

Company: San Diego Gas & Electric Company (U 902 M)
Proceeding: 2024 General Rate Case
Application: A.22-05-016
Exhibit: SDG&E-17-R

REVISED
PREPARED DIRECT TESTIMONY OF
DAVID H. THAI
(CUSTOMER SERVICES – FIELD OPERATIONS)

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA



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SUMMARY

CUSTOMER SERVICES - FIELD OPERATIONS (In 2021 \$000s)			
	2021 Adjusted- Recorded	TY2024 Estimated	Change
Total Non-Shared Services	33,342	40,337	6,995
Total Shared Services (Incurred)	0	0	0
Total O&M	33,342	40,337	6,995

INFORMATION TECHNOLOGY CAPITAL (In 2021 \$000s)			
Categories of Management	Estimated 2022	Estimated 2023	Estimated 2024
Customer Services – Field Operations	22,833	52,849	81,418
Total Capital	22,833	52,849	81,418

Summary of Requests

San Diego Gas & Electric Company’s (SDG&E or Company) Customer Services – Field Operations (CS-Field Operations) is requesting \$40.337 million, an increase of \$6.995 million from Base Year (BY) 2021 adjusted-recorded costs. The increase is attributable to supporting increased customer growth, customer service orders and other related services at customer premises.

Overall, CS-Field Operations consists primarily of field technicians who perform services at customer premises, including gas and electric meter work, establishing and disconnecting gas and electric service, lighting gas pilot lights, conducting customer appliance checks, investigating reports of potential gas leaks, investigating customer complaints of high bills, shutting off and restoring gas service for fumigations, responding to fires (e.g., to check for gas leakage/shut off gas service) and emergency incidents, and other related field services for customers. Field technicians work from five different operating districts that are dispersed throughout SDG&E’s service territory, which spans more than 4,100 square miles from the California-Mexico border to southern Orange County. The composition of support staff that assists with field operations includes Work Management, Training, Data Analytics and Smart Meter Operations.

The request also reflects expenses to support upgrading of obsolescent technology to meet our customers' needs timely and efficiently. SDG&E's request includes the following:

- CS-Field Operations customer growth and work order volume forecast.
- Incremental funding for staffing and systems to support operations, safety, compliance, and training activities.
- Incremental funding for electric meter and gas module failure replacements because of aging metering infrastructure.
- Incremental funding to support the Field Service Delivery (FSD) and Smart Meter 2.0 Projects. FSD is an initiative to modernize delivery of customer services in the field while enhancing safety and employee engagement. Smart Meter 2.0 is an initiative to replace SDG&E's initial advanced metering infrastructure (AMI), that was deployed in the 2009 to 2010 timeframe, and is reaching life expectancy and beginning to experience increased failure rates.
- Risk Assessment Mitigation Phase (RAMP) activities.

SDG&E has aligned the above activities to create a field operations organization focused on customers as trusted energy infrastructure stewards for safe, reliable, and efficient customer service. Implementation of the aforementioned activities will facilitate SDG&E's ability to control field operations costs while delivering customer service in a safe, reliable, and efficient manner.

I chose the base year forecast method for CS-Field Operations. For the various reasons described in my testimony, a base year forecast represents an appropriate starting point to calculate TY 2024 operations and maintenance expenses for the department activities listed above. In addition to sponsoring my own organization's costs, my testimony also supports the business justification for Information Technology (IT) capital costs for CS-Field Operations projects that are sponsored by SDG&E witness William J. Exon (Information Technology (Capital)) (Exhibit (Ex.) SDG&E-25, Chapter (Ch.) 2).

**REVISED PREPARED DIRECT TESTIMONY OF
DAVID H. THAI
(CUSTOMER SERVICES – FIELD OPERATIONS)**

I. INTRODUCTION

A. Summary of Customer Services - Field Operations Costs and Activities

My testimony supports the Test Year 2024 forecasts for operations and maintenance (O&M) costs for non-shared services, and capital costs for the forecast years 2022, 2023, and 2024, associated with the Customer Services - Field Operations area for SDG&E. Table DHT-1 summarizes my sponsored costs.

**Table DHT-1
Test Year 2024 Summary of Total O&M Costs**

CS - FIELD OPERATIONS (In 2021 \$000s)			
Categories of Management	2021 Adjusted- Recorded	TY2024 Estimated	Change
A. Customer Services – Field Operations	33,342	40,337	6,995
Total Non-Shared Services	33,342	40,337	6,995

Capital costs for the forecast years 2022, 2023, and 2024, for information technology systems that support CS-Field Operations (summarized in Table DHT-2 below), are described in the Information Technology Chapter 2: IT Capital Forecasts testimony of Mr. Exon (Exhibit SDG&E-25, Ch. 2). However, my testimony will provide the overarching business justification for these costs.

**Table DHT-2
Test Year 2024 Summary of Total Capital IT Costs**

IT Capital (In 2021 \$000s)			
Categories of Management	Estimated 2022	Estimated 2023	Estimated 2024
Customer Services – Field Operations	22,833	52,849	81,418
Total Capital	22,833	52,849	81,418

Capital costs for gas meters, regulators, tools, and equipment required for CS-Field Operations are covered in the Gas Distribution testimony of L. Patrick Kinsella (Exhibit SDG&E-04). Capital costs for electric meters and other electrical equipment used for CS-Field Operations are covered in the Electric Distribution Capital testimony of Oliva Reyes (Exhibit SDG&E-11).

1 **B. Support To and From Other Witnesses**

2 My testimony also references the testimony and workpapers of several other witnesses,
3 either in support of their testimony or as referential support for mine. The CS-Field Operations
4 costs set forth in my testimony are based on active gas and electric meter counts as well as
5 projected meter growth. Forecasted gas meter growth is covered in the Gas Customer Forecast
6 testimony of Scott Wilder (Exhibit SDG&E-39). Forecasted electric meter growth is covered in
7 the Electric Customer Forecast testimony of Kenneth E. Schiermeyer (Exhibit SDG&E-40).
8 Capital costs for meters associated with planned and routine meter changes and regulators
9 required for the underset regulator remediation program are discussed by Mr. Kinsella (Exhibit
10 SDG&E-04). Costs associated with company fleet vehicles used by the CS-Field Operations
11 field workforce are covered in the Fleet Services testimony of Arthur Alvarez (Exhibit SDG&E-
12 22). CS-Field Operations related miscellaneous revenues, including the basis for the forecasted
13 revenues and the projected revenues, are covered in the Miscellaneous Revenues testimony of
14 Christine Fischer (Exhibit SDG&E-42). CS-Field Operations costs to achieve applicable
15 miscellaneous revenues are embedded as a subset of historical and forecast CS-Field Operations
16 costs covered in my testimony. Lastly, IT Capital costs for systems and technology that supports
17 CS-Field Operations are covered by Mr. Exon (Exhibit SDG&E-25, Ch 2). Melanie E.
18 Hancock’s testimony addresses the Post-Test Year Ratemaking for Smart Meter 2.0 (Exhibit
19 SDG&E-45).

20 **C. Organization of Testimony**

21 My cost forecasts support SDG&E’s goal of providing safe, reliable, and efficient gas
22 and electric service to customers, as well as complying with applicable federal, state, local and
23 California Public Utility Commission (CPUC or Commission) regulations. The CS-Field
24 Operations cost forecasts also support SDG&E’s focus on continuous improvement from a safety
25 perspective, and from both cost efficiency and customer experience perspectives as well. All
26 requested O&M and capital expenses are described in detail in the remaining sections of my
27 testimony and the workpapers supporting my testimony. Organizationally, my testimony covers:

- 28 • Customer Field Operations
- 29 • Customer Field Operations Supervision
- 30 • Work Management
- 31 • Customer Field Operations Support (such as Training and Data Analytics)

- Smart Meter Operations.

D. Policy

CS-Field Operations is sponsoring two Capital projects: Smart Meter (SM) 2.0 and Field Service Delivery (FSD). Below you will find the policy justification for each endeavor. SM 2.0 is represented across various testimonies, Tables DHT-3 and DHT-4 below represent the witness areas where SM 2.0 incremental O&M and capital costs are conveyed.

**Table DHT-3
Smart Meter 2.0 O&M Forecast**

Summary of SM 2.0 O&M Costs (In 2021 \$000s)	
Witness Areas	TY 2024 Estimated Cost
Ex. SDG&E-17 Witness D. Thai, Customer Services - Field Operations (CSFO) - Customer Field Operations, Section IV, A and Workpaper (WP) 1FC001.000	90
Ex. SDG&E-17 Witness D. Thai, CSFO - Smart Meter Operations, Section IV, E and WP 1FC005.000	2,035
Ex. SDG&E-19 Witness S. Baule Customer Services - Information (CSIN) Marketing, Communications, Research and Analytics WP 1IN001.000	120
Ex. SDG&E-25 Ch. 2 IT Forecasts - O&M Witness: T. Ballard WP 2100-0207.000	2,176
Total SM 2.0 O&M Costs	4,421

**Table DHT-4
Smart Meter 2.0 Capital Forecast**

Summary of SM 2.0 Capital Costs (In 2021 \$000s)			
Witness Area	2022	2023	2024
Ex. SDG&E-25 Ch. 2 IT Forecasts – Capital Witness: Mr. Exon SM 2.0 Capital Workpaper (CWP) 218810	4,292	32,802	58,459
Total SM 2.0 Capital Costs	4,292	32,802	58,459

Smart Meter 2.0: SDG&E provides electric and gas service for over 3.6 million customers. Of those customers, SDG&E provides service to approximately 1.5 million electric meters and 900 thousand gas meters with attached gas AMI modules. This metering system is collectively referred to as the smart meter system and is interchangeable with AMI for the purposes of this chapter. The electric meters and gas modules communicate customer electric and gas utilization through the smart meter system to SDG&E’s data collection engine, meter

1 data management, and billing systems. Data acquisition is critical for accurate and timely billing
2 of consumption, and used for operations, customer programs, and third-party providers (i.e.,
3 demand response providers).

4 Since the original AMI deployment in 2009, incremental modernization efforts have
5 occurred to the existing system, however the current meter system is nearing the end of its useful
6 life. As a result, SDG&E seeks to replace the gas modules and subsequently the electric meters
7 over the timeframe of 2023 through 2030.

8 The span of this deployment is pivotal as it creates a glidepath for the discontinuation of
9 legacy metering systems in a manner that will avoid impacts to existing integrations and
10 processes. The timing also allows the operations groups to proactively deploy infrastructure to
11 manage against expected failures occurring at the end of the technology's useful life – a key
12 point when considering an inability to address failures accordingly will result in estimated
13 customer bills and/or delayed bills. Further, the timing affords procurement teams an opportunity
14 to manage a potential supply chain constraint that limits metering equipment availability and
15 subsequent impacts to operations. Not addressing the meter system issues mentioned above can
16 create a poor customer experience, increase the manual intervention needed to manage these
17 billing exceptions, and create greater operational challenges.

18 The timing of the deployment also creates new opportunities in the future to enhance grid
19 capabilities leveraging the next generation of AMI technology. As referenced in the Electric
20 Distribution O&M testimony of Tyson Swetek, Appendix C – SDG&E's Grid Modernization
21 Plan (Ex. SDG&E-12), next generation AMI technology is a critical cornerstone technology that
22 could span across all four themes, developed pursuant to Decision (D.)18-03-023.¹ For example,
23 the adoption of SM 2.0 will enable continued growth for Distributed Energy Resources (DER)
24 and enhance situational awareness for utility operators through a robust and reliable
25 communication network.

26 Smart Meter 2.0 leverages new technology to improve long-term, secure and accurate
27 relay of customer meter data information. For the implementation of Smart Meter 2.0
28 communications, SDG&E proposes email and direct mail be sent to customers in targeted zip
29 codes at fixed intervals in advance of installation. SDG&E will develop appropriate bilingual

¹ D.18-03-023 at 2.

1 collateral in English and Spanish, such as door hangers for field service representatives and fact
2 sheets for customer facing outreach groups, as needed. In addition, Smart Meter 2.0 information
3 and frequently asked questions (FAQs) will be communicated through SDG&E's website
4 (sdge.com), posts on social media channels (Facebook, Instagram, Twitter, and NextDoor) and
5 bill package messages (onserts and inserts), as space allows.

6 Field Service Delivery (FSD): FSD is a multi-year program to implement integrated,
7 cohesive, and modern technology solutions for field operations and supporting business
8 organizations. Key objectives and value drivers for the FSD platform include replacing end of
9 life and unsupported software, consolidating software applications, and improving the customer
10 experience and satisfaction.

11 The FSD program will focus on implementing scheduling, dispatch, mobility, and
12 analytics tools to improve field operations and customer satisfaction. This new technology
13 solution will consolidate the Scheduling, Dispatch and Field Work Execution tools for Electric
14 and Gas Distribution, and Customer Service, replacing the current Click and SORT
15 (ABB/Ventyx) applications, into a single software solution. By modernizing these business
16 solutions and consolidating their functions, users will have a centralized system to conduct work
17 and as a result, will support operational effectiveness and improve customer service. This will be
18 accomplished in multiple phases: Phase 1 will focus on implementing the solution for electric
19 distribution operations and gas distribution operations, and Phase 2 will focus on customer
20 service and other field operational groups.

21 In addition to the implementation of technology solutions, the program will focus on
22 integrating organizational and operational process improvements supported by the new
23 technology solutions.

24 The capital request for SM 2.0 and FSD can be found in the Information Technology
25 testimony and capital workpapers (CWP) of William J. Exon (Ex. SDG&E-25, Ch. 2; Ex.
26 SDG&E-25-CWP 218810, 00920AI, 00920T, and 00920AS). The business justification for SM
27 2.0 and FSD Scheduling & Dispatch Phase / Data & Analytics Platform are covered in my
28 prepared testimony in Section V, A and B. While the business justification for Field Mobility
29 Development is sponsored in Safety, Risk, and Asset Management testimony of Kenneth J.
30 Deremer (Ex. SDG&E-31). The associated O&M costs are covered in my prepared testimony in

1 Section IV, A, D, and E. Tables DHT-5 and DHT-6 below represent the witness areas where
 2 FSD O&M and capital costs are conveyed.

3 **Table DHT-5**
 4 **Field Service Delivery O&M Forecast**

Summary of FSD O&M Costs (In 2021 \$000s)			
Witness Area	BY 2021 Embedded Base Costs	TY 2024 Estimated Costs	TY 2024 Estimated Incremental
Ex. SDG&E-17 Witness D. Thai, CSFO - Customer Field Operations Support, Section IV, D and WP 1FC004.000	578	1,490	912
Total FSD O&M Costs	578	1,490	912

5 **Table DHT-6**
 6 **Field Service Delivery Capital Forecast**

Summary of FSD Capital Costs (In 2021 \$000s)			
Witness Area	2022	2023	2024
Ex. SDG&E-25, Ch. 2 IT Forecasts – Capital Witness: Mr. Exon FSD – Scheduling & Dispatch Phase / Data & Analytics Platform CWP 00920AI / 00920T	13,400	13,839	19,296
Field Mobility Development CWP 00920AS	1,835	0	0
Total FSD Capital Costs	15,235	13,839	19,296

II. RISK ASSESSMENT MITIGATION PHASE INTEGRATION

Certain costs supported in my testimony are driven by activities described in SoCalGas and SDG&E’s May 17, 2021, Risk Assessment Mitigation Phase (RAMP) Report.² Table DHT-7 provides a summary of the RAMP-related costs supported in my testimony:

**Table DHT-7
Summary of RAMP O&M Costs**

CS - FIELD OPERATIONS Summary of RAMP O&M Costs (In 2021 \$000s)			
	BY 2021 Embedded Base Costs	TY 2024 Estimated Total	TY 2024 Estimated Incremental
RAMP Risk Chapter			
SDG&E-Risk-8 Incident Involving an Employee	582	582	0
SDG&E-Risk-9 Incident Related to the Medium Pressure System (Excluding Dig-in)	10,449	10,805	356
Total RAMP O&M Costs	11,031	11,387	356

A. Risk Overview

As summarized in Table DHT-7 above, my testimony includes costs to mitigate the safety-related risks and cross-functional factors included in the RAMP report. These risks and factors are further described in Table DHT-8 below:

**Table DHT-8
RAMP Risk Chapter Description**

SDG&E-Risk-9 – Incident Related to the Medium Pressure System	SDG&E’s Medium Pressure Incident risk chapter addresses the risk of asset failure caused by a medium pressure pipeline system event which results in serious injuries or fatalities and/or damages to the infrastructure.
SDG&E-Risk-8 – Incident Involving an Employee	SDG&E’s IIE Risk is defined as the risk of an incident involving one or more on-duty employees that causes serious injury or fatality to a company employee.

² Please refer to the testimony of RAMP to GRC Integration of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Ch.2) for more details regarding the utilities’ RAMP Report.

The testimony of RAMP to GRC Integration of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Ch.2) describes all the risks and factors included in the RAMP report and the process utilized for RAMP to GRC integration.

B. GRC Risk Controls and Mitigations

Table DHT-9 below summarizes the TY 2024 forecast by workpaper associated with the RAMP activities.

**Table DHT-9
Summary of Safety Related Risk Mitigation Costs by Workpaper**

CS - FIELD OPERATIONS RAMP Activity O&M Forecasts by Workpaper (In 2021 \$000s)						
Workpaper	RAMP ID	Description	BY2021 Embedded Base Costs	TY2024 Estimated Total	TY2024 Estimated Incremental	GRC RSE
1FC001.000 Customer Field Operations	SDG&E- Risk-8 - C04	Employee Behavioral Accident Prevention Process Program	249	249	0	123
1FC001.000	SDG&E- Risk-8 - C10	Personal Protective Equipment	132	132	0	0*
1FC001.000	SDG&E- Risk-9 - C19	Field and Public Safety	10,278	10,543	265	0.03
1FC004.000 Customer Field Operations Support	SDG&E- Risk-9 - C21	CSF Quality Assurance (QA) Program	171	262	91	0.2
1FC005.000 Smart Meter Operations	SDG&E- Risk-8 - C04	Employee Behavioral Accident Prevention Process Program	166	166	0	123
1FC005.000	SDG&E- Risk-8 - C10	Personal Protective Equipment	35	35	0	0*
Total			11,031	11,387	356	

*An RSE was not calculated for this activity.

1 For each of the workpapers identified in Table DHT-9 above, additional descriptions of
2 the RAMP controls and mitigations that comprise these forecasts are discussed within the cost
3 category sections below.

4 The costs for these activities are found in my workpapers and shown as adjustments to
5 my forecasted costs. In my workpapers, RAMP mitigation costs are broken down between
6 “RAMP-Base” to represent BY 2021 embedded costs and “RAMP-Incremental” to represent TY
7 2024 estimated incremental costs. CFO costs are primarily based on activity levels (i.e., order
8 volume). Therefore, the TY 2024 estimated incremental costs for RAMP do not refer to new
9 projects or programs, but rather, these estimated incremental costs represent the change in
10 activity levels as compared to BY 2021 embedded cost levels. This change in activity levels
11 impacts workforce requirements, which affects RAMP-related mitigation costs. For example,
12 one of CFO’s safety related field orders is a “Gas Leak – Hazard” order. In BY 2021, CFO
13 completed 20,499 “Gas Leak – Hazard” orders. The TY 2024 forecast for this order type is
14 21,059, which is an increase of 560 orders over BY 2021 embedded cost levels.³ Consequently,
15 the RAMP mitigation costs are reflected as incremental to TY 2024 as compared to BY 2021
16 embedded costs but pertains to the same mitigation activity.

17 C. Changes from RAMP Report

18 As discussed in more detail in the RAMP to GRC Integration testimony of Messrs.
19 Pearson and Flores (Ex. SCG-03/SDG&E-03, Chapter 2), in the RAMP Proceeding, the
20 Commission’s Safety Policy Division (SPD) and intervenors provided feedback on the
21 Companies’ 2021 RAMP Reports. Appendix B in Ex. SCG-03/SDG&E-03, Chapter 2 provides
22 a complete list of the feedback and recommendations received and the Companies’ responses.

23 General changes to risk scores or Risk Spend Efficiency (RSE) values are primarily due
24 to changes in the Multi-Attribute Value Framework (MAVF) and RSE methodology, as
25 discussed in the RAMP to GRC Integration testimony. Other than these changes, the RAMP-
26 related activities described in my GRC testimony are consistent with the activities presented in
27 the 2021 RAMP Report.

28 Changes from the 2021 RAMP Report presented in my testimony, including updates to
29 forecasts and the amount and timing of planned work, are summarized as follows:

³ See supplemental workpaper 1 attached to Ex. SDG&E-17-WP 1FC001.000, reference line item #33.

- 1 • In response to stakeholder feedback received in the RAMP Proceeding, SDG&E
2 performed additional tranching analysis at a more granular level for some of the
3 risk mitigations described in my testimony.⁴ SDG&E identified Meter and
4 Beyond the Meter as an additional tranche for Incidents Related to the Medium
5 Pressure System risk mitigations.

6 **III. SUSTAINABILITY AND SAFETY CULTURE**

7 Sustainability, safety, and reliability are the cornerstones of SDG&E’s core business
8 operations and are central to SDG&E’s GRC presentation. SDG&E is committed to delivering
9 clean, safe, and reliable electric and natural gas service in a manner that supports California’s
10 climate policy, adaptation, and mitigation efforts. In support of the legal and regulatory
11 framework set by the state, SDG&E has set a goal to reach Net Zero greenhouse gas (GHG)
12 emissions by 2045, adopted a Sustainability Strategy to facilitate the integration of GHG
13 emission reduction strategies into SDG&E’s day-to-day operations and long-term planning, and
14 published an economy-wide GHG Study that recommends a diverse approach for California
15 leveraging clean electricity, clean fuels, and carbon removal to achieve the 2045 goals through
16 the lens of reliability, affordability, and equity.⁵ SDG&E’s Sustainability Strategy serves as a
17 guide to enable a more just and equitable energy future in SDG&E’s service territory and
18 beyond.⁶ As a “living” strategy, SDG&E will continue to update the goals and objectives as
19 technologies, policies, and stakeholder preferences change. See the Sustainability Policy
20 testimony of Estela de Llanos (Exhibit SDG&E-02).

21 In this GRC, SDG&E focuses on three major categories that underpin the Sustainability
22 Strategy: mitigating climate change, adapting to climate change, and transforming the grid to be
23 the reliable and resilient catalyst for clean energy. SDG&E’s goal is to contribute to the
24 decarbonization of the economy by way of diversifying energy resources, collaborating with
25 regional partners, and providing customer choice that enables an affordable, flexible, and
26 resilient grid.

⁴ D.18-12-014 at 18, “Tranching” refers to “[a] logical disaggregation of a group of assets (physical or human) or systems into subgroups with like characteristics for purposes of risk assessment.”

⁵ SDG&E, The Path to Net Zero, A Decarbonization Roadmap for California (April 2022) *available at*: <https://www.sdge.com/sites/default/files/documents/netzero2.pdf>.

⁶ SDG&E, Building a Better Future, SDG&E Sustainability Strategy Update (October 2021) *available at*: https://www.sdge.com/sites/default/files/documents/Sustainability_2021.pdf.

1 Some of the activities described in further detail in this testimony advance the state’s
2 climate goals and align with SDG&E’s Sustainability Strategy. Specifically, the proposed Smart
3 Meter 2.0 endeavor will drive progress in the area of grid transformation and mitigating climate
4 change. For example, the next iteration of advanced metering infrastructure will enable SDG&E
5 to expand its wire-down detection capabilities to reduce public and employee safety risk and
6 wildfire risk potential. The next iteration of advanced metering infrastructure will also be critical
7 in promoting the continued decarbonization of the economy through supporting distributed
8 energy resource adoption and subsequently expanding customer energy technology choices.
9 SDG&E will seek to partner with mobile home parks and tribal lands to begin test deployments
10 to transition customers who could best benefit from new metering technologies first.

11 SDG&E continues its ongoing program of climate adaptation and resilience work with
12 development of a climate vulnerability assessment on its assets in compliance with the Order
13 Instituting Rulemaking (OIR) to consider Strategies and Guidance for Climate Change
14 Adaptation adopted by the Commission on August 27, 2020.⁷ D.20-08-046 takes steps to ensure
15 California’s investor-owned utilities (IOUs) are prepared to upgrade their infrastructure,
16 operations and services to adapt to climate change, and to ensure safe and reliable energy service
17 to all Californians – including those most vulnerable and disadvantaged.⁸ The vulnerability
18 assessment for the Climate Change Adaptation OIR focuses on climate risk, specifically
19 temperature, sea-level, wildfire, precipitation, and cascading impacts, to utility operations,
20 services, and assets.⁹ At the conclusion of the assessment the expectation is to provide a
21 portfolio of options dealing with vulnerability both short- and long-term efforts as mentioned
22 within the next GRC. SDG&E has established the Climate Adaptation Vulnerability Assessment
23 Memorandum Account (CAVAMA) to capture activities related to the OIR mandates.¹⁰

24 Finally, safety is a Company core value and SDG&E is committed to providing safe and
25 reliable service to all its stakeholders. This safety-first culture is embedded in every aspect of the

⁷ D.20-08-046, Decision on Energy Utility Climate Change Vulnerability Assessments and Climate Adaptation in Disadvantaged Communities (Phase 1, Topics 4 and 5).

⁸ *Id.*

⁹ D.20-08-046, Ordering Paragraph (OP) 9 at 124-128.

¹⁰ SDG&E Advice Letter 3614-E / 2907-G, approved and effective September 25, 2020, Establishment of the Climate Adaptation Vulnerability Assessment Memorandum Account (CAVAMA) Pursuant to Decision 20-08-046, available at <https://tariff.sdge.com/tm2/pdf/3614-E.pdf>.

1 Company's work. In 2020, SDG&E commenced development and deployment of a Safety
2 Management System (SMS), which better aligns and integrates safety, risk, asset, and emergency
3 management across the entire organization. The SMS takes a holistic and pro-active approach to
4 safety and expands beyond "traditional" occupational safety principles to include asset safety,
5 system safety, cyber safety, and psychological safety for improved safety performance and
6 culture. SDG&E's SMS is a systematic, enterprise-wide framework that utilizes data to
7 collectively manage and reduce risk and promote continuous learning and improvement in safety
8 performance through deliberate, routine, and intentional processes. Customer Services Field
9 Operations utilizes the SMS framework to help advance our goal of zero safety incidents by
10 coordinating and building upon numerous effective safety programs to further promote a
11 physical and psychologically safe culture. Field and office employees are encouraged to report
12 near misses which are communicated broadly to assist in mitigating risk and 'at-risk' behaviors.
13 Increased face to face interaction in the form of field observations, quality near miss sharing and
14 strong leadership follow through are contributing to the successful implementation of the SMS.

15 SDG&E remains focused on identifying and implementing the most cost-effective
16 solutions with the potential to make the greatest impact on reducing GHG emissions, while
17 maintaining a safe and reliable energy system. SDG&E believes that safety, reliability, and
18 sustainability are inextricably linked and fundamental to the Company's ability to continue to
19 successfully operate. See the Sustainability Policy testimony of Estela de Llanos (Exhibit
20 SDG&E-02) for additional detail on SDG&E's Sustainability Strategy and the Safety, Risk and
21 Asset Management testimony of Mr. Deremer (Exhibit SDG&E-31) for additional detail of
22 SDG&E's Safety Policy.

23 **IV. NON-SHARED COSTS**

24 "Non-Shared Services" are activities that are performed by a utility solely for its own
25 benefit. The Corporate Center cost category provides certain services to the utilities and to other
26 subsidiaries. For purposes of this general rate case, SDG&E treats costs for services received
27 from Corporate Center as Non-Shared Services costs, consistent with any other outside vendor
28 costs incurred by the utility. SDG&E CS-Field Operations O&M costs are all "Non-Shared
29 Services." The O&M forecast includes the cost of field technicians, collectors, and dispatchers as
30 well as costs for other supporting activities required to enable CS-Field Operations to provide
31 services to customers. An explanation of all adjustments to BY 2021 adjusted-recorded costs are

provided in the workpapers supporting this testimony. Table DHT-10 summarizes the total non-shared O&M forecasts for the listed cost categories.

**Table DHT-10
Non-Shared O&M Summary of Costs**

CS - FIELD OPERATIONS (In 2021 \$000s)			
A. Customer Services - Field Operations	2021 Adjusted-Recorded	TY2024 Estimated	Change
1. Customer Field Operations	16,085	16,769	684
2. Customer Field Operations Supervision	1,272	1,468	196
3. Work Management	3,346	3,534	188
4. Customer Field Operations Support	3,576	5,279	1,703
5. Smart Meter Operations	9,063	13,287	4,224
Total	33,342	40,337	6,995

A. Customer Field Operations

Table DHT-11 below summarizes SDG&E’s requested TY 2024 expenses for Customer Field Operations cost category.

**Table DHT-11
O&M Summary for Customer Field Operations Cost Category**

A. Customer Services - Field Operations (In 2021 \$000s)	2021 Adjusted-Recorded	TY2024 Estimated	Change
1. Customer Field Operations			
Labor	15,046	15,689	643
Non-Labor	1,040	1,081	41
Total	16,085	16,769	684

1. Description of Costs and Underlying Activities

The Customer Field Operations (CFO) 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

1 generated work include meter and regulator changes, and other meter work necessary to maintain
2 company assets, and collecting customer payments for delinquent bills. Non-labor costs include
3 items such as uniform expenses, small tools and miscellaneous supplies used on the job. RAMP-
4 related costs for CFO include the costs for the following mitigation activities:

5 (1) Customer orders related to field and public safety – SDG&E field employees are
6 trained to address safety hazards on customer premises through a variety of orders related to
7 public safety. See supplemental workpaper 1 attached to Ex. SDG&E-17-WP 1FC001.000 for
8 the RAMP order types and Appendix B for order descriptions.

9 (2) Behavior Based Safety (BBS) - BBS is a proactive approach to safety and health
10 management, focusing on principles that recognize at-risk behaviors as a frequent cause of both
11 minor and serious injuries. The purpose is to reduce the occurrence of at-risk behaviors by
12 modifying an individual's actions and/or behaviors through observation, feedback and positive
13 interventions aimed at developing safe work habits.

14 (3) Personal Protective Equipment (PPE) - The purpose of SDG&E's PPE program is to
15 protect employees from the risk of injury by creating a barrier against workplace hazards. PPE
16 includes clothing and equipment designed to protect employees while performing their job (e.g.,
17 flame resistant clothing, gloves, protective eyewear). All employees who are required to use PPE
18 are trained on when PPE is necessary, which PPE is necessary, how to properly
19 don/remove/adjust/wear PPE, limitations of PPE and the proper care/maintenance/life/disposal of
20 PPE.

1 Table DHT-12 below summarizes the safety related risk mitigation costs for Customer
 2 Field Operations.

3 **Table DHT-12**
 4 **Summary of Safety Related Risk Mitigation Costs for Customer Field Operations**

RAMP Activity O&M Forecasts (In 2021 \$)						
Workpaper	RAMP ID	Description	BY2021 Embedded Base Costs	TY2024 Estimated Total	TY2024 Estimated Incremental	GRC RSE
1FC001.000 Customer Field Operations	SDG&E-Risk-8 - C04	Employee Behavioral Accident Prevention Process Program	249	249	0	123
1FC001.000	SDG&E-Risk-8 - C10	Personal Protective Equipment	132	132	0	0*
1FC001.000	SDG&E-Risk-9 - C19	Field and Public Safety	10,278	10,543	265	0.03
Total			10,659	10,924	265	

5 *An RSE was not calculated for this activity.

6 The calculations for the estimated expenses for CFO are included in my workpapers (Ex.
 7 SDG&E-17-WP 1FC001.000).

8 **2. Forecast Method**

9 The forecast method developed for this cost category is base year. A base year was
 10 chosen because 2021 is the last recorded year that accurately reflects the expense level associated
 11 with current departmental activity. CFO departmental activity and correlated costs are primarily
 12 driven by work order volumes. Work order volumes, in turn, are largely driven by outside factors
 13 including customer growth, weather, the state of the economy, customer turnover, the level of
 14 natural gas and electric prices, customer appliances/equipment choices, emergency incidents
 15 such as fires and earthquakes, and changes to applicable laws and regulations. To forecast TY
 16 2024 expenses as accurately as possible, SDG&E utilized a 2021 base year for most order types,
 17 excluding those incremental funding requests discussed in Section 4a. A description of each
 18 order type is provided in Appendix B. The actual historical volume by order type from 2017

1 through BY 2021 and estimated volume by order type for 2022 through TY 2024 and those order
2 types that used forecasting other than the base year are provided in my workpapers.¹¹

3 As explained in the Gas Customer Forecast testimony of Mr. Wilder (Ex. SDG&E-39),
4 SDG&E gas meter growth is expected to increase by a total of 2.65% from 903,649 in BY 2021
5 to 927,597 in TY 2024. As explained in the Electric Customer Forecast testimony of Mr.
6 Schiermeyer (Ex. SDG&E-40), the number of electric meters is expected to grow by 2.78% from
7 1,489,949 in BY 2021 to 1,531,337 in TY 2024. In almost all cases, CFO work order volumes
8 are forecasted on a number-of-orders-per-active meter basis, by order type. The TY 2024
9 forecasted order volumes for each order type are the product of the forecasted number of orders
10 per meter and the number of forecasted meters in TY 2024.

11 **3. Cost Drivers**

12 In addition to order volumes and customer growth, CFO field technician costs are driven
13 by the length of time it takes to travel to customer premises (drive time); the length of time it
14 takes to complete each type of work order (on-premise time); the amount of non-job time (e.g.
15 start of day and end of day, breaks, other non-order activities); safety meetings; training; and
16 vacation and sick time. Each CFO technician is assigned a vehicle to travel to the job sites and
17 complete a work order. Therefore, an increase in the number of field technicians corresponds to
18 an increase in the number of vehicles. The costs associated with incremental company fleet
19 vehicles used by the CFO field technicians are covered in the Fleet Services testimony of Mr.
20 Alvarez (Ex. SDG&E-22).

21 **Drive Time**

22 Each CFO order has an associated average drive time per order to allow the field
23 technician time to travel to the customer's premises (between orders). Historical and forecast
24 average drive times per order are summarized in Table DHT-13 below. Forecasted 2022-2024
25 average drive times per order assume a 2019 average as it is indicative of the normal drive time
26 before the COVID-19 pandemic in 2020 and 2021 and is more representative of TY 2024. The
27 average drive time in base year is largely affected by more employees working from home
28 causing the drive time average to be lower than normal.

¹¹ See Ex. SDG&E-17-WP, 1FC001.000.

Table DHT-13
Average Drive Time per Order (In Minutes)

CFO	History					Forecast		
Year	2017	2018	2019	2020	2021	2022	2023	2024
Drive Time	12.77	12.83	13.81	13.13	12.32	13.81	13.81	13.81

On-Premise Time

Each CFO order type has an associated on-premises average order completion time. On premises times can change over time to the extent procedures are modified or new safety requirements are implemented for a particular order type. Except for orders discussed in Section 4a, BY 2021 average on premises time per order type was used to forecast on premises time in 2022-2024 because the most current procedures and safety requirements are reflected in BY 2021 on premises times.¹²

Non-Job Time, Training Time, Vacation and Sick, Wage Rate and Non-Labor Expense

In addition to drive time and on-premise time being converted to hours and then full-time equivalent (FTE), the appropriate non-job time includes morning preparation time, safety tailgates, breaks, afternoon workday inventory, yard duties such as stocking vehicles, conducting paperwork, standby for emergencies, vehicle and computer maintenance, one-on-one with supervisors, workday field observations, scheduled safety meetings and training time. Training time includes but is not limited to skills training, operator qualification, compliance, and tools training. The SDG&E vacation and sick factors were applied to compute forecasted FTE by year. The 2019 non-job time was used to determine the forecast non-job time per FTE on the basis that 2019 is most indicative of a normal year without the impact of COVID-19, i.e., no suit-up time and less preparation time and is representative of TY2024. Training time was computed using a base-year 2021 average because it is consistent with the workload forecast.

¹² See supplemental workpaper 1 attached to Ex. SDG&E-17-WP 1FC001.000

1 Table DHT-14 below provides a summary of the applicable non-work factors applied to
 2 determine the total number of FTEs required for completing the forecast order volumes.

3 **Table DHT-14**
 4 **Non-Productive Factors Used to Determine FTE Requirements**

Non-Productive Factor Type	BY FTE Factor %	TY FTE Factor %
Non-job time (e.g., start and end of day, breaks, non-order work, etc.)	84.34	52.83
Training (meetings/training)	9.15	9.15
Vacation and Sick	17.06	17.06

5 Considering various CFO job classifications, a blended wage rate was utilized for CFO to
 6 compute total labor expense. An associated non-labor expense per FTE for related small tools,
 7 uniforms, and miscellaneous supplies is also added to compute total non-labor expenses for TY
 8 2024. The non-labor expense per FTE is warranted as FTE dictates the number of small tools,
 9 uniforms, miscellaneous supplies that will be needed.

10 **4. Summary of Customer Field Operations Costs**

11 SDG&E TY 2024 funding request of \$16.769 million for the Customer Field Operations
 12 cost category, an increase of \$0.684 million to BY 2021 adjusted-recorded costs, consists of the
 13 elements summarized in Table-DHT-15 below:

14 **Table DHT-15**
 15 **Summary of TY 2024 Incremental O&M Expenses for Customer Field Operations**

Customer Field Operations (In 2021 \$000s)	Labor	Non-Labor	Total	FTEs
a. Order Volume	309	20	329	2.5
b. SM 2.0 Capital Project Impacts	84	6	90	0.8
c. RAMP - SDG&E-Risk-9-C19 - Incident Related to the Medium Pressure System – Field and Public Safety Order Volume	250	15	265	2.0
Total O&M	643	41	684	5.3

1 **Incremental Funding Requests**

2 In addition to the order volume forecast based on the base year and projected meter
3 growth forecasts, SDG&E is requesting incremental funding for the activities listed below.¹³

4 **a. Order Volume Fluctuation**

5 I am requesting \$309,000 in labor for 2.5 Customer Field Operations Technician FTE and
6 \$20,000 in non-labor above BY 2021 for order volume increase. Order volumes fluctuate due to
7 the COVID-19 pandemic. Certain order types during the COVID-19 pandemic are affected by
8 the safety procedures instituted to prevent communicable disease, including suiting up in full
9 PPE prior to entering customer homes and weekly tailgates to discuss and enforce COVID-19
10 protocols. CFO is working in the emergency peak status which considerably reduces the order
11 types fielded by employees to reduce exposure risk to employees and customers alike. Therefore,
12 for orders affected by COVID-19, CS-Field Operations is using 2019 order volume as it is
13 indicative of CFO normal workload levels before the COVID-19 pandemic. Other orders such as
14 compliance meter work were affected by the necessary cut-off for the Customer Information
15 System (CIS) replacement going-live during the base year to ensure seamless transition of
16 customer data from one information system to another. In this case, the 2021 base year order
17 count is prorated to reflect the full-year impact. The exceptions to BY 2021 order volume
18 forecast are shown in my workpapers.¹⁴

19 **b. Smart Meter 2.0 Capital Project Impacts**

20 I am requesting \$84,000 in labor for 0.8 Customer Field Operations Technician FTE and
21 \$6,000 in non-labor above BY 2021 for the removal of gas modules as a result of implementing
22 Smart Meter 2.0 Capital Project. Reference Ex. SDG&E-25, Ch 2 witness Mr. Exon, Ex.
23 SDG&E-25-CWP 218810. Contract non-labor costs associated with SM 2.0 Capital Project for
24 the removal of gas modules and electric meters are included in my testimony reference Section E
25 Smart Meter Operation and shown in my workpaper Ex. SDG&E-17-WP 1FC005.000.

26 **c. RAMP - SDG&E-Risk-9-C19 - Incident Related to the Medium**
27 **Pressure System - Order Volume**

28 I am requesting \$250,000 in labor for SM 2.0 Customer Field Operations Technician FTE
29 and \$15,000 in non-labor above BY 2021 for order volume increase related to field and public

¹³ *Id.*

¹⁴ *Id.*

safety.¹⁵ Incremental RAMP expense accurately reflects the increase in departmental activity. RAMP order volumes are primarily driven by outside factors including customer-meter growth, weather, customer appliances/equipment choices, emergency incidents such as fires and earthquakes, and changes to applicable laws and regulations.

Customers call SDG&E’s Customer Contact Center for various safety related reasons, such as: 1) potential gas leaks when customers report smelling a natural gas type odor; 2) fumigations; and 3) carbon monoxide (CO) testing. These calls generate field orders that are handled by CFO. Additionally, within this category are CFO atmospheric corrosion (ACOR) orders. Qualified technicians perform the ACOR inspection orders which often generate follow-up repair orders to remediate conditions identified during the inspections. By responding to these safety-related field orders, SDG&E mitigates risk to employees and the public.

B. Customer Field Operations Supervision

Table DHT-16 below summarizes SDG&E’s requested TY 2024 expenses for the Customer Field Operations Supervision cost category.

**Table DHT-16
O&M Summary for CFO Supervision Cost Category**

A. Customer Services - Field Operations (In 2021 \$000s)	2021 Adjusted-Recorded	TY2024 Estimated	Change
2. Customer Field Operations Supervision			
Labor	1,239	1,435	196
Non-Labor	33	33	0
Total	1,272	1,468	196

1. Description of Costs and Underlying Activities

Organizationally, CFO field employees report to field supervisors. Like field technicians and collectors, field supervisors are geographically dispersed across SDG&E’s five operating districts. Field supervisors monitor and coach employees, conduct safety and job observations, coordinate with dispatch and others to address and resolve field issues, respond to emergency incidents to provide on-site leadership, and manage the overall performance of CFO employees who work at each of the operating districts.

¹⁵ *Id.*

1 The calculations for the estimated expenses for CFO Supervision are included in my
2 workpapers (Ex. SDG&E-17-WP 1FC002.000).

3 **2. Forecast Method**

4 The estimated number of field supervisors in TY 2024 is based on maintaining an
5 employee-to-supervisor ratio of 12:1. A ratio of 12:1 is appropriate given the geographic areas
6 covered by each operating base, the variety of work performed, and conditions encountered at
7 customer premises, and the expectation that supervisors spend as much time as possible in the
8 field performing safety and job observations, coaching employees, and managing employee
9 performance. Non-labor expenses include cell phones, office supplies and other miscellaneous
10 expenses. The non-labor cost estimate is based on a base year of non-labor expense.

11 **3. Cost Drivers**

12 Costs are driven by the number of supervisors, applicable salary levels, and associated
13 non-labor expenses for supervisory employees. The number of supervisors is driven by the
14 number of field employees, maintaining an employee to supervisor ratio of 12:1, and the
15 geographic coverage needed to provide adequate field safety oversight at all times. Each field
16 supervisor is assigned a vehicle to perform field observations and respond to emergency
17 incidents. Therefore, an increase in the number of supervisors corresponds to an increase in the
18 number of vehicles. The costs associated with incremental company fleet vehicles used by the
19 CFO supervisors are covered in the Fleet Services testimony of Mr. Alvarez (Ex. SDG&E-22).

20 **4. Summary of Customer Field Operations Supervision Costs**

21 SDG&E's TY 2024 funding request of \$1.468 million for the CFO Supervision cost
22 category, an increase of \$0.196 million compared to BY 2021 adjusted-recorded costs, consists
23 of the elements summarized in Table-DHT-17 below.¹⁶

24 **Table DHT-17**
25 **Summary of TY2024 Incremental O&M Expenses for CFO Supervision**

CFO Supervision (In 2021 \$000s)	Labor	Non-Labor	Total	FTEs
Span of Control – 1 Supervisor per 12 Field FTE	196	0	196	1.7
Total	196	0	196	1.7

¹⁶ See supplemental workpaper 1 attached to Ex. SDG&E-17-WP 1FC002.000.

1 **Incremental Funding Request**

2 I am requesting \$196,000 in labor for 1.7 Supervisor FTE to support a 12:1 employee to
3 supervisor ratio. Supervisor time spent on field observations will continue to increase to engage
4 with field employees for gauging their experience and developmental needs. Maintaining a 12:1
5 employee to supervisor ratio will provide additional opportunity for critical contact with
6 employees resulting in:

- 7 • Employee and customer safety by ensuring safe work practices
- 8 • Development, growth, and training opportunities
- 9 • Increased morale and job satisfaction

10 **C. Work Management**

11 Table DHT-18 below summarizes SDG&E’s requested TY 2024 expenses for the Work
12 Management cost category.

13 **Table DHT-18**
14 **O&M Summary of Work Management Cost Category**

A. Customer Services - Field Operations (In 2021 \$000s)	2021 Adjusted-Recorded	TY2024 Estimated	Change
3. Work Management			
Labor	3,285	3,473	188
Non-Labor	61	61	0
Total	3,346	3,534	188

15 **1. Description of Costs and Underlying Activities**

16 Work management is conducted by dispatch personnel who route and dispatch work
17 orders to CFO employees, electric troubleshooters, electric distribution crews, and gas
18 distribution field employees on a day before and same day basis, 24 hours a day, 365 days a year.
19 Dispatchers handle all matters that arise during the day, including dispatch of emergency orders
20 in real-time as they are received, redistribution of work when employees call in sick or are
21 otherwise unavailable, redistribution of work orders when employees are not able to complete all
22 work that has been assigned for the day, coordination of logistics such as material and equipment
23 ordering, no park signs, traffic control, etc., and employee availability and schedule of field
24 employees. Non-labor expenses include cell phones, office supplies, and other miscellaneous
25 expenses.

1 **Service Dispatch**

2 Monday through Friday from 6:30 AM to 3:30 PM, the primary responsibility of Service
3 Dispatch is to ensure safe, accurate, and efficient order dispatching to Customer Service Field
4 Technicians (CSFT) and Electric Troubleshooters (ETS). Key work responsibilities include
5 assigning and routing planned customer and company work (compliance, maintenance) to CSFT
6 and ETS, while managing unplanned work as well. Service Dispatch determines if there is
7 enough staffing to manage urgent needs, and shifts planned work as needed to ensure safety
8 matters are swiftly dispatched to the appropriate personnel.

9 During hours not addressed above, Service Dispatch manages all planned and unplanned
10 work for all field employees, including engaging contractors as needed. This team works 24
11 hours a day, 7 days a week, 365 days a year.

12 **District Crew Dispatcher**

13 The primary responsibility of District Crew Dispatchers is to prepare gas and electric
14 distribution crew jobs for working on the scheduled date. Prerequisite tasks include but are not
15 limited to ensuring all needed permits are acquired and current, electric switch plans are
16 submitted, arranging support crews and required equipment such as traffic control and heavy
17 machinery. Crew Dispatch dispatches “day of” jobs and provides just-in-time support to crews
18 for “day of” jobs such as additional crews or tools.

19 **Dispatch Training**

20 The Dispatch Training group is primarily responsible for working with multiple internal
21 stakeholder teams on projects and supporting the respective unit operational requirements. They
22 draft, train, and maintain all knowledge management material for new hires and incumbent
23 Dispatch Specialists and District Crew Dispatchers.

24 The calculations for the estimated expenses for Work Management are included in my
25 workpapers (Ex. SDG&E-17-WP 1FC003.000).

26 **2. Forecast Method**

27 The forecast method developed for this cost category is base year. A base year was
28 chosen because 2021 is the last recorded year that accurately reflects the expense level associated
29 with current departmental activity. Work Management departmental activity and correlated costs
30 are primarily impacted by outside factors including customer growth, weather, the state of the
31 economy, emergency incidents such as fires and earthquakes, and changes to applicable laws and

1 regulations. To forecast TY 2024 expenses as accurately as possible, SDG&E utilized a 2021
2 base year.

3 **3. Cost Drivers**

4 Costs are primarily driven by the number of dispatchers needed to provide 24/7, 365 days
5 per year coverage including employee time off and training needs, including the need to
6 immediately respond to all emergency orders, as well as applicable premium wage rates. Unlike
7 Customer Field Operations costs, Work Management costs are not driven by the order volume
8 alone. Weather, the state of the economy, emergency incidents such as fires and earthquakes, and
9 changes to applicable laws and regulations influence dispatch needs.

10 **4. Summary of Work Management Costs**

11 SDG&E's TY 2024 funding request of \$3.534 million for Work Management, an
12 increase of \$0.188 million compared to BY 2021 adjusted-recorded costs, consists of the
13 elements summarized in Table-DHT-19 below:

14 **Table DHT-19**
15 **Summary of TY 2024 Incremental O&M Expenses for Work Management**

Work Management (In 2021 \$000s)	Labor	Non-Labor	Total	FTE
a. Full-year Labor Impact	72	0	72	0.7
b. Increased Workload Requirements	116	0	116	1.2
Total	188	0	188	1.9

16 **Incremental Funding Request**

17 **a. Full Year Labor Impact**

18 I am requesting \$72,000 in labor above BY 2021 to add back full-year salaries for 0.7
19 FTE. In BY 2021, there were timing issues in backfilling partial vacancies due to challenges
20 with hiring qualified candidates during the COVID-19 pandemic and returns from medical leave.
21 Without these adjustments, true labor costs would not be accurately reflected.

22 **b. Increased Workload Requirements**

23 I am requesting \$76,000 in labor above BY 2021 for two additional dispatchers at 39%
24 O&M for on demand requirements including unplanned absences and service territory
25 emergency and non-emergency events to manage a fixed, rotating 24/7 operation. In addition, I
26 am requesting \$40,000 in labor above BY 2021 for an additional supervisor at 39% O&M to
27 provide increased performance management, safety oversight and employee engagement.

1 **D. Customer Field Operations Support**

2 Table DHT-20 below summarizes SDG&E’s requested TY 2024 expenses for the
3 Customer Field Operations Support cost category.

4 **Table DHT-20**
5 **O&M Summary of CFO Support Cost Category**

A. Customer Services - Field Operations (In 2021 \$000s)	2021 Adjusted-Recorded	TY2024 Estimated	Change
4. Customer Field Operations Support			
Labor	2,861	3,742	881
Non-Labor	715	1,537	822
Total	3,576	5,279	1,703

6 **1. Description of Costs and Underlying Activities**

7 The CFO Support cost category consists of centralized training including classroom and
8 field instructors and training manager; quality assurance (QA) inspectors and QA supervisor who
9 inspect the work of technicians; operations clerks at each field operating district responsible for
10 supporting the field operations; Area Managers who oversee the day-to-day activities of each
11 field operating district; a Meter Access group that manages any difficulty field technicians
12 experience gaining safe access to meters at customers' premises; a Safety, Compliance and
13 Regulatory group who oversee critical safety and compliance endeavors; Field Operations
14 Strategy and Analytics group responsible for operations reporting and analytics leveraging
15 business intelligence; CS Technical Advisors to provide internal and external technical support
16 and guidance to ensure compliance with SDG&E Service Standards; and Director and Vice
17 President of Customer Operations. Also included is Field Service Delivery, an initiative to
18 modernize delivery of customer services in the field while enhancing safety and employee
19 engagement. RAMP-related costs for CFO Support include the costs for the following mitigation
20 activity:

21 (1) CSF Quality Assurance (QA) Program – The QA Program is designed to verify the
22 field employees are completing field orders according to established policy and procedures and
23 to see that customers are receiving safe and reliable service. The program provides a snapshot of
24 the quality of work being performed by the CSF Employees on customer premises. QA
25 Specialists (Inspectors) take a random sampling of field orders completed by field employees
26 and inspect the work performed on the customer premises. Inspectors record all findings of each

individual order onto an inspection form. That information is then utilized to develop refresher training and to provide feedback to the CSF employees. Table DHT-21 summarizes the safety related risk mitigation costs for Customer Field Operations Support.

**Table DHT-21
Summary of Safety Related Risk Mitigation Costs for Customer Field Operations Support**

RAMP Activity O&M Forecasts (In 2021 \$000s)						
Workpaper	RAMP ID	Description	BY2021 Embedded Base Costs	TY2024 Estimated Total	TY2024 Estimated Incremental	GRC RSE
1FC004.000 Customer Field Operations Support	SDG&E-Risk-9 - C21	CSF Quality Assurance (QA) Program	171	262	91	0.2
Total			171	262	91	

The calculations for the estimated expenses for CFO Support are included in my workpapers (Ex. SDG&E-17-WP 1FC004.000).

2. Forecast Method

Forecasted TY 2024 expenses for both labor and non-labor are based on base year. A base year was chosen because 2021 is the last recorded year that accurately reflects the expense level associated with current departmental activity. CFO Support departmental activity and correlated costs are primarily driven by safety, compliance and regulatory activities, training requirements, projects and work order volumes. Work order volumes are largely driven by outside factors including customer growth, weather, the state of the economy, customer turnover, the level of natural gas and electric prices, customer appliances/equipment choices, emergency incidents such as fires and earthquakes, and changes to applicable laws and regulations. SDG&E utilized a 2021 base year to forecast TY 2024 expenses as accurately as possible.

3. Cost Drivers

Costs are primarily driven by the need to: train new employees; maintain a technically proficient workforce; validate that work is performed in a manner meeting SDG&E’s quality standards; ensure the safety of our employees and the public through safety, compliance, and regulatory activities; and overall operational support through analytics and effective workload methods.

1 **4. Summary of Customer Field Operations Support Costs**

2 SDG&E’s TY 2024 funding request of \$5.279 million for the CFO Support cost category,
 3 an increase of \$1.703 million compared to BY 2021 adjusted-recorded costs, consists of the
 4 elements summarized in Table-DHT-22 below:

5 **Table DHT-22**
 6 **Summary of TY 2024 O&M Expenses for Customer Field Operations Support**

CFO Support (In 2021 \$000s)	Labor	Non-Labor	Total	FTEs
a. Full-year Labor Impact	265		265	2.6
b. Incremental Positions	435		435	3.6
c. Field Service Delivery (FSD)	90	822	912	0.6
d. SDG&E-Risk-9-C21 Incident Related to the Medium Pressure - CSF Quality Assurance (QA) Program	91		91	0.9
Total	881	822	1,703	7.7

7 **a. Full Year Labor Impact**

8 I am requesting \$265,000 in labor above BY 2021 to add back full-year salaries for 2.6
 9 FTE. In BY 2021, there were timing issues in backfilling vacancies due to challenges with
 10 hiring qualified candidates during the COVID-19 pandemic, returns from medical leave and
 11 shifts from Capital to O&M due to employees returning from special projects. Without these
 12 adjustments, true labor costs would not be accurately reflected.

13 **b. Incremental Positions**

14 I am requesting \$435,000 in labor for 3.6 FTE above BY 2021 consisting of the
 15 following positions:

16 **Development & Quality Manager (\$122,000 / 0.9 FTE)**

17 The Development and Quality Manager position will lead a functional team overseeing
 18 all CFO training, standards and quality programs and will include maintaining and developing
 19 coordinated training materials, consistent management practices of training instructors, and
 20 providing overall administration of training programs and materials. The focus will be to ensure
 21 training procedures, quality control processes and sound business practices are adhered to
 22 throughout the CFO organization. This position is responsible for integrating and coordinating
 23 development of new and existing quality assurance processes for core business functions,

1 providing independent review of critical business processes from an end-to-end perspective that
2 may span several manager organizations, and ensuring ongoing compliance activities are
3 completed, reviewed, and reported to regulators, when required, each year. In addition, the
4 Development and Quality Manager will oversee, and report results of field quality assurance
5 inspections each month to CFO supervision for employee performance feedback and retraining
6 opportunities.

7 **Principal Customer Analyst (\$126,000 / 1.0 FTE)**

8 The Principal Customer Analyst will conduct real-time data analysis to gain predictive
9 intelligence to uncover patterns and relationships, gaining more valuable business insights
10 enabled with the acquisition of descriptive data as new enterprise systems were deployed in
11 2021. These insights will influence operational efficiencies such as workload forecasting and
12 routing optimization; optimizing technological routing criteria decreases drive time and increases
13 customer satisfaction.

14 **Field Operations Manager (\$140,000 / 0.9 FTE)**

15 The Field Operations Manager (FOM) provides overall leadership direction to reporting
16 managers and supervisors within Customer Field Operations for the entire SDG&E service
17 territory. The role oversees management development, field planning scheduled work and
18 organizing resources for emergencies. The FOM engenders business values and priorities to field
19 leadership team members such that they can lead their teams to accomplish customer service-
20 focused objectives safely and timely. The FOM is responsible for employee, customer, public
21 and pipeline safety; customer after-meter services and builder satisfaction; construction and
22 maintenance of gas and electric meters and above ground piping; and completion of mandated
23 compliance work.

24 **Operations Assistant (\$47,000 / 0.9 FTE)**

25 The Operations Assistant provides administrative support to leadership and employees
26 including, but not limited to, departmental reports, systems data entry, monitoring and periodic
27 reporting of departmental training requirements, processing of employee travel requests and
28 reimbursements, maintaining department files and timekeeping, and vacation scheduling for
29 district employees.

1 **c. Field Service Delivery**

2 I am requesting \$90,000 in labor for 0.6 FTE and \$822,000 in non-labor above BY2021
3 in O&M support of the Field Service Delivery (FSD) Capital Project. Labor accounts for 20% of
4 a Manager of FSD and two Business Leads to; provide project oversight for all phases of the
5 project lifecycle including establishing project scope, timelines, and milestones; ensure
6 workstreams (technical, procedural, change management) deliverables are on target; provide
7 overall direction which ensures the solutions implemented meet the requirements of business
8 operations; manage project risks and ensure implementation of appropriate mitigations; provide
9 stakeholder updates and communication; and perform as a liaison between IT and Business
10 operations through all phases of the project. Non-labor includes training delivery and
11 Operational Change Management (OCM), outreach, communication, and engagement. Training
12 delivery and OCM activities, such as roadshows, stakeholder communication, stakeholder
13 engagement, etc. per accounting rules cannot be capitalized on an IT Capital project and
14 therefore must be expensed.

15 **d. SDG&E-Risk-9-C21 Incident Related to Medium Pressure -**
16 **CSF Quality Assurance Program**

17 I am requesting \$91,000 in labor above BY 2021 to add back full-year salaries for 0.9
18 FTE. In BY 2021, there were employees who worked only a partial year because of the delay in
19 backfilling QA positions attributable to the COVID-19 pandemic. Without this adjustment, true
20 labor costs would not be accurately reflected. Increases in total RAMP orders observed in
21 forecast years are based on active gas counts as well as projected meter growth, which
22 contributes to increased activities. Reference Table DHT-23 for RAMP QA Inspection activity.

23 **Table DHT-23**
24 **RAMP Quality Assurance Inspections**

QA Inspections	History					Forecast		
	2017	2018	2019	2020	2021	2022	2023	2024
# of Inspections	1,160	1,463	2,135	181	476	1,451	1,465	1,479

1 **E. Smart Meter Operations**

2 Table DHT-24 below summarizes SDG&E’s requested TY 2024 expenses for the Smart
3 Meter Operations cost category.

4 **Table DHT-24**
5 **O&M Summary of Smart Meter Operations Cost Category**

A. Customer Services - Field Operations (In 2021 \$000s)	2021 Adjusted-Recorded	TY2024 Estimated	Change
5. Smart Meter Operations			
Labor	8,410	9,884	1,474
Non-Labor	653	3,403	2,750
Total	9,063	13,287	4,224

6 **1. Description of Costs and Underlying Activities**

7 Smart Meter Operations (SMO) supports the delivery of customer services on premises,
8 responds to customer inquiries, resolves customer problems, and ensures safe, accurate, and
9 reliable metering for SDG&E meters, covering all of San Diego County and South Orange
10 County. The key subgroups within the SMO organization are: Electric Metering Operations,
11 Quality Assurance & Training, Network Operations, Electric Metering Engineering, Smart Meter
12 Field Services and the Smart Meter Capital Program Team. Additional description of each SMO
13 sub-group is provided below. RAMP-related costs for CFO Support include the costs for the
14 following mitigation activities:

15 (1) Behavior Based Safety (BBS) - BBS is a proactive approach to safety and health
16 management, focusing on principles that recognize at-risk behaviors as a frequent cause of both
17 minor and serious injuries. The purpose is to reduce the occurrence of at-risk behaviors by
18 modifying an individual's actions and/or behaviors through observation, feedback and positive
19 interventions aimed at developing safe work habits.

20 (2) Personal Protective Equipment (PPE) - The purpose of SDG&E’s PPE program is to
21 protect employees from the risk of injury by creating a barrier against workplace hazards. PPE
22 includes clothing and equipment designed to protect employees while performing their job (e.g.,
23 flame resistant clothing, gloves, protective eyewear). All employees who are required to use PPE
24 are trained on when PPE is necessary, which PPE is necessary, how to properly
25 don/remove/adjust/wear PPE, limitations of PPE and the proper care/maintenance/life/disposal of

PPE. Table DHT-25 summarizes the safety related risk mitigation costs for Smart Meter Operations.

**Table DHT-25
Summary of Safety Related Risk Mitigation Costs for Smart Meter Operations**

RAMP Activity O&M Forecasts (In 2021 \$000s)						
Workpaper	RAMP ID	Description	BY2021 Embedded Base Costs	TY2024 Estimated Total	TY2024 Estimated Incremental	GRC RSE
1FC005.000 Smart Meter Operations	SDG&E-Risk-8 - C04	Employee Behavioral Accident Prevention Process Program	166	166	0	123
1FC005.000	SDG&E-Risk-8 - C10	Personal Protective Equipment	35	35	0	0*
Total			201	201	0	

*An RSE was not calculated for this activity.

The calculations for the estimated expenses for SMO are included in my workpapers (Ex. SDG&E-17-WP 1FC005.000).

Electric Metering Operations (EMO)

EMO is responsible for electric meter field related activities for commercial customers as well as reading and troubleshooting all Smart Meters. Most of these field activities are related to: wiring instrument transformers and test switches, setting new meters, testing, removing and changing meters, investigating and troubleshooting metering problems, and reading and verifying meters. EMO tests existing electric meters on an annual and bi-annual scheduled basis pursuant to the CPUC’s Direct Access Standards for Metering and Meter Data (DASMMD) guidelines.¹⁷ In D.98-12-080, the CPUC adopted permanent standards for meter products that may be used in California's Direct Access market.¹⁸ These standards were based upon

¹⁷ CPUC, Direct Access Standards for Metering and Meter Data (1999) available at <https://www.sdge.com/sites/default/files/documents/DASMMD.pdf>.

¹⁸ *Id.* at i, stating “These standards were established by California Public Utilities Commission (CPUC) Decision 98-12-080 and are generally broad in scope in order to allow an open architecture approach to metering and meter data, expand technology choices, and provide opportunities for all market participants on an equal basis. In instances where the CPUC did not adopt permanent standards in

1 recommendations made to the CPUC in a report by the Permanent Standards Working Group.¹⁹
 2 SDG&E’s policy is to comply with these standards for all SDG&E customers, in addition to
 3 Direct Access customers. The following Table DHT-26 shows the testing frequency and
 4 customer criteria based on the DASMMD.

5 **Table DHT-26**
 6 **Minimum Meter Maintenance and Testing Schedule**

Maintenance and Testing Frequency	Customer Maintenance and Testing Criteria
One Year Interval	Customer’s annual usage of 2 million kWh or higher
Two Year Interval	Customer’s annual usage between 720,000 and 2 million kWh
Annual Statistical Sample Plan	Non-residential customer’s annual usage less than 720,000 kWh
Residential Meters	Either a formal sampling plan performed annually, or tests done upon request and removal, where applicable
Direct Current (DC) Meters	Either a formal sampling plan performed annually, or tests done upon request and removal, where applicable

7 Nearly 90% of the electric meters in SDG&E’s territory are single-phase residential
 8 metering applications. EMO supports the investigation of these residential customer meters and
 9 replaces meters when necessary. EMO also performs single-phase meter testing, manual meter
 10 reads, and meter read verifications.

11 **Quality Assurance and Training**

12 The Quality Assurance (QA) and Training group is responsible for ensuring the accuracy
 13 and functionality of electric meters and electric metering equipment, identifying potential safety
 14 issues at customer premises, validating that field employees adhere to department policies and
 15 procedures, and certifying that field technicians are trained properly. The QA and Training group
 16 has three primary areas of responsibility: Meter and Instrument Shops, Meter Technician
 17 Auditing (field and desktop), and Meter Technician Training.

D.98-12-080, the standards established by D.97-12-048 and D.98-05-044 are included herein as indicated. This DASMMD is referred to and incorporated by reference into the associated Direct Access tariffs.”

¹⁹ *Id.*

1 **Network Operations**

2 Network Operations is responsible for the collection, processing, and validation of daily
3 reads for all gas and electric meters in SDG&E’s service territory. The group is the business
4 owner and operator of the Meter Data Management System (MDMS), the Collection Engine
5 (CE), and the Operation Reporting System (ORS). The primary purpose of the MDMS and the
6 CE is to ensure that complete and accurate meter read data is provided to the billing system.
7 Network Operations is also responsible for SDG&E’s legacy automated meter reading
8 application (MV-90), which remotely collects data for 500 legacy Interval Data Recorder (IDR)
9 meters. The primary responsibilities of the Network Operations team also include daily (24/7)
10 operation and monitoring of the supported systems and applications, which include performing
11 system and application upgrades, diagnosing and troubleshooting the Smart Meter
12 communication systems, and to provide desktop troubleshooting for meters failing validation,
13 validating data accuracy and completeness, failing meter communications, and monitoring meter
14 events and alarms. Network Operations also retrieves and delivers data related to analytics and
15 safety. Network Operations maintains the capability for customers to use Home Area Network
16 (HAN) devices that allow for customers to monitor usage via OpenWay Collection Engine
17 (OWCE) and the Entryway application.

18 **Smart Meter Capital Programs**

19 The Smart Meter Capital Program Department leads the team responsible for developing
20 the company's long-term metering technology strategy as well as managing the SM 2.0 Capital
21 Project and other smart metering projects. The department ensures implementation, deployment,
22 and maintenance of all metering within the company's service territory are compliant with
23 billing, CPUC regulations, and advanced technology use-cases required by other internal
24 business units. The Smart Meter Capital Program department manages support staff assuring
25 project controls adhere to company best practices, systems support, compliance activities and
26 controls standard operating procedure processes to be leveraged in advance of asset deployment
27 for the SM 2.0 Project.

28 **Smart Meter Field Services**

29 The Smart Meter Field Services Department provides leadership for the planning,
30 development, and implementation of SDG&E’s Smart Meter Field Services solutions. The
31 department collaborates regularly with the Electric Meter Operations, Customer Service Field,

1 Smart Meter Capital Program, Network Operations Engineering (NOE), Smart Meter Data
2 Operations (SMDO) and Electric Metering Engineering (EME) organizations to troubleshoot and
3 deploy field solutions to address smart meter network issues. The Smart Meter Field Services
4 Department manages major field projects within the department, including the development of
5 work scope, budget, schedule, and resource requirements. The team prepares, negotiates and
6 approves agreements for contractors, consultants and vendors.

7 **Electric Metering Engineering (EME)**

8 The primary responsibility of Electric Metering Engineering (EME) is to ensure safe,
9 accurate, and reliable metering. EME's key work responsibilities include determining meter
10 standards and specifications, evaluating, troubleshooting, and approving electric meters,
11 instrument transformers, metering products and equipment, and developing specialized metering
12 designs for field applications such as power generation, net metering, and clean transportation.
13 EME maintains metering software applications related to electric meter configurations, and
14 devices used for meter programming and reading. EME documents new procedures, training aids
15 for new metering products and equipment, and provides training to Metering Field Technicians
16 as well as other technical support to internal groups.

17 The calculations for the estimated expenses for SMO are included in my workpapers (Ex.
18 SDG&E-17-WP 1FC005.000).

19 **2. Forecast Method**

20 Forecasted TY 2024 expenses are based on base year. A base year was chosen because
21 2021 is the last recorded year that accurately reflects the expense level associated with current
22 departmental activity. SMO departmental activity and correlated costs are primarily driven by
23 projects and work order volumes. Of significant consideration is the onset of the SM 2.0 Capital
24 Project to redeploy metering infrastructure to replace aged and obsolescent AMI technology.
25 Further, the complexities arising from the Time Of Use (TOU) transition have increased interval
26 data validation, editing, and field work for customers, requiring significantly more time to
27 generate a customer's bill. Finally, work order volumes are largely driven by outside factors
28 including metering infrastructure failures, customer growth, weather, and emergency incidents.

29 **3. Cost Drivers**

30 Costs are primarily driven by more electric meter changeouts due to increased electric
31 meter failures as a result of "blank displays," a fatal condition that incapacitates the meter;

1 instructors for electric technician training classes including Electric Meter Tester Apprentice
 2 (EMTA) classes; SM 2.0 Capital Project impacts for removals and E-waste of gas modules and
 3 electric meters; and a labor shift from the Vehicle Grid Integration Memo Account (VGIMA).
 4 Each field technician is assigned a vehicle to travel to the job sites and complete a work order.
 5 Therefore, an increase in the number of field technicians corresponds to an increase in the
 6 number of vehicles. The costs associated with incremental company fleet vehicles used by the
 7 field technicians in Smart Meter Operations are covered in the Fleet Services testimony of Mr.
 8 Alvarez (Ex. SDG&E-22).

9 **4. Summary of Smart Meter Operations Costs**

10 SDG&E TY 2024 funding request of \$13.287 million for the Smart Meter Operations
 11 cost category, an increase of \$4.224 million compared to BY 2021, consists of the elements
 12 summarized in Table-DHT-27 below:

13 **Table DHT-27**
 14 **Summary of TY2024 Incremental O&M Expenses for Smart Meter Operations**

Smart Meter Operations (In 2021 \$000s)	Labor	Non- Labor	Total	FTEs
a. Work Order Volume Increase due to Electric Meter Failures	872		872	11.0
b. Electric Meter Tester Apprenticeship Program	476	42	518	5.5
c. Full-year Labor Impact	166		166	1.9
d. New Positions	190		190	1.8
e. Labor Shift from Vehicle GRID Integration Memorandum Account	353	90	443	3.7
f. SM 2.0 Capital Project Impacts: Labor Shift to Capital	-583		-583	-6.2
g. SM2.0 Capital Project Impacts: Removals		1,723	1,723	0.0
h. SM 2.0 Capital Project Impacts: E-waste		895	895	0.0
Total	1,474	2,750	4,224	17.7

15 **Incremental Funding Request**

16 **a. Work Order Volume Increase due to Electric Meter Failures**

17 I am requesting \$872,000 in labor above BY 2021 for 11 additional residential Single-
 18 Phase Technicians (SPT) required to remediate increasing meter failures attributed to technology
 19 reaching end of life. A complication in the remediation process are potential challenges with

1 supply chain constraints until failed meters can be replaced. In recent history, SDG&E
 2 has observed a significant increase in meter failures with an average increase of 58% since
 3 2018. The majority (70% of the total) of meter failures are driven by a condition SDG&E has
 4 termed “Blank Display.” SDG&E has removed over 11,000 meters due to this condition since
 5 the beginning of Smart Meter deployment in 2009. This failure has been traced back to
 6 component failure on the circuit board used to supply power for the meter. After a thorough root
 7 cause analysis (RCA) our smart meter manufacturer has determined this condition primarily
 8 exists on single-phase residential smart meters that were manufactured in the 2009/2010
 9 timeframe. Smart meters built during that timeframe represent about 60% of SDG&E’s installed
 10 meter population (700K total). This identified risk increases the probability of high levels
 11 of future system wide failure rates as it increases the on-going likelihood of failures due
 12 to technology end of life. Table DHT-28 below details failure data since 2016.

13 **Table DHT-28**
 14 **Historical Electric Meter Failures**

Year	Total Meter Failure	% Change (Previous Year)
2016	2,021	
2017	1,921	-5%
2018	2,513	31%
2019	3,784	51%
2020	7,777	106%
2021	11,151	43%

15

1 Using historical failure data SDG&E's Data Analytics group developed the following
2 failure forecast in Table DHT-29 for the next several years:

3 **Table DHT-29**
4 **Forecasted Electric Meter Failures***

Year	Total Meter Failure Forecast	% Change (Previous Year)
2022	15,897	43%
2023	24,297	53%
2024	35,414	46%
2025	49,618	40%
2026	67,276	36%
2027	88,756	32%
2028	114,427	29%
2029	144,656	26%
2030	179,812	24%

*A simple moving average method is used to forecast the long-term trend. Monthly units are averaged with a sliding window of 12-months and a cubic polynomial is fitted to all the historical data. Polynomial coefficients that best fit the data are calculated in Excel (LINEST function) by using the "least squares" method. This polynomial is then used to extrapolate future blank display units in the future.

5 Therefore, 11 additional residential SPTs are required for the incremental work
6 associated with replacing the increasing meter failures to ensure continued reliable, timely and
7 accurate customer meter data acquisition for billing.

8 **b. Electric Meter Tester (EMT) Apprenticeship Program**

9 I am requesting \$476,000 in labor, and \$42,000 in non-labor above BY 2021 for 5.5 FTE
10 EMTAs to prepare for meter deployments. EMO will be responsible for changing out electric
11 meters installed on instrument-rated services when the SM 2.0 project begins. We estimate there
12 are 30,000 sites that exist in this category. These electric meter type change outs for these
13 services can only be performed by Journeyman Electric Meter Testers. It takes three years of
14 training to become a Journeyman Electric Meter Tester. An EMTA class must begin in 2024 to
15 ensure SDG&E has enough qualified resources to change out the instrument rated meters when
16 electric deployment of SM 2.0 begins. Six journeymen meter workers are required to assist with
17 the increased workload created by SM 2.0 electric meter deployment starting in 2026. These
18 resources are also needed for the following activities: increased field testing to ensure system
19 accuracy, increased troubleshooting and maintenance activities, field activities associated with
20 new communities, and increased installation and maintenance of metering applications for

1 generation interconnection projects beyond 2026. SDG&E's resource estimate is based on an
2 average commercial account meter changeout time estimate of four meters per day per
3 technician.

4 **c. Full Year Effect Labor**

5 I am requesting \$166,000 in labor above the BY 2021 to add back full-year salaries for
6 1.9 FTE. In BY 2021, there were employees who worked only a partial year because of a delay
7 in backfilling due to lack of qualified applicants during the COVID-19 pandemic. Without this
8 adjustment, true labor costs would not be accurately reflected.

9 **d. Incremental Positions**

10 I am requesting \$190,000 in labor for 1.8 FTE above BY 2021 consisting of the
11 following positions:

12 **Senior Instructor (\$88,000 / 0.9 FTE)**

13 The Senior Instructor acts as a subject matter expert to advise field operations on changes
14 to policy and standards to ensure safe work practices. The Senior Instructor also provides
15 operational supervision and oversight for all technical training around electric metering,
16 including development and coordination for all EMO training programs. This position provides
17 guidance to ensure that safety regulations and metering standards are followed at the EMO
18 training facility and ensures all Instructors follow safety standards. In addition, this position
19 ensures all Joint Apprentice Committee (JAC) State approved apprentice program qualifications
20 for Electric Meter Tester Apprentices are met, training standards are adhered to and are
21 consistent across the EMO organization.

22 **Business System Analyst (\$102,000 / 0.9 FTE)**

23 The Business System Analyst position is responsible for ensuring the accuracy of
24 information collected by EMO metering technicians, monitoring electric meter performance,
25 managing returned merchandise processes, and ongoing coordination EMO tool purchasing. The
26 Business System Analyst works directly with EMO, EME, NOE, SMDO and other internal
27 customers. The Business System Analyst is also responsible for performing daily operational
28 activities in the following areas: service order review, meter compliance statistics, meter data
29 analytics, testing equipment evaluation, meter failure tracking, shop systems support, purchase
30 order management, and SAP Subject Matter Expert (SME) activities.

1 **e. Labor Shift from Power Your Drive (PYD) Refundable**

2 I am requesting \$353,000 in labor, for 2.4 FTE Electric Vehicle (EV) Equipment
3 Technicians, 1.3 FTE EV Operations Analysts, and \$90,000 in contract labor above BY 2021
4 due to a shift from the Vehicle Grid Integration Memo Account (VGIMA) to O&M in TY2024.
5 As part of the PYD portfolio of EV programs, SDG&E owns over 3,000 charging stations.²⁰
6 These charging stations and related infrastructure will continue to be repaired and maintained by
7 the EV Technicians. Charging software, inventory, meter testing, and account maintenance will
8 also continue to be managed by the EV Operations Analyst.

9 On March 31, 2016, SDG&E filed Advice Letter 2877-E/2886-E establishing the Electric
10 Vehicle-Grid Integration (VGI) pilot program schedule pursuant to D.16-01-045.²¹ The VGIMA
11 was established to record incremental long-term O&M expenses for the VGI pilot program.²² As
12 explained in the testimony of Regulatory Accounts witness Jason Kupfersmid (Ex. SDG&E-43),
13 the VGIMA will be closed effective December 31, 2023, and the ongoing costs of the program
14 are included in the 2024 Test Year.

15 **f. Capital Project Impacts - Labor Shift to Capital Smart Meter**
16 **2.0**

17 I am requesting a (\$583,000) reduction in labor for (6.2) FTE below BY 2021 related to
18 an internal resource shift to Capital responsible for development, testing and implementation of
19 the Smart Meter 2.0 Project through the end of the deployment cycle, performing work and
20 support for Smart Meter 2.0.

²⁰ Power Your Drive is a program started in 2017 providing low-cost EV charging stations to make EV charging stations more accessible to apartment and condo dwellers, and workplace employees. To date, SDG&E has installed over 3,000 charging stations at 255 locations.

²¹ SDG&E Advice Letter 2877-E/2886-E, approved and effective December 16, 2016, Establishment of the Vehicle-Grid Integration (VGI) Pilot Program Schedule and Participation Payment Pursuant to Commission Decision 16-01-045, available at <https://tariff.sdge.com/tm2/pdf/2877-E.pdf>. See also, D.16-01-045, OP 3(a) at 181, states in part, “The alternative VGI program terms authorizes and approves a \$45 million startup budget, plus cost recovery through future general rate case proceedings for justified capital and operations and maintenance expenses, for San Diego Gas & Electric Company (SDG&E) to implement the ‘2016 Vehicle VGI Pilot Program,’ which is patterned after the Proposed Settlement, with the additional modifications made by this decision.”

²² See SDG&E Advice Letter 2881-E, approved May 23, 2016, and effective May 25, 2016, Establishment of the Vehicle Grid Integration Memorandum Account Pursuant to Commission Decision 16-01-045 available at <https://tariff.sdge.com/tm2/pdf/2881-E.pdf>.

1 **g. Capital Project Impacts - Smart Meter 2.0 Removals**

2 I am requesting \$1,723,000 in contract non-labor above BY 2021 for removal expense
3 associated with the replacement of gas modules and electric meters as a result of implementing
4 SM 2.0 Capital Project.²³ The contract non-labor expense for removals has been normalized
5 over the four-year GRC cycle based on the projected SM 2.0 Capital Project deployment
6 schedule.²⁴ The removal expenses are not included in the SM 2.0 capital forecast.

7 **h. Capital Project Impacts - Smart Meter 2.0 E-waste**

8 I am requesting \$895,000 in contract non-labor above BY 2021 for E-Waste. The
9 contract non-labor incremental increase for E-Waste/Disposal is the expense for the proper
10 handling and disposal of scrap meter/modules as a result of implementing the SM 2.0 Capital
11 Project.²⁵The costs for E-waste have been normalized over the four-year GRC cycle based on the
12 projected SM 2.0 Capital Project deployment schedule.²⁶

13 **V. CAPITAL**

14 I am sponsoring the business rationale for each of the following IT capital projects. The
15 estimated capital expense requests are included in the testimony and capital workpapers of Mr.
16 Exon (Ex. SDG&E-25 Ch. 2 and Ex. SDG&E-25-CWP 218810, 00920AI, 00920T, 00900D, and
17 00900E). Table DHT-30 summarizes the total capital forecasts for 2022, 2023, and TY 2024.

²³ See Information Technology testimony of William J. Exon (Ex. SDG&E-25, Ch. 2, Ex. SDG&E-25-CWP 218810).

²⁴ See supplemental workpaper 3 attached to Ex. SDG&E-17-WP 1FC005.000.

²⁵ See Information Technology testimony of William J. Exon (Ex. SDG&E-25, Ch. 2, Ex. SDG&E-25-CWP 218810).

²⁶ See supplemental workpaper 4 attached to Ex. SDG&E-17-WP 1FC005.000.

**Table DHT-30
Capital Expenditures Summary of Costs**

IT Capital (In 2021 \$000s)				
CWP	CS Field Operations	Estimated 2022	Estimated 2023	Estimated 2024
218810	A. Smart Meter 2.0	4,292	32,802	58,459
00920AI / 00920T	B. FSD Scheduling & Dispatch Phase / Data & Analytics Platform	13,400	13,839	19,296
00900D / 00900E	C. Smart Meter Product / Upgrade	5,141	6,208	3,663
	Total	22,833	52,849	81,418

A. Smart Meter 2.0

1. Business Justification

The forecast for Smart Meter 2.0 for 2022, 2023, and 2024 is \$4,292,000, \$32,802,000, and \$58,459,000, respectively. Smart Meter 2.0 is the Company’s replacement to its initial AMI system, that was deployed in the 2009 to 2010 timeframe. AMI enables secure two-way communication between SDG&E’s business and customers’ meters. Smart Meter 2.0 consists of integrated meter systems and controls, communication networks, data processing and management systems. Since the original deployment, incremental modernization efforts have occurred to the existing AMI system, however SDG&E’s current meters are nearing the end of their useful life. SDG&E seeks to first replace its gas modules and subsequently transition to electric meter replacements. In addition to ensuring reliable, timely and accurate customer meter data acquisition for billing, the Company is striving to enhance grid capabilities in this next generation of AMI technology. Next generation capabilities will enable customer energy technology choices, additional data points for customer energy usage insights, improve outage detection and response times, and facilitate the safe and reliable operation of the grid.

As mentioned above, the next generation AMI technology is a critical cornerstone technology spanning across all four themes in SDG&E’s Grid Modernization Plan, developed pursuant to D.18-03-023.²⁷ The themes are as follows:

- Advancing interconnection and modeling to further operationalize DER

²⁷ D.18-03-023 at 34-36 (OP 2, 4, 7); Appendix A.

- 1 • Improving visibility, management, and control of both the distribution system and
- 2 DERs
- 3 • Developing reliable, resilient and secure communication network
- 4 • Leveraging Distributed Energy Resources (DER) technology to support grid
- 5 reliability and resilience

6 With growing penetration of DER and the increasing needs to have granular visibility and
7 management of the distribution system, a robust and reliable communication network, accurate
8 modeling and sensing data, intelligent platforms like Smart Meter 2.0 are becoming increasingly
9 important for grid modernization. Some key initiatives that are highly dependent on the evolution
10 of the existing AMI network and forthcoming in state proceedings due to safety, reliability, or
11 power quality benefits, are listed below:

12 (1) Distributed Energy Resource Management System (DERMS) and Demand
13 Response Management System (DRMS) integrate customer needs to grid needs
14 and make optimized management decisions. These systems require 100%
15 accurate customer generation to system data, which is then aggregated in a central
16 DERMS system to support dynamic customer generation dispatch and charging
17 limits. The technology utilizes the electric system model, eliminating the
18 capability of performing this function using edge computing. Foundational to this
19 technology are both correct transformer load modeling (TLM) and transformer
20 phase connectivity.

21 (2) As mentioned, TLM identification and phase identification technology also
22 improves the accuracy of customer outage identification and notifications. This
23 becomes even more important for customers impacted by Public Safety Power
24 Shutoff (PSPS) or Load Curtailment.

25 (3) Innovative programs such as wire-down detection and back-feed detection
26 reduce public and employee safety risk and wildfire risk. Both play an important
27 role in SDG&E's commitment to public and employee safety. These technologies
28 require granular AMI voltage and load data, analytical software and correct TLM
29 to function correctly.

30 (4) Finally, voltage management activities, such as Volt Var Optimization
31 programs, rely on real-time voltage data from AMI meters to detect abnormal

1 voltage events and make corrective actions.

2 The only viable technology capable of providing this data at scale are Smart Meter 2.0
3 meters with the associated communication infrastructure to support the additional data capture.
4 Furthermore, Smart Meter 2.0 will enhance the customer experience by enabling additional data
5 points for customer energy usage insights, subsequently leading to better energy efficiency and
6 demand response outcomes. Smart Meter 2.0 also enables the possibility of system
7 enhancements to the gas infrastructure that will enable same-day high gas consumption detection
8 for immediate mitigation.

9 Smart Meter 2.0 leverages proven technology with years of futureproofing to ensure
10 long-term secure and accurate relay of customer meter data information. SDG&E expects to
11 initially begin with the deployment of gas modules followed by the electric meter replacements.

12 **2. Post-Test Year**

13 As described in the Post-Test Year Ratemaking testimony of Melanie E. Hancock (Ex.
14 SDG&E-45), in this GRC, SDG&E is requesting a revenue requirement for 2025-2027. Ms.
15 Hancock proposes a mechanism to determine the level of revenue requirement for those years.
16 The mechanism proposed by Ms. Hancock for capital-related costs will not provide SDG&E
17 with adequate funding for the Smart Meter 2.0 project. Accordingly, I sponsor the business
18 justification for SDG&E's requested costs for 2025-2027 that will enable SDG&E to continue to
19 reliably acquire customer meter data remotely to accurately convey and bill customer
20 consumption timely, and transfer meter data to operations, customer programs, and third-party
21 providers.

22 As described in Section D of my testimony above, Smart Meter 2.0 will proactively
23 replace 1.5 million electric meters and 900 thousand gas meters with attached gas AMI modules.
24 Since the original AMI deployment in 2009, incremental modernization efforts have occurred to
25 the existing system, however the current meter system is nearing the end of its useful life. As a
26 result, SDG&E seeks to proactively replace the gas modules and subsequently the electric meters
27 over the timeframe of 2023 through 2030. Smart Meter 2.0 will incrementally increase
28 deployment levels after 2024, therefore relying on historical averages is not representative of the
29 work nor the investment SDG&E intends to make to project in the future.

30 Accordingly, rather than applying the capital-related part of the post-test year mechanism
31 proposed by Ms. Hancock to Smart Meter 2.0, which is based on a historical average, SDG&E

1 proposes to use the direct capital-related costs described in Table DHT-31 below to establish
2 revenue requirements for years 2025-2027 and escalate those costs consistent with all of capital
3 costs in Ms. Hancock’s proposed mechanism. Escalation is not included in the figures in the
4 table below and would be applied to the forecasts.

5 **Table DHT-31**
6 **Capital Expenditures Summary of Post-Test Year Costs**

SMART METER (SM) 2.0 CAPITAL (In 2021\$)			
	Estimated 2025 (\$000)	Estimated 2026 (\$000)	Estimated 2027 (\$000)
TOTAL SM 2.0 CAPITAL	59,989	69,169	54,163

7 The post-test year proposal herein is limited to capital treatment in the post-test years.
8 The O&M costs associated with Smart Meter 2.0 are included in Ms. Hancock’s post-test year
9 mechanism proposal and are covered in my prepared testimony.

10 SDG&E requests the CPUC adopt post-test year capital forecasts, as shown in Table
11 DHT-31 above, for years 2025, 2026, and 2027. Ms. Hancock provides the revenue requirement
12 associated with the figures in Table DHT-31, in her testimony, of which incorporates escalation
13 and loading considerations.

14 **B. Field Service Delivery**

15 **1. Business Justification**

16 The forecasts for Field Service Delivery (FSD) Scheduling & Dispatch Phase/Data &
17 Analytics Platform for 2022, 2023, and 2024 are \$13,400,000, \$13,839,000, and \$19,296,000,
18 respectively.

19 FSD is a multi-year program to implement integrated, cohesive, and modern technology
20 solutions for field operations and supporting business organizations. Key objectives and value
21 drivers for the FSD platform include the following:

- 22 • Replace end of life and unsupported software
- 23 • Consolidate software applications
- 24 • Improve customer experience and satisfaction

25 The FSD program will focus on implementing scheduling, dispatch, mobility, and
26 analytics tools to improve field operations and customer satisfaction. This new technology
27 solution will consolidate the Scheduling, Dispatch and Field Work Execution tools for Electric
28 and Gas Distribution, and Customer Service, replacing the current Click and SORT

1 (ABB/Ventyx) applications, into a single software solution. This will be accomplished in
2 multiple phases: Phase 1 will focus on implementing the solution for electric distribution
3 operations and gas distribution operations, and Phase 2 will focus on customer service and other
4 field operational groups.

5 A Data and Analytics platform will also be developed in concert with the new technology
6 solution enabling a single view of work across an extended number of systems empowering
7 higher level decision-making. Benefits include minimizing customer impacts by lack of
8 operations visibility, enhanced forecasting capabilities, planning tools, and workload
9 management based on resource and employee skillset constraints, better situational awareness of
10 crew locations, and improved ability to estimate work durations based on work types.

11 C. Smart Meter Product / Upgrade

12 1. Business Justification

13 The forecast for Smart Meter Product and Upgrade for 2022, 2023, and 2024 are
14 \$5,141,000, \$6,208,000, and \$3,663,000, respectively.

15 The Smart Meter Product teams will upgrade production and non-production Meter Data
16 Management System (MDMS) application software OpenWay Collection Engine (OWCE)
17 application software, What's Up Gold (WUG) network monitoring application software and
18 Certicom Decryption and Encryption Key Servers to their latest vendor provided version.

19 The Smart Meter Product team will develop numerous reporting, analytics, workflow,
20 and process automation tools to align with significant changes in the enterprise and the upcoming
21 SM 2.0 Project. Lastly, the Smart Meter Product teams will implement numerous technical
22 investments in Application Test Automation and system monitoring and reporting.

23 VI. CONCLUSION

24 My O&M and capital forecasts were carefully developed and scrutinized by CS-Field
25 Operations staff members and me as representing a reasonable and prudent level of funding for
26 SDG&E CS-Field Operations. The expense forecasts are based on diligent, thorough and
27 transparent consideration of the myriad of factors influencing costs associated with providing
28 CS-Field Operations services. The funding requested in my testimony is critical to providing
29 safe, reliable, efficient services at customer premises, and reflects SDG&E's efforts to
30 continuously improve its operations for the benefit of ratepayers. This concludes my prepared
31 direct testimony.

1 **VII. WITNESS QUALIFICATIONS**

2 My name is David Thai. I am employed by San Diego Gas & Electric Company
3 (SDG&E) as the Smart Meter Capital Program and Operations Manager. My business address is
4 4949 Greencraig Lane, San Diego, California, 92123. My current responsibilities include
5 overseeing SDG&E's Smart Meter Capital Program, Smart Meter Network and Data Operations,
6 Smart Meter Field Support, and Metering Engineering. I assumed my current position in 2020. I
7 have been employed by SDG&E since 2008 and have held positions of increasing responsibility
8 in Substation Construction and Maintenance, Distribution Planning, Transmission Engineering
9 and Project Management, Grid Operations, Electric and Fuel Procurement, and Smart Meter
10 Operations. I hold a Bachelor of Science degree in Electrical and Electronic Engineering from
11 California State University, Sacramento. I am a licensed Professional Engineer in the State of
12 California. I have not previously testified before the Commission.

APPENDIX A
GLOSSARY OF TERMS

APPENDIX A – Glossary of Terms

Acronyms	Definition
ACOR	Atmospheric Corrosion
AMI	Advanced Metering Infrastructure
BBS	Behavior-Based Safety
BY	Base Year
CAVAMA	Climate Adaptation Vulnerability Assessment Memorandum Account
CE	Collection Engine
CEI	Clean Energy Innovation
CIS	Customer Information Systems
CO	Carbon Monoxide
CFO	Customer Field Operations
CPUC	California Public Utility Commission
CS	Customer Services
CSF	Customer Services Field
CSFO	Customer Service Field Operations
CSFT	Customer Service Field Technicians
CSO	Customer Service Order
CWP	Capital Workpaper
D	Decision
DASMMD	Direct Access Standards for Metering and Meter Data
DER	Distributed Energy Resources
DERMS	Distributed Energy Resource Management System
DRMS	Demand Response Management System
DOT	Department of Transportation
EME	Electric Metering Engineering
EMO	Electric Metering Operations
EMTA	Electric Meter Tester Apprentice
ETS	Electric Troubleshooter
EV	Electric Vehicle

Acronyms	Definition
FSD	Field Service Delivery
FTE	Full-time Equivalent
GHG	Greenhouse Gas
GMPCP	Gas Meter Performance Control Program
GRC	General Rate Case
HAN	Home Area Network
HBI	High Bill Investigation
IDR	Interval Data Recorder
IOU	Investor-Owned Utilities
IT	Information Technology
JAC	Joint Apprentice Committee
MSA	Meter Set Assembly
MDMS	Meter Data Management System
NJT	Non-Job Time
NOE	Network Operations Engineering
O&M	Operations and Maintenance
OCM	Operational Change Management
OIR	Order Instituting Rulemaking
ORS	Operation Reporting System
OSHA	Occupational Safety and Health Administration
OWCE	OpenWay Collection Engine
P1	Priority 1 Emergency Orders
PMC	Planned Meter Change
PPE	Personal Protective Equipment
PSPS	Public Safety Power Shutoff
PYD	Power Your Drive
QA	Quality Assurance
RAMP	Risk Assessment Mitigation Phase
RSE	Risk Spend Efficiency
SDG&E	San Diego Gas and Electric

Acronyms	Definition
SM	Smart Meter
SMDO	Smart Meter Data Operations
SME	Subject Matter Expert
SMO	Smart Meter Operations
SORT	Service Order Routing Tool
SMS	Safety Management System
TY	Test Year
TOU	Time of Use
TLM	Transformer Load Modeling
VGIMA	Vehicle Grid Integration Memorandum Account
V&S	Vacation and Sick
WUG	What's Up Gold

APPENDIX B

DESCRIPTION OF ACTIVITY PERFORMED

APPENDIX B

Order Type - Description of Activity Performed

Line No.	ORDER TYPE	DESCRIPTION OF ACTIVITY PERFORMED
1	CHANGE OF ACCOUNT - CA ELEC	This order type is used for field work performed to establish a new customer's account for electric service. No appliance work is performed.
2	CHANGE OF ACCOUNT - CA GAS	This order type is used for field work performed to establish a new customer's account for gas service. These orders are issued when the gas meter is already on.
3	CHANGE OF ACCOUNT - CA GAS & ELEC	This order type is used for field work performed to establish a new customer's account for gas and electric service. These orders are issued when the electricity cannot be turned on remotely and the gas meter is already on.
4	CHANGE OF ACCOUNT - GIVE NOTICE	This order type is used when a field technician was going to shut off gas service but, while at the premises, determines that a new occupant has moved in. The new occupant is given a 24-hour notice of the requirement to establish an account. The gas is left on.
5	CHANGE OF ACCOUNT - RTO	This order type is used when a tenant moves out. Responsibility for the account is moved to the property owner and a field technician restores service. RTO refers to "Return to Owner".
6	COLLECTIONS - CREDIT SHUT OFF	This order type is used when a customer's service is manually shut off for non-payment.
7	COLLECTIONS - FIRST CALL	This order type is used when the customer account is past due and the field employee makes a first attempt to collect. A 48-hour notice is left informing the customer the meter will be shut off if the outstanding balance is not paid.
8	COLLECTIONS - SECOND CALL	This is where the customer account is past due. The field employee makes a second attempt to collect. If the second collection attempt fails, the electric and/or gas meter is shut off and secured.
9	COLLECTIONS - THIRD CALL	This is where the customer account is past due. This is a third attempt to collect or close meter. If the customer is unable to pay, the meter is turned off and secured.
10	OPT-OUT READ	This order type is used when a customer has elected to enroll in SDG&E's Opt-Out Program, so a field employee takes a manual read of customer's electric and gas meter bi-monthly.
11	CSO - APPLIANCE ADJUSTMENTS	This order type is used when a customer requests service on a gas appliance (e.g., inoperative water heater).

APPENDIX B (Continued)

Order Type - Description of Activity Performed

Line No.	ORDER TYPE	DESCRIPTION OF ACTIVITY PERFORMED
12	CSO - APPLIANCE MECHANIC WORK	This order type is used when a field technician performs gas appliance/equipment work at a commercial/industrial facility, as well as for follow-up orders where a higher skilled technician is needed to service a customer's gas appliance.
13	CSO - CARBON MONOXIDE-EMERGENCY	This order type is used when a customer reports Carbon Monoxide (CO) symptoms or was transported for medical treatment where CO poisoning is suspected. The field technician validates the operation of the gas appliances and takes action to repair or make the appliance safe, as needed.
14	CSO - CARBON MONOXIDE-NON-EMERGENCY	This is a service order for which the customer has requested that a field technician check their premises for Carbon Monoxide (CO); the customer has not experienced any CO symptoms.
15	CSO - HIGH PRESSURE	This order type is used when a customer has reported possible pressure problems at an appliance. The field technician checks the appliance for proper operation, as well as the pressure supplied at the meter.
16	CSO - NO GAS	This is a service order for which a customer has indicated they have no gas. The field technician investigates the source of the problem, takes corrective action and restores gas service as needed.
17	CSO - OTHER MISC GAS & ELEC CUSTOMER REQUESTS	This order type is used when a customer calls with a non-standard request. For example, they have no power in a portion of their home or want to know if an exposed pipe in their yard is a gas line. The service technician investigates the customer's concern.
18	CSO - SCHOOL LEAK SURVEYS	This order type is used when a school requests a complete survey of their gas lines to ensure the integrity of their gas system. The field technician performs an inspection, including inspecting all appliances, to validate the system is leak free and/or identify needed repairs.
19	CSO - SEASONAL OFF	This order type is used when a customer requests the gas to be shut off on a heating appliance. The field technician performs a safety check of the appliance and leaves the appliance off.
20	CSO - SEASONAL ON MULTIPLES	This order type is used when a multi-unit premise, such as an assisted living establishment, requests that a service technician light the pilots on gas space heating appliances. The appliances are also checked for safety.
21	CSO - SEASONAL ON SINGLES	This order type is used when a customer (single-unit premise) requests that the pilot on their gas space heating appliance be lit. The appliance is also checked for safety.

APPENDIX B (Continued)

Order Type - Description of Activity Performed

Line No.	ORDER TYPE	DESCRIPTION OF ACTIVITY PERFORMED
22	FUMIGATION/BUG FOGGER	This order type is used when a customer requests that the gas be shut off or restored for fumigation activity. For shut off, the meter is closed and secured. For restores, the gas is restored and appliances are serviced.
23	GAS LEAKS - EMERGENCY B&B INSIDE	This order type is used when a customer requests emergency service to address an interior gas line or connector that is broken. (B&B = broken and blowing)
24	GAS LEAKS - EMERGENCY B&B OUTSIDE	This order type is used when a customer requests emergency service to address an exterior gas line or connector that is broken. (B&B = broken and blowing)
25	GAS LEAKS - EMERGENCY AGENCY REQUEST	This order type is used when an external agency (e.g., fire department) contacts the company and a field technician responds to a gas leak, fire, etc.
26	GAS LEAKS - FIRE AND EXPLOSIONS	This order type is used when a customer requests field response to a fire or explosion.
27	GAS LEAKS - HAZARD	This order type is used when a customer reports a gas leak and, based on the information provided, it is categorized as a possible hazard. The field technician investigates, makes the condition safe, and repairs any leaks to the extent possible. The customer may be referred to an outside service provider if the repair is beyond the scope of the utility.
28	GAS LEAKS – NON-HAZARD	This order type is used when a customer reports a gas leak and, based on the information provided, it is categorized as non-hazardous. The technician investigates, makes the condition safe, and repairs any leaks to the extent possible. The customer may be referred to an outside service provider if the repair is beyond the scope of the utility.
29	HBI – HIGH BILL INVESTIGATION	This order type is used when a customer requests that a service technician inspect the facility and related appliances due to a higher than expected bill.
30	METER WORK O&M - ATMOSPHERIC CORROSION	This is a service order issued to remedy atmospheric corrosion or other abnormal operating conditions on an above ground meter set assembly (MSA). The field technician identifies and repairs abnormal operating conditions found on the MSA.
31	METER WORK O&M - CURB	This order type is used for DOT-required curb meter inspections. All curb meters are inspected every three years. Follow-up orders to correct conditions found that are not completed as part of the inspection are also included, e.g., replace fittings, regulator, or meter.

APPENDIX B (Continued)

Order Type - Description of Activity Performed

Line No.	ORDER TYPE	DESCRIPTION OF ACTIVITY PERFORMED
32	METER WORK O&M - CUSTOMER COMPANY CHANGE ELECTRIC	This order type is used when an electric meter is changed due to routine maintenance issues.
33	METER WORK O&M - CUSTOMER COMPANY CHANGE GAS	This order type is used when a gas meter is changed due to routine maintenance issues.
34	METER WORK O&M - CUSTOMER COMPANY TEST GAS	This order type is used when the meter is selected for replacement under SDG&E's Gas Meter Performance Control Program, or is replaced in response to a customer request during a high bill investigation (HBI).
35	METER WORK O&M - MISCELLANEOUS	This order type is used when a field technician performs routine maintenance on the gas or electric meter. Examples include installing/removing life support seals and replacing an unreadable meter index.
36	METER WORK O&M - PERIODIC TEST CHANGE GAS	This order type is used when a field technician changes a gas meter so it can be tested for accuracy. These orders are part of SDG&E's Gas Meter Performance Control Program.
37	NONPAY TURN ON - CREDIT CUT INS	This order type is used when a customer's service is turned back on after paying the balance on the account.
38	READ & VERIFY - REREADS	This order type is used when a meter is re-read for billing or other purposes.
39	TURN ON/SHUTOFF - CUST/COMPANY REMOVE/RESET - ELEC	This order type is used when a field technician removes or reinstalls an electric meter.
40	TURN ON/SHUTOFF - CUST/COMPANY REMOVE/RESET - GAS	This order type is used when a field technician removes or reinstalls a gas meter.
41	TURN ON/SHUTOFF - GIVE NOTICE CUT	This order type is used when a customer has been given 24 hours to establish an account and they have not contacted the utility. The field technician closes and secures the meter.
42	TURN ON/SHUTOFF - SHUT OFF ELECTRIC	This order type is used when a customer requests that electric service be shut off. Electric service is shut off remotely when possible.

APPENDIX B (Continued)

Order Type - Description of Activity Performed

Line No.	ORDER TYPE	DESCRIPTION OF ACTIVITY PERFORMED
43	TURN ON/SHUTOFF - SHUT OFF GAS	This is a service request to shut off gas service. The field technician turns off the gas service at the customer's meter.
44	TURN ON/SHUTOFF - SHUT OFF GAS & ELECTRIC	This order type is used when a customer requests that both their electric and gas service be shut off. The field technician closes and secures the gas meter. The electric service is shut off remotely when possible.
45	TURN ON/SHUTOFF - SHUT OFF IN ERROR	This order type is used when gas or electric service is restored after being turned off for an unknown reason.
46	TURN ON/SHUTOFF - SOFT SHUT OFF GAS & ELECTRIC	This order type is used when a customer request was initiated to shut off both the electric and gas service. The service technician does not close the meters. Information is left informing the new customer to call for service.
47	TURN ON/SHUTOFF - SOFT TURN ON GAS & ELECTRIC	This order type is used when a new customer has called for service. The gas meter is read and the electric service is turned on. No appliances are serviced.
48	TURN ON/SHUTOFF - TURN ON ELECTRIC	This order type is used when a new customer has called for service. The field technician turns on the electric service.
49	TURN ON/SHUTOFF - TURN ON GAS & ELECTRIC	This order type is used when a new customer has called for service. The gas and electric service is turned on. All gas appliances are serviced.
50	TURN ON/SHUTOFF - TURN ON GAS	This order type is used when a new customer has called for service. The field technician turns on the gas meter and all gas appliances are serviced.
51	MISCELLANEOUS - HOUSELINE TEST PURGE O&M	This order type is used when customer-owned piping for a pre-established account is tested by the field technician to ensure the gas is odorized.
52	SMART METER	This order type is used for work related to Smart Meter equipment. Examples include Opt-Out and Smart Meter device replacement.
53	INCOMPLETE	This order type is used when a field technician is not able to complete an order, e.g., customer not home, cannot access meter, etc.
54	NON-FIELDED GAS MODULE TROUBLESHOOT	This activity is performed at the yard when the technician is troubleshooting the gas modules.

SDG&E 2024 GRC Testimony Revision Log –August 2022

Exhibit	Witness	Page	Line or Table	Revision Detail
SDG&E-17	David H. Thai	DHT-iii	SUMMARY / Summary of Requests	Revised TY 2024 Estimated from 40,462 to 40,337 and Change from 7,120 to 6,995.
SDG&E-17	David H. Thai	DHT-1	Table DHT-1	Revised TY 2024 Estimated from 40,462 to 40,337 and Change from 7,120 to 6,995.
SDG&E-17	David H. Thai	DHT-2	Line 17	Changed “is” to “are.”
SDG&E-17	David H. Thai	DHT-4	Line 15	Added “the.”
SDG&E-17	David H. Thai	DHT-13	Table DHT-10	Revised Smart Meter Operations TY2024 Estimated from 13,412 to 13,287 and Change from 4,349 to 4,224. Revised Total from 40,462 to 40,337 and Change from 7,120 to 6,995.
SDG&E-17	David H. Thai	DHT-29	Table DHT-23	Revised # of QA Inspection Forecast in 2022; 2023; and 2024 from 1,241; 1.337; and 1,349 to 1,451; 1,465; and 1,479.
SDG&E-17	David H. Thai	DHT-30	Table DHT-24	Revised TY2024 Estimated Non-Labor from 3,528 to 3,403 and Change from 2,875 to 2,750. Revised Total from 13,412 to 13,287 and Change from 4,349 to 4,224.
SDG&E-17	David H. Thai	DHT-35	Lines 10-11	Revised SDG&E TY 2024 funding request from 13.412 to 13.287 million for the Smart Meter Operations cost category. Revised the increase from 4.349 to 4.224 million compared to BY 2021.
SDG&E-17	David H. Thai	DHT-35	Table DHT-27	Revised Electric Meter Tester Apprenticeship Program Non-Labor from 167 to 42 and Total from 643 to 518. Revised Total Non-Labor for Smart Meter Operations from 2,875 to 2,750 and Total from 4,349 to 4,224.
SDG&E-17	David H. Thai	DHT-37	Line 9	Revised non-labor above BY 2021 from \$125,000 to \$42,000. Deleted the footnote.
SDG&E-17	David H. Thai	DHT-9, 15, 31	Tables: DHT-9, DHT-12, DHT-25	Revised RSE value for SDG&E-Risk-8-C04 to be 123 instead of 53.