SDG&E Gas Engineering Capital 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 System Integrity**

**i. SDG&E Gas System Integrity O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Gas System Integrity</b>		326	1,666	(1,340)	-80%		Units not available for this Witness Area because there is no single number of like units that would be comparable year over year				
Gas Contractor Controls	Safety Policies & Programs	0	138	(138)	-100%						
Pipeline Safety & Compliance	Non-RAMP	131	115	16	14%						
Damage Prevention and Public Awareness	Non-RAMP	195	106	89	84%						
Damage Prevention and Public Awareness	Public Awareness	0	666	(666)	-100%	Yes, at the total WP					
<b>Sub-Total Field O&amp;M -Damage Prevention and Public Awareness</b>		<b>195</b>	<b>772</b>	<b>(577)</b>	<b>-75%</b>	<b>Yes</b>					
Codes Standards and Records	Information Management Systems	0	641	(641)	-100%	Yes					

**ii. SDG&E Gas System Integrity Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Damage Prevention and Public Awareness	The strategy for Public Awareness was optimized while the Company still met federally mandated Public Awareness program requirements, as prescribed in Title 49 CFR §192.616.			Does not meet criteria
Codes Standards and Records	The strategy for Codes Standards and Records was optimized, however, the activity was performed by organizations across the Company, so the costs were not recorded in this workgroup.			Does not meet criteria

**iii. SDG&E Gas System Integrity O&M Workpaper Descriptions and GRC Testimony Locations**

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Gas System Integrity	Damage Prevention and Public Awareness	1SI003.000	The Public Awareness program contributes to enhanced public safety by providing certain risk mitigation measures. The program includes activities to educate the public, appropriate government organizations, and persons engaged in excavation-related activities regarding: (1) use of the one-call notification system prior to excavation and other damage prevention activities; (2) possible hazards associated with unintended releases from a gas pipeline facility; (3) physical indications that such a release may have occurred; (4) steps that should be taken for public safety in the event of a gas pipeline release; and (5) procedures for reporting such an event.	SDG&E-05 OR-19 to OR-22
Gas System Integrity	Codes Standards and Records	2100-3563	Codes and Standards help SDG&E and SoCalGas meet their regulatory obligations and allow for information exchange to enhance public and employee safety. This Workpaper covers non-labor support needed to manage and provide consistency with respect to gas standards best practices and regulatory oversight.	SDG&E-05 OR-23 to OR-24

**iv. SDG&E Gas System Integrity Capital Variances**

The Gas System Integrity witness did not sponsor any capital costs in the TY 2019 GRC.

**D. SDG&E Gas Transmission**

**i. SDG&E Gas Transmission O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Gas Transmission</b>		4,756	5,504	(749)	-14%		Units not available for this Witness Area because there is no single number of like units that would be comparable year over year				
Pipeline Operations	Non-RAMP	225	1,925	(1,700)	-88%	Yes					
Pipeline Operations	Patrol Pipeline for Leaks	66	21	45	213%						
Pipeline Operations	MAXIMO Tracking	41	29	12	42%						
Pipeline Operations	M&I Maintenance	1,509	8	1,501	18763%	Yes					
<b>Sub-Total Pipeline Operations</b>		<b>1,841</b>	<b>1,983</b>	<b>(142)</b>	<b>-7%</b>						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Compression Station Operations	Non-RAMP	2,853	3,361	(509)	-15%						
Technical Services	Non-RAMP	45	8	37	462%						
Technical Services	Operator Qualification	7	117	(110)	-94%						
Technical Services	Operations	11	35	(24)	-70%						
<b>Sub-Total Technical Services</b>		<b>62</b>	<b>160</b>	<b>(98)</b>	<b>-61%</b>						

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

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Pipeline Operations	The authorized Maintenance RAMP item in this Workpaper covered limited pipeline maintenance activities. However, the actual spend against this Maintenance RAMP item included other Maintenance activities that were authorized as Non-RAMP.			Does not meet criteria

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

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	Workpaper Description	2019 GRC Testimony Reference
Gas Transmission	Pipeline Operations	1GT000.000	Gas Transmission Pipelines Operations is responsible for the safe day-to-day operation and maintenance of gas transmission pipeline facilities and related infrastructure. This includes, but is not limited to, leak surveys, valve inspections, cathodic protection systems, locate & mark, stand-by, and maintaining equipment at pipeline receipt points that includes odorization equipment and real-time operating data telemetry communication equipment	SDG&E-06 EAM-8 to EAM-10

**iv. SDG&E Gas Transmission Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Gas Transmission		11,406	9,253	2,153	23%		Units not available for this WP because there is no single number of like units that would be comparable year over year.				
New Gas Transmission Pipeline	Non-RAMP	(37)	2,304	(2,341)	-102%	Yes					
GT Relocation	Non-RAMP	0	2	(2)	-100%						
GT Cathodic Protection	Requirements for corrosion control	136	208	(73)	-35%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
GT M&R Stations	Non-RAMP	3,181	549	2,632	480%	Yes					
GT Replacements	Non-RAMP	1,624	0	1,624	100%	Yes					
GT Replacements	HCA Class Location Follow-up Mitigation	0	1,703	(1,703)	-100%	Yes					
<b>Sub-Total GT Replacements</b>		<b>1,624</b>	<b>1,703</b>	<b>(79)</b>	<b>-5%</b>						
Compressor Stations (415)	Non-RAMP	3,107	1,756	1,351	77%	Yes					
Compressor Stations (435)	Non-RAMP	3,395	2,730	665	24%						

v. **SDG&E Gas Transmission Capital Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
New Gas Transmission Pipelines	Underspend was due to lack of new Transmission customer projects in 2019.			Does not meet criteria
GT M&R Stations	Overspend was due to an unplanned meter set assembly (MSA) decommissioning project and a delayed security upgrade project that was to occur in 2018 instead of 2019.			Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
GT Replacements	Underspend in RAMP Pipeline Replacements was due to no Class Location Projects completed in 2019 because there were no Class Location issues in the SDG&E service territory in 2019. The overspend in Non-RAMP Pipeline Replacements was due to routine pipeline replacements.			Does not meet criteria
Compressor Stations	Overspend primarily due to unforeseen repairs to compressor equipment to maintain system reliability.			Does not meet criteria

**vi. 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	2019 GRC Testimony Reference
Gas Transmission	004x1	New Pipelines	New Construction Pipeline is required to provide the backbone and local natural gas transmission system with additional resiliency, capacity, and reliability in order to serve new or increased loads or to provide natural gas supply reinforcement to an existing area.	SDG&E-07-R JGT-9 to JGT-10
Gas Transmission	004180	GT M&R Stations	This Budget Code includes costs of installing and rebuilding large meter set assemblies (MSAs) for transmission-served customers and pressure limiting stations on the gas transmission system. These assets require replacement principally for three reasons: aging, change in use patterns and/or population encroachment, and enhancement of the transmission system to address gas quality and capacity issues. The capital work sustains reliable operation of critical transmission assets. This includes periodic replacement of local field measurement and control equipment	SDG&E-07-R JGT-16 to JGT-18

			directly linking with Gas Operations SCADA system via remote communications.	
Gas Transmission	M04120	GT Replacements	<p>Occasionally natural gas transmission pipelines need to be replaced due to the condition of the pipeline or hazardous conditions affecting the existing pipeline location. Some pipeline sections need to be replaced due to erosion from agricultural activities or storm water runoff; more often, however, replacements are required due to a class location change, which is the re-classification of a pipeline segment from non-High Consequence Area to High Consequence Area (HCA) due to changes in population density in the vicinity of that pipeline segment.</p> <p>This category includes costs for activities, as described, designed to mitigate system reliability risks.</p>	SDG&E-07-R JGT-10
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-07-R JGT-13 to JGT-15



### 3. SDG&E OTHER

#### A. SDG&E Customer Services

##### i. SDG&E Customer Services O&M Variances

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Customer Services</b>		60,788	75,715	(14,927)	-20%						
<b>Customer Services Field</b>		<b>21,707</b>	<b>25,751</b>	<b>(4,044)</b>	<b>-16%</b>						
Customer Services Field - Operations	Non-RAMP	9,334	12,049	(2,714)	-23%	Yes	175,962 Orders	255,096 Orders	(79,134)	-31%	
Customer Services Field - Operations	Job Observation and Behavior Based Safety	133	160	(27)	-17%						
Customer Services Field - Operations	CSF Emergency Orders - include carbon monoxide, fumigation and hazardous and nonhazardous gas leaks and atmospheric corrosion orders	5,091	4,973	118	2%		75,211 Orders	78,812 Orders	(3,601)	-5%	

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Customer Services Field - Operations	Workforce Planning Technical Training for Critical Roles - Service Technicians and Appliance Mechanics backfill for retirements	201	54	147	272%						
<b>Sub-Total Customer Services Field - Operations</b>		<b>14,759</b>	<b>17,236</b>	<b>(2,476)</b>	<b>-14%</b>						
Customer Services Field – Supervision	Non-RAMP	1,084	1,544	(460)	-30%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year.				
Customer Services Field – Dispatch	Non-RAMP	3,244	4,242	(999)	-24%						
Customer Services Field – Dispatch	Field observations of employee and contractors’ activities and safety behaviors	1	1	0	0%						
<b>Sub-Total Customer Services Field – Dispatch</b>		<b>3,245</b>	<b>4,243</b>	<b>(999)</b>	<b>-24%</b>		Units not available for this workpaper because there is no single number of like units that would be comparable year over year.				
Customer Services	Non-RAMP	2,511	2,648	(137)	-5%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Field – Support											
Customer Services Field - Support	Field observations of employee and contractors' activities and safety behaviors	108	80	28	35%						
<b>Sub-Total Customer Services Field – Support</b>		<b>2,619</b>	<b>2,728</b>	<b>(109)</b>	<b>-4%</b>		Units not available for this workpaper because there is no single number of like units that would be comparable year over year.				
<b>Customer Service Information &amp; Technology</b>		<b>14,665</b>	<b>21,924</b>	<b>(7,259)</b>	<b>-33%</b>						
Marketing, Research & Analytics	Non-RAMP	6,834	8,075	(1,240)	-15%						
Marketing, Research & Analytics	Safety Communications (Summer/Winter Preparedness; Emergency Preparedness)	340	426	(86)	-20%						
Marketing, Research & Analytics	Safety Communications (Wire Down)	1,852	6,499	(4,647)	-72%	Yes, at the WP					
<b>Sub-Total Marketing, Research &amp; Analytics</b>		<b>9,026</b>	<b>15,000</b>	<b>(5,973)</b>	<b>-40%</b>	<b>Yes</b>	Units not available for this workpaper because there is no single number of like units that would be comparable year over year.				
Customer Programs, Pricing, and	Non-RAMP	5,451	6,615	(1,164)	-18%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Other Office											
Customer Programs, Pricing, and Other Office	Natural Gas Appliance Testing (NGAT) is a safety-related program for Customer Assistance's Energy Savings Assistance (ESA) Program participants. <sup>2</sup>	188	309	(121)	-39%		4,972 NGAT's	7,391 NGAT's	(2,419)	-33%	Yes
<b>Sub-Total Customer, Programs, Pricing and Other Office</b>		<b>5,639</b>	<b>6,924</b>	<b>(1,285)</b>	<b>-19%</b>						
<b>Customer Service - Office Operations</b>		<b>24,415</b>	<b>28,039</b>	<b>(3,624)</b>	<b>-13%</b>						
Advanced Metering Ops	Non-RAMP	7,659	10,711	(3,051)	-28%	Yes, at total WP					
Advanced Metering Ops	Job Observation and Behavior Based Safety	118	40	78	195%						
Advanced Metering Ops	Workforce Planning	100	117	(17)	-15%						

<sup>2</sup> These NGAT numbers are preliminary and subject to change in the final ESA Program annual report expected to be filed May 1, 2020.

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Sub-Total Advanced Metering Op</b>		<b>7,877</b>	<b>10,868</b>	<b>(2,990)</b>	<b>-28%</b>	<b>Yes</b>	Units not available for this workpaper because there is no single number of like units that would be comparable year over year.				
Credit & Collections	Non-RAMP	2,092	3,064	(972)	-32%						
Credit & Collections	Meter Tampering and meter bypass investigation and remediation.	279	258	21	8%		2,652 Investigations / leads	2,208 Investigations / leads	444	20%	Yes
<b>Sub-Total Credit &amp; Collections</b>		<b>2,371</b>	<b>3,322</b>	<b>(951)</b>	<b>-29%</b>						
CCC Operations	Non-RAMP	10,587	10,362	225	2%						
CCC Operations	Emergency calls taken by the Customer Contact Center including outage calls.	280	403	(123)	-31%		142,618 Emergency / outage calls	185,605 Emergency / outage calls	(42,987)	-23%	Yes
CCC Operations	Capture Customer Email Program to update customer contact information	164	180	(16)	-9%		1,138,569 email solicitation / verification residential non-move calls	1,053,335 email solicitation / verification residential non-move calls	85,234	8%	
CCC Operations	ESS Emergency call training: 5 hrs per ESS.	24	22	2	9%		0.4 FTE	0.4 FTE	0	0%	
<b>Sub-Total CCC Operations</b>		<b>11,055</b>	<b>10,967</b>	<b>88</b>	<b>1%</b>						
CCC Support	Non-RAMP	3,112	2,883	229	8%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year				

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

WP Activity Description	Dollar Variance Explanation	Projects/Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
<b>Customer Services Field</b>				
Customer Services Field – Operations (Non- RAMP)	<p>Lower than forecasted customer generated orders.</p> <p>Lower than forecasted number of gas leak detectors purchased in 2019 due to remaining 2018 inventory levels.</p> <p>Compliance orders lower than forecasted due to favorable testing results.</p> <p>Lower than forecasted incomplete orders due to focus on reducing meter access issues.</p>			Does not meet criteria
<b>CS - Information &amp; Technologies</b>				
Marketing Research & Analytics	Lower than forecasted safety communications expenses due to the delayed GRC decision and utilizing lower cost delivery channels.			Does not meet criteria
Customer Programs, Pricing and Other Office	Does not meet criteria			RAMP NGAT units: Energy Savings Assistance (ESA) Program did not meet its enrollment goals for 2019, so with less homes treated than forecasted, SDG&E

WP Activity Description	Dollar Variance Explanation	Projects/Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
				contractors performed less NGATs than imputed authorized.
<b>CS – Office Operations</b>				
Advanced Metering Ops	Lower than forecasted staffing level during some portion of 2019. Resources forecasted for O&M activities were shifted to emergent capital work. Savings were achieved by efficiency improvements and automation of both reporting and troubleshooting.	Hosting fees and software contracts cancelled due to technology efficiencies.	Emergent capital projects to maintain and enhance the smart meter network.	Does not meet criteria
Credit & Collections	Does not meet criteria			RAMP - Meter tampering and meter bypass remediation: Investigative resources are now more readily available. Remote disconnect availability also reduces field time to resolve issues.
CCC Operations	Does not meet criteria			RAMP - Emergency and outage calls: lower than forecasted emergency and outage calls due to improvements in outage notifications, and more reliable emergency customer contact information.

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

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Customer Services – Field	Customer Services Field - Operations	1FC001.000	<p>The CS-F Operations cost category consists of labor and non-labor expenses for field technicians to provide service at customer premises, including both customer and company-generated work orders. Examples of customer-generated work orders include requests to establish/remove gas and electric service, light gas pilots, check gas appliances, shut off and restore gas service for fumigation, investigate the potential causes of high bills, respond to emergency incidents, investigate potential gas leaks, and other services. Examples of company-generated work include meter and regulator changes, and other meter work necessary to maintain company assets, and collecting customer payments for delinquent bills. Non-labor costs include items such as uniform expenses, small tools and miscellaneous supplies used on the job.</p> <p>This workpaper is in scope of the spending accountability report due to customer orders relative to public safety, job observations, behavior-based safety, and workforce planning and technical training related activities, as described, designed to mitigate safety risks.</p>	SDG&E-17-R GRM-B-9 to GRM-B-19
CS - Information & Technologies	Marketing Research & Analytics	1IN003.000	The Marketing, Research, & Analytics (MRA) department is responsible for a wide variety of activities, which include developing strategic marketing plans, execution of communication tactics across various channels (such as mass, direct, social and digital), oversight and	SDG&E-19 LCD-27 to LCD-44



Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
			<p>management of SDG&amp;E’s websites, conducting qualitative and quantitative customer research and analytics, supporting statewide collaboration regarding various marketing initiatives, 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>	
CS - Information & Technologies	Customer Programs, Pricing and Other Office	1IN004.000	<p>Customer Programs, Pricing, and Other Office (CP&amp;P) consists of the Vice President of Customer Services and three key groups: Customer Assistance Programs (CAP), Customer Solutions and Customer Pricing. These groups are collectively responsible for analytical, technical and policy support for development of value-added customer solutions as well as rate design, strategy, electric load analysis, and demand forecasting.</p> <p>This workpaper is in scope of the spending accountability report due to Natural Gas Appliance Testing (NGAT) conducted for Energy Savings Assistance (ESA) program participants as described, designed to mitigate safety risks.</p>	SDG&E-19 LCD-44 to LCD-49
Customer Services - Office Operations	Advanced Metering Ops	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&amp;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 job observations, behavior-based safety, and workforce planning related activities, as described, designed to mitigate safety risks.</p>	SDG&E-18 JDS-9 to JDS-18

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Customer Services - Office Operations	Credit & Collections	100003.000	<p>Credit &amp; Collections consists of Credit and Collections, Customer Payment Services, and Meter Revenue Protection.</p> <p>This workpaper is in scope of the spending accountability report due to meter tampering and meter bypass as described, designed to mitigate safety risks.</p>	SDG&E-18 JDS-26 to JDS-30
Customer Services - Office Operations	CCC Operations	100006.000	<p>The Customer Contact Center (CCC) expenses cover the costs of answering customer telephone calls; responding to incoming email from customers; responding to customer inquiries through on-line chat features; answering written customer correspondence regarding customer account activity; following up on all CPUC telephone referrals and informal and formal customer complaints; and, responding to other customer account-related inquiries.</p> <p>This workpaper is in scope of the spending accountability report due to ESS emergency call training, emergency and outage calls handled by the CCC, and post filing mitigation program – capture customer email to update customer contract information as described, designed to mitigate safety risks.</p>	SDG&E-18 JDS-49 to JDS-56

**B. SDG&E Information Technology & Cyber Security**

**i. SDG&E Information Technology & Cyber Security O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Information Technology &amp; Cyber Security</b>		75,581	92,298	(16,717)	-18%						
<b>Information Technology</b>		66,322	84,081	(17,759)	-21%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
IT Applications NSS	Non-RAMP	17,098	18,748	(1,650)	-9%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year				
IT Infrastructure NSS	Non-RAMP	5,843	12,934	(7,092)	-55%	Yes	Units not available for this workpaper because there is no single number of like units that would be comparable year over year				
Telecom Field Voice - SDG&E	Non-RAMP	1,563	2,185	(622)	-28%		12 FTE	15 FTE	(3)	-20%	
Enterprise Integration Services	Non-RAMP	1,373	1,766	(394)	-22%		11 FTE	14 FTE	(3)	-21%	
SSDS Project Office	Non-RAMP	1,115	698	417	60%		9 FTE	5 FTE	4	80%	
Software Dev - Work Meas Systems	Non-RAMP	782	347	434	125%		6 FTE	3 FTE	3	100%	
Software Dev - Database Administrator	Non-RAMP	595	2,211	(1,615)	-73%		5 FTE	16 FTE	(12)	-71%	
Network Communication Services Director	Non-RAMP	2,470	36	2,434	6759%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year				
Client Technology & Depot Services	Non-RAMP	1,355	1,768	(413)	-23%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year				
Middleware and Internet Engineering	Non-RAMP	424	608	(185)	-30%		3 FTE	5 FTE	(2)	-40%	
Infrastructure Eng & Ops Director	Non-RAMP	361	580	(218)	-38%		2 FTE	4 FTE	(2)	-50%	
Network/Telecom Services - SDG&E	Non-RAMP	7,738	6,354	1,384	22%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year				

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Enterprise Operations	Non-RAMP	(0)	2	(2)	-100%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year				
Server Management	Non-RAMP	481	949	(468)	-49%		4 FTE	8 FTE	(4)	-50%	
Infrastructure Program Office	Non-RAMP	51	393	(342)	-87%		0 FTE	2 FTE	(2)	-100%	
IT Network Field - LAN/WAN Voice	Non-RAMP	0	1	(1)	-100%		0 FTE	0 FTE	0	0%	
Enterprise Command Center	Non-RAMP	1,298	2,230	(932)	-42%		9 FTE	17 FTE	(8)	-47%	
Shared Software Development Contracts	Non-RAMP	5,468	6,679	(1,212)	-18%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year				
Project Improvement Office-NCS	Non-RAMP	192	231	(39)	-17%		2 FTE	2 FTE	(0)	0%	
Service Delivery – NCS	Non-RAMP	736	820	(84)	-10%		5 FTE	7 FTE	(2)	-29%	
Service Development Program Management	Non-RAMP	343	313	30	9%		3 FTE	3 FTE	0	0%	
Customer Analytics System	Non-RAMP	534	520	14	3%		2 FTE	2 FTE	(0)	0%	
Field Force Program Delivery Team	Non-RAMP	540	59	481	820%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year				

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
SVO & CITO	Non-RAMP	906	459	447	97%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year				
Director IT Infrastructure	Non-RAMP	1,336	1,173	162	14%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year				
Infrast Prgrm Office	Non-RAMP	711	809	(99)	-12%		6 FTE	5 FTE	1	20%	
Clint Services Maintenance & Support	Non-RAMP	0	2	(2)	-100%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year				
Voice Leased Circuits	Non-RAMP	983	1,041	(58)	-6%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year				
Mgd Svc Voice Enterp	Non-RAMP	842	2,561	(1,719)	-67%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year				
Voice Enterp Support	Non-RAMP	158	537	(379)	-71%		1 FTE	3 FTE	(2)	-67%	
CLIENT TECH SVCS	Non-RAMP	0	72	(72)	-100%		0 FTE	1 FTE	(1)	-100%	
IT Portfolio Management	Non-RAMP	132	308	(175)	-57%		0 FTE	2 FTE	(2)	-100%	
Bi & Analytics Engineering-SAS Contracts	Non-RAMP	5,167	5,147	20	0%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year				

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
IT& OTI Contracts SS	Non-RAMP	5,382	11,152	(5,769)	-100%	Yes	Units not available for this workpaper because there is no single number of like units that would be comparable year over year				
IT Telecom PMO	Non-RAMP	65	94	(29)	-57%		0 FTE	1 FTE	(1)	-100%	
SDG&E Network Engineering	Non-RAMP	282	293	(11)	0%		2 FTE	1 FTE	1	100%	
<b>Cyber Security</b>		<b>9,259</b>	<b>8,217</b>	<b>1,042</b>	<b>13%</b>						
Security Policy and Awareness	Cyber security risk and vulnerability	1,402	1,022	380	37%		8 FTE	8 FTE	0	0%	
Director - Information Security	Cyber security risk and vulnerability	400	392	8	2%		2 FTE	2 FTE	0	0%	
Security Engineering	Cyber security risk and vulnerability	1,435	1,532	(97)	-6%		10 FTE	10 FTE	0	0%	
Security Operations	Cyber security risk and vulnerability	2,460	1,877	583	31%		16 FTE	16 FTE	0	0%	
Critical Infrastructure Protection	Non-RAMP	2,635	2,950	(315)	-11%						
Critical Infrastructure Protection	Incremental maintenance costs associated with Grid Modernization capital projects	0	420	(420)	-100%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Sub-Total Critical Infrastructure Protection</b>		<b>2,635</b>	<b>3,370</b>	<b>(735)</b>	<b>-22%</b>		Units not available for this workpapers because there is no single number of like units that would be comparable year over year				
Information Security Programs	Cyber security risk and vulnerability	927	24	903	3763%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year				

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

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
IT Infrastructure NSS	Shifted work from O&M to infrastructure capital projects in response to significant infrastructure outage. In addition, Microsoft Office 365 costs were capitalized due to increased functionality.			Does not meet criteria
IT& OTI Contracts SS	Lower than forecasted software and hardware costs resulting from successful contract negotiations.			Does not meet criteria

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

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Information Technology	IT Infrastructure NSS	1IT002.000	IT Infrastructure NSS workpaper includes non-shared labor and non-labor charges related to providing services to SDG&E-only facilities and network engineering infrastructure support.	SDG&E-24-R CRO-12
Information Technology	IT& OTI Contracts SS	2100-3921	This cost center contains computing infrastructure costs supporting system-wide resources.	SDG&E-24-R CRO-14 to CRO-15

iv. SDG&E Information Technology Capital Variances

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
IT & Cyber Security		92,348	125,422	(33,074)	-26%		Units not available for these workpapers because there is no single number of like units that would be comparable year over year.				
<b>Sub-Total Information Technology</b>		<b>90,171</b>	<b>119,977</b>	<b>(29,806)</b>	<b>-25%</b>						
IT - Enterprise – Application	Records Management	6,633	2,152	4,481	208%						
IT - Enterprise – Application	Electric Infrastructure Integrity	5,158	0	5,158	100%	Yes, at total WP					
IT - Enterprise – Application	Non-RAMP	10,996	2,081	8,918	428%	Yes, at total WP					
<b>Sub-Total IT Applications</b>		<b>22,787</b>	<b>4,233</b>	<b>18,554</b>	<b>438%</b>	<b>Yes</b>					
IT - Enterprise - Network – RAMP	Records Management	0	4,494	(4,494)	-100%						



WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
IT - Enterprise – Network	Non-RAMP	25,482	40,655	(15,173)	-37%	Yes, at total WP					
<b>Sub-Total IT Network</b>		<b>25,482</b>	<b>45,149</b>	<b>(19,667)</b>	<b>-44%</b>	<b>Yes</b>					
IT - Enterprise – Infrastructure	Non-RAMP	25,012	2,103	22,909	1089%	Yes, at total WP					
IT - Enterprise – Infrastructure	Records Management	13	0	13	100%						
<b>Sub-Total IT - Enterprise – Infrastructure</b>		<b>25,025</b>	<b>2,103</b>	<b>22,922</b>	<b>1090%</b>	<b>Yes</b>					
Customer Services	Non-RAMP	7,811	12,017	(4,206)	-35%						
Locator Phase 2: USA Ticket Automation	Non-RAMP	19	0	19	100%						
<b>Sub-Total IT Non-Balanced Projects</b>		<b>81,125</b>	<b>53,503</b>	<b>17,622</b>	<b>28%</b>						
IT WMP – Balanced	Non-RAMP	9,046	56,474	(47,428)	-84%	Yes					
<b>IT - Enterprise - Cyber - RAMP</b>	<b>Cyber Security</b>	<b>2,177</b>	<b>5,445</b>	<b>(3,268)</b>	<b>-60%</b>						

v. **SDG&E Information Technology Capital Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
<b>Information Technology</b>				
IT Applications	Variance due to emergent needs and new technology availability driving business value.		Electric Asset Management, Intelligent Automation Business Process Management, Fire Patrol & Compliance Management Program Inspection	Does not meet criteria
IT Network	Response to significant infrastructure outage resulted in reprioritization of projects in the network & infrastructure portfolio.	Transmission Communications Reliability Improvement, Field Area Network Voice Radio and Dispatch		Does not meet criteria
IT Infrastructure	Response to significant infrastructure outage resulted in reprioritization of projects in the network & infrastructure portfolio.		Base Camp	Does not meet criteria
IT WMP	Project continued to solidify scope and technology but at a slower rate than initially expected. Authorized levels are expected to be expended during the current GRC cycle.	Private Long-Term Evolution (LTE) Communications Network		Does not meet criteria

**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	2019 GRC Testimony Reference
Information Technology	813, 831, 833	IT Applications	Applications support the development, implementation and maintenance of computer software utilized by customers, employees and/or vendor partners.	SDG&E-24-R CRO-16 to CRO-31
Information Technology	831,834	IT Network	Telecommunication network supports the design, implementation and operation of the company's network system.	SDG&E-24-R CRO-16 to CRO-31
Information Technology	834	IT Infrastructure	IT Infrastructure supports the design, implementation and operation of the company's computing infrastructure.	SDG&E-24-R CRO-16 to CRO-31
Information Technology	834	IT WMP	IT WMP includes applications, network and infrastructure projects designed to mitigate wildfire risk.	SDG&E-24-R CRO-16 to CRO-31

**C. SDG&E Support Services**

**i. SDG&E Support Services O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Support Services Total</b>		<b>37,278</b>	<b>37,378</b>	<b>(100)</b>	<b>0%</b>						
<b>Environmental</b>		<b>4,401</b>	<b>5,043</b>	<b>(641)</b>	<b>-13%</b>						
Environmental SDG&E NSS Cost Center	Non-RAMP	4,401	5,043	(641)	-13%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year.				

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Real Estate and Facilities</b>		<b>32,877</b>	<b>32,335</b>	<b>542</b>	<b>2%</b>						
SDG&E Facility Operations	Non-RAMP	5,413	5,133	280	5%		13 FTE	13 FTE	0	0%	
SDG&E Facility Operations	Physical Security	3,176	3,814	(638)	-17%		76 Security Guards	91 Security Guards	(15) Security Guards	-16%	
<b>Sub-Total SDG&amp;E Facility Operations</b>		<b>8,589</b>	<b>8,947</b>	<b>(358)</b>	<b>-4%</b>						
Land Services	Non-RAMP	845	742	103	14%		3 FTE	3 FTE	0	0%	
SDG&E Rents & Maintenance	Non-RAMP	19,092	17,513	1,579	9%		31,000sq'	28,400sq'	2,600sq'	9%	
Re Planning	Non-RAMP	876	1,134	(258)	-23%		5 FTE	5 FTE	0	0%	
HQ Rent & Facilities Maintenance	Non-RAMP	1,283	2,372	(1,089)	-46%		4,200sq'	7,800sq'	(3,600sq')	46%	
Facilities & Capital Programs – Admin	Non-RAMP	109	138	(29)	-21%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year.				
Re Resources	Non-RAMP	248	525	(277)	-53%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year.				
Facilities Operations South Manager	Non-RAMP	658	525	133	25%		4 FTE	4 FTE	(0)	0%	
RB Data Center	Non-RAMP	723	427	296	69%		12,000sq'	7,100sq'	4,900sq'	69%	

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Re Planning-Mac	Non-RAMP	453	12	441	3652%		Units not available for this workpaper because there is no single number of like units that would be comparable year over year.				

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

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

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

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

**iv. SDG&E Support Services Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Support Services - Real Estate, Land Services &amp; Facilities</b>		22,885	65,600	(42,715)	-65%		<b>Units not available for these workpapers due to highly variable project scope and the absence of like units that would be comparable year over year.</b>				
Land Blanket	Non-RAMP	159	339	(180)	-53%						
Structures and Improvements	Non-RAMP	4,435	5,418	(983)	-18%						
Environmental/Safety Blanket	Facility improvements necessary to comply with safety and environmental code or regulations and also to implement best practices towards mitigating risk to either the environment or safety of employees or the public.	2,197	2,411	(214)	-9%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Misc. Equipment Blanket	Non-RAMP	831	2,320	(1,489)	-64%						
Security Systems	Physical Security Systems	3,158	4,547	(1,389)	-31%						
Infrastructure & Reliability	Non-RAMP	3,589	5,976	(2,387)	-40%						
Remodel/Relocate/Reconfig Blanket	Non-RAMP	4,885	25,782	(20,897)	-81%	Yes					
Business Unit Expansion/Miramar Welding Room Expansion	Non-RAMP	2,240	3,397	(1,157)	-34%						
Archibus Business Systems Improvements	Non-RAMP	1,095	566	529	93%						
Mission Control Modernization	Modernization of Grid Control Centers	(102)	0	(102)	-100%						
CP East IT Improvements	Non-RAMP	645	5,558	(4,913)	-88%						
RBDC Power Reliability Improvements	Non-RAMP	(248)	9,284	(9,532)	-103%	Yes					

**v. SDG&E Support Services Capital Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
<b>Real Estate, Land Services &amp; Facilities</b>				
Remodel/Relocate/Reconfigure Blanket	Driven primarily by the delayed start of the CP Refresh Project. The	Deferred - CP Refresh Project	CP Annex 2 <sup>nd</sup> Floor Tenant	Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	initiation of the CP Refresh Project was delayed pending approval in the TY 2019 GRC.	(work paper sub 00709A.003)	Improvement, Miramar New Warehouse	
Rancho Bernardo Data Center (RBDC) Power Reliability Improvements	Driven primarily by the delayed start of the RBDC Expansion Project. The initiation of the RBDC Expansion Project was delayed pending approval in the TY 2019 GRC.	Deferred - RBDC Expansion Project (work paper sub 16771A.003).		Does not meet criteria

**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	2019 GRC Testimony Reference
Real Estate, Land Services & Facilities	00709, 18777, 18778, 18779, 18781, 18785, 19780, 19781	Remodel/Relocate/Reconfiguration Blanket	The projects included in this budget code typically include branch office ergonomic refurbishments; room modifications and tenant improvements to increase capacity, functionality or density; reorganization to collocate work groups, add capacity for offices and workstations, technical lab space and resource areas.	SDG&E-22 RDT-34 to RDT-37
Real Estate, Land Services & Facilities	16771A, 19785	RBDC Power Reliability Improvements	The project will replace existing electrical equipment at the Rancho Bernardo Data Center, consisting of Static Transfer Switches and Automatic Transfer Switches, which are necessary, critical components in transferring system to emergency power sources and beyond their useful lives. In addition, the project will re-circuit emergency power distribution from existing, 30+ year old generators to new generators provided through a separate project and already in place. It will also involve installation of a new	SDG&E-22 RDT-45



Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
			switchboard to facilitate the transfer of loads from the old generator plant to the new generator plant. The project will add a second set of redundant UPS systems necessary to safeguard against critical system interruption and information loss at the Rancho Bernardo Data Center.	

**D. SDG&E Administrative & General**

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

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Administrative &amp; General</b>		77,400	59,988	17,412	29%						
<b>Accounting &amp; Finance, Legal, Regulatory Affairs, External Affairs</b>		633	795	(162)	-20%						
Operations Cost Center -USS- Controllers-Business Controls	Non-RAMP	633	260	373	143%		3 FTE	3 FTE	0	0%	
Operations Cost Center -USS- Controllers-Business Controls	Consulting expertise to improve records management program	0	535	(535)	-100%		0	0	0	0%	
<b>Sub-Total Operations Cost Center -USS- Controllers-Business Controls</b>		633	795	(162)	-20%		3 FTE	3 FTE	0	0%	
<b>Compensation &amp; Benefits</b>		161	279	(118)	-42%		Units unavailable because this workpaper does not have a single number of like units that would be comparable				

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
							year over year; this program is considered an outside service and does not report any FTE units.				
Health Benefits - Emp Assistance Program	Non-RAMP	161	279	(118)	-42%						
<b>Corporate Center - General Administration</b>		<b>72,520</b>	<b>51,709</b>	<b>20,811</b>	<b>40%</b>		Units not available for this workpaper because there is no single number of like units that would be comparable year over year; Corporate Center is considered Outside Services and does not report any FTE units.				
SECC Outside Services Employees - F923.1	Non-RAMP	70,095	49,045	21,050	43%	Yes, at the total WP					
SECC Outside Services Employees - F923.1	Records Management	103	103	0	0%						
SECC Outside Services Employees - F923.1	Workplace Violence/Corporate Security	1,787	1,291	496	38%						
SECC Outside Services Employees - F923.1	Cybersecurity	535	1,270	(735)	-58%						
<b>Sub-Total SECC Outside Services Employees - F923.1</b>		<b>72,520</b>	<b>51,709</b>	<b>20,811</b>	<b>40%</b>	<b>Yes</b>					
<b>Risk Management</b>		<b>4,086</b>	<b>7,205</b>	<b>(3,119)</b>	<b>-43%</b>		<b>4</b>	<b>4</b>	<b>0</b>	<b>0%</b>	
Risk Management	Non-RAMP	1,931	4,124	(2,194)	-53%		1 FTE	1 FTE	0	0%	
VP Enterprise Risk Management	Non-RAMP	191	460	(270)	-59%		2 FTE	2 FTE	0	0%	
Operations Risk Management SDG&E	Non-RAMP	1,965	2,620	(655)	-25%		1 FTE	1 FTE	0	0%	

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

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
<b>Corporate Center – General Administration</b>				
SECC Outside Services Employees - F923.1	<p>This workpaper [SECC Outside Services Employed – F923.1] had a very small amount attributable to RAMP and/or safety-related activities. The RAMP activities themselves do not meet the variance criteria threshold. The vast majority of this workpaper included costs for Non-RAMP and/or non-safety-related items. The overall variance/overage in 2019 actuals is due to higher than forecasted costs allocated to SDG&amp;E primarily due to disallowances of the LTIP and SERP programs, higher finance and bank fees incurred, net additional staffing/labor and non-labor costs, and an increase in outside legal services. Even though a portion of the requested funding for SDG&amp;E’s LTIP and SERP programs was disallowed in the TY 2019 GRC decision, the full forecasted amount was still incurred in 2019.</p>			Does not meet criteria

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

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Corporate Center – General Administration	SECC Outside Services Employees - F923.1	1SE000.001	<p>Corporate Center Shared Services Allocations - Outside Services Employed: 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>	SDG&E-26-R MLD-10 to MLD-14

**E. SDG&E Human Resources Department, Safety, Long-Term Disability, & Worker’s Compensation**

**i. Human Resources Department, Safety, Long-Term Disability, & Worker’s Compensation O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Human Resources Dept, Safety, LTD &amp; WC</b>		<b>7,017</b>	<b>7,873</b>	<b>(856)</b>	<b>-11%</b>						
Safety, Wellness & Disability Services	Non-RAMP	0	0	0	0%						
Safety, Wellness & Disability Services	Safety Training, Workshops and campaigns	1,712	1,358	354	26%						
Safety, Wellness & Disability Services	AED Maintenance	17	43	(26)	-60%						
Safety, Wellness & Disability Services	OSHA Voluntary Protection Programs	3	54	(51)	-94%						
Safety, Wellness & Disability Services	VPP Application and Implementation	0	107	(107)	-100%						
Safety, Wellness & Disability Services	Contractor Safety Database	18	43	(25)	-58%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Safety, Wellness & Disability Services	Program Manager FY Impact	115	134	(19)	-14%		1 FTE	1 FTE	0	0%	
Safety, Wellness & Disability Services	Contractor Safety Program Analyst	88	80	8	9%		1 FTE	1 FTE	0	0%	
<b>Sub-Total Safety, Wellness &amp; Disability Services</b>		<b>1,953</b>	<b>1,820</b>	<b>133</b>	<b>7%</b>		Except where noted, units unavailable because this workpaper does not have a single number of like units that would be comparable year over year				
Organizational Effectiveness	Non-RAMP	1,780	1,919	(139)	-7%						
Organizational Effectiveness	Supervisor Effectiveness Training	0	107	(107)	-100%						
Organizational Effectiveness	Working Foreman Training and Human Performance	0	85	(85)	-100%						
Organizational Effectiveness	Workforce Planning Efforts / Supervisor Effectiveness Program	42	241	(199)	-83%						
Organizational Effectiveness	Training		0	0	0%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Sub-Total Organizational Effectiveness</b>		<b>1,822</b>	<b>2,352</b>	<b>(530)</b>	<b>-23%</b>		Units unavailable because this workpaper does not have a single number of like units that would be comparable year over year.				
Offices of The President And COO	Non-RAMP	1,490	1,708	(218)	-13%		Units unavailable because this workpaper does not have a single number of like units that would be comparable year over year.				
SDG&E Field Safety	Field Safety Advisor	886	1,038	(152)	-15%		1 FTE	1 FTE	0	0%	-
Safety Compliance	Increased substance abuse prevention, testing and contractor monitoring	586	642	(56)	-9%		Units unavailable because this workpaper does not have a single number of like units that would be comparable year over year.				
Employee Assistance Program (EAP) And Wellness Programs	Non-RAMP	280	314	(34)	-11%		Units unavailable because this workpaper does not have a single number of like units that would be comparable year over year.				

**ii. SDG&E Human Resources Department, Safety, Long-Term Disability, & Worker’s Compensation O&M Variance Explanations**

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

**iii. SDG&E Human Resources Department, Safety, Long-Term Disability, & Worker’s Compensation O&M Workpaper Descriptions and GRC Testimony Locations**

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

**4. SDG&E BALANCED PROGRAMS – DIMP, TIMP, TREE TRIMMING, ELECTRIC DISTRIBUTION OVERHEAD POOLS AND WILDFIRE MITIGATION**

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

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

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Balanced Direct O&amp;M</b>		43,577	35,925	(7,652)	-21%						
TIMP	Assessments of transmission pipelines in High Consequence Areas (49 CFR Part 192 Subpart O) to evaluate and remediate threats and minimize risk.	7,682	5,336	2,346	44%	Yes	7 ILI 5 ECDA	1 ILI 9 ECDA	6 -4	600% 44%	Yes Yes
DIMP	Programs in place to minimize integrity risks to distribution pipelines and minimize infrastructure damage.	1,386	6,421	(5,035)	-78%	Yes	Units not available for this Witness Area because there is no single number of like units that would be comparable year over year				
Vegetation Management (Tree Trimming)	Programs to inspect and maintain trees in SDG&E's service territory that have the potential to encroach within the minimum	34,509	24,168	10,341	43%	Yes	Units not available for this workpaper because there is no single number of like units that would be comparable year over year				



WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
	required compliance distance between vegetation and overhead power lines.										

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

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
TIMP	TIMP is balanced throughout the GRC authorized cycle and not on an individual year basis. Accordingly, the number of projects completed varies year-to-year and individual year expenditures may vary from the authorized amount. Integrity management activities remain variable based on assessment findings and individual project costs will vary.			<i>The units identified in this report are a component and not the entirety of activities and costs supporting TIMP.</i>  SDG&E's TIMP budget is authorized and balanced to GRC cycles rather than calendar years and program activity may vary year to year due to compliance and operational considerations. Integrity management activities remain variable based on assessment findings; accordingly, the number of units completed varies year-to-year.
DIMP	DIMP is balanced throughout the GRC authorized cycle and not on an individual year basis. Accordingly,			Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	<p>the number of projects completed varies year-to-year and individual year expenditures may vary from the authorized amount. Integrity management activities remain variable based on assessment findings and individual project costs will vary. Additionally, O&amp;M costs are informed by Capital activities.</p>			
<p>Vegetation Management (Tree Trimming)</p>	<p>Tree Trimming is two-way balanced and is subject to a 35% threshold. Pursuant to D.19-09-051 (at OP 8.b), SDG&amp;E is required to file a Tier 3 Advice Letter for recovery of under collected balances up to 35%, and an application for under collected balances above 35%. SDG&amp;E's balance in this account has exceeded 35% and thus, SDG&amp;E will be subsequently filing an application providing the variance explanation and seeking cost recovery.</p>		<p>As explained in SDG&amp;E's 2019 Wildfire Mitigation Plan (at 43-44), SDG&amp;E began implementing enhanced vegetation management practices in 2019, including to achieve a 25-foot clearance post-trim within the HFTD where feasible between trees and electric facilities.</p>	<p>Does not meet criteria</p>

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

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
TIMP & DIMP	TIMP	1TD000.000	TIMP complies with 49 CFR 192, Subpart O—Gas Transmission Pipeline Integrity Management, and includes activities such as threat identification and risk assessment, pipeline assessments, remediation, and other actions that minimize threats and integrity concerns to reduce risk of pipeline failure.	SDG&E-11 MTM-9 to MTM-16
TIMP & DIMP	DIMP	1TD000.001	DIMP complies with 49 CFR 192, Subpart P— Gas Distribution Pipeline Integrity Management and identifies and reduces pipeline integrity risks for distribution pipelines, as required under the Pipeline Integrity, Protection, Enforcement and Safety Act of 2006.6.	SDG&E-11 MTM-16 to MTM-21
Electric Distribution	Vegetation Management (Tree Trimming)	1ED021.001	SDG&E’s Vegetation Management program complies with CPUC GO 95, Rule 35; Public Resources 25 Code, sections 4292 and 4293; and NERC FAC-003 and is responsible for inspecting and maintaining an inventory of approximately 450,000 trees. The tree trimming work includes pruning healthy trees growing into overhead power lines as well as the pruning or removal of dead, dying, diseased, or structurally unsound trees with the potential to fall into overhead lines.	SDG&E-15 WHS-69 to WHS-72

**B. SDG&E Balanced Programs Direct Capital**

**i. SDG&E Balanced Programs Direct Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>TIMP &amp; DIMP</b>		46,744	55,444	(8,700)	16%						
TIMP	TIMP ILI/ECDA	5,375	4,526	849	19%		See O&M Section for TIMP units				
DIMP	DIMP DREAMS	41,369	50,918	(9,548)	-19%	Yes	46 Miles	27 Miles	19 mi	70%	Yes

**ii. SDG&E Balanced Programs Direct Capital Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
DIMP	DIMP is balanced throughout the GRC authorized cycle and not on an individual year basis. Accordingly, the number of projects completed varies year-to-year and individual year expenditures may vary from the authorized amount. Integrity management activities remain variable based on assessment findings and individual project costs will vary.			<p><i>The units identified in this report are a component and not the entirety of activities and costs supporting DIMP.</i></p> <p>SDG&amp;E’s DIMP budget is authorized and balanced throughout the GRC cycle rather than calendar years and program activity may vary year to year due to compliance and operational considerations. Additionally, in SDG&amp;E’s TY 2019 GRC, the forecasted units for DIMP Capital represented a</p>

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
				component of DIMP authorized activities and costs. Completed units in 2019 appear higher due to consideration of additional work not previously unitized. If comparing authorized and completed mileage based on the prior definition of units, the variance is minimal. SDG&E is developing a forecasting methodology to address this in future GRCs.

**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	2019 GRC Testimony Reference
TIMP & DIMP	095460	DIMP	DIMP complies with 49 CFR 192, Subpart P— Gas Distribution Pipeline Integrity Management and identifies and reduces pipeline integrity risks for distribution pipelines, as required under the Pipeline Integrity, Protection, Enforcement and Safety Act of 2006.6.	SDG&E-11 MTM-24 to MTM-25

C. SDG&E Balanced Program Regulatory Account 2019 Cumulative Balances

i. SDG&E Regulatory Account – DIMPBA

SDG&E DIMPBA Details Revenue Requirements (\$000) Program Cycle 2019 Two-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
<b>Year 2019</b>						
Beginning Balance	(30)					(30)
O&M		2,293	12,146	(9,853)		(9,853)
Capital-Related Costs		1,525		1,525		1,525
Adjustments <sup>3</sup>		30		30		30
Interest					(89)	(89)
<b>Subtotal</b>	<b>(30)</b>	<b>3,848</b>	<b>12,146</b>	<b>(8,298)</b>	<b>(89)</b>	<b>8,417</b>

ii. SDG&E Regulatory Account – TIMPBA

SDG&E TIMPBA Details Revenue Requirements (\$000) Program Cycle 2019 Two-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
<b>Year 2019</b>						
Beginning Balance	1,652					1,652
O&M		9,694	9,007	687		687
Capital-Related Costs		117		117		117
Interest					60	60
<b>Subtotal</b>	<b>1,652</b>	<b>9,811</b>	<b>9,007</b>	<b>804</b>	<b>60</b>	<b>2,516</b>

<sup>3</sup> Per D.19-09-052 balance as of December 31, 2018 was transferred to Core Fixed Cost Account (CFCA) and Noncore Fixed Cost Account (NFCA).

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

SDG&E Tree Trimming Balancing Account Details Revenue Requirements (\$000) Program Cycle 2019 Two-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
<b>Year 2019</b>						
Beginning Balance	(2,590)					(2,590)
O&M		33,957	24,168	9,789		9,789
Amortization			(3,222)	3,222		3,222
Interest						0
<b>Subtotal</b>	<b>(2,590)</b>	<b>33,957</b>	<b>20,946</b>	<b>13,011</b>		<b>10,421</b>

iv. SDG&E Regulatory Account – Overhead Pools Balancing Account

SDG&E Overhead Pools Balancing Account Details Revenue Requirements (\$000) Program Cycle 2019 One-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
<b>Year 2019</b>						
Beginning Balance	0					0
Funding		121,869	172,406	(50,537)		(50,537)
Interest					0	0
<b>Subtotal</b>	<b>0</b>	<b>121,869</b>	<b>172,406</b>	<b>(50,537)</b>	<b>0</b>	<b>(50,537)</b>

v. **SDG&E Regulatory Account – Wildfire Mitigation Plan Memorandum Account**

SDG&E Wildfire Mitigation Plan Memorandum Account Details Revenue Requirements (\$000)						
Program Cycle 2019 <sup>4</sup>						
Two-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	<b>Beginning Balance</b>	<b>Actual</b>	<b>Authorized</b>	<b>Under/(Over) Collection</b>	<b>Interest</b>	<b>Ending Balance</b>
<b>Year 2019</b>						
Beginning Balance						0
O&M		43,425	23,637	19,788		19,788
Capital-Related Costs		1,033		1,033		1,033
Amortization						0
Interest					32	32
<b>Subtotal</b>		<b>44,458</b>	<b>23,637</b>	<b>20,821</b>	<b>32</b>	<b>20,853</b>

<sup>4</sup> The WMPMA was effective beginning on May 30, 2019. Therefore, the WMPMA balance represents the time period of May 30 through December 31, 2019. However, the Wildfire-related figures in the remainder of this 2019 RSAR are for calendar year 2019.



## **D. SDG&E Balanced Program Regulatory Account Disposition**

### **i. TIMP & DIMP**

Per D.19-09-051, the TIMPBA and Post-2011 DIMPBA will continue for the 2019 GRC cycle. 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 under-collections as a result of overspending up to 35% of the total authorized O&M and capital expenditures, SDG&E will submit a Tier 3 advice letter seeking recovery of the under-collected amount. For under-collections due to overspending greater than 35% of the total authorized O&M and capital expenditures, SDG&E will seek recovery through a separate application. If SDG&E has not overspent in excess of the total authorized O&M **and** capital expenditures for the current GRC cycle, but an under-collection exists due to compounding of actual capital revenue requirement recorded in the balancing account, SDG&E will incorporate the under-collected balance in its annual regulatory account balance update submittal for recovery in the subsequent year's rates. For any unspent funds at the end of the current GRC cycle, SDG&E will propose in its next GRC proceeding to return the unspent funds in rates to customers.

### **ii. DIMPBA**

In its TY 2019 GRC, SDG&E proposed to return to customers the Post-2011 DIMPBA over-collected balance as of December 31, 2018.<sup>5</sup> Per D.19-09-052, the DIMPBA balance as of December 31, 2018 was transferred to CFCA and NFCA to be included in rates.

### **iii. TIMPBA**

Pending AL 2777-G, SDG&E requests authority to recover the under-collection for program cycle 2016-2018.

### **iv. Tree Trimming Balancing Account**

Pursuant to D.19-09-051, TY 2019 GRC, effective January 1, 2019, the TTBA will continue for the 2019 GRC cycle. TTBA is a two-way balancing account. SDG&E is required to file a Tier 3 advice letter for recovery of under-collections up to 35 percent of the revenue requirement and an application for under-collections above 35 percent. Any over-collected balance at the end of each year will be amortized in connection with its annual regulatory account balance update filing for rates effective January 1 of the following year.

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<sup>5</sup> A.17-10-007, Ex. SDG&E-41 (Jasso) at NGJ-12: 10-11.

Disposition of the TTBA balance is through SDG&E's regulatory account update filing in October of each year. Via AL 3291-E<sup>6</sup>, effective January 1, 2019, SDG&E returned the projected 2018 year-end overcollection.

**v. Overhead Pools Balancing Account**

Pursuant to D.19-09-051, the Overhead Pools Balancing account (OPBA) is established as a non-interest bearing, one-way balancing account, in effect during the TY 2019 GRC cycle and will be evaluated at the end of the cycle. The OPBA shall apply to Electric Distribution customers, except for those specifically excluded by the Commission. The four overhead capital pools that are covered by this balancing account are the Local Engineering Electric Distribution pool; Local Engineering – Substation pool; the Department Overhead pool and the Contract Administration pool. This is a tracking account only and is not posted to the general ledger. The account will be evaluated for ratemaking purposes over the entire cycle covered by the TY 2019 GRC. If the account is over-collected at the end of the TY 2019 GRC cycle, the amount will be calculated into a revenue requirement to be refunded to ratepayers. This adjustment will be included in the next available rate change following the TY 2019 GRC cycle.

**vi. Wildfire Mitigation Plan Memorandum Account**

Pursuant to D.19-05-039 and AL 3454-E / 2817-G, SDG&E established the Wildfire Mitigation Plan Memorandum Account (WMPMA) to track costs incurred to implement the plan, effective May 30, 2019. The WMPMA is a two-way memorandum account. The WMPMA shall remain open until the Commission authorizes closure of the account. The WMPMA may be addressed in SDG&E's GRC proceeding or other proceeding deemed appropriate by the Commission.

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<sup>6</sup> Approved by the CPUC on December 17, 2018.

**ATTACHMENT B - SOCALGAS'S 2019 RISK SPENDING ACCOUNTABILITY REPORT**

1. **SOCALGAS GAS**

**A. SoCalGas Gas Distribution**

**i. SoCalGas Gas Distribution O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Gas Distribution</b>		139,780	154,807	(15,027)	-10%		Unless noted, units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
Field Services Leadership & Operations Assessment	Non-RAMP	392	296	96	32%		1 FTE	1 FTE	0	0%	
Field Support	Non-RAMP	13,603	13,896	(293)	-2%		175 FTE				
Field Support	Maintenance - Pipeline observation "Standby" (From Field Support	0	3,580	(3,580)	-100%	Yes	0				
Field Support	PPE and Safety Equipment	0	21	(21)	-100%		0	0	0	0	
Field Support	Qualifications of Pipeline Personnel	2,707	2,547	160	6%		80,200 Hours				
Field Support	Contractor Management and Traffic Control	917	1,587	(670)	-42%			15 FTE			
Field Support	QA Job Observations, Field Rides and Job Monitoring	77	62	15	24%		3,200 FACT Entries				

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Sub-Total Field Support</b>		<b>17,304</b>	<b>21,693</b>	<b>(4,389)</b>	<b>-20%</b>	<b>Yes</b>					
Leak Survey	Non-RAMP	1,196	2,642	(1,445)	-55%	Yes					
Leak Survey	Maintenance - Leak Survey	8,605	9,138	(533)	-6%		31,784 Miles				
<b>Sub-Total Leak Survey</b>		<b>9,801</b>	<b>11,780</b>	<b>(1,979)</b>	<b>-17%</b>						
Locate & Mark	Non-RAMP	1,611	41	1,570	3829%	Yes					
Locate & Mark	Locate & Mark Activities	13,882	15,729	(1,847)	-12%		462,231 USA Tickets	400,222 USA Tickets	62,009	15%	
Locate & Mark	QA Job Observations Field Rides and Job Monitoring	2,326	1,696	630	37%		2,935 Orders				
<b>Sub-Total Locate &amp; Mark</b>		<b>17,819</b>	<b>17,466</b>	<b>353</b>	<b>2%</b>						
Main Maintenance	Non-RAMP	20,637	16,717	3,919	23%	Yes					
Main Maintenance	Contracting for Traffic Control Delineation materials -- Distribution Only. Outside vendors	827	1,763	(936)	-53%						
Main Maintenance	Maintenance - Valve Inspection and Maintenance (From Field Support)	945	888	57	6%		6,644 Orders				
Main Maintenance	High-Pressure Pipeline Failure, Project Maintenance - Valve Maintenance and Installation (Distribution High Pressure) (From Field Support)	65	61	4	7%		454 Orders				

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Main Maintenance	Maintenance - Pipeline Patrol (From Field Support)	84	204	(120)	-59%		535 Orders				
Main Maintenance	Maintenance - Bridge and Span (From Field Support)	101	125	(24)	-19%		735 Orders				
Main Maintenance	Maintenance - Unstable Earth Inspection (From Field Support)	6	8	(2)	-25%		141 Orders				
<b>Sub-Total Main Maintenance</b>		<b>22,665</b>	<b>19,766</b>	<b>2,899</b>	<b>15%</b>						
Service Maintenance	Non-RAMP	11,384	17,147	(5,763)	-34%	Yes					
Tools Fittings & Materials	Non-RAMP	11,166	8,526	2,640	31%	Yes					
Tools Fittings & Materials	PPE and Safety Equipment - Companywide purchases of personal protective equipment (PPE)	1,560	714	846	118%						
Tools Fittings & Materials	PPE and Safety Equipment - Uniform rentals for employees - both protective and for security	551	1,063	(512)	-48%						
<b>Sub-Total Tools Fittings &amp; Materials</b>		<b>13,277</b>	<b>10,303</b>	<b>2,974</b>	<b>29%</b>	<b>Yes</b>					
Asset Management	Non-RAMP	7,515	7,578	(63)	-1%		74 FTE	65 FTE	9	14%	
Measurement & Regulation	Non-RAMP	7,335	9,231	(1,896)	-21%	Yes					

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Measurement & Regulation	Maintenance - Inspect meters, regulators, and gauges to evaluate and confirm overpressure protection is in place and maintained.	1,271	1,510	(239)	-16%		3,233 Orders				
Measurement & Regulation	Maintenance - Maintenance and inspections of meter set assemblies (MSA) in the system.	6,452	5,436	1,016	19%		22,294 Orders				
<b>Sub-Total Measurement &amp; Regulation</b>		<b>15,058</b>	<b>16,177</b>	<b>(1,119)</b>	<b>-7%</b>						
Cathodic Protection	Non-RAMP	1,565	1,981	(416)	-21%						
Cathodic Protection	Requirements for Corrosion Control	12,921	16,892	(3,971)	-24%	Yes	44,957 Orders				
Cathodic Protection	Gas Facility and Pipeline Inspections	1,005	953	52	5%		8,991 Orders				
<b>Sub-Total Cathodic Protection</b>		<b>15,491</b>	<b>19,826</b>	<b>(4,335)</b>	<b>-22%</b>	<b>Yes</b>					
Operations and Management	Non-RAMP	5,152	6,976	(1,824)	-26%	Yes, at total WP					
Operations and Management	Policy, Procedures, Standards, and ESCMP	0	996	(996)	-100%						
<b>Sub-Total Operations and Management</b>		<b>5,152</b>	<b>7,972</b>	<b>(2,820)</b>	<b>-35%</b>	<b>Yes</b>					
Regional Public Affairs	Non-RAMP	3,921	4,801	(880)	-18%	-	30 FTE	33 FTE	(3) FTE	-9%	

ii. SoCalGas Gas Distribution O&M Variance Explanations

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Field O&M – Field Support	The variance for the standby RAMP activity is due to duplicate treatment of dollars in the Locate & Mark work paper. At the workpaper level, the variance is also due to lower than forecasted staffing level during 2019.			Does not meet criteria
Field O&M – Leak Survey	The variance in non-RAMP is due to lower than forecasted costs in Leak Survey related activities.			Does not meet criteria
Field O&M – Locate and Mark	The variance in non-RAMP is due to higher than forecasted costs in Locate & Mark related activities.			Does not meet criteria
Field O&M – Main Maintenance	The non-RAMP variance is due to higher than forecasted costs associated with pipeline maintenance activities. The RAMP activities and overall workpaper did not exceed the threshold to require a variance explanation.			Does not meet criteria
Field O&M – Service Maintenance	The variance is due to the allocation of a large number of accounting-based credits, as well as lower than forecasted incremental costs related to the MSA Inspections.			Does not meet criteria
Field O&M – Tools, Fittings & Materials	The variance is due to higher than forecasted activities resulting in the need to purchase more materials.			Does not meet criteria
Measurement & Regulation	The non-RAMP variance is due to lower than forecasted costs associated with M&R related activities. The RAMP activities and overall workpaper did not exceed the threshold to require a variance explanation.			Does not meet criteria
Cathodic Protection	The RAMP and workpaper variances are due to both lower incurred costs than forecasted as well as a slow ramp up of incremental labor costs.			Does not meet criteria



WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Operations and Management	At the workpaper level, the variance is due to lower than forecasted staffing level during 2019. The activities described in the RAMP item are performed in other witness areas.			Does not meet criteria

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

Witness Area	Workpaper Name	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
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 GOM-62 to GOM-69
Gas Distribution	Field O&M – Leak Survey	2DG000.001	The work in this workgroup is associated with federal and state pipeline safety regulations associated with surveying for gas leaks.	SCG-04-R GOM-36 to GOM-40
Gas Distribution	Field O&M – Locate and Mark	2GD000.002	The work in this workgroup is initiated by third-party excavators requesting SCG to identify substructures at locations of planned excavations. The performed work is preventative in nature and required to avert damages caused by third-party excavators working near gas underground substructures.  The work is primarily comprised of: Locating and marking SoCalGas’s underground pipelines; Conducting job observations; Performing pothole operations; and Performing depth checks.	SCG-04-R GOM-31 to GOM-36
Gas Distribution	Field O&M – Main Maintenance	2GD000.003	Work in this workgroup is designed to meet federal (49 CFR 192) and state (GO 112-F, SB1371) pipeline safety regulations and to extend	SCG-04-R GOM-49 to GOM-56

Witness Area	Workpaper Name	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
			<p>the life of distribution main pipelines and related infrastructure. Main maintenance is generally corrective in nature and required to keep the natural gas system operating safely and reliably.</p> <p>Primary activities include: Leak evaluation; Leak repairs; Franchise alterations; Compliance maintenance; and Miscellaneous main maintenance.</p>	
Gas Distribution	Field O&M – Service Maintenance	2GD000.004	<p>The work in this workgroup is designed to meet federal (49 CFR 192) and state, (General Order 112-F) 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.</p> <p>This category includes costs for activities, as described, designed to mitigate infrastructure integrity risks.</p>	SCG-04-R GOM-56 to GOM-62
Gas Distribution	Field O&M – Tools, Fittings & Materials	2GD000.005	<p>This workgroup includes the purchase of small tools, small pipe fittings, miscellaneous pipeline materials, and miscellaneous installation materials used during construction and maintenance activities and those held in inventory as vehicle truck stock. These materials are necessary to obtain complete and safe work results.</p>	SCG-04-R GOM-69 to GOM-72
Gas Distribution	Measurement & Regulation	2GD002.000	<p>Recorded to this workgroup are labor and non-labor expenses for maintaining and operating regulator stations, medium and large Meter Set Assemblies (MSAs), and associated components. Measurement and Regulation activities focus primarily on maintaining and operating approximately 1,975 regulator stations and approximately 102,000 medium and large customer MSAs in the SoCalGas service territory.</p>	SCG-04-R GOM-40 to GOM-45
Gas Distribution	Cathodic Protection	2GD003.000	<p>Cathodic Protection is one method utilized by SoCalGas to mitigate the external corrosion on buried steel pipelines, without which the steel will corrode by reverting back to its natural state as an iron oxide. Mitigating external corrosion is required to decrease the potential for leaks and reduced useful life of the pipelines.</p>	SCG-04-R GOM-45 to GOM-49

Witness Area	Workpaper Name	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Gas Distribution	Operations and Management	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 GOM-77 to GOM-81 &  SCG-05-R OR-24 to OR-33

**iv. SoCalGas Gas Distribution Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Gas Distribution</b>		<b>301,934</b>	<b>391,406</b>	<b>(89,473)</b>	<b>-23%</b>		Unless noted below, units aren't available for this Witness Area because there is no single number of like units that would be comparable year over year.				
New Business Construction	Non-RAMP	57,751	54,203	3,549	7%		40,151 Meter Installations	51,388 Meter Installations	-11,237 Meter Installations	-22%	
New Business - RAMP	MSA Inspections- Customer Service Initial Turn-ons	3,409	2,858	551	19%						
<b>Sub-Total New Business</b>		<b>61,160</b>	<b>57,061</b>	<b>4,099</b>	<b>7%</b>						
Gas Meters	Non-RAMP	26,154	33,762	(7,608)	-23%	Yes	122,043 Meters Purchased	184,513 Meters Purchased	-62,470 Meters Purchased	-34%	
Gas Regulators	Non-RAMP	7,648	5,802	1,846	32%		154,982 Regulators Purchased	102,444 Regulators Purchased	52,538 Regulators Purchased	51%	
Cathodic Protection	Non-RAMP	0	4,437	(4,437)	-100%	Yes, at the total WP					

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Cathodic Protection - RAMP	Systems are in place to monitor and manage compliance activity schedules	4,302	6,325	(2,023)	-32%	Yes, at the total WP	141 Field Completed Orders				
<b>Sub-Total Cathodic Protection</b>		<b>4,302</b>	<b>10,762</b>	<b>(6,460)</b>	<b>-60%</b>	<b>Yes</b>					
Electronic Pressure Monitors (EPM)	Non-RAMP	729	653	76	12%		140 EPM Installations				
Remote Meter Reading	Non-RAMP	213	0	213	100%						
Pressure Betterment Projects	Non-RAMP	18,508	26,124	(7,616)	-29%	Yes	35 Field Completed Orders				
Main Replacements	Non-RAMP	11,887	35,716	(23,829)	-67%	Yes, at the total WP	169 Field Completed Orders				
Main Replacements - RAMP	Contracting for Traffic Control Delineation materials	2,015	2,428	(413)	-17%						
<b>Sub-Total Main Replacements</b>		<b>13,902</b>	<b>38,144</b>	<b>(24,242)</b>	<b>-64%</b>	<b>Yes</b>					
Main & Service Abandonments	Non-RAMP	13,218	13,337	(119)	-1%		4,604 Field Completed Orders				
Service Replacements	Non-RAMP	35,591	38,927	(3,336)	-9%		3,707 Field Completed Orders				

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Pipeline Relocations - Freeway	Non-RAMP	796	8,868	(8,072)	-91%	Yes	7 Field Completed Orders				
Pipeline Relocations - Franchise	Non-RAMP	14,363	20,247	(5,884)	-29%	Yes	8 Field Completed Orders				
Meter Guards	Non-RAMP	1,648	9,390	(7,742)	-82%	Yes	1,803 Completed Remediations	12,848 Completed Remediations	-11,045 Completed Remediations	-86%	
Regulator Stations	Non-RAMP	5,444	21,735	(16,291)	-75%	Yes, at the total WP	20 Regulator Stations				
Regulator Stations - RAMP	Systems are in place to monitor and manage compliance activity schedules related to high pressure	167	209	(42)	-20%						
Regulator Stations - RAMP	Systems are in place to monitor and manage compliance activity schedules related to medium pressure.	136	48	88	186%						
<b>Sub-Total Regulator Stations</b>		<b>5,747</b>	<b>21,992</b>	<b>(16,245)</b>	<b>-74%</b>	<b>Yes</b>					
Supply Line Replacements	Non-RAMP	0	4,762	(4,762)	-100%	Yes					
Other Distribution Capital Projects	Non-RAMP	10,314	3,700	6,613	179%	Yes, at the total WP	90 Field Completed Orders				

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Other Distribution Capital Projects - RAMP	Systems are in place to monitor and manage compliance activity schedules- Maintenance and Inspection of Medium Pressure Valves	15	6	9	165%						
Other Distribution Capital Projects - RAMP	Valve Maintenance and Installation (Distribution High Pressure)	73	25	48	193%						
<b>Sub-Total Other Distribution Capital Projects</b>		<b>10,402</b>	<b>3,731</b>	<b>6,671</b>	<b>179%</b>	<b>Yes</b>					
Gas Energy Measurement Systems (GEMS)	Non-RAMP	2,215	1,690	525	31%		848 GEMS Units	540 GEMS Units	308 GEMS Units	57%	
Capital Tools & Equipment	Non-RAMP	6,055	10,936	(4,881)	-45%	Yes, at the total WP					
Capital Tools & Equipment - RAMP	Prevention and Improvements	328	0	328	100%						
Capital Tools & Equipment - RAMP	Upgrade Nomex Coveralls & Fresh Equipment	652	0	652	100%						
Capital Tools & Equipment - RAMP	Confined space air monitoring system for field personnel	892	0	892	100%						
<b>Sub-Total Capital Tools &amp; Equipment</b>		<b>7,927</b>	<b>10,936</b>	<b>(3,009)</b>	<b>-28%</b>	<b>Yes</b>					

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Field Capital Support	Non-RAMP	74,937	84,242	(9,305)	-11%		674 FTE				
Field Capital Support - RAMP	Med Pressure Company Crew Inspections	76	66	10	16%		3,075 Inspections				
Field Capital Support – RAMP	Systems are in place to monitor and manage compliance activity schedules	848	122	726	594%		9 FTE				
<b>Sub-Total Field Capital Support</b>		<b>75,861</b>	<b>84,430</b>	<b>(8,569)</b>	<b>-10%</b>						
New Business Construction	Non-RAMP	1,550	789	762	97%						

**v. SoCalGas Gas Distribution Capital Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Gas Meters	Lower than forecasted meters purchased as existing inventories were used at a greater level than anticipated. Meter purchases will vary over the GRC cycle.			Does not meet criteria
Cathodic Protection	The RAMP and non-RAMP variances, which result in a workpaper level variance are due to work forecasted to occur in 2019 being completed in prior years, permitting and contractor scheduling conflicts causing projects to be delayed,			Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	and the cyclical nature of prioritizing projects during a GRC cycle.			
Pressure Betterments	The variance is due to lower than forecasted costs. Several projects did not start on schedule due to contractor and external agency delays.			Does not meet criteria
Main Replacements	The variance is due to performing fewer main replacements than forecasted.			Does not meet criteria
Pipeline Relocations – Freeway	The variance is due to lower than forecasted third-party agency demand for relocation of pipeline and related facilities at or near Freeways/Highways.			Does not meet criteria
Pipeline Relocations - Franchise	The variance is due to lower than forecasted municipality and third-party agency demand for relocations of pipeline and related facilities.			Does not meet criteria
Meter Guards	The variance is due to lower than forecasted costs and anticipated project ramp up to meet accelerated meter guard installation schedule. This will be made up within the GRC Cycle.			Does not meet criteria
Regulator Stations	The variance is due to performing fewer regulator station projects than forecasted.			Does not meet criteria
Supply Line Replacements	Supply line replacements were performed under other distribution capital projects.			Does not meet criteria
Other Distribution Capital Projects	The variance is due to higher than forecasted number of valve replacements and other projects necessary to maintain integrity of the distribution pipeline system.			Does not meet criteria



WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Capital Tools	The variance is due to major purchases occurring prior to 2019. These purchases will vary over the GRC cycle.			Does not meet criteria

**vi. SoCalGas Gas Distribution Capital Workpaper Descriptions and GRC Testimony Locations**

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
Gas Distribution	163	Meters	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. This category includes costs for activities, as described, designed to mitigate system reliability risks.	SCG-04-R GOM-126 to GOM-129
Gas Distribution	173	Cathodic Protections	This work category includes capital expenditures associated with the installation of cathodic protection equipment used to preserve the integrity of steel pipelines by protecting them from external corrosion. This category includes costs for activities, as described, designed to mitigate infrastructure integrity risks.	SCG-04-R GOM-112 to GOM-116
Gas Distribution	251	Pressure Betterments	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. This category includes costs for activities, as described, designed to mitigate system reliability risks.	SCG-04-R GOM-96 to GOM-99
Gas Distribution	252	Main Replacements	This work category includes expenditures to replace mains operating at 60 psig and below, also referred to as medium-pressure main replacements. This category includes costs for activities, as described, designed to mitigate infrastructure integrity risks.	SCG-04-R GOM-101 to GOM-103

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
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 GOM-116 to GOM-118
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’s franchise agreements with city and county agencies.</p> <p>This category includes costs for activities, as described, designed to mitigate public safety risks.</p>	SCG-04-R GOM-118 to GOM-120
Gas Distribution	264	Meter Guards	<p>Represented in this work category are expenditures for installations of Meter Guards to protect the meter set assemblies at existing customer locations from vehicular traffic.</p> <p>This category includes costs for activities, as described, designed to support public safety and system integrity.</p>	SCG-04-R GOM-123 to GOM-125
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 OM-109 to GOM-112
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 GOM-99 to GOM-100
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>	SCG-04-R GOM-121 to GOM-123

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
			This category includes costs for activities, as described, designed to mitigate public safety risks.	
Gas Distribution	725 and 906	Capital Tools	<p>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 repair of gas pipeline systems.</p> <p>This category includes costs for activities, as described, designed to mitigate employee safety risks.</p>	SCG-04-R GOM-134 to GOM-138

**B. SoCalGas Gas Control & System Operations**

**i. SoCalGas Gas Control & System Operations O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Gas Control & System Operations - Planning		8,700	9,670	(970)	-10%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
Energy Markets & Capacity Products - Director	Non-RAMP	0	340	(340)	-100%						
Energy Markets & Capacity Products - Support	Non-RAMP	882	667	215	32%						
Energy Markets & Capacity Products - Manager	Non-RAMP	876	663	213	32%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Gas Scheduling	Non-RAMP	821	780	41	5%						
Gas Control & Scada Operation Group - USS	Non-RAMP	0	14	(13)	-96%						
Gas Control & Scada Operation Group - USS	Fatigue Management	385	463	(78)	-17%						
Gas Control & Scada Operation Group - USS	Operation	0	2	(2)	-100%						
Gas Control & Scada Operation Group - USS	Gas Control Operation	2,032	1,741	291	17%						
Gas Control & Scada Operation Group - USS	Catastrophic Damage / Cyber Security	1,071	1,036	35	3%						
<b>Sub-Total Gas Control &amp; Scada Operation Group - USS</b>		<b>3,488</b>	<b>3,256</b>	<b>233</b>	<b>7%</b>						
Gas Transmission Planning	Non-RAMP	710	745	(35)	-5%						
Storage Products Manager	Non-RAMP	170	170	0	0%						
Emergency Services	Non-RAMP	0	127	(127)	-100%						
Emergency Services	Safety, Wellness and Emergency Services Support	1,751	2,921	(1,170)	-40%	Yes, at the total WP					
<b>Sub-Total Emergency Services</b>		<b>1,751</b>	<b>3,048</b>	<b>(1,297)</b>	<b>-43%</b>	<b>Yes</b>					

**ii. SoCalGas Gas Control & System Operations O&M Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Emergency Services	Variance was due to lower than forecasted staffing levels associated with the timing of the delayed TY 2019 GRC decision.			Does not meet criteria

**iii. SoCalGas Gas Control & System Operations O&M Workpaper Descriptions and GRC Testimony Location**

Witness Area	Workpaper Name	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Gas Control & System Operations	Emergency Services	2GS001	The SoCalGas Emergency Services department main objective is to support SoCalGas goals of maintaining comprehensive and coordinated emergency response and recovery programs to comply with applicable state and federal requirements. The department consists of four key groups I.e. Core Emergency Operations Center Operations, Emergency Services Enhancement Program, Enterprise Planning/Tech Advancement/Training Program, and Regulatory Compliance/Stakeholder Outreach/Development Program	SCG-13 DKZ-3 and DKZ-15 to DKZ-16

**C. SoCalGas Gas Engineering**

**i. SoCalGas Gas Engineering O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Gas Engineering</b>		<b>20,495</b>	<b>31,110</b>	<b>(10,615)</b>	<b>-34%</b>		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
Dir Eng & Tech Services	Non-RAMP	505	546	(41)	-7%						
Dir Eng & Tech Services	Information Management Systems	0	325	(325)	-100%						
<b>Sub-Total Dir Eng &amp; Tech Service</b>		<b>505</b>	<b>871</b>	<b>(366)</b>	<b>-42%</b>						
MRC Management & Special Projects	Non-RAMP	225	967	(742)	-77%						
Measurement & Design	Non-RAMP	508	1,255	(747)	-60%						
Measurement Technologies	Non-RAMP	955	1,380	(424)	-31%						
Measurement Field Support	Non-RAMP	830	1,348	(518)	-38%						
Engineering Design Management Process Engineering & Design	Non-RAMP	975	2,004	(1,030)	-51%	Yes, at the WP					
Engineering Design Management Process Engineering & Design	Information Management Systems	105	237	(132)	-56%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Sub-Total Engineering Design Management Process Engineering &amp; Design</b>		<b>1,080</b>	<b>2,241</b>	<b>(1,162)</b>	<b>-52%</b>	<b>Yes</b>					
Pipeline Materials	Non-RAMP	716	429	287	67%						
Mechanical Design	Non-RAMP	108	194	(85)	-44%						
Pipeline Engineering	Non-RAMP	472	724	(251)	-35%						
Research, Planning & Development	Non-RAMP	2	43	(41)	-96%						
MRC - Instrumentation Repair and Field Support	Non-RAMP	441	1,428	(987)	-69%						
Engineering Analysis Center - Chemical Lab	Non-RAMP	1,966	2,219	(253)	-11%						
MRC Standards	Non-RAMP	135	787	(651)	-83%						
High Pressure & Distribution Engineering	Non-RAMP	617	1,231	(614)	-50%						
Electrical Design	Non-RAMP	136	166	(30)	-18%						
Gas Engineering Analysis Center NGV and Electrical Field	Non-RAMP	6,452	6,597	(145)	-2%						
Land Services & Right of Way	Non-RAMP	2,900	3,900	(1,000)	-26%	Yes					

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Civil Structural & Hazard Mitigation Engineering	Non-RAMP	333	1,071	(738)	-69%						
Civil Structural & Hazard Mitigation Engineering	Monitoring of Land Movement & Flood zones	238	1,176	(938)	-80%						
Civil Structural & Hazard Mitigation Engineering	Gas Infrastructure Resilience & Vulnerability Report	149	349	(200)	-57%						
Civil Structural & Hazard Mitigation Engineering	Real time monitoring of land movement via stress acting on infrastructure	1	107	(106)	-99%						
<b>Sub-Total Civil Structural &amp; Hazard Mitigation Engineering</b>		<b>721</b>	<b>2,703</b>	<b>(1,982)</b>	<b>-73%</b>	<b>Yes</b>					
Meter Shop & Records		1,725	2,627	(903)	-34%						



**ii. SoCalGas Gas Engineering O&M Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Engineering Design Management Process Engineering & Design	The variance is due to lower than forecasted staffing levels associated with the timing of the Commission’s decision and the need to further refine the engineering design portion of the scope of SB 1383 renewable natural gas project work, leading to the deferral of implementation and an extension of schedule.			Does not meet criteria
Land Services & Right of Way	The variance is due to delay in the design, development and implementation of the technological solution to improve the Right of Way record management system. Work was deferred to allow sufficient time to coordinate the document management requirements and existing system capabilities with IT and to adequately identify and analyze the new technologies and solutions available.			Does not meet criteria
Civil Structural & Hazard Mitigation Engineering	The variance is due to lower than forecasted costs resulting from a change in scope of satellite monitoring program and deferred implementation of a new seismic study program associated with the timing of the Commission’s decision.			Does not meet criteria

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

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Gas Engineering	Engineering Design Management Process Engineering & Design	2200-0318	<p>The Engineering Design group is responsible for Pipeline Design, Mechanical Design, Process Engineering and Design Drafting, including support of renewable gas design of interconnect facilities. The Process Engineering group is responsible for supporting operations and projects related to dehydration units, scrubbers, vessels and wells. The Design Drafting group is responsible for Computer Aided Drafting (CAD) engineering designs for projects, which includes the conversion of standard two-dimensional design applications to a data-centric, three-dimensional (3D) model related to gas assets.</p> <p>This category includes Engineering Information Technology team mitigation activities.</p>	SCG -9-R DRH-12, DRH-22 to DRH-24, DRH-29 to DRH-30
Gas Engineering	Land Services & Right of Way	2EN001.000	Land Services & Right of Way manages the necessary property rights that allow for the access, operation, and maintenance of pipeline infrastructure on public and private properties, which includes administration of lease payments. This group also includes Land Survey work.	SCG-9-R DRH-12, DRH-15 to DRH-21
Gas Engineering	Civil Structural & Hazard Mitigation Engineering	2EN002.000	<p>The Civil Structural and Hazard Mitigation Engineering group is responsible for structural engineering design and Geological Hazard Engineering programs, which includes a seismic mitigation program, strain gauge programs, and satellite monitoring programs.</p> <p>This category includes activities, as described designed to mitigate geological hazards and climate change adaption related risks.</p>	SCG-9-R DRH-10, DRH-12, DRH-13 to DRH-14

**iv. SoCalGas Gas Engineering Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Gas Engineering		11,636	9,768	1,867	19%		Units not available for this WP because there is no single number of like units that would be comparable year over year.				
Laboratory Equipment - RAMP	Odorization	2,588	2,540	48	2%						
Supervision & Engineering Overhead Pool	Non-RAMP	9,047	7,228	1,819	25%						

**v. SoCalGas Gas Engineering Capital Variance Explanation**

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

**vi. SoCalGas Gas Engineering Capital Workpaper Description and GRC Testimony Location**

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

**D. SoCalGas Gas Major Projects**

**i. SoCalGas Gas Major Projects O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Major Projects</b>		1,988	4,301	(2,314)	-54%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
Major Projects Management & Outreach	Non-RAMP	661	2,434	(1,773)	-73%	Yes, at the total WP					
Major Projects Management & Outreach	Real-time pressure data and providing remote control to high priority distribution sites.	95	1,516	(1,421)	-94%	Yes, at the total WP					
<b>Sub-Total Major Projects Management &amp; Outreach</b>		<b>756</b>	<b>3,950</b>	<b>(3,194)</b>	<b>-81%</b>	<b>Yes</b>					
Project & Construction Management	Non-RAMP	513	217	296	137%						
Project Controls and Estimating	Non-RAMP	718	135	584	433%						

**ii. SoCalGas Gas Major Projects O&M Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Major Projects Management & Outreach	Due to the delayed 2019 GRC decision, construction of the Distribution Operations Control Center did not start as planned. Therefore, no post-construction, O&M expenses were incurred in 2019.			Does not meet criteria

**iii. SoCalGas Gas Major Projects O&M Workpaper Descriptions and GRC Testimony Locations**

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Gas Major Projects	Major Projects Management & Outreach	2MP001.000	This cost center captures the activities and expenses associated with the Vice President of Gas Engineering and Major Projects (2200-2391), Director of Project Management and Construction (2200-2529) and Capital Projects Outreach (2200-2576). Activities include the O&M costs of leadership of engineering and project execution as well as the costs of public education regarding capital projects.	SCG-08-R MAB-11 to MAB-12

**iv. SoCalGas Gas Major Projects Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Gas Major Projects</b>		<b>347</b>	<b>42,673</b>	<b>(42,326)</b>	<b>-99%</b>		<b>Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.</b>				
Supervision & Engineering – Major Projects	Non-RAMP	24	0	24	100%						
Distribution Operations Control Center (DOCC)	Non-RAMP	323	13,366	(13,043)	-98%	Yes, at total WP					
Distribution Operations Control Center (DOCC)	Gas Control Operation	0	29,307	(29,307)	-100%	Yes, at total WP					
<b>Sub-Total (DOCC)</b>		<b>323</b>	<b>42,673</b>	<b>(42,351)</b>	<b>-99%</b>	<b>Yes</b>					

**v. SoCalGas Gas Major Projects Capital Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Distribution Operations Control Center (DOCC)	Due to the delayed 2019 GRC decision, the planned testing and installation of the control and real-time monitoring sites were postponed, resulting in decreased spend in 2019.			Does not meet criteria

vi. SoCalGas Gas Major Projects Capital Workpaper Descriptions and GRC Testimony Locations

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
Major Projects	343	Distribution Operations Control Center (DOCC)	SoCalGas and SDG&E intend to establish a distribution Control Center that is functionally similar and integrated into to its existing transmission Gas Control Center. Control room functions include ensuring pipeline safety parameters as established by Federal and State agencies, analyzing and responding to abnormal and/or emergency situations on the pipeline system, coordinating necessary pipeline shutdowns for maintenance and/or emergency measures, and serving as a communication center between various departments conducting maintenance on the Transmission pipeline system.	SCG-08-R MAB-19 to MAB-25

E. SoCalGas Gas System Integrity

i. SoCalGas Gas System Integrity O&M Variances

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Gas System Integrity		14,993	35,582	(20,589)	-58%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
USS - VP Gas System Integrity	Non-RAMP	0	678	(678)	-100%						
Business Process ESS Implementation and ESS Mobile Solution	Non-RAMP	1,038	206	832	403%						
Business Process ESS Implementation and ESS Mobile Solution	Information Management System	110	119	(9)	-8%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Sub-Total Business Process ESS Implementation and ESS Mobile Solution</b>		<b>1,148</b>	<b>325</b>	<b>823</b>	<b>253%</b>						
Applications	Non-RAMP	0	515	(515)	-100%						
ESS Production Support	Non-RAMP	69	610	(541)	-89%						
ESS Production Support	Information Management Systems	0	108	(108)	-100%						
<b>Sub-Total ESS Production Support</b>		<b>69</b>	<b>718</b>	<b>(649)</b>	<b>-90%</b>						
Wrk Mgmt & Databases	Non-RAMP	795	1,786	(991)	-56%						
Wrk Mgmt & Databases	Operational Compliance and Oversight	293	216	77	36%						
<b>Sub-Total Wrk Mgmt &amp; Databases</b>		<b>1,088</b>	<b>2,002</b>	<b>(914)</b>	<b>-46%</b>						
Contract & Maintenance	Non-RAMP	617	603	15	2%						
Field Technologies	Non-RAMP	222	448	(226)	-50%						
Gas System Integrity Staff & Programs	Non-RAMP	109	345	(235)	-68%						
Operator Qualification	Non-RAMP	927	1,248	(321)	-26%						
Operator Qualification	Operations	750	856	(106)	-12%						
<b>Sub-Total Operator Qualification</b>		<b>1,677</b>	<b>2,104</b>	<b>(427)</b>	<b>-20%</b>						
Pipeline System Construction Policy	Locate & Mark Activities	0	932	(932)	-100%						



WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Pipeline System Construction Policy	Locate & Mark Activities	0	270	(270)	-100%						
Pipeline System Construction Policy	Locate & Mark Activities	0	120	(120)	-100%						
Pipeline System Construction Policy	Policy Procedures Standards and ESCMP	771	668	103	15%						
<b>Sub-Total Pipeline System Construction Policy</b>		<b>771</b>	<b>1,990</b>	<b>(1,219)</b>	<b>-61%</b>	<b>Yes</b>					
Quality & Risk	Non-RAMP	419	969	(551)	-57%						
Quality & Risk	Operational Compliance and Oversight	0	340	(340)	-100%						
<b>Sub-Total Quality &amp; Risk</b>		<b>419</b>	<b>1,309</b>	<b>(891)</b>	<b>-68%</b>						
Enterprise Geographic Information System (eGIS)	Non-RAMP	757	2,126	(1,369)	-64%	Yes, at the total WP					
Enterprise Geographic Information System (eGIS)	Operational Compliance and Oversight	0	625	(625)	-100%						
<b>Sub-Total Enterprise Geographic Information System (eGIS)</b>		<b>757</b>	<b>2,751</b>	<b>(1,994)</b>	<b>-72%</b>	<b>Yes</b>					
Shared Public Awareness Activities	Non-RAMP	0	(303)	303	-100%						
Shared Public Awareness Activities	Analysis	146	882	(736)	-83%						
<b>Sub-Total Shared Public Awareness Activities</b>		<b>146</b>	<b>579</b>	<b>(433)</b>	<b>-75%</b>						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Pipeline Safety & Compliance Manager	Non-RAMP	678	920	(241)	-26%						
Pipeline Safety Oversight	Non-RAMP	599	617	(18)	-3%						
Records Management - From 2200-2361	Operational Compliance and Oversight	0	1,778	(1,778)	-100%	Yes, at the total WP					
Records Management - From 2200-2361	Policy Procedures Standards and ESCMP	0	970	(970)	-100%						
<b>Sub-Total Records Management - From 2200-2361</b>		<b>-</b>	<b>2,748</b>	<b>(2,748)</b>	<b>-100%</b>	<b>Yes</b>					
Gas Operations Training & Development	Non-RAMP	315	1,376	(1,061)	-77%	Yes, at the total WP					
Gas Operations Training & Development	Qualification of Pipeline Personnel	108	1,132	(1,024)	-90%	Yes, at the total WP					
Gas Operations Training & Development	Qualifications of Pipeline Personnel	540	716	(176)	-25%						
Gas Operations Training & Development	Qualifications of Pipeline Personnel	158	288	(130)	-45%						
Gas Operations Training & Development	Qualifications of Pipeline Personnel	117	348	(231)	-66%						
Gas Operations Training & Development	Qualifications of Pipeline Personnel	108	107	1	1%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Gas Operations Training & Development	Expand “Situation City” training props at Pico Rivera campus	0	269	(269)	-100%						
Gas Operations Training & Development	Qualifications of Pipeline Personnel	154	107	47	44%						
Gas Operations Training & Development	Qualifications of Pipeline Personnel	4	5	(1)	-20%						
Gas Operations Training & Development	Qualifications of Pipeline Personnel	17	16	1	6%						
Gas Operations Training & Development	Employee Skills Training	100	597	(497)	-83%						
Gas Operations Training & Development	Locate & Mark Training	73	152	(79)	-52%						
<b>Sub-Total Gas Operations Training &amp; Development</b>		<b>1,694</b>	<b>5,113</b>	<b>(3,419)</b>	<b>-67%</b>	<b>Yes</b>					
Pipeline Safety & Compliance	Non-RAMP	139	657	(517)	-79%						
Pipeline Safety & Compliance	Operational Compliance and Oversight	0	109	(109)	-100%						
Pipeline Safety & Compliance	Operational Compliance and Oversight	250	321	(71)	-22%						
Pipeline Safety & Compliance	Operational Compliance and Oversight	884	850	34	4%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Pipeline Safety & Compliance	Operational Compliance and Oversight	1,230	1,210	20	2%						
<b>Sub-Total Pipeline Safety &amp; Compliance</b>		<b>2,503</b>	<b>3,147</b>	<b>(643)</b>	<b>-20%</b>						
Public Awareness	Non-RAMP	493	304	190	62%						
Public Awareness	Public Awareness	0	1,498	(1,498)	-100%	Yes, at the total WP					
<b>Sub-Total Public Awareness</b>		<b>493</b>	<b>1,802</b>	<b>(1,308)</b>	<b>-73%</b>	<b>Yes</b>					
Asset Management	Non-RAMP	2,001	2,386	(385)	-16%						
Asset Management	Operational Compliance and Oversight	0	110	(110)	-100%						
Asset Management	Operational Compliance and Oversight	0	226	(226)	-100%						
<b>Sub-Total Asset Management</b>		<b>2,001</b>	<b>2,722</b>	<b>(721)</b>	<b>-26%</b>						
Gas Contractor Controls	Contractor Management and Traffic Control	0	4,147	(4,147)	-100%	Yes					

ii. SoCalGas Gas System Integrity O&M Variance Explanations

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Pipeline System Construction Policy	Resources were re-prioritized to support damage prevention activities for SB 1371 and DIMP.	Second RAMP item, acquisition of smart devices to give the Company the capability to capture photographs of location marks at the USA ticket location, was delayed to 2020 and will be implemented in association with the Mobile Data Terminals (MDT)		Does not meet criteria
Enterprise Geographic Information System (eGIS)	Resources were re-prioritized to support damage prevention activities for SB 1371, TIMP and DIMP.	GIS Utility and Pipeline Data Model (UPDM) Medium Pressure implementation will be done in phases over the next several years.		Does not meet criteria
Records Management - From 2200-2361	The strategy for Records Management was optimized while the activity is being performed by organizations across the Company.	This activity will be performed by various organizations across the Company.		Does not meet criteria
Gas Operations Training & Development	Resources were re-prioritized to support other emergent capital priorities and projects funded via other mechanisms.	Requirements for the Employee Collaborative Training Program are being refined and estimated		Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
		to be rolled out in 2020; Classroom Technology was capitalized		
Public Awareness	The strategy for Public Awareness was optimized while Company still met federal mandated Public Awareness program, as prescribed in 49 CFR 192.616.			Does not meet criteria
Gas Contractor Controls	The work under this activity was redistributed and managed across the Organization. We re-organized to optimize the strategy proposed in this Workpaper.			Does not meet criteria

**iii. SoCalGas Gas System Integrity O&M Workpaper Descriptions and GRC Testimony Locations**

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Gas System Integrity	Pipeline System Construction Policy	2200-2345	Pipeline Systems Construction Policy focuses on the safe construction of high and medium pressure pipelines and associated systems. This category includes development and maintenance of medium and high pressures construction policies and practices in accordance with applicable specifications, requirements and regulations.	SCG-05-R OR-56 to OR-59
Gas System Integrity	Enterprise Geographic Information System (EGIS)	2200-2376	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.	SCG-05-R OR-65 to OR-66

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
			This category includes costs for activities, as described, designed to mitigate system reliability risks.	
Gas System Integrity	Records Management - From 2200-2361	2200-7242	Records Management provides centralized operational oversight for records management processes in specific operational areas.	SCG-05-R OR-67 to OR-68
Gas System Integrity	Gas Operations Training & Development	2SI001.000	Gas Operations Training and Development communicates and reinforces the SoCalGas safety culture and strives to instill a passion for success through participation in employee seminars, ongoing refresher training, and one-on-one employee meetings. Gas Operations Training and Development also consists of Field Technical Skills Training for employees in Gas Transmission, Gas Distribution, and Storage. These trainings and services are necessary for the Company to follow applicable laws, regulations and standards and to help maintain the safety of the workforce and the public. Also, included under Gas Operations Training and Development are activities and associated O&M expenses within the workgroup of Pipeline Maintenance Policy, which conducts a variety of operational services necessary for employees to complete their daily activities. These activities include identifying, developing, implementing, monitoring, and enhancing Company policies, procedures, tariffs, technologies, and/or reports used by Gas Transmission, Gas Distribution, and Storage.	SCG-05-R OR-24 to OR-33
Gas System Integrity	Public Awareness	2SI003.000	This activity includes development and implementation of a federally-mandated Public Awareness program, as prescribed in 49 CFR 192.616. The Public Awareness program contributes to enhanced public safety by providing certain risk mitigation measures. In adopting these Public Awareness program requirements, the Pipeline and Hazardous Materials Safety Administration (PHMSA) determined that “effective public awareness programs are vital to continued safe pipeline Operations” and that “such programs are an important factor in establishing communications with affected stakeholders, providing information necessary to enhance public awareness of pipelines, and communicating stakeholder roles relative to pipeline safety.” The federal regulations directing the implementation of this program specifically require that the	SCG-05-R OR-37 to OR-41

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
			<p>program include activities to educate the public, appropriate government organizations, and persons engaged in excavation-related activities regarding: (1) Use of the one-call notification system prior to excavation and other damage prevention activities; (2) possible hazards associated with unintended releases from a gas pipeline facility; (3) Physical indications that such a release may have occurred; (4) steps that should be taken for public safety in the event of a gas pipeline release; and (5) procedures for reporting such an event.</p>	
Gas System Integrity	Gas Contractor Controls	2SI005.000	<p>Gas Contractor Controls collaborates with Company and industry leaders and subject matter experts to formulate and promote policy related to construction contractor safety and pipeline safety/quality oversight. Activities include establish, maintain, and expand construction contractor oversight program, including safety (occupational and process), to systematically review, assess, and enhance the management practices related to contractors; provide written guidance on inspection of workmanship on the pipeline; facilitate invoice approval process via online training and invoice submittal system user support; and construction fraud vigilance and training. As prescribed in the Agreement between SoCalGas and Utility Workers Union of America (AFL-CIO) and International Chemical Workers Union Council, SoCalGas must provide semi-annual reports to the union identifying contract employees doing represented work (excluding Distribution) and a report of Gas Distribution contract employment showing the ration of company/contractor employees. Deliver pipeline construction fraud awareness training; author and maintain Company Gas Standards, forms, and workflows related to construction contractor oversight and associated information/records collection, including those related to California Public Utilities Code Section 141 Construction and Safety Standards; and develop Safety Congress presentation/content and facilitate quarterly meetings. Pipeline Safety Management System (PSMS)- Develop and implement a Company-wide PSMS API RP 1173, consistent with PHMSA's recommendation.</p>	SCG-05-R OR-43 to OR-46

**iv. SoCalGas Gas System Integrity Capital Variances**

This witness did not sponsor capital costs.



**F. SoCalGas Gas Transmission**

**i. SoCalGas Gas Transmission O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Gas Transmission</b>		32,233	33,216	(982)	-3%		Units are not available for this witness area because there is no single number of like units that would be comparable year over year.				
Director Gas Transmission – USS	Non-RAMP	246	258	(12)	-5%						
Field Operations Managers – USS	Non-RAMP	307	452	(145)	-32%						
Technical Services Manager - USS	Non-RAMP	299	384	(85)	-22%						
Pipeline Operations	Non-RAMP	1,354	10,771	(9,417)	-87%	Yes, at the total WP					
Pipeline Operations	Maintenance - Valve, Meters, Pipe, PLS, Regulators, etc.	13,132	4,354	8,778	202%	Yes, at the total WP					
Pipeline Operations	Corrosion Control Operation - Cathodic Protection	1,387	271	1,116	412%	Yes, at the total WP					
Pipeline Operations	Odorization of Natural Gas	570	108	462	428%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Pipeline Operations	Training and Qualification of Personnel	44	188	(144)	-77%						
<b>Sub-Total Pipeline Operations</b>		<b>16,487</b>	<b>15,692</b>	<b>795</b>	<b>5%</b>						
Compressor Station Operations	Non-RAMP	9,960	10,799	(839)	-8%						
Technical Services	Non-RAMP	319	588	(269)	-46%						
Technical Services	Class Location (Hydrotest) - Incremental	0	1,439	(1,439)	-100%	Yes, at the total WP					
Technical Services	Right of Way - Maintenance of access roads	1,527	0	1,527	100%	Yes, at the total WP					
Technical Services	Utility Conflict Review, Ops Emergency Preparedness & QA/QC	587	1,319	(732)	-55%						
Technical Services	Right of Way - Routine	2,501	1,500	1,001	67%	Yes, at the total WP					
Technical Services	HCA Class Location Operation	0	785	(785)	-100%						
<b>Sub-Total Technical Services</b>		<b>4,934</b>	<b>5,631</b>	<b>(697)</b>	<b>-12%</b>						

**ii. SoCalGas Gas Transmission O&M Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Pipeline Operations	The authorized Maintenance RAMP item in this Workpaper covered limited pipeline maintenance activities. However, the actual spend against this Maintenance RAMP item included other Maintenance activities that were authorized as Non-RAMP. Overspend on Corrosion control operation was because authorized funding for this activity was less than historical spend.			Does not meet criteria
Technical Services	Hydrotests have yet to be completed but are still anticipated to be completed during the rate case cycle. The primary spend in this activity was maintenance of access roads and routine right of way projects.	Hydrotesting deferred		Does not meet criteria

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

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Gas Transmission	Pipeline Operations	2GT000.000	Gas Transmission Pipelines Operations is responsible for the safe day-to-day operation and maintenance of gas transmission pipeline facilities and related infrastructure. This includes, but is not limited to, leak surveys, valve inspections, cathodic protection systems, locate & mark, stand-by, and maintaining equipment at pipeline receipt points that includes odorization equipment and real-time operating data telemetry communication equipment.	SCG-06 EAM-9 to EAM-10
Gas Transmission	Technical Services	2GT002.000	The Technical Services function includes the activities of engineering, instrumentation, control, project support, and plan file review in support of the day-to-day operations and maintenance of the gas transmission system. Responsibilities include right-of-way maintenance, providing on-site	SCG-06 EAM-16

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
			technical expertise to Pipeline and Compression Operations field personnel, and troubleshooting technical issues for both capital and O&M projects.	

**iv. SoCalGas Gas Transmission Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Gas Transmission</b>		230,936	207,480	23,456	11%		Unless noted below, units are not available for this Witness Area because there is no single number of like units that would be comparable year over year.				
Gas Transmission New Pipeline	Non-RAMP	11,490	8,354	3,136	38%	Yes	14,763 ft				
GT - Pipeline Replacements	Non-RAMP	286	0	286	100%						
Gas Transmission Relocations	Non-RAMP	16,667	6,601	10,065	152%	Yes					
GT M&R Stations	Non-RAMP	37,756	21,428	16,328	76%	Yes					
GT Auxiliary Equipment	Non-RAMP	2,741	4,922	(2,181)	-44%	Yes, at total WP					
GT Auxiliary Equipment - RAMP	Operational Resiliency	0	6,880	(6,880)	-100%	Yes, at total WP					
GT Auxiliary Equipment - RAMP	Physical security measures put in place for the security/safety of employees	361	2,172	(1,811)	-83%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
	and infrastructure										
GT Auxiliary Equipment - RAMP	Strain Gauge Installation Projects	99	453	(354)	-78%						
<b>Sub-Total GT Auxiliary Equipment</b>		<b>3,201</b>	<b>14,427</b>	<b>(11,226)</b>	<b>-78%</b>	Yes					
Gas Transmission Freeway Relocations	Non-RAMP	1,950	100	1,850	1858%		170 ft				
Gas Transmission Cathodic Protection	Non-RAMP	2,030	6,154	(4,124)	-67%	Yes, at total WP	2 CP Engines				
Gas Transmission Cathodic Protection - RAMP	Requirements for corrosion control	5,266	1,379	3,887	282%	Yes, at total WP	4 Deep Wells Anodes				
<b>Sub-Total GT Cathodic Protection</b>		<b>7,296</b>	<b>7,534</b>	<b>(238)</b>	<b>-3%</b>						
Land Rights & Buildings	Non-RAMP	482	5,195	(4,712)	-91%	Yes					
GT Bldg's & Improve / Quality/Economic Driven	Non-RAMP	2,591	0	2,591	100%	Yes					
GT & Stor Cap Tools / Quality/Economic Driven	Non-RAMP	340	0	340	100%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
GS Stor Cap Tools	Non-RAMP	556	0	556	100%						
GT Compressor Stations	Non-RAMP	0	218	(218)	-100%						
GT Replacement Pipelines	Non-RAMP	31,446	9,741	21,704	223%	Yes					
GT Replacement Pipelines - RAMP	Gas Transmission	534	2,139	(1,605)	-75%						
<b>Sub-Total GT Replacement Pipelines</b>		<b>31,980</b>	<b>11,880</b>	<b>20,100</b>	<b>169%</b>	Yes					
GT Compressor Stations	Non-RAMP	9,518	12,616	(3,099)	-25%	Yes					
GT Compressor Stations	Non-RAMP	0	1,452	(1,452)	-100%						
MP PL Rpls / Quality/Economic Driven	Non-RAMP	432	0	432	100%						
GT Compressor Stations	Non-RAMP	106,393	117,676	(11,283)	-10%	Yes					

v. **SoCalGas Gas Transmission Capital Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Gas Transmission New Pipeline	The overspend was due to a collectible project that was accelerated in 2019. Additional spend required due to unforeseen pipeline flaws that required repairs and land acquisition for Temporary Right of Entry (TRE).			Does not meet criteria
Gas Transmission Relocations	The overspend was primarily from increased franchise and landowner requests to relocate pipeline. In addition, two major projects originally planned for 2017 were delayed to 2019 due to issues obtaining right-of-way agreements.			Does not meet criteria
M&R Stations	There were more base RAMP projects (i.e. Valve Maintenance & Installation) that were completed in 2019 than anticipated due to more requests coming from the Operating Districts. In addition, collectible projects are contributing to the variance, as payment credits are not part of the actuals recorded under this budget code.			Does not meet criteria
Auxiliary Equipment	Forecasted physical security projects at critical sites were completed prior to 2019 and therefore resulted in reduced spend. In addition, there were no Operational Resiliency projects completed due to limited studies completed to verify if redundant pipelines would provide any flexibility to the pipeline system.			Does not meet criteria
Gas Transmission Cathodic Protection	The underspend in CP non-RAMP projects is due to only completing two CP engine projects. There were 34 other CP engine projects in various stages of planning or			Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	reconciliation in 2019. The overspend in CP RAMP projects was a result of more deep well anodes being installed than anticipated due to a more focused effort of CP out of tolerance reads.			
Land Rights & Buildings	Underspend was due to projects associated with acquiring land rights that did not materialize as forecasted.			Does not meet criteria
GT Bldg's & Improve / Quality/Economic Driven	Overspend was due to miscellaneous building improvement projects at Blythe Compressor Station that were not part of the forecast.			Does not meet criteria
GT Pipeline Replacements	There were more leak projects than anticipated across the service territory due to mandated increased instrument leak survey on Transmission pipelines. The leaks had various remediation windows not exceeding 24-months. In addition, pipeline encroachment projects contributed to the overspend.			Does not meet criteria
Compressor Stations (315)	Lower than forecasted compressor station activities were a result of the inability to schedule shut-ins/shutdown of the compressor equipment to perform work.			Does not meet criteria
Compressor Stations (335)	The underspend of \$11M of authorized 2019 dollars was due to the timing of execution for the Blythe Compression Station. There was a delay in early construction milestones such as piling installation and building foundation work as well as the release for fabrication of project components, causing a shift in dollars from 2019 to 2020.			Does not meet criteria



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

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
Gas Transmission	301	New Pipelines	<p>The New Pipeline 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 includes projects to install new pipelines designed to mitigate reliability risks to the SoCalGas transmission system.</p>	SCG-07 MAB-9 to MAB-10
Gas Transmission	3x4	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 MAB-13 to MAB-16
Gas Transmission	308	M&R Stations	<p>This Budget Code includes costs of installing and rebuilding large meter set assemblies (MSAs) for transmission-served customers and pressure limiting stations on the gas transmission system. These assets require replacement principally for three reasons: aging, change in use patterns and/or population encroachment, and enhancement of the transmission system to address gas quality and capacity issues. The capital work sustains reliable operation of critical transmission assets. This includes periodic replacement of local field measurement and control equipment directly linking with Gas Operations SCADA system via remote communications.</p>	SCG-07 MAB-26 to MAB-28
Gas Transmission	3X9	Auxiliary Equipment	<p>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's centralized Gas Control's SCADA computer system. Also included are telemetry-related upgrades to remote site security systems and remote-control systems for critical in-line valves</p>	SCG-07 MAB-28 to MAB-29

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
Gas Transmission	316	Gas Transmission Cathodic Protection	<p>This workpaper 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 pipelines safety regulations and enable the maintenance of adequate protection on company facilities.</p> <p>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.</p>	SCG-07 MAB-25 to MAB-26
Gas Engineering	617	Land Rights & Buildings	<p>This workpaper provides capital funding for purchases of land or land rights for new high-pressure pipelines and for existing rights-of-way that have expired per contractual obligation and need to be re-negotiated. Typically, these are for pipelines installed in private lands. Federal law requires public utility lines occupying private lands to be protected by acquisition of land rights thus protecting the utility and their downstream consumers.</p>	SCG-09-R DRH-38
Gas Engineering	633	GT Bldg's & Improve / Quality/Economic Driven	<p>This workpaper provides funding for construction, replacement or upgrades to building structures used by Transmission operations to contain, shelter and/or protect Transmission equipment such as meter stations, pressure regulating equipment, critical valves, or controls equipment.</p>	SCG-09-R DRG-38
Gas Transmission	312	GT Replacement Pipelines	<p>Projects in this Budget Code include the cost to plan, design, permit, acquire materials, construct, commission, and mitigate impacts for the replacement of pipelines, fittings, valves, and associated pressure regulating stations and service lines. Multiple projects are completed each year ranging in size and magnitude from a few feet to several miles of replacement. Projects can involve difficult and hazardous access with many logistical challenges caused by weather or physical terrain. Also included are projects to replace pipelines due to class location changes.</p>	SCG-07 MAB-10 to MAB-13
Gas Transmission	3x5	Compressor Stations	<p>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</p>	SCG-07 MAB-16 to MAB-24

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
			components, controls and ancillary equipment to maintain the reliability and safety of the facility.	

**G. SoCalGas Gas Underground Storage**

**i. SoCalGas Gas Underground Storage O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Underground Storage		39,288	44,041	(4,753)	-11%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
Underground Storage	Non-RAMP	32,237	32,408	(171)	-1%						
Underground Storage	Maintenance work performed on gas storage wells	1,195	4,442	(3,247)	-73%	Yes, at the total WP					
Underground Storage	Contract Security	203	1,407	(1,204)	-86%	Yes, at the total WP					
Underground Storage	Maintenance of high-pressure storage lines	3,692	2,973	719	24%						
Underground Storage	Internal Corrosion Plan	255	599	(344)	-57%						
<b>Sub-Total Underground Storage</b>		<b>37,582</b>	<b>41,829</b>	<b>(4,247)</b>	<b>-10%</b>						
Storage Risk Management	Non-RAMP	1,705	2,212	(506)	-23%						

**ii. SoCalGas Gas Underground Storage O&M Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Underground Storage	Lower than forecasted due to reprioritization of resources to increased SIMP activities. Due to the increase in number of plug and abandons, less maintenance work was required on wells. The increase in SIMP work caused more contractor traffic, rig work, on-site material & supplies, and subsequently additional security for safety reasons, billed to SIMP.			Does not meet criteria

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

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Underground Storage	Underground Storage	2US000.000	Storage Operations is responsible for the safe, efficient, and economical operation of the underground natural gas storage facilities for SoCalGas. This work paper covers the supervision, engineering, and operational costs associated with the operation of the underground storage fields.	SCG-10-R NPN-18 to NPN-24

**iv. SoCalGas Gas Underground Storage Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Underground Storage		71,315	133,600	(62,285)	-47%		Units are unavailable because these workpapers do not have a single number of like units that would be comparable year over year.				
GS Compressor Stations	Non-RAMP	7,524	29,080	(21,555)	-74%	Yes					

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
GS Wells - Cushion Gas Purchase	Non-RAMP	0	2,340	(2,340)	-100%	Yes, at total WP					
GS Wells - RAMP Base - C1	Well replacements	0	55,444	(55,444)	-100%	Yes, at total WP					
GS Wells - RAMP Base - C2	Well plug & abandon	28,632	8,203	20,429	249%	Yes, at total WP					
GS Wells - RAMP Base - C4	Well workovers	535	1,096	(561)	-51%						
GS Wells - RAMP Base - C7	Wells blanket projects	1,521	1,132	390	34%						
<b>GS Wells Sub-Total</b>		<b>30,688</b>	<b>68,215</b>	<b>(37,527)</b>	<b>-55%</b>	<b>Yes</b>					
GS Pipelines	Non-RAMP	16,334	7,694	8,640	112%	Yes					
GS Purification	Non-RAMP	1,503	6,348	(4,844)	-76%	Yes					
GS Auxiliary Equipment	Non-RAMP	14,818	19,999	(5,182)	-26%	Yes, at total WP					
GS - Aliso Canyon	Erosion mitigation	374	1,132	(758)	-67%						
GS - Playa Del Rey	Erosion mitigation	33	1,132	(1,099)	-97%						
<b>GS Auxiliary Equipment Sub-Total</b>		<b>15,225</b>	<b>22,263</b>	<b>(7,039)</b>	<b>-32%</b>	<b>Yes</b>					
Storage Lead Abatement	Non-RAMP	41	0	41	100%						

v. **SoCalGas Gas Underground Storage Capital Variance Explanation**

WP Activity Description	Dollar Variance Explanation	Projects/Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
GS Compressor Stations	Lower than forecasted compressor station activities. Deferred work with the Honor Rancho study. And less activity in compressor work because of the unavailability of shut-ins/shutdown of the compressor equipment to maintain the reliability of the system.	Deferred Honor Rancho Study		Does not meet criteria
Wells	Lower than forecasted well replacement activity attributed to deferred drilling of new wells and cushion gas purchase. SoCalGas reallocated resources to complete well integrity assessments and plugging and abandonment activities consistent with new California Geologic Energy Management Division (CalGEM) requirements.	Deferred drilling of new wells and cushion gas purchase		Does not meet criteria
Pipelines	Higher than forecasted pipeline 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 CalGEM.			Does not meet criteria
Purification Equipment	Lower than forecasted purification equipment work at the 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 limited ability to schedule shut-	Deferred dehydration work, tank farm, and other blanket work		Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	ins/shutdown of the purification equipment at those facilities to perform work.			
Auxiliary Equipment	Lower than forecasted due to new regulatory drivers requiring monitoring at various fields under CARB Oil and Gas rule, rather than GRC. Resources and funding were re-allocated to address compliance and reliability activities.	A fence-line project was cancelled, and the majority of remaining work was deferred in this category in 2019		Does not meet criteria

**vi. 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	2019 GRC Testimony Reference
Underground Storage	00411	GS Compressor Stations	These storage compressor units increase the pressure of natural gas so it can be injected into the underground reservoirs. Examples of equipment within this area include turbines, engines, high pressure gas compressors, compressed air system equipment, fire suppression systems, gas scrubbers, and related control instruments. This budget category includes the necessary capital for maintenance, replacements, and upgrades of the various storage field compressors to uphold safety, maintain or improve reliability, extend equipment life, achieve environmental compliance, and to meet the required injection capacities.	SCG-10-R NPN-31 to NPN-35
Underground Storage	00412	Wells	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.  The intent behind the capital expenditure plan is to provide safe, reliable	SCG-10-R NPN-35 to NPN-42

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
			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.</p>	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 maintaining compliance with applicable regulatory and environmental regulations.</p>	SCG-10-R NPN-44 to NPN-46
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-10-R NPN-46 to NPN-51



**H. SoCalGas Gas Pipeline Safety Enhancement Program (PSEP)**

**i. SoCalGas PSEP O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Pipeline Safety Enhancement Plan</b>		8,900	60,582	(51,682)	-85%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
Pipeline Safety Enhancement Program	Approved PSEP program to test or replace High Consequence Area High Pressure pipelines	2,874	56,325	(53,452)	-95%	Yes					
Pipeline Safety Enhancement Program-PMO Costs	Approved PSEP program to test or replace High Consequence Area High Pressure pipelines	6,026	4,257	1,769	42%	Yes					

**ii. SoCalGas PSEP O&M Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Pipeline Safety Enhancement Program	The 2019 authorized amount represents O&M that has been normalized to reflect anticipated total project work throughout the 2019-2021 GRC cycle. As stated in Exhibit 231 at RDP-A-21: “Because 2019 will be a transition year as PSEP is incorporated into the GRC process, forecasted			Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	costs for 2019 do not reflect the level of forecasted spend in the post-test years. Therefore, the PSEP TY 2019 O&M forecast has been normalized to reflect the forecasted total level of expenditures over the 2019-2021 GRC period.” No pressure test projects were forecasted to be placed in service in 2019; therefore, costs incurred in 2019 reflect preliminary engineering and design and other costs to support execution of these projects in 2020 and 2021.			
Pipeline Safety Enhancement Program-PMO Costs	Actual O&M and capital allocation reflected a higher percentage of O&M than forecasted.			Does not meet criteria

**iii. SoCalGas PSEP O&M Workpaper Descriptions and GRC Testimony Locations**

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Pipeline Safety Enhancement Program	PSEP Pipeline Hydrotest Projects	2PS000.000	This is the total cost of PSEP Hydrotest projects in the GRC. Costs have been normalized based on the hydrotest expenditures from 2019-2021. Detailed information at a project level is contained in the supplemental workpapers included as Exhibit No. SCG-15-WP-S.	SCG-15-R RDP-A-28 to RDP-A-33
Pipeline Safety Enhancement Program-PMO Costs	PMO Costs	2PS000.001	The PSEP Project Management Office (PMO) provides governance and management that enable the PSEP program to effectively achieve their objectives. The PMO ensures compliance with regulatory requirements, facilitates and implements continuous work improvement, and establishes controls across all PSEP functional teams. The PSEP PMO costs included in this forecast represents those PSEP organizational costs that are not charged to individual projects.	SCG-15-R RDP-A-36 to RDP-A-38

**iv. SoCalGas PSEP Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Pipeline Safety Enhancement Program</b>		66,003	131,027	(65,024)	-50%						
PSEP Pipeline Replacement - RAMP	Approved PSEP program to test or replace High Consequence Area High Pressure pipelines	28,160	35,890	(7,730)	-22%	Yes	0.922 mi	0.865 mi	0.057 mi	7%	
PSEP Valve Projects - RAMP		37,843	83,971	(46,128)	-55%	Yes	45 installations	94 installations	(49) installations	-52%	Yes
PSEP PMO - RAMP		0	11,166	(11,166)	-100%	Yes	Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				

**v. SoCalGas PSEP Capital Variance Explanation**

WP Activity Description	Dollar Variance Explanation	Projects/Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
PSEP Pipeline Replacement - RAMP	Variance primarily reflects execution timing of replacement projects. Costs incurred in 2019 are attributable to ten replacement projects, seven of which were not originally planned to be initiated in 2019 but incurred costs related to planning and engineering design or construction. Other planned projects were delayed due to the timing of the Commission's authorization to commence Phase 2 projects. Some portion of the variance is attributable to a lack of pipeline test failures. While costs to remediate a potential test failure were included in the capital workpaper, no test failures were experienced on any of the 2019 GRC projects.			Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
PSEP Valve Projects - RAMP	<p>Variance due to execution timing of valve project bundles originally planned for 2019. Reasons for this primarily include cancellation of projects through the scope validation process during the detailed design stage (22); planned deferral of projects to better optimize SoCalGas resources and schedules by bundling smaller scope installations (23); and deferral of projects due to long lead permit delays (16). This was partially offset by construction of planned projects (11); acceleration of projects not originally planned for 2019 (17); and new projects identified and executed in 2019 (17). In sum, costs associated with 45 project bundles were incurred relative to the 94 planned installations. As of the submittal of this report, SoCalGas plans to complete implementation of the approved Valve Enhancement Plan within the GRC cycle.</p>	<p>A total of 75 installations were canceled or deferred to 2020/2021.</p>	<p>A total of 17 new installations were added to the list of projects presented in the TY 2019 GRC.</p>	<p>Does not meet criteria</p>
PSEP PMO - RAMP	<p>Capital PMO labor and contractor costs reflect lower than forecasted staffing levels and functional efficiencies associated with the maturation of the PMO organization. Furthermore, labor costs incurred were included in the capital components of projects. Material storage and warehousing is an overhead loader allocated to the capital components of projects and therefore is embedded in project costs. Other capital PMO costs reflect non-initiated projects that are expected to be initiated within the current GRC cycle.</p>			<p>Does not meet criteria</p>

vi. SoCalGas PSEP Capital Workpaper Descriptions and GRC Testimony Locations

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
PSEP	569A and 563, 564, and 565	PSEP Pipeline Replacement Projects	This is the total cost of PSEP Replacement projects in the GRC. The forecast also includes an allowance for pipeline test failures. Detailed information at a project level is contained in the supplemental workpapers included as Exhibit No. SCG-15-WP-S-R.	SCG-15-R RDP-A-40 to RDP-A- 47
PSEP	569B and 571	PSEP Valves	Continued implementation of the Valve Enhancement Plan included in the overall PSEP approved by the Commission in D.14-06-007. We expect to complete PSEP Valve projects in each of the GRC years at an annual cost of \$82 million. Detailed information at a project level is contained in the supplemental workpapers included as Appendix A of SCG-15.	SCG-15-R RDP-A-48
PSEP	569C	PSEP PMO	The PSEP Project Management Office (PMO) provides governance and management that enable the PSEP program to effectively achieve their objectives. The PMO ensures compliance with regulatory requirements, facilitates and implements continuous work improvement, and establishes controls across all PSEP functional teams. The PSEP PMO costs included in this forecast represents those PSEP organizational costs that are not charged to individual projects.	SCG-15-R RDP-A-36 to RDP A-38

I. SoCalGas Gas Acquisition

i. SoCalGas Gas Acquisition O&M Variance

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Gas Procurement		4,687	4,604	84	2%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
Gas Acquisition	Non-RAMP	4,687	4,604	84	2%						

**ii. SoCalGas Gas Acquisition Variance Explanation**

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

**iii. 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.

**2. SOCALGAS OTHER**

**A. SoCalGas Customer Services**

**i. SoCalGas Customer Services O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Customer Services</b>		249,026	270,720	(21,695)	-8%						
<b>Advance Metering Infrastructure Policy</b>		8,975	11,245	(2,270)	-20%						
Advanced Meter Operations	Non-RAMP	8,421	10,748	(2,327)	-22%	Yes, at the WP	Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
Advanced Meter Operations	Damaged or down poles may create an unsafe condition. Inspect annually and repair as needed.	397	298	99	33%		4,404 Inspections	4,600 Inspections	(196)	-4%	

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Advanced Meter Operations	Analyze consumption patterns to identify atypical/unusual consumption	157	199	(42)	-21%		32,900 Accounts	21,312 Accounts	11,588	54%	Yes
<b>Sub-Total Advanced Meter Operations</b>		<b>8,975</b>	<b>11,245</b>	<b>(2,270)</b>	<b>-20%</b>	<b>Yes</b>					
<b>Customer Services - Field &amp; Meter Reading</b>		<b>180,412</b>	<b>187,371</b>	<b>(6,960)</b>	<b>-4%</b>						
CS Field Staff Manager	Non-RAMP	478	523	(46)	-9%						
CS Field Staff Manager	Policy Procedures Standards and ESCMP	803	938	(135)	-14%						
<b>Sub-Total CS Field Staff Manager</b>		<b>1,281</b>	<b>1,461</b>	<b>(181)</b>	<b>-12%</b>		<b>Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.</b>				
Customer Services Field - Operations	Non-RAMP	74,552	79,156	(4,604)	-6%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
Customer Services Field - Operations	Safety-related field Orders, Field Employee meetings and Training	40,462	39,888	574	1%		805,237 Safety-related field orders	843,077 Safety-related field orders	(37,840)	-4%	

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Customer Services Field - Operations	PPE and Tools	3,237	3,364	(127)	-4%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
<b>Sub-Total CS Field - Operations</b>		<b>118,251</b>	<b>122,408</b>	<b>(4,157)</b>	<b>-3%</b>						
Customer Services Field - Supervision	Non-RAMP	12,087	11,102	985	9%						
Customer Services Field - Supervision	Job Observations Field Rides and Job Monitoring	780	951	(171)	-18%						
<b>Sub-Total CS Field- Supervisor</b>		<b>12,867</b>	<b>12,053</b>	<b>814</b>	<b>7%</b>		<b>Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.</b>				
Customer Services Field - Dispatch	Non-RAMP	12,699	9,465	3,234	34%	Yes	Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
Customer Services Field - Support	Non-RAMP	11,203	15,160	(3,957)	-26%	Yes, at the WP					
Customer Services Field - Support	Employee Skills Training and QA inspections	3,661	3,787	(126)	-3%						
<b>Sub-Total CS Field- Support</b>		<b>14,864</b>	<b>18,947</b>	<b>(4,083)</b>	<b>-22%</b>	<b>Yes</b>	<b>Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.</b>				
MSA Inspection Program	Non-RAMP	4,004	7,052	(3,048)	-43%	Yes	72,206 Remediation Orders	166,509 Remediation Orders	(94,303)	-57%	



WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
MSA Inspection Program	Gas Facility and Pipeline Inspections	14,578	12,687	1,891	15%		2,365,887 MSA Inspections	2,292,132 MSA Inspections	73,755	3%	-
<b>Sub-Total MSA Inspection Program</b>		<b>18,582</b>	<b>19,739</b>	<b>(1,157)</b>	<b>-6%</b>						
Meter Reading - Operations	Non-RAMP	703	1,192	(489)	-41%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
Meter Reading - Operations	PPE and Safety Equipment and Gas Facility and Pipeline inspections	702	1,226	(524)	-43%		242,278 Manual Meter Reads	335,744 Manual Meter Reads	(93,466)	-28%	Yes
<b>Sub-Total Meter Reading - Operations</b>		<b>1,405</b>	<b>2,418</b>	<b>(1,013)</b>	<b>-42%</b>	<b>Yes</b>					
Meter Reading - Clerical	Non-RAMP	180	161	19	12%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
Meter Reading - Supervision & Training	Non-RAMP	4	387	(383)	-99%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
Meter Reading - Support	Non-RAMP	279	332	(54)	-16%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
<b>Customer Services - Office Operations</b>		<b>36,590</b>	<b>42,145</b>	<b>(5,555)</b>	<b>-13%</b>						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
CCC - Operations	Non-RAMP	26,956	29,793	(2,837)	-10%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
CCC - Operations	Update customer information for access purposes	702	1,579	(877)	-56%		4,365,076 Call Volume	4,908,129 Call Volume	(543,053)	-11%	
CCC - Operations	CSR Training, Quality Observations, CCC Safety Committee Liaison	264	247	17	7%		4,065 Hours	4,524 Hours	(459)	-10%	
CCC - Operations	Emergency Call Handling	756	932	(176)	-19%		278,190 Call Volume	346,767 Call Volume	(68,577)	-20%	Yes
<b>Sub-Total CCC - Operations</b>		<b>28,678</b>	<b>32,551</b>	<b>(3,873)</b>	<b>-12%</b>						
CCC - Support	Non-RAMP	7,912	9,594	(1,681)	-18%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
<b>Customer Services - Information</b>		<b>19,648</b>	<b>24,666</b>	<b>(5,017)</b>	<b>-20%</b>						
Renewable Gas - Customer Outreach	Non-RAMP	423	1,028	(605)	-59%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Clean Transportation - Customer Outreach	Non-RAMP	1,184	1,463	(280)	-19%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year				
CI-Customer Strategy and Engagement	Non-RAMP	5,865	7,652	(1,787)	-23%	Yes	Units unavailable because these work papers do not have a single number of like units that would be comparable year over year				
CI-Customer Assistance Programs	Non-RAMP	671	761	(90)	-12%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year				
CI-Customer Assistance Programs	Natural Gas Appliance Testing (NGAT) <sup>1</sup>	2,106	2,923	(817)	-28%		69,751 NGATs	103,084 NGATs	(33,333)	-32%	Yes
<b>Sub-Total CI-Customer Assistance Programs</b>		<b>2,777</b>	<b>3,684</b>	<b>(907)</b>	<b>-25%</b>						
CI-Customer Segment Services	Non-RAMP	9,400	10,837	(1,438)	-13%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year				
<b>Customer Services - Technologies, Policies &amp; Solutions</b>		<b>3,401</b>	<b>5,294</b>	<b>(1,893)</b>	<b>-36%</b>		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year				
Business Strategy and Development	Non-RAMP	899	1,616	(717)	-44%						
Environmental Affairs	Non-RAMP	512	697	(186)	-27%						

<sup>1</sup> These NGAT numbers are preliminary and subject to change in the final ESA Program annual report expected to be filed May 1, 2020.

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Energy & Environmental Policy	Non-RAMP	832	1,768	(936)	-53%						
Planning & Legislative Analysis	Non-RAMP	221	238	(17)	-7%						
Policy & Environmental Solutions NSS	Non-RAMP	938	975	(37)	-4%						

**ii. SoCalGas Customer Services O&M Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
<b>Advance Metering Infrastructure Policy</b>				
Advanced Meter Operations	Lower than forecasted data collection unit (DCU) maintenance fees due to a favorable agreement with the vendor			Improved safety analytics algorithms and processes allowed for a higher detection of unusual consumption at lower cost.
<b>Customer Services - Field &amp; Meter Reading</b>				
Customer Services Field – Dispatch	Higher than forecasted costs due to facility relocation of dispatch employees.		Relocation of Dispatch workforce	Does not meet criteria
Customer Services Field - Support	Lower than forecasted costs due to resources for O&M activities shifted to capital work and lower staffing levels during a			Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	portion of 2019 associated with the timing of the TY 2019 GRC decision.			
MSA Inspection Program	Lower than forecasted costs due to lower staffing levels associated with the timing of the TY 2019 GRC decision.			Does not meet criteria
Meter Reading - Operations	Lower forecasted costs due to lower manual meter reads for opt-out customers and escalated cities.			Fewer reads associated with opt-out customers due to increase in outreach and fewer escalated cities reads due to neighboring city DCU's providing communication coverage.
<b>Customer Services - Office Operations</b>				
CCC – Operations	Does not meet criteria			Lower than forecasted emergency call volume.
<b>Customer Services - Information</b>				
CI-Customer Strategy and Engagement	Customer Strategy & Engagement completed safety communications within the authorized funding level. However, variances were primarily attributed to the following: costs for Customer Experience Study Program activities completed in 2019 were recorded under Customer Service-Office Operations, lower than forecasted non-labor costs due to a re-prioritization of resources for certain activities in a given year, and deferred activities that are expected to be initiated within the current GRC cycle.	Business Customer Insight Panels Business Customer Insight Survey Disadvantaged communities & climate change customer communications, related video productions, and communications campaign analyses		Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
CI-Customer Assistance Programs	Does not meet criteria			Lower than forecasted percentage of treated homes required NGAT in 2019.

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

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Advance Metering Infrastructure Policy	Advanced Meter Operations	2AM002.000	<p>This workpaper includes costs associated with the Advanced Meter Operations (AMO) organization. AMO will be responsible for AM systems maintenance and DCUs network management, post-project deployment.</p> <p>This workpaper includes activities, as described, designed to mitigate safety risks.</p>	SCG-17-R RFG-14 to RFG-23
Customer Services - Field & Meter Reading	Customer Service Field – Dispatch	2FC003.000	CS - Field Dispatch personnel route and dispatch work orders to CS - Field Operations employees 24 hours a day, 365 days a year. Dispatchers are located at four central locations and handle all matters that come up during the day, including: 1) dispatching emergency orders real time as they are received; 2) redistributing work when CS - Field Operations employees call in sick or otherwise become unavailable; and 3) redistributing work orders when CS - Field Operations employees are not able to complete all work that has been assigned for the day.	SCG-18-R GRM-32 to GRM-33
Customer Services - Field & Meter Reading	Customer Service Field – Support	2FC004.000	<p>CS - Field Support includes: (1) centralized training (classroom instructors, supervisors and a training manager located at SoCalGas’s Pico Rivera skills training centers); (2) field instructors who accompany new residential field technicians immediately following their formal training; quality assurance (QA) inspectors and a QA supervisor who inspect the work of field technicians to ensure policy adherence and quality of the work performed; (3) field technology support personnel who maintain the field mobile data terminals, work management, routing and reporting systems used for CS - Field Operations; (4) operations clerks who are located at the field operating bases; (5) region and district management; and (6) administrative associates.</p> <p>This workpaper includes activities, as described, designed to mitigate safety risks.</p>	SCG-18-R GRM-34 to GRM-38

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	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.e., 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-18-R GRM-38 to GRM-44
Customer Services - Field & Meter Reading	Meter Reading - Operations	2FC006.000	<p>Costs include part-time meter readers who are dispersed across SoCalGas's operating bases. Meter readers are equipped with MDTs (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-18-R GRM-44 to GRM-47
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> <p>This workpaper includes activities, as described, designed to mitigate safety risks.</p>	SCG-19-R MHB-7 to MHB-9, MHB-11 to MHB-20
Customer Services - Information	CI-Customer Strategy and Engagement	2IN001.000	<p>The function and objectives of Customer Strategy and Engagement are to: provide prompt communications to customers with the objective to build awareness of and improve access to existing and new utility services, programs and resources;</p>	SCG-20-R ASC-13 to ASC-23

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
			<p>educate customers and stakeholders about natural gas, energy management, billing/payment options, programs, and natural gas safety; adopt and maintain relevant communication channels; conduct customer research and analysis to understand customer service needs, preferences, and products; enforce intellectual property requirements across internal and external communications; and enforce Web Access Standards to ensure web pages and PDF documents available on SoCalGas’s website are compliant with current accessibility standards.</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>	
Customer Services - Information	CI-Customer Assistance Programs	2IN002.000	<p>The Customer Assistance Program area covers costs for the administration of assistance programs offered to residential customers with limited income and/or certain medical conditions. These programs include Energy Savings Assistance (ESA) Program Natural Gas Appliance Testing (NGAT), Medical Baseline Program, and the Gas Assistance Fund.</p> <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 ESA Program California Installation Standards Manual and the Statewide ESA 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-20-R ASC-24 to ASC-27



**B. SoCalGas Information Technology and Cyber Security**

**i. SoCalGas Information Technology and Cyber Security O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Information Technology &amp; Cyber Security</b>		<b>21,792</b>	<b>32,221</b>	<b>(10,429)</b>	<b>-32%</b>						
<b>Information Technology</b>		<b>21,287</b>	<b>31,458</b>	<b>(10,172)</b>	<b>-32%</b>						
Director IT SoCalGas Applications	Non-RAMP	564	775	(212)	-27%		5 FTE	2 FTE	3	150%	
Director - Computing Infrastructure	Non-RAMP	178	0	178	100%		1 FTE	1 FTE	0	0%	
SCG Work Management Services	Non-RAMP	1,181	1,307	(126)	-10%		6 FTE	11 FTE	(5)	-45%	
SCG GIS & Cad Services	Non-RAMP	312	185	128	69%		3 FTE	1 FTE	2	200%	
SCG Software Dev - Database	Non-RAMP	169	616	(447)	-73%		1 FTE	4 FTE	(3)	-75%	
SCG Apps Maj Mrk App - SCG	Non-RAMP	1,719	1,562	158	10%		10 FTE	8 FTE	2	25%	
Scalable Platform Servs - SCG	Non-RAMP	258	515	(257)	-50%		1 FTE	2 FTE	(1)	-50%	
CI Compute Support SCG	Non-RAMP	1,808	1,120	688	61%		9 FTE	9 FTE	0	0%	
CI Compute Provisioning SCG	Non-RAMP	62	688	(626)	-91%		0 FTE	5 FTE	(4)	-80%	
CI Standards	Non-RAMP	567	551	15	3%		4 FTE	5 FTE	(1)	-20%	

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
IT Portfolio Management	Non-RAMP	415	650	(235)	-36%		2 FTE	2 FTE	1	50%	
Architecture and Integration - SCG	Non-RAMP	560	569	(9)	-2%		3 FTE	3 FTE	0	0%	
IT Telecom PMO	Non-RAMP	79	101	(22)	-22%		0 FTE	1 FTE	(1)	-100%	
IT Applications NSS	Non-RAMP	5,796	8,581	(2,785)	-32%	Yes	24 FTE	30 FTE	(6)	-20%	
IT Infrastructure NSS	Non-RAMP	7,619	14,239	(6,620)	-46%	Yes	10 FTE	36 FTE	(26)	-72%	
<b>Cyber Security</b>		<b>505</b>	<b>763</b>	<b>(258)</b>	<b>-34%</b>						
IT Information Security SCG	Firewall Admin	505	763	(258)	-34%		1 FTE	1 FTE	0	0%	

**ii. SoCalGas Information Technology and Cyber Security O&M Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
<b>Information Technology and Cybersecurity</b>				
IT Applications NSS	The variance is due to lower than forecasted staffing level during some portion of 2019. In addition, CIS replacement study delayed aligning with revised schedule for submission of subsequent GRC.			Does not meet criteria
IT Infrastructure NSS	Shifted work from O&M to infrastructure capital projects in response to significant infrastructure			Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	outage. In addition, Microsoft Office 365 costs were capitalized due to increased functionality.			

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

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
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-26 CRO-12 to CRO-13
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-26 CRO-13 to CRO-14

**iv. SoCalGas Information Technology and Cyber Security Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Information Technology &amp; Cyber Security</b>		120,504	114,364	6,140	5%		Units not available for these workpapers because there is no single number of like units that would be comparable year over year.				
<b>Sub-Total Information Technology</b>		<b>102,285</b>	<b>88,676</b>	<b>13,609</b>	<b>15%</b>						
Applications - Utility Operations/Mandated	Non-RAMP	174	353	(179)	-51%						
Applications - Utility Operations/Mandated - RAMP	Records Management	16,764	16,202	562	3%						
Applications - Utility Operations/Mandated - RAMP	Employee, Contractor, Customer, and Public Safety	3,228	103	3,124	3022%	Yes, at WP total					
<b>Sub-Total Applications - Utility Operations/Mandated</b>		<b>20,166</b>	<b>16,658</b>	<b>3,508</b>	<b>21%</b>	<b>Yes</b>					
Infrastructure - Hardware/Reliability/Improvements	Non-RAMP	32,919	1,068	31,851	2982%	Yes					
Infrastructure - Software/Reliability/Improvements	Non-RAMP	680	0	680	100%						
Network/Telecom - Hardware/Reliability/Improvements	Non-RAMP	4,281	19,007	(14,727)	-77%	Yes					
Applications - Utility Operations/Reliability/Improvements	Non-RAMP	17,400	21,128	(3,729)	-18%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Applications - Utility Operations/Reliability/Improvements - RAMP	Records Management	1,861	17,383	(15,522)	-89%	Yes, at WP total					
<b>Sub-Total Applications - Utility Operations/Reliability/Improvements</b>		<b>19,261</b>	<b>38,512</b>	<b>(19,251)</b>	<b>-50%</b>	<b>Yes</b>					
Hardware - Utility Operations/Reliability/Improvements	Non-RAMP	18,842	10,518	8,324	79%	Yes, at WP total					
Hardware - Utility Operations/Reliability/Improvements - RAMP	Records Management	5,527	2,912	2,615	90%	Yes, at WP total					
<b>Sub-Total Hardware - Utility Operations/Reliability/Improvements</b>		<b>24,370</b>	<b>13,431</b>	<b>10,939</b>	<b>81%</b>	<b>Yes</b>					
Incorporating AMI Data into Scheduling & Balancing Process	Non-RAMP	608	0	608	100%						
<b>Cyber Security - RAMP</b>	<b>Cyber Security</b>	<b>18,219</b>	<b>25,688</b>	<b>(7,469)</b>	<b>-29%</b>	<b>Yes</b>					

v. **SoCalGas Information Technology Capital Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Applications - Utility Operations/Mandated	Emergent needs due to end of life technology replacement with more reliable, secure, and cohesive solutions that also provide increased capability and usability. Additionally, new initiatives and projects identified to improve operational safety.		Incident Management System, Environmental, Health & Safety	Does not meet criteria
Infrastructure - Hardware/Reliability/Improvements	Response to significant previous infrastructure outage resulted in reprioritization of projects in the network & infrastructure portfolios.		Base Camp	Does not meet criteria
Network/Telecom - Hardware/Reliability/Improvements	Response to significant previous infrastructure outage resulted in reprioritization of projects in the network & infrastructure portfolios.	SCG FAN - Voice Radio & Dispatch, WAN, LAN, Private Network		Does not meet criteria
Applications - Utility Operations/Reliability/Improvements	Projects continued to solidify scope and technology but at a slower rate than initially expected. Authorized levels are expected to be expended during the current GRC cycle.	High Pressure Construction		Does not meet criteria
Hardware - Utility Operations/Reliability/Improvements	Response to significant previous infrastructure outage resulted in reprioritization of projects in the network & infrastructure portfolios.		Base Camp MDT Refresh	Does not meet criteria
Cyber Security - RAMP	Overall Cyber Security prioritized capital expenditures to align with staffing levels that were lower than forecasted. Authorized levels are expected to be expended during the current GRC cycle.			Does not meet criteria

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	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-26 CRO-17 to CRO-39
Information Technology	770	Infrastructure - Hardware/ Reliability/ Improvements	<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 utility operations.</p> <p>This category includes costs for activities, as described, designed to mitigate reliability risks.</p>	SCG-26 CRO-17 to CRO-39
Information Technology	772	Network/ Telecom - Hardware/ Reliability/ Improvements	<p>IT Network/Telecom supports the design, implementation and operation of the company's network 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>	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-26 CRO-17 to CRO-39
Information Technology	777	Hardware - Utility Operations/ Reliability/ Improvements	<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>	SCG-26 CRO-17 to CRO-39

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
			This category includes costs for activities, as described, designed to mitigate reliability risks.	
Cyber Security	768	Hardware - Cyber Asset, Identity, Access Mgmt.	Cyber Security supports the design, implementation and integration of the hardware utilized to respond, protect, identify and detect cyber related threats. Projects included in this budget code are related to enterprise-wide hardware investments in support of cyber security operations.  This category includes costs for activities, as described, designed to mitigate reliability risks.	SCG-27-R GW-26 to GW-29

**C. SoCalGas Support Services**

**i. SoCalGas Support Services O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Support Services</b>		<b>25,043</b>	<b>30,308</b>	<b>(5,265)</b>	<b>-17%</b>						
<b>Environmental Services</b>		<b>4,490</b>	<b>7,562</b>	<b>(3,072)</b>	<b>-41%</b>						
Environmental	Non-RAMP	2,023	4,748	(2,725)	-57%	Yes, at total WP					
Environmental	Environmental Services and Safety Compliance Management Program (ESCMP)	85	110	(25)	-23%		2 FTE	2 FTE	0	0%	



WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Environmental	Environmental Self-Assessment	532	478	54	11%		102 Self-Assessments	121 Self-Assessments	(19)	-16%	
Environmental	Investigation of environmental exposure incidents	539	484	55	11%		328 Agency Inspections	245 Agency Inspections	83	34%	Yes
Environmental	Compliance program to comply with the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	2	19	(17)	-89%						
Environmental	Service Contracting	0	180	(180)	-100%						
Environmental	Asbestos Safety Program	560	786	(226)	-29%		6 FTE	9 FTE	(3)	-33%	Yes
Environmental	SoCalGas Environmental Training	749	757	(8)	-1%		3,545 Attendees	3,797 Attendees	(252)	-7%	
<b>Sub-Total Environmental</b>		<b>4,490</b>	<b>7,562</b>	<b>(3,072)</b>	<b>-41%</b>	<b>Yes</b>	<b>Units not available for all activities within this workpaper, unless otherwise noted, because there is no single number of like units that would be comparable year over year.</b>				
<b>Fleet Services &amp; Facilities</b>		<b>20,553</b>	<b>22,745</b>	<b>(2,192)</b>	<b>-10%</b>						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Facilities-Monterey Park Mgr	Non-RAMP	1,993	2,513	(520)	-21%		5 FTE	7 FTE	(2)	-29%	
Facilities GCT	Non-RAMP	1,345	1,631	(285)	-17%		11 FTE	10 FTE	1	10%	
Director	Non-RAMP	82	125	(43)	-34%		1 FTE	1 FTE	0	0%	
Facility Operations	Non-RAMP	16,569	17,355	(785)	-5%		51 FTE	47 FTE	4	9%	
Facility Operations	New Contract Security	199	236	(37)	-16%						
Facility Operations	Physical Security	351	17	334	1965%						
Facility Operations	Site Security Reviews	13	12	1	8%						
Facility Operations	Additional Security Guards	0	857	(857)	-100%						
<b>Sub-Total Facility Operations</b>		<b>17,132</b>	<b>18,477</b>	<b>(1,344)</b>	<b>-7%</b>		<b>Units not available for all activities within this workpaper, unless otherwise noted, because there is no single number of like units that would be comparable year over year.</b>				
<b>Supply Management, Logistics &amp; Supplier Diversity</b>		<b>2,445</b>	<b>3,518</b>	<b>(1,073)</b>	<b>-30%</b>		<b>Units not available for this workpaper because there is no single number of like units that would be comparable year over year.</b>				
Fabrication & Repair	Non-RAMP	2,445	3,518	(1,073)	-30%	Yes					

ii. SoCalGas Support Services O&M Variance Explanations

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
<b>Environmental</b>				
Environmental Services	<p>This workpaper contains both RAMP and non-RAMP/non-safety-related activities. The RAMP activities captured within this workpaper, as separately reported here, do not meet the dollar variance threshold. The non-RAMP items in this workpaper include labor and non-labor costs for environmental compliance activities. The imputed authorized amount for this workpaper includes costs for environmental compliance-related activities incurred by other operating groups or not separately tracked within the Environmental Services cost center. SoCalGas is currently assessing how best to track these costs going forward for future reports.</p>			<p><b>RAMP activity</b> - Investigation of environmental exposure incidents: SoCalGas experienced an increased amount of inspections in 2019. The number of agency inspections vary from year to year, and SoCalGas has no control over the number or frequency of inspections.</p> <p><b>RAMP activity</b> - Asbestos Safety Program: There are vacancies within the program that are pending new hires.</p>
<b>Supply Management &amp; Supplier Diversity</b>				
Fabrication & Repair	<p>SoCalGas' Fabrication and Tool Repair Shop equipped employees with the specialized machining and fabrication of tools, materials, and equipment required to support operations. For 2019, SoCalGas performed work with a reduced work force since it did not receive GRC authorization until late in the year and did not have authorization to increase the level of service to our field business departments. This resulted in an underspend of the imputed authorized amount for 2019.</p>			<p>Does not meet criteria</p>

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

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Environmental Services	Environmental Programs	2EV000.000	Environmental Services responds dynamically to several changing factors in the SCG territory which cannot be expected to follow historical trending patterns. Regulatory instructions and requirements from government agencies expand the scope of Environmental attention annually. These Environmental Services cost centers includes subject matter experts in air and water quality, biological resources, cultural resources, land planning, and managing the internal environmental governance of the company. The group supports ongoing environmental compliance, including obtaining environmental permits and approvals, developing environmental plans and conducting specialized environmental training.	SCG-25 DJ-6, DJ-11 to DJ-12
Supply Management & Supplier Diversity	Fabrication & Repair	2SS003.000	This cost center supports the field requirements for fabricated materials, such as wedding bands, canopies, pre-fabricated regulator stations, shop modified pressure control fittings and specialty tools. They are also a supplier of approximately 300 inventoried materials which are distributed by the Pico Rivera general warehouse. The shop also performs maintenance, repair and calibration on pneumatic, hydraulic, electronic and gas driven tools and equipment.	SCG-22 DW-12 to DW-13

**iv. SoCalGas Support Services Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Support Services - Facilities</b>		19,568	32,720	(13,152)	-40%		Units not available for these workpapers because there is no single number of like units that would be comparable year over year.				
Infrastructure & Improvements	Non-RAMP	15,508	29,778	(14,269)	-48%	Yes, at total WP					
Infrastructure & Improvements - RAMP	Physical Security	1,669	679	990	146%						

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Sub-Total Infrastructure &amp; Improvements</b>		<b>17,177</b>	<b>30,457</b>	<b>(13,279)</b>	<b>-44%</b>	<b>Yes</b>					
Safety/Environmental	Non-RAMP	2,391	2,263	128	6%		-	-	-	-	-

v. SoCalGas Support Services Capital Variance Explanations

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
Infrastructure & Improvements	<p><b>Non-RAMP</b> - Facilities only spent \$200K for the Gas Control facility due to the delay in the TY 2019 GRC Decision received in September of 2019.</p> <p><b>RAMP Physical Security</b> - The expenditures in this funding category were higher than forecasted due to aging infrastructure requiring additional repairs and replacements.</p>			Does not meet criteria

**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	2019 GRC Testimony Reference
Fleet Services & Facility Operations	653	Infrastructure & Improvements	<p>The Infrastructure &amp; 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.</p>	SCG-23-R CLH-41 to CLH-43

**D. SoCalGas Administrative & General**

**i. SoCalGas Administrative & General O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>Administrative &amp; General</b>		<b>80,916</b>	<b>65,460</b>	<b>15,456</b>	<b>24%</b>						
<b>Accounting &amp; Finance, Legal, Regulatory Affairs, External Affairs</b>		<b>1,064</b>	<b>1,254</b>	<b>(190)</b>	<b>-15%</b>						
Accounting Systems & Compliance	Non-RAMP	1,064	317	747	236%		7 FTE	7 FTE	0	0%	
Accounting Systems & Compliance	Consulting expertise to improve records management program	-	937	(937)	-100%		1 FTE	1 FTE	0	0%	
<b>Sub-Total Accounting Systems &amp; Compliance</b>		<b>1,064</b>	<b>1,254</b>	<b>(190)</b>	<b>-15%</b>						
<b>Compensation &amp; Benefits</b>		<b>328</b>	<b>777</b>	<b>(449)</b>	<b>-58%</b>		<b>Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.</b>				
Health Benefits - Emp Assistance Program	Non-RAMP	328	777	(449)	-58%						
<b>Corporate Center - General Administration</b>		<b>78,715</b>	<b>63,114</b>	<b>15,601</b>	<b>25%</b>	<b>Yes</b>	<b>Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.</b>				
SECC Outside Services	Non-RAMP	75,323	58,553	16,770	29%	Yes					

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Employees - F923.1											
SECC Outside Services Employees - F923.1	Records Management	118	118	0	0%						
SECC Outside Services Employees - F923.1	Workplace Violence/Corporate Security	2,601	2,127	474	22%						
SECC Outside Services Employees - F923.1	Cybersecurity	673	2,316	(1,643)	-71%						
<b>Sub-Total SECC Outside Services Employees - F923.1</b>		<b>78,715</b>	<b>63,114</b>	<b>15,601</b>	<b>25%</b>	<b>Yes</b>					
<b>Risk Management</b>		<b>809</b>	<b>315</b>	<b>494</b>	<b>157%</b>						
Director of Risk	Non-RAMP	96	-	96	100%		1 FTE	0 FTE	1	100%	
Chief Risk Officer	Non-RAMP	385	-	385	100%		1 FTE	0 FTE	1	100%	
Oper Risk Mgmt-SCG	Non-RAMP	328	315	13	4%		2 FTE	2 FTE	0	0%	



**ii. SoCalGas Administrative & General O&M Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
<b>Corporate Center – General</b>				
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.			Does not meet criteria

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

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	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-28-R MLD-9 to MLD-11

**E. SoCalGas Human Resources O&M Variances**

**i. SoCalGas Human Resources O&M Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
Human Resources Dept, Safety, LTD & WC		16,454	20,889	(4,435)	-21%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
SCG CEO President & COO and Chief of Human Resources & CAO	Non-RAMP	2,272	1,770	502	28%						
SCG Director HR Services	Non-RAMP	5,571	3,077	2,494	81%	Yes					
SCG Director HR Services	Workforce Planning - Software/Program Implementation.	114	2,599	(2,485)	-96%	Yes					
<b>Sub-Total SCG Director HR Services</b>		<b>5,685</b>	<b>5,676</b>	<b>9</b>	<b>0%</b>						
SCG Director Safety & Wellness	Non-RAMP	5,164	596	4,568	767%	Yes, at the WP total					
SCG Director Safety & Wellness	HR sponsored employee contractor customer & public safety activities.	514	8,698	(8,184)	-94%	Yes, at the WP total					
<b>Sub-Total SCG Director Safety &amp; Wellness</b>		<b>5,678</b>	<b>9,294</b>	<b>(3,616)</b>	<b>-39%</b>	<b>Yes</b>					

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
SCG Director Org Effectiveness	Non-RAMP	2,366	1,716	650	38%						
SCG Director Org Effectiveness	Knowledge Management and Training Strategy	453	2,433	(1,980)	-81%	Yes, at the WP total					
<b>Sub-Total SCG Director Org Effectiveness</b>		<b>2,819</b>	<b>4,149</b>	<b>(1,330)</b>	<b>-32%</b>	<b>Yes</b>					

**ii. SoCalGas Human Resources O&M Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
<b>Human Resources Dept, Safety, LTD &amp; WC</b>				
SCG Director HR Services	Due to the delay in the GRC decision, the variance is due to Workforce Planning projects that will be initiated within the current GRC cycle.			Does not meet criteria
SCG Director Safety Wellness	Due to the delay in the GRC decision, the variance is due to Safety & Wellness projects that will be initiated within the current GRC cycle.  Forecasts included employee labor for Alert Driving program training however expenses were recorded in the employees' actual work area.  Lower than forecasted expense for other proposed incremental programs resulting from re-scoping and cost efficiencies.			Does not meet criteria
SCG Director Org Effectiveness	Due to the delay in the GRC decision, the variance is due to Knowledge Management			Does not meet criteria

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	projects that will be initiated within the current GRC cycle, and lower than forecasted staffing level during some portion of 2019 for Succession Planning.			

**iii. SoCalGas Human Resources O&M Workpaper Descriptions and GRC Testimony Locations**

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Human Resources Dept, Safety, LTD & WC	SCG Director HR Services	2HR004.000	The HR Services department is comprised of five work units, including: (1) Staffing - Manages the recruitment and selection of a qualified and diverse workforce; (2) HR Research & Workforce Planning - Responsible for pre-employment testing and assessments used for internal and external selection. Workforce Planning conducts workforce trend analyses and forecasts workforce needs; (3) HR Operations - Responsible for management and retention of all employee personnel records; (4) Compensation - Responsible for developing and delivering competitive compensation programs, ensuring legal compliance and adherence to wage and hour laws; and (5) Employee Care Services (ECS) - Responsible for Workers' Compensation program, short- and long-term disability, leaves of absence, and return-to-work programs, Family Medical Leave Act (FMLA), California Family Rights Act (CFRA), Pregnancy Disability Leave (PDL), temporary modified duty placements, and reasonable accommodations under the Americans with Disabilities Act (ADA), and the California Fair Employment and Housing Act (FEHA).	SCG-32 MG-19 to MG-23
Human Resources Dept, Safety, LTD & WC	SCG Director Safety Wellness	2HR006.000	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.	SCG-32 MG-25 to MG-30

Witness Area	WP Activity Description	O&M Workpaper # 2016 GRC/ 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
Human Resources Dept, Safety, LTD & WC	SCG Director Org Effectiveness	2HR007.000	The Organizational Effectiveness (OE) department provides leadership, organizational, and employee development programs, instructional design services, and knowledge transfer and management programs for SoCalGas. OE consists of three work units providing services to SoCalGas: Organizational Development & Talent Management, Knowledge Management, and Learning & Development.	SCG-32 MG-30 to MG-33

### 3. SOCALGAS BALANCED PROGRAMS – DIMP, TIMP, SIMP, AND RD&D

#### A. SoCalGas Balanced Direct O&M Expenses

##### i. SoCalGas Balanced Direct O&M Variances

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>TIMP &amp; DIMP</b>		<b>120,237</b>	<b>92,741</b>	<b>27,496</b>	<b>30%</b>						
TIMP Project Support	TIMP Data Maintenance	905	1,777	(872)	-49%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
DIMP Project Support	DIMP Data Maintenance	362	1,769	(1,407)	-80%	Yes	Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
TIMP	ILI & ECDA - cleaning and assessing internal conditions of high-pressure pipelines	76,363	47,817	28,546	60%	Yes	37 ILI 28 ECDA	21 ILI 20 ECDA	16 8	76% 40%	Yes Yes
DIMP	DIMP Programs (e.g., DREAMS, GIPP)	42,607	41,378	1,229	3%		166,000 Riser Inspections 65,000 Service Inspections 5,660 Site Mitigations	180,000 Riser Inspections 60,000 Service Inspections 4,400 Site Mitigations	-14,000 5,000 1,260	-8% 8% 29%	No No Yes
Underground Storage - RSIMP	SIMP RAMP	13,795	20,324	(6,529)	-32%	Yes	Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				
Research Development and Demonstration (RD&D) Technology Dev	Non-RAMP	13,143	15,395	(2,252)	-15%		Units unavailable because these work papers do not have a single number of like units that would be comparable year over year.				

ii. SoCalGas Balanced Direct O&M Variance Explanation

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
DIMP Project Support	DIMP is balanced throughout the GRC authorized cycle and not on an individual year basis. Accordingly, the number of projects completed varies year-to-year and individual year expenditures may vary from the authorized amount. Integrity management activities remain variable based on assessment findings and individual project costs will vary. 2019 costs also reflect Line 235 activities, which SoCalGas will identify and file a Tier II Advice Letter for in accordance with the D.19-09-051.			Does not meet criteria
TIMP			Decision 19-09-051 recognized the uncertainty of costs that would be incurred by SoCalGas due to repair of Line 235. In accordance with the TY 2019 GRC Decision, SoCalGas is tracking Line 235 costs separately to file a Tier II Advice Letter.	<p><i>The units identified in this report are a component and not the entirety of activities and costs supporting TIMP.</i></p> <p>SoCalGas's TIMP budget is authorized and balanced throughout the GRC cycle rather than calendar years and program activity may vary year to year due to compliance and operational considerations. Integrity management activities remain variable based on assessment findings;</p>

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
				accordingly, the number of units completed varies year-to-year.
DIMP	Does not meet criteria			<p><i>The units identified in this report are a component and not the entirety of activities and costs supporting DIMP.</i></p> <p>SoCalGas's DIMP budget is authorized and balanced to GRC cycles rather than calendar years and program activity may vary year to year due to compliance and operational considerations. Integrity management activities remain variable based on assessment findings; accordingly, the number of units completed varies year-to-year.</p>
Underground Storage – RSIMP	<p>SIMP is balanced to the GRC authorized cycle and not on an individual year basis. Activity and costs may fluctuate year to year.</p> <p>O&amp;M costs for SIMP are driven by activities supporting the management of storage policies and procedures, training,</p>			Does not meet criteria



WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
	management and analysis of data produced by inspections, etc.			

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

Witness Area	WP Activity Description	O&M Workpaper # 2019 GRC	GRC Workpaper Description	2019 GRC Testimony Reference
TIMP & DIMP	DIMP Project Support	2200-7001	Shared service Project Support for the SDG&E DIMP Program.	SCG-14 MTM-28
TIMP & DIMP	TIMP	2TD000.000	TIMP complies with 49 CFR 192, Subpart O—Gas Transmission Pipeline Integrity Management, and includes activities such as threat identification and risk assessment, pipeline assessments, remediation, and other actions that minimize threats and integrity concerns to reduce risk of pipeline failure.	SCG-14 MTM-28 to MTM-31
TIMP & DIMP	DIMP	2TD000.001	DIMP complies with 49 CFR 192, Subpart P— Gas Distribution Pipeline Integrity Management and identifies and reduces pipeline integrity risks for distribution pipelines, as required under the Pipeline Integrity, Protection, Enforcement and Safety Act of 2006.6.	SCG-14 MTM-20 to MTM-28
Underground Storage	Underground Storage – RSIMP	2US002.000	SIMP is a forward-looking, methodical, and structured program using advanced inspection technologies such as ultra-sonic and neutron type casing logs along with risk management disciplines to address well integrity issues. Primary O&M activities focus on the development, management and support of the Storage Integrity Management Program (SIMP).	SCG-10-R NPN-25 to NPN-28

**B. SoCalGas Balanced Programs Direct Capital**

**i. SoCalGas Balanced Direct Capital Variances**

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
<b>TIMP &amp; DIMP Total</b>		<b>227,579</b>	<b>243,272</b>	<b>(15,693)</b>	<b>-6%</b>						
DIMP	DIMP Programs & records management	4,923	3,168	1,755	55%		Not a measurable activity				
DIMP	DIMP Programs - High Pressure Risk	1,430	109,015	(107,585)	-99%	Yes	372 site mitigations	286 site mitigations	86	30%	Yes
DIMP	DIMP Programs - Medium Pressure Risk	114,650	68,856	45,794	67%	Yes	74 mi	107 mi	(33)	-31%	Yes
<b>Sub-Total DIMP</b>		<b>121,003</b>	<b>181,039</b>	<b>(60,036)</b>	<b>-33%</b>	<b>Yes</b>					
TIMP – Dist	ILI & ECDA - cleaning and assessing internal conditions of high-pressure pipelines	9,586	5,748	3,838	67%	Yes	See O&M section for TIMP units				

WP Activity Description	RAMP Mitigation Activity	2019 Actuals (\$000)	2019 Imputed Authorized (\$000)	\$ Variance (\$000)	% Variance	Meets Variance Criteria?	2019 Actual Units	2019 Imputed Authorized Units	Unit Variance	% Unit Variance	Meets Variance Criteria?
TIMP – Trans	ILI & ECDA - cleaning and assessing internal conditions of high-pressure pipelines	92,489	52,298	40,191	77%	Yes	See O&M section for TIMP units				
TIMP	TIMP Data Maintenance	4,501	4,187	314	7%		Not a measurable activity				
<b>Sub-Total TIMP</b>		<b>106,576</b>	<b>62,233</b>	<b>44,343</b>	<b>71%</b>	<b>Yes</b>					
SIMP Total	Well Integrity Management inclusive of inspection of wells, plugging and abandonment, data management, etc.	64,118	60,402	3,716	6%		5 Plug & Abandonments 20 Workovers	0 Plug & Abandonments 68 Workovers	5 Plug & Abandonments (48) Workovers	100% -71%	Yes Yes

**ii. SoCalGas Balanced Direct Capital Variance Explanations**

WP Activity Description	Dollar Variance Explanation	Projects/ Activities Canceled or Deferred	Emergent Projects/ Activities not Planned in the TY2019 GRC	RAMP Unit Variance Explanation
DIMP	SoCalGas is reallocating authorized costs for DIMP between the high-pressure and medium-pressure RAMP chapters to better support risk management activities. The overall total authorized cost remains unaffected. Based on this reallocation, the high-pressure work for DIMP (SCG-04) should be			<i>The units identified in this report are a component and not the entirety of activities and costs supporting DIMP.</i>

	lowered from \$109M to \$520K; medium-pressure work (SCG-10) should be changed from \$69M to \$177M. Moreover, DIMP is balanced to the GRC authorized cycle and not on an individual year basis. Accordingly, the number of projects completed varies year-to-year and individual year expenditures may vary from the authorized amount. Integrity management activities also remain variable based on assessment findings and individual project costs will vary.			SoCalGas's DIMP budget is authorized and balanced throughout the GRC cycle rather than calendar years and program activity may vary year to year due to compliance and operational considerations. Integrity management activities remain variable based on assessment findings; accordingly, the number of units completed varies year-to-year
TIMP	TIMP is balanced throughout the GRC authorized cycle and not on an individual year basis. Accordingly, the number of projects completed varies year-to-year and individual year expenditures may vary from the authorized amount. Integrity management activities remain variable based on assessment findings and individual project costs will vary. Capital costs are informed by O&M activities and include repairs or remediations. 2019 costs also reflect Line 235 activities, which SoCalGas will identify and file a Tier II Advice Letter for in accordance with the 2019 GRC Decision (D.19-09-051).		The TY 2019 GRC Decision (D.19-09-051) recognized the uncertainty of costs that would be incurred by SoCalGas due to repair of Line 235. In accordance with the TY 2019 GRC Decision (D.19-09-051), SoCalGas is tracking Line 235 costs separately to file a Tier II Advice Letter.	
SIMP	Does not meet criteria			<i>The units identified in this report are a component and not the entirety of activities and costs supporting SIMP.</i>  SoCalGas's SIMP budget is authorized and balanced throughout the GRC cycle rather than calendar years and program activity may vary year to year due to compliance and operational considerations. Well remediation and abandonment activity is also influenced by results of integrity assessments and remains variable.

iii. SoCalGas Balanced Direct Capital Workpaper Descriptions and GRC Testimony Locations

Witness Area	Capital Workpaper or Prime Budget Code #	WP Activity Description	GRC Workpaper Description	2019 GRC Testimony Reference
TIMP & DIMP	003120 & 00276	TIMP	TIMP complies with 49 CFR 192, Subpart O—Gas Transmission Pipeline Integrity Management, and includes activities such as threat identification and risk assessment, pipeline assessments, remediation, and other actions that minimize threats and integrity concerns to reduce risk of pipeline failure.	SCG-14 MTM-28 to MTM-31
TIMP & DIMP	002770	DIMP	DIMP complies with 49 CFR 192, Subpart P— Gas Distribution Pipeline Integrity Management and identifies and reduces pipeline integrity risks for distribution pipelines, as required under the Pipeline Integrity, Protection, Enforcement and Safety Act of 2006.6.	SCG-14 MTM-20 to MTM-28
Underground Storage	00441	SIMP	SIMP is a forward-looking, methodical, and structured program using advanced inspection technologies such as ultra-sonic and neutron type casing logs along with risk management disciplines to address well integrity issues.	SCG-10-R NPN-51 to NPN-57

C. SoCalGas Regulatory Account 2019 Cumulative Balances

i. SoCalGas Regulatory Accounts – DIMPBA

SoCalGas DIMPBA Details Revenue Requirements (\$000) Program Cycle 2019 - 2023 Two-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
<b>Year 2019</b>						
Beginning Balance						
O&M		43,228	41,378	1,850		1,850
Capital-Related Costs		1,018	6,820	(5,802)		(5,802)
Interest					(87)	(87)
<b>Subtotal</b>		<b>44,246</b>	<b>48,198</b>	<b>(3,952)</b>	<b>(87)</b>	<b>(4,039)</b>

ii. SoCalGas Regulatory Accounts – TIMPBA

SoCalGas TIMPBA Details Revenue Requirements (\$000)						
Program Cycle 2019 - 2023						
Two-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
<b>Year 2019</b>						
Beginning Balance						
O&M		75,952	47,817	28,135		28,135
Capital-Related Costs		245	1,020	(775)		(775)
Interest					206	206
<b>Subtotal</b>		<b>76,197</b>	<b>48,837</b>	<b>27,360</b>	<b>206</b>	<b>27,566</b>

iii. SoCalGas Regulatory Accounts – SIMPBA

SoCalGas SIMPBA Details Revenue Requirements (\$000)						
Program Cycle 2019 - 2023						
Two-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	Beginning Balance	Actual	Authorized	Under/(Over) Collection	Interest	Ending Balance
<b>Year 2019</b>						
Beginning Balance						
O&M		13,901	20,324	(6,423)		(6,423)
Capital-Related Costs		1,134	490	644		644
Interest					(87)	(87)
<b>Subtotal</b>		<b>15,036</b>	<b>20,814</b>	<b>(5,778)</b>	<b>(87)</b>	<b>(5,866)</b>

iv. SoCalGas Regulatory Accounts – RD&D

SoCalGas RD&D Expense Account Details Revenue Requirements (\$000)						
Program Cycle 2019 - 2023						
One-Way						
	(a)	(b)	(c)	(d) = (b) - (c)	(e)	(f) = (a) + (d) + (e)
	<b>Beginning Balance</b>	<b>Actual</b>	<b>Authorized</b>	<b>Under/(Over) Collection</b>	<b>Interest</b>	<b>Ending Balance</b>
<b>Year 2019</b>						
Beginning Balance						
O&M		13,142	15,395	(2,253)		(2,253)
Capital-Related Costs						
Interest					(93)	(93)
<b>Subtotal</b>		<b>13,142</b>	<b>15,395</b>	<b>(2,253)</b>	<b>(93)</b>	<b>(2,346)</b>

**D. SoCalGas Balanced Program Regulatory Account Disposition of Cost Recovery**

**i. TIMP & DIMP & SIMP (same for all 3 programs)**

Per D.19-09-051, the TIMPBA, Post-2011 DIMPBA, and SIMPBA will continue for the 2019 GRC cycle.

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 under-collections as a result of overspending up to 35% of the total authorized O&M and capital expenditures, SoCalGas will submit a Tier 3 advice letter seeking recovery of the under-collected amount. For under-collections due to overspending greater than 35% of the total authorized O&M and capital expenditures, SoCalGas will seek recovery through a separate application. If SoCalGas has not overspent in excess of the total authorized O&M and capital expenditures for the current GRC cycle, but an under-collection exists due to compounding of actual capital revenue requirement recorded in the balancing account, SoCalGas will incorporate the under-collected balance in its annual regulatory account balance update submittal for recovery in the subsequent year's rates. For any unspent funds at the end of the current GRC cycle, SoCalGas will propose in its next GRC proceeding to return the unspent funds in rates to customers.

**ii. TIMPBA and DIMPBA**

Pursuant to Advice No. 5539, refunds of overcollections totaling \$5,756,011 associated with the Post-2011 DIMPBA (2016-2018 and 2012-2015 GRC cycles) and net overcollections totaling \$22,058,901 associated with the TIMPBA (2016-2018 and 2012-2015 GRC cycles) were incorporated in 2020 rates.

**iii. SIMPBA**

The SIMPBA 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 under-collection of approximately \$34 million through a future request by application to be filed in 2020.



**iv. Research Development and Demonstration Expense Account (RDDEA)**

The RDDEA is a one-way regulatory account. Pursuant to D. 19-09-051, the RDDEA will continue through the 2019 GRC cycle.

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 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. Under-collections 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 over-collected balance as of December 31, 2018.<sup>2</sup> Pursuant to Advice No. 5539, refunds of these overcollections totaling \$269,409 associated with the 2016-2018 GRC cycle were incorporated in 2020 rates.

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<sup>2</sup> A.17-10-008, Ex. SCG-42 (Yu) at RQY-2: 12-13.