Company: Southern California Gas Company (U 904 G)
Proceeding: 2024 General Rate Case
Application: A.22-05-015
Exhibit: SCG-06-2R-E

SECOND REVISED

PREPARED DIRECT TESTIMONY OF

RICK CHIAPA, STEVE HRUBY, AND AARON BELL

(GAS TRANSMISSION OPERATIONS AND CONSTRUCTION)

ERRATA

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

May 2023

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APPENDICES

SUMMARY

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)			
O&M	2021 Adjusted-Recorded	Forecast TY 2024	Change
Non-Shared	38,218	38,754	536
Shared	9,008	13,303	4,295
Total O&M	47,226	52,057	4,831

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)				
	2021 Adjusted-Recorded	**Estimated 2022**	**Estimated 2023**	**Estimated 2024**
NON-COLLECTIBLE (NC)		160,642	119,078	105,846
COLLECTIBLE (CO)		21,852	31,664	805
Total CAPITAL	**250,910**	**182,494**	**150,742**	**106,651**

Summary of Requests

In total, Southern California Gas Company (SoCalGas) requests that the California Public Utilities Commission (CPUC or Commission) adopt its Test Year 2024 (TY 2024) General Rate Case (GRC) forecast of $52,057,000 for Gas Transmission operations and maintenance (O&M), Gas Control & System Planning, Control Center Modernization (CCM), and Transmission & Storage Strategy. The forecast is composed of $38,754,000 for non-shared service activities and $13,303,000 for shared service activities. SoCalGas further requests the Commission adopt its forecast for capital expenditures of $182,494,000 (2022), $150,742,000 (2023), and $106,651,000 (2024) for Gas Transmission, Construction, and CCM capital costs. These expenditures will promote the safe and reliable delivery of natural gas through the transmission system, while complying with state and local regulations. SoCalGas's O&M and capital requests are reasonable and fully justified in that the activities:

1. Are consistent with applicable laws, codes, and standards established by local, state, and federal authorities;
2. Maintain the safety and reliability of the gas transmission system;
3. Address operations, maintenance, and construction needs;

4. Support SoCalGas's commitment to mitigate risks associated with hazards to public and employee safety, infrastructure integrity, system reliability, and sustainability;
5. Maintain and strengthen a qualified workforce; and
6. Align with California's climate goals to maintain a resilient gas grid through the energy transition to support a carbon neutral economy and a transition to a net zero energy future.

Specific capital projects for gas transmission pipelines and appurtenances, as well as projects associated with compressor stations that help transport gas to support the larger gas transmission operations, encompass the following:

1. Pipeline replacements due to class location changes;
2. Freeway and franchise pipeline relocations;
3. Construction of new pipeline;
4. Capital improvements to compressor stations;
5. Cathodic protection improvement via installation of deep well anodes and pipeline recoating;
6. Measurement & regulation replacement and/or improvements;
7. Upgrading and/or replacing security and auxiliary equipment;
8. Optical Pipeline Monitoring (OPM)1 stations and High Consequence Area (HCA) methane sensors related to CCM; and
9. Equipment to support the integration of alternative fuels such as hydrogen and renewable natural gas.

These capital projects will safeguard the long-term safety and integrity of the system. SoCalGas anticipates this type of work to remain at constant levels over time as the Company manages maturing infrastructure, responds to safety requirements, and integrates alternative fuels into the system.

In addition to sponsoring the Gas Transmission O&M and capital cost requests, this testimony will also provide a comparison of proposed Line 235 Project costs, a status update regarding the CCM project (an evolution of the Distribution Operations Control Center),[2] the business justification for two information technology (IT) capital projects, and a reasonableness review and cost recovery request for the Core Balancing project.

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[1] Optical Pipeline Monitoring (OPM) technology utilizes specialized fiber optic cables to provide temperature, strain, and vibration sensing capabilities. The cable is a distributed sensor and is not planned or optimized for communication.

[2] Described as the "Distribution Operations Control Center" (DOCC) in the revised Gas Major Projects testimony of Michael A. Bermel at 19-25 and authorized in D.19-09-051 at 127-131.

SECOND REVISED PREPARED DIRECT TESTIMONY OF RICK CHIAPA, STEVE HRUBY, AND AARON BELL (GAS TRANSMISSION & CONSTRUCTION)

I. INTRODUCTION

A. Summary of Gas Transmission Operations and Construction Costs Activities

Our testimony supports the Test Year (TY) 2024 forecasts for operations and maintenance (O&M) costs for both non-shared and shared services, as well as the capital costs for the forecast years 2022, 2023, and 2024. The sponsored costs associated with the Gas Transmission Operations and Construction areas of SoCalGas are summarized in Table CHB-1, below.

Our testimony also supports the capital investments described in greater detail herein. These investments support the safety, reliability, sustainability, and operational effectiveness of the natural gas transmission system while maintaining compliance with applicable regulatory and environmental regulations. SoCalGas requests that the Commission adopt the forecasts of Gas Transmission Operations and Construction O&M expenditures for TY 2024 of $52,057,000, and the capital expenditures for years 2022, 2023, and 2024 of $182,494,000, $150,742,000, and $106,651,000, respectively.

TABLE CHB-1
Southern California Gas Company
TY 2024 Summary of Total Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)			
	2021 Adjusted Recorded	**TY 2024 Forecast**	**Change**
Total Non-Shared Services	38,218	38,754	536
Total Shared Services (Incurred)	9,008	13,303	4,295
Total O&M	47,226	52,057	4,831

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)				
	2021 Adjusted-Recorded	**Estimated 2022**	**Estimated 2023**	**Estimated 2024**
NON-COLLECTIBLE (NC)		160,642	119,078	105,846
COLLECTIBLE (CO)		21,852	31,664	805
Total CAPITAL	**250,910**	**182,494**	**150,742**	**106,651**

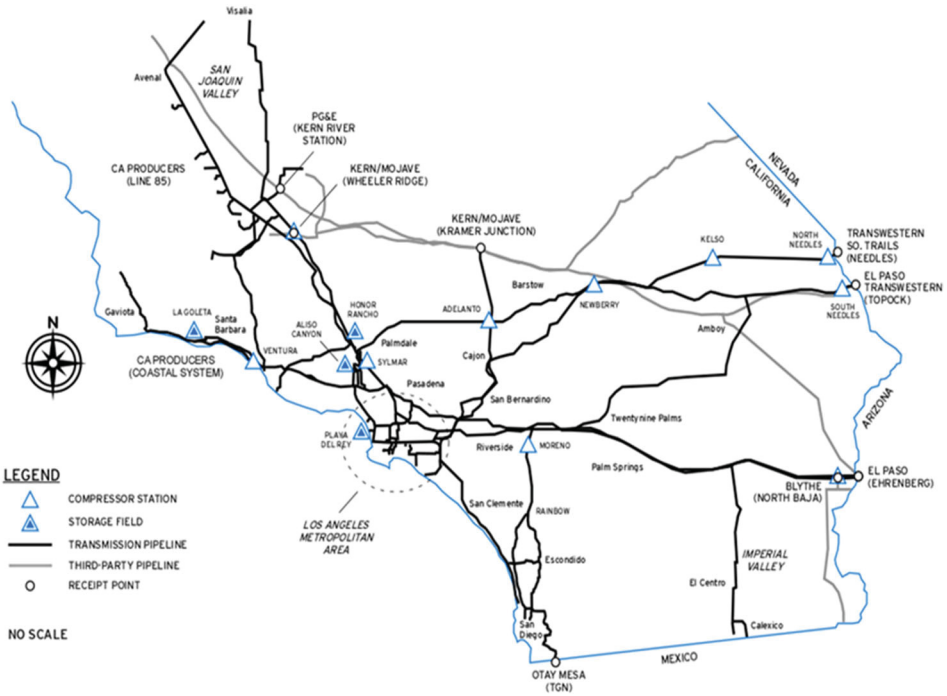
The SoCalGas gas system encompasses transmission pipelines, underground storage fields, and distribution pipelines. The purpose of this direct testimony is to support the request for Gas Transmission Operations and Construction O&M expenditures and capital projects that are required for the safe, reliable, and effective operation of the Gas Transmission system. In addition, the testimony supports the request for Gas Control and System Planning O&M expenditures. The projects included in this testimony are related to operation of the gas transmission pipelines and appurtenances, as well as work associated with major construction projects, most notably the Line 235 Replacement Project. Also included are the costs associated with continued work on the Control Center Modernization (CCM)[3] project. These costs are, in part, being sponsored in this testimony, as well as others that are detailed below. Additionally, this testimony provides the business justification for two Information Technology (IT) projects related to a renewable natural gas project and upgrades to the Envoy system.

This testimony speaks to the ongoing maintenance of the infrastructure associated with the operation of nine compressor stations located throughout the service territory and identified

[3] *Id*.

in Figure CHB-1. The transmission system is designed to receive natural gas from interstate pipelines and various California offshore and onshore production sources.

FIGURE CHB-1
SoCalGas Transmission System



Two SoCalGas organizations, Gas Transmission Operations and the Construction organization, are responsible for planning and executing capital projects and activities that support the ongoing reliability of SoCalGas's transmission operations. Gas Transmission Operations' goal is to support SoCalGas in being the cleanest, safest, and most innovative energy company in North America. The SoCalGas Construction[4] organization provides centralized fiscal and project management of large capital investments. The Construction organization provides analysis regarding cost estimates, permit requirement coordination, and scheduling and execution of major gas infrastructure facilities projects necessary for the continued safe and reliable transmission of natural gas throughout the service territory.

B. Cost Forecast Methodology

The TY 2024 O&M forecast for Gas Transmission Operations and Construction was

[4] The Construction Organization was identified as Project and Construction Management in Ex. SCG-08-R at 16 and D.19-09-0591 at 125.

determined by first reviewing five years of historical recorded costs (2017 through 2021). These recorded costs were adjusted to remove expenses related to the Catastrophic Event Memorandum Account (CEMA) and by making other applicable accounting adjustments such as non-GRC related costs associated with the Senate Bill (SB) 1371 Emissions Strategy Program. The results of this process were then used to calculate the following forecast methods: base year recorded; three-, four-, and five-year linear trend results; and three-, four-, and five-year annual-averaging results and zero base.

SoCalGas carefully considered the reasonableness of the various results to identify the best available and most applicable predictor of future period base costing. Through this process, we determined that for O&M expenditures, there was not one methodology that suited all circumstances. The utilization of a mixture of the base year recorded, five-year average, and zero-based forecast methodologies, depending on the circumstances, most accurately depicted the basis from which to start each forecast that would meet the future operational needs of Gas Transmission Operations and Construction. Next, we reviewed operational standards of proposed O&M activities to identify any new and emerging activities. The selected forecast method results were then adjusted to account for these future period incremental cost changes. The combined result established our TY 2024 forecast.

Gas Transmission Operations and Construction capital cost forecasts followed a similar process as the O&M forecast with reviewing historical costs, adjusting any large onetime projects, comparing the available forecast methods to the base year 2021 expenditures, and reviewing new and emerging gas transmission facilities that are proposed to be built in the test year period. Once again, we concluded that no single methodology would accurately depict all the circumstances of the forecasted capital projects. Therefore, we determined that for new projects without a meaningful record of historical costs to draw information from, the zero-based methodology was the most accurate. For the remaining capital projects, we used the three-year average, five-year average, and base year recorded methodology where appropriate.

C. Support To and From Other Witnesses

Our testimony also references the testimony and workpapers of several other witnesses, either in support of their testimony or as referential support for ours. Those witnesses include:

- Sustainability and Climate Policy testimony of Naim Jonathan Peress (Climate Policy) and Michelle Sim (Sustainability) (Exhibit SCG-02)

- Risk Management Policy testimony of Deana Ng (Exhibit SCG-03, Chapter 1)
- RAMP to GRC Integration testimony of Gregory Flores and R. Scott Pearson (Exhibit SCG-03/SDG&E-03, Chapter 2)
- Gas Distribution testimony of Mario Aguirre (Exhibit SCG-04)
- Gas Distribution testimony of L. Patrick Kinsella (Exhibit SDG&E-04)
- Gas System Staff and Technology testimony of Wallace Rawls (Exhibit SCG-05/SDG&E-05)
- Gas Transmission testimony of Rick Chiapa and Steve Hruby (Exhibit SDG&E-06)
- Pipeline Safety Enhancement Plan (PSEP) testimony of Bill Kostelnik (Exhibit SCG-08)
- Gas Integrity Management Programs testimony of Amy Kitson and Travis Sera (Exhibit SCG-09/SDG&E-09)
- Gas Storage Operations and Construction testimony of Larry Bittleston and Steve Hruby (Exhibit SCG-10)
- Clean Energy Innovations testimony of Armando Infanzon (Exhibit SCG-12)
- Customer Services – Field and Advanced Meter Operations testimony of Daniel Rendler (Exhibit SCG-14)
- Real Estate and Facility Operations testimony of Brenton Guy (Exhibit SCG-19)
- Fleet Services testimony of Michael Franco (Exhibit SCG-18)
- Environmental Services testimony of Albert J. Garcia (Exhibit SCG-20)
- Information Technology testimony of William J. Exon - (Exhibits SCG-21 and SDG&E-25)
- Safety and Risk Management Systems testimony of Neena N. Master (Exhibit SCG-27)
- People and Culture Department testimony of Abigail Nishimoto (Exhibit SCG-28)
- Shared Services Billing, Shared Assets Billing, Segmentation, and Capital Reassignments testimony of Angel Le and Paul Malin (Exhibit SCG-30)
- Regulatory Accounts testimony of Rae Marie Yu (Exhibit SCG-38)

- Post-Test Year Ratemaking testimony of Khai Nguyen (Exhibit SCG-40)
- Corporate Center – General Administration testimony of Derick R. Cooper (Exhibit SCG-23)
- Cost Escalation testimony of Scott Wilder (Exhibits SCG-36 and SDG&E-41)

D. Organization of Testimony

Our testimony sponsors the TY 2024 General Rate Case Gas Transmission Operations O&M forecasts and capital forecasts for years 2022, 2023, and 2024. For capital projects of considerable scale, cost and/or duration, we provide a forecast and general description within this testimony, appendices to this testimony, and the supporting workpapers. Some projects included in our testimony will not be completed until post-test years and some of the CCM project activities are planned to continue through 2028. All costs in this testimony are represented as 2021 dollars, unless otherwise noted. For additional information on the projects and activities described herein, refer to the Capital Workpapers for the Prepared Direct Testimony of Rick Chiapa, Steve Hruby, and Aaron Bell (Exhibit SCG-06-CWP Chiapa, Hruby, and Bell).

Our testimony is organized as follows:

- Introduction
- Risk Assessment Mitigation Phase (RAMP)
- Sustainability and Safety Culture
- Non-Shared Operations and Maintenance Costs
- Shared Operations and Maintenance Costs
- Capital Requests
- Reasonableness Review
- Future Gas Transmission Major Projects
- Control Center Modernization (CCM)
- Conclusion

II. RISK ASSESSMENT MITIGATION PHASE INTEGRATION

Certain costs supported in our testimony are driven by activities described in SoCalGas's May 17, 2021, Risk Assessment Mitigation Phase (RAMP) Report.[5] Table CHB-2 provides a summary of the RAMP-related costs supported in our testimony:

TABLE CHB-2
Southern California Gas Company
Summary of RAMP O&M Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)			
	BY2021 Embedded Base Costs	**TY2024 Estimated Total**	**TY2024 Estimated Incremental**
RAMP Risk Chapter:			
SCG-Risk-1 Incident Related to the High-Pressure System (Excluding Dig-in)	27,997	29,743	1,746
SCG-Risk-2 Excavation Damage (Dig-In) on the Gas System	3,591	3,591	0
Sub-total	31,588	33,334	1,746
RAMP Cross-Functional Factor (CFF) Chapter			
SCG-CFF-1 Asset and Records Management	200	200	0
Sub-total	200	200	0
Total RAMP O&M Costs	**31,788**	**33,534**	**1,746**

[5] *See* RAMP to GRC Integration testimony of Gregory S. Flores and R. Scott Pearson (Ex. SCG-03/SDG&E-03, Chapter 2) for more details regarding the utilities' 2021 RAMP Report.

TABLE CHB-3
Southern California Gas Company
Summary of RAMP Capital Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)				
	2022 Estimated RAMP Total	**2023 Estimated RAMP Total**	**2024 Estimated RAMP Total**	**2022-2024 Estimated RAMP Total**
RAMP Risk Chapter:				
SCG-Risk-1 Incident Related to the High-Pressure System (Excluding Dig-in)	151,528	108,951	97,458	357,937
SCG-Risk-2 Excavation Damage (Dig-In) on the Gas System	2,038	2,608	3,746	8,392
SCG-Risk-5 Incident Involving an Employee	81	81	81	243
Sub-total	153,647	111,640	101,285	366,572
RAMP Cross-Functional Factor (CFF) Chapter:				
SCG-CFF-5 Physical Security	2,218	2,218	2,218	6,654
Sub-total	2,218	2,218	2,218	6,654
Total RAMP Capital Costs	**155,865**	**113,858**	**103,503**	**373,226**

A. RAMP Risk and Cross-Functional Factor Overview

As summarized in Table CHB-3 above, our testimony includes costs to mitigate the safety-related risks and cross-functional factors included in the RAMP report.[6] These risks and factors are further described in Table CHB-4 below:

[6] Unless otherwise indicated, references to the 2021 RAMP Report refer to SoCalGas's RAMP Report.

TABLE CHB-4
Southern California Gas Company
RAMP Risk Chapter Description

SCG-1 Incident Related to the High-Pressure System (Excluding Dig-in)	Catastrophic Damage
SCG-2 Excavation Damage (Dig-In) on the Gas System	Employee, Contractor, Customer & Public Safety
SCG-Risk -5 Incident Involving an Employee	Workplace Violence
SCG-CFF-1 Cross Functional Factor Asset Management	Establish and Enterprise Asset Management Model
SCG-CFF-5 Physical Security	Physical Security

In developing this request, priority was given to these key safety risks to assess which risk mitigation activities Gas Transmission Operations and Construction currently performs and what incremental efforts are needed to further mitigate these risks. While developing the GRC forecasts, SoCalGas evaluated the scope, schedule, resource requirement, and synergies of RAMP-related projects and programs to determine costs already covered in the base year and incremental increases expected in the test year.

Messrs. Flores and Pearson (Ex. SCG-03/SDG&E-03) discuss the risks and CFFs included in the 2021 RAMP Reports and the RAMP to GRC integration process.

B. GRC Risk Controls and Mitigations

Table CHB-5 below provides a narrative summary of the forecasted RAMP-related activities that we are sponsoring in our testimony.

TABLE CHB-5
Southern California Gas Company
Summary of RAMP Risk and CFF Activities

RAMP ID	Activity	Description
SCG-Risk-1 - C13	Measurement & Regulation Stations - Maintenance	Measurement & Regulation Station activities consist of valve inspections, vault inspections, producer station inspection, pressure limiting station inspections, relief valve inspections and actuator/controller, and regulator inspections on transmission pipelines.
SCG-Risk-1 - C14	Odorization	Odorization activities consist of the delivery and safe storage of odorant at SoCalGas receipt points and the monthly odor intensity testing on transmission pipelines.
SCG-Risk-1 - C4	Leak Survey & Patrol	Instrument Leak Survey & Patrol activities consist of semi-annual leak and patrol surveys, quarterly patrols and special leak and patrol surveys on transmission pipelines.
SCG-Risk-1 - C7	Pipeline Maintenance	Pipeline Maintenance activities consist of class location surveys, valve inspections, vault inspections and bridge and span inspections on transmission pipelines.
SCG-Risk-2 - C02	Locate & Mark Training (HP (High Pressure))	Locate and mark training provides employees who perform locating tasks with the necessary knowledge and operator qualification to locate and mark underground gas facilities.
SCG-Risk-2 - C04	Locate & Mark Activities (HP)	The purpose of the locate and mark activities is to prevent damage to gas infrastructure caused by excavators.
SCG-Risk-2 - C06	Locate and Mark Annual Refresher Training and Competency Program (HP)	All company personnel performing locate and mark Activities must complete an annual re-training and refresh program. This program consists of local supervisors reviewing SoCalGas Gas Standards with the locate and mark workforce.
SCG-Risk-2 - C26	Pipeline Patrol and Pipeline Markers (HP)	Qualified employees patrol high-pressure pipelines, assessing the area over and around the pipeline for signs of excavation or potential excavation.
SCG-Risk-2 - C28	Company Excavator Training (HP)	A formal training program provides excavation training to employees who are required to excavate as part of their job duties.
SCG-Risk-1 - C11	Compressor Station Maintenance	Compressor Station Maintenance activities consist of compressor unit inspections, primary and backup power generator inspections, fire water system and emergency system inspections, programable logic controllers (PLC) and instrumentation inspections, valve inspections, vessel inspections, tank

RAMP ID	Activity	Description
		inspections, scrubber inspections, relief valve inspections, actuator/controller and regulator inspections, and leak surveys on Compressor Stations equipment and pipeline systems.
SCG-Risk-1 - C2	Cathodic Protection - Maintenance	Cathodic protection maintenance activities consist of annual electrical test station (ETS) reads, bi-monthly current source inspections and annual rectifier maintenance on transmission pipelines.
SCG-Risk-1 - C19	Engineering, Oversight and Compliance Review	Engineering, Oversight and Compliance Review activities consist of utility plan checks and review of all completed compliance orders on transmission pipeline systems.
SCG-Risk-1 - C8	Right of Way (ROW)	Right of Way activities consist of planning, installation, construction and closeout of road regrading, erosion repairs, and gate/fence installations on transmission pipelines.
SCG-Risk-1 - C9	Class Location (Hydrotest)	Class Location (Hydrotest) O&M activity involves hydrotesting transmission pipeline segments operating out of class due to new development increasing population density in the area surrounding the pipeline.
SCG-Risk-1 - C03	Leak Repair	Leak repair activities consist of the planning, installation, construction, and closeout of projects initiated due to leaks on transmission pipelines or appurtenances.
SCG-Risk-1 - C16	Supervisory Control and Data Acquisition (SCADA) Operation	Gas Control and the SCADA Operations group are responsible for the remote monitoring, control, and real-time operations of SoCalGas and San Diego Gas & Electric's (SDG&E) combined gas-transmission system including associated pipelines, line compressor stations, and underground storage facilities.
SCG-CFF-1 - 7	Establish an Enterprise Asset Management Operating Model (EAM)	The existing EAM organization will expand to provide the policy direction, program management, coordination management, and change management required to implement the EAM.
SCG-Risk-1 - C17	Control Room Monitoring, Operation and Fatigue Management	Control Room Monitoring and Operation activities consist of 24/7 operation of the transmission pipeline system in a real-time control room environment.
SCG-Risk-1 - C18	Gas Transmission Planning	Gas Transmission Planning is responsible for long-term planning and design of SoCalGas and SDG&E's gas transmission systems.

RAMP ID	Activity	Description
SCG-Risk-1 - C05	Pipeline Relocations/ Replacement	Pipeline relocation and replacement activities consist of planning, installation, construction and closeout of pipeline reroutes triggered by either weather-related external forces, municipality requests, right-of-way agreements, or class location changes.
SCG-Risk-1 - C06	Shallow/Exposed Pipe Remediation	Shallow or exposed pipe activities consist of the planning, installation, construction, and closeout of projects to add additional cover or protection to Transmission pipelines.
SCG-Risk-1 - C10	Compressor Stations - Capital	Compressor station activities consist of the planning, installation, construction and closeout of compressor upgrades, pipe replacements, valve replacements, and equipment upgrades including water, oil, and air systems at the compressor station.
SCG-Risk-1 - C01	Cathodic Protection - Capital	Cathodic protection activities consist of the planning, installation, construction and closeout of rectifiers/deep well anode beds, remote power and pipeline coating replacements on transmission pipelines.
SCG-Risk-1 - C12	Measurement & Regulation - Capital	Measurement & Regulation activities consist of the planning, installation, construction and closeout of redesigns/upgrades for producer vessels, meters, stations, Company-owned facilities at customer meter set assemblies, and control valve stations on transmission pipeline systems.
SCG-Risk-1 - C15	Security and Auxiliary Equipment	Security and auxiliary equipment activities consist of the planning, installation, construction and closeout of security cameras, lighting, gates, locks, and equipment upgrades such as pipe supports, analyzers and Supervisory Control and Data Acquisitions (SCADAs) on transmission pipeline facilities.
SCG-CFF-5 - 1	Physical Security	Physical security systems provide protection enhancements to facilities or infrastructure to improve access control, intrusion detection, and interdiction capabilities to deter, detect, delay, assess, communicate, or respond to undesirable events.
SCG-Risk-5 - M07	Workplace Violence Prevention Program Enhancements	The purpose of these activities is to reduce the likelihood of a workplace violence event by increasing protective measures at Company facilities that have employees.
SCG-Risk-1 - C23	Blythe Compressor Station Modernization	The primary objectives of the compressor station modernization projects are to replace and modernize existing compressors and associated infrastructure to comply with air quality regulations while prioritizing reliability, capacity, and system resilience.

RAMP ID	Activity	Description
SCG-Risk-2 - C37	Pipeline Monitoring Technologies	The CCM project will deploy new field pipeline monitoring technologies along existing high-consequence and/or evacuation-challenged areas as well as along new and replaced transmission pipelines.

The RAMP risk mitigation efforts are associated with specific actions, such as programs, projects, processes, and utilization of technology. For each of these mitigation efforts, an evaluation was made to determine the portion, if any, that was already performed as part of historical activities (*i.e.*, embedded base costs) and the portion, if any, that was incremental to base year activities. Furthermore, for the incremental activities, a review was completed to determine if any portion of incremental activity was part of the workgroup's base forecast methodology. The result is what SoCalGas considers to be a true representation of incremental increases over the base year.

Our incremental request supports the ongoing management of these risks that could pose significant safety, reliability, and financial consequences. These RAMP activities are discussed in further detail below, as well as in our workpapers. For additional information, refer to Appendix C - SoCalGas RAMP Workpaper Roadmap, which contains tables identifying by workpaper the TY 2024 forecast dollars associated with O&M activities and for 2022, 2023 and 2024 for Capital activities from the 2021 RAMP Report that are discussed in this testimony.

C. Changes from RAMP Report

As discussed in more detail in the RAMP to GRC Integration testimony of Messrs. Flores and Pearson (Ex. SCG-03/SDG&E-03, Chapter 2), in the RAMP Proceeding, the Commission's Safety Policy Division (SPD) and intervenors provided feedback on the Companies' 2021 RAMP Reports. Appendix B in Ex. SCG-03/SDG&E-03, Chapter 2 provides a complete list of the feedback and recommendations received and the Companies' responses. Changes from the 2021 RAMP Report presented in our testimony, including updates to forecasts and the amount and timing of planned work, are summarized as follows:

- The Pipeline Monitoring Technologies C37 was identified as a mitigation in SCG Risk 2 Excavation Damage (Dig-In) on the Gas System. The CCM project has extended the HCA methane sensor deployment duration through the end of 2028 because of additional time needed to evaluate the methane sensing technologies as

well as to further develop the methane sensor site selection criteria. This analysis is needed to assess the latest and emerging methane sensor technologies and to verify optimal methane sensor performance for their intended application in high consequence areas near transmission pipelines. The CCM project's scope includes plans to deploy and place in service 140 units by the end of 2024, and an additional 1,540 units by the end of 2028.

- The mitigation of Compressor Station Maintenance (SCG-Risk-1, C11) was updated in the GRC to reflect a projected increase in new hires that are needed to maintain new equipment at the modernized compressor stations. Accordingly, the GRC forecasted costs have increased compared to the 2021 RAMP Report.
- The mitigation of Compressor Stations – Capital Upgrades (SCG-Risk-1, C10) was updated in the GRC to reflect a prioritization of forecasts. Accordingly, the GRC forecasted costs have decreased compared to the 2021 RAMP Report.
- The mitigation of Security & Auxiliary Equipment (SCG-Risk-1, C15) was updated to reflect the reprioritization of the forecast and to accurately capture the cross functional mitigation. Accordingly, the GRC forecasted costs have decreased compared to the 2021 RAMP Report.
- The mitigation Blythe Compressor Station Modernization (SCG-Risk-1, C23-T1) did not have a forecast in the RAMP filing since it was planned to be completed in 2021. Select components of the Project, further described herein, have in-service dates that shifted from 2021 to 2022. The forecasts have been updated accordingly.

III. SUSTAINABILITY AND SAFETY CULTURE

Sustainability at SoCalGas focuses on continuous improvement, innovation, and partnerships to advance California's climate objectives incorporating holistic and sustainable business practices and approaches. SoCalGas's sustainability strategy, ASPIRE 2045, integrates five key focus areas across the Company's operations to promote the public interest, and the wellbeing of utility customers, employees, and other stakeholders. Please refer to the Sustainability and Climate Change Policy testimony of Michelle Sim and Naim Jonathan Peress

(Exhibit SCG-02) for a more detailed discussion of SoCalGas's sustainability and climate policies.[7]

The activities described in this testimony advance the State's climate goals and align with SoCalGas's sustainability priorities. Specifically, the execution of Blythe Compressor Station Modernization, CCM, and Transmission operations projects will drive progress in the areas of accelerating the transition to clean energy, protecting the climate and improving air quality in our communities, and achieving world-class safety. The new CCM building that will house Gas Control will help facilitate this response, as well as contribute to goals through design, by achieving LEED certification and net zero energy. Additionally, SoCalGas's emissions reduction program minimizes the venting of gas and identifies and repairs leaks as a part of the Company's compliance with Senate Bill (SB) 1371. As a company, SoCalGas has committed to phasing out the venting of gas during planned transmission pipeline work by 2030.

Safety is foundational to SoCalGas and its sustainability strategy. As the nation's largest gas distribution utility, the safety of SoCalGas's customers, employees, contractors, system, and the communities served has been – and will remain – a fundamental value for the Company and is interwoven in everything SoCalGas does. This safety-first culture is embedded in every aspect of SoCalGas's business. The tradition of providing safe and reliable service spans 150 years of the Company's history and is summarized in the SoCalGas Leadership Commitment statement, which is endorsed by the entire senior management team:

> SoCalGas leadership is fully committed to safety as a core value. SoCalGas's Executive Leadership is responsible for overseeing reported safety concerns and promoting a strong, positive safety culture and an environment of trust that includes empowering employees to identify risks and to "Stop the Job."

SoCalGas's approach to safety is one of continuous learning and improvement where all employees and contractors are encouraged and expected to engage in areas of opportunity for learning and promote open dialogue where learning can take place.[8]

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[7] *See* Sustainability and Climate Change Policy testimony of Naim Jonathan Peress and Michelle Sim (Ex. SCG-02) for a more detailed discussion of SoCalGas's sustainability and climate goals.

[8] *See* Safety and Risk Management System testimony of Neena Master (Ex. SCG-27) for more information about SoCalGas's overall safety approach.

Gas Transmission and Construction follow SoCalGas's integrated approach to safety called the Safety Management System (SMS). The SMS takes a holistic and pro-active approach to safety and expands beyond "traditional" occupational safety principles to include asset safety, system safety, cyber safety, and psychological safety for improved safety performance and culture. SoCalGas's SMS is a systematic, enterprise-wide framework that utilizes data to collectively manage and reduce risk and promote continuous learning and improvement in safety performance through deliberate, routine, and intentional processes. The SMS applies to all SoCalGas Transmission assets, aswell as to all employees, from senior management to those on the frontline.

IV. NON-SHARED OPERATIONS AND MAINTANENCE COSTS

Operations and maintenance activities in Gas Transmission Operations are routinely performed on 3,385 miles of gas transmission pipelines and their associated facilities in response to federal and state regulatory agency codes and standards and franchise obligations, and to sustain safe and reliable operation of the transmission pipeline system. This work includes leak surveys, pipeline patrol, leak repairs, pipeline and instrumentation maintenance, corrosion control measures, valve maintenance, pressure limiting station maintenance, compressor station maintenance, odorization coordination, and locating and marking buried pipelines to avoid damage caused by third-party dig-ins. This work is completed by the Field Operations and Compressor Operations departments. Field Operations includes Pipeline & Instrumentation Operations and cathodic protection activities. Compressor Operations includes activities associated with operating and maintaining compressor engines for the safe and reliable transportation of natural gas through the transmission pipeline system. Field support for operations and maintenance activities comes from the Technical Services department and includes right-of-way planning, hydrotesting planning, and utility conflict review.

The Storage Products Manager group manages the sale of storage products and California Energy Hub (CEH) services through sales campaigns, open seasons, and bilateral negotiations to meet customer needs and maximize reliability and value for SoCalGas's ratepayers.

The CCM project consists of the operating expenses and maintenance activities related to the Project Management Office (PMO), change management, CCM Operations Technology (OT) enhancements, optical pipeline monitoring (OPM) stations, and HCA methane sensors.

Table CHB-6 below summarizes the total non-shared O&M forecasts for the listed cost categories.

TABLE CHB-6
Southern California Gas Company
Non-Shared O&M Summary of Costs

GAS TRANSMISSION CONSTRUCTION & OPERATIONS In 2021 $ (000s)			
Categories of Management	**BY 2021 Adjusted Recorded**	**TY 2024 Estimate**	**Change**
A. Pipeline & Instrumentation Operations	17,827	18,713	886
B. Compressor Station Operations	10,671	12,003	1,331
C. Cathodic Protection	1,352	1,352	0
D. Technical Services	7,519	5,373	-2,146
E. Storage Products Manager	158	164	6
F. Control Center Modernization	690	1,149	459
Total Non-Shared Services	**38,218**	**38,756**	**536**

A. Pipeline & Instrumentation Operations

TABLE CHB-7
Southern California Gas Company
Summary of Non-Shared O&M Costs

GAS TRANSMISSION CONSTRUCTION & OPERATIONS In 2021 $ (000s)			
Pipeline & Instrumentation Operations	**BY 2021 Adjusted Recorded**	**TY 2024 Estimate**	**Change**
Labor	14,731	15,617	886
• Non-Labor	3,096	3,096	0
• NSE Total	0	0	0
Total Non-Shared Services	**17,827**	**18,713**	**886**
FTE	**131**	**139.9**	**8.9**

1. Description of Costs and Underlying Activities

Pipeline & Instrumentation Operations within Gas Transmission Operations consists of the following activities:

A. Instrument Leak Survey
B. Pipeline Patrol
C. Locate & Mark and Standby
D. Measurement and Regulation Inspections
E. Odorization Activities

These activities address the physical condition of the gas transmission pipeline system and its appurtenances. Similar activities are completed at ten operating bases located throughout the 20,000 square mile service territory. The activities completed at these operating bases form the Pipeline & Instrumentation Operations category. These operating bases are responsible for the safe day-to-day operation and maintenance of gas transmission pipeline facilities and the related infrastructure.

Pipeline & Instrumentation Operations is also responsible for providing emergency services in response to earthquakes, wildfires, dig-ins, or other events as needed to minimize the potential for danger to the public and any impact to system reliability. They are also responsible for addressing issues related to gas quality standards, as well as maintaining compliance with applicable environmental and regulatory agency safety requirements, which include but are not limited to air quality, asbestos, lead, polychlorinated biphenyls, natural resources, ground water, storm water, hazardous waste, and materials handling for both above- and below-ground pipeline appurtenances. Gas Transmission continuously monitors changes in these regulatory requirements and adjusts and/or adds operations activities accordingly to uphold compliance, satisfy all legal requirements, and support SoCalGas's and the State's Greenhouse Gas (GHG) reduction goals, as described by Mr. Peress and Ms. Sim (Ex. SCG-02).

Gas transmission pipelines are surveyed semi-annually, or quarterly if a pipeline is at a railroad crossing or in a Class 4 location. Instrument leak surveys are performed by SoCalGas employees walking and driving along the pipeline with appropriate, properly calibrated equipment. SoCalGas employees and third-party vendors use helicopters to perform leak surveys in remote regions that are not easily accessible. In addition to routine leak surveys, Gas Transmission Operations performs special leak surveys, as needed. Examples of special survey work include conducting leak surveys in advance of street improvements to address potential leaks prior to street moratoriums, after the occurrence of any significant incident (*i.e.,* a train derailment, explosion, earthquake, flooding, landslides, near transmission pipelines, etc.), when SoCalGas plans to increase the maximum allowable operating pressure of a pipeline, or when routine survey requirements are not considered adequate because of the pipe condition.

Gas Transmission performs pipeline patrol on different frequencies depending on class location. Patrol is conducted to visually observe surface conditions on and adjacent to the pipeline rights-of-way for indications of leaks, construction activity, and other factors affecting safety and operations to comply with federal and state regulations. Other Pipeline Patrol activities include repairing, replacing, and/or installing new high pressure warning signs and inspecting bridge crossings and spans for any signs of abnormal conditions. Increased work due to aging infrastructure has increased the costs associated with pipeline patrol. In addition, 53 miles of Gas Transmission pipeline are changing from being classified as Class 3 to Class 4 locations, which will require increased leak surveys and pipeline patrol.

Locate-and-mark activities are preventative in nature and are required to avert damage by third-party excavators working near underground gas substructures.[9] In addition, locating and marking new electrical lines to automated equipment will be incremental activities in this area. The work primarily comprises:

A. Locating and marking SoCalGas underground pipelines

B. Conducting job observations

C. Performing pothole operations

D. Performing depth checks

Standby activities are performed in accordance with the requirements of 49 C.F.R., Part 192.935, which require a qualified Company representative to be present when excavation activity takes place near a covered pipeline segment. SoCalGas requires this activity for all pipelines operating at high pressure (pressure above 60 psi) and for all Company and third-party projects. Employees will be on standby to inspect and monitor excavation activities to prevent excavation damage to Company pipelines.

Measurement and Regulation (M&R) Inspections focus primarily on maintaining and operating pressure limiting stations, relief valves, control valves, pneumatic and mechanical valve operators, transmitters, and large customer meter set assemblies (MSA) in the SoCalGas service territory. These devices and equipment help maintain the pipeline at or below the Maximum Allowable Operating Pressure (MAOP) to comply with General Order (GO)112-F and 49 C.F.R., Part 192 which require that no pipeline, vessel, or associated facility be operated

[9] Cal. Gov. Code § 4216.

at a pressure above the MAOP. Large customer MSAs require routine maintenance of the meters, regulators, and other components to meet customers' capacity requirements and to measure gas volume accurately. Personnel in this area will also support the incremental activity of operating and maintaining equipment at the Hydrogen House.[10] Odorization activities are performed in accordance with the requirements of 49 C.F.R., Part 192.625, which requires a combustible gas in a transmission pipeline to be odorized, ensuring that the gas is readily detectable by a person with a normal sense of smell. Gas Transmission is required to provide odorization for transmission of out-of-state and intrastate gas supplies via coordination with an odorant vendor. Approximately 45 gas suppliers supply un-odorized natural gas to receipt points. SoCalGas has odorant injection and odorant monitoring systems at the receipt points that properly odorize and monitor the natural gas. Odor intensity and odorant levels are monitored by qualified Gas Transmission personnel. The monitoring is performed by completing odor intensity tests at strategic locations across the service territory using an odorometer. The odorometer mixes a gas sample stream with odor free air to determine the odor level.

Partial costs of items from the RAMP Dig-In Chapter are also accounted for in the Pipeline & Instrumentation Operations workpaper (Ex. SCG-06-WP). These include costs associated with locate-and-mark training, locate-and-mark activities, the locate-and-mark annual refresher training and competency program, pipeline patrol and pipeline markers, and the company excavator training.

Nine new incremental employees will be needed in 2022 to support Pipeline & Instrumentation activities. These activities are driven by the need to safeguard the integrity of the pipeline system, thus mitigating risks associated with hazards to the public, employee safety and system reliability. These positions will help Gas Transmission Operations meet emissions reduction goals that align with ASPIRE 2045. Responsibilities include compliance work, follow-up corrective maintenance identified by compliance inspection results, unscheduled maintenance work (*e.g.*, unexpected malfunction of a device), emergency support (*e.g.*, system shut down to respond to a damage, pressure incident, or major event as in the case of an earthquake), and support of general operations requirements (*e.g.*, test shutdowns to determine system behavior under specific conditions). Some of the increases in these activities are driven

[10] *See* Clean Energy Innovations testimony of Armando Infanzon (Ex. SCG-12) for a further explanation of the Hydrogen House.

by the age and type of equipment installed, with older or obsolete equipment requiring more maintenance.

Gas Transmission Operations will assume the maintenance of the El Centro high-pressure system which has been recently maintained by the Gas Distribution organization. These pipelines are the responsibility of Gas Transmission Operations, and the maintenance is being transferred back to Gas Transmission Operations. This will result in additional capital expenses and additional ongoing O&M costs for Gas Transmission Operations. All compliance activities will be completed by Pipeline & Instrumentation personnel. Activities such as leak surveying and pipeline patrol will be needed for over 190 miles of Department of Transportation (DOT)-defined transmission pipelines. Main line valves and two M&R stations will now be maintained by Gas Transmission.

The above-described activities all support one or more of the following RAMP mitigations and are necessary to maintain or improve the pipeline system.

TABLE CHB-8
Southern California Gas Company
RAMP Activity O&M Forecasts by Workpaper
In 2021 Dollars ($000s)

Workpaper	RAMP ID	Description	BY2021 Embedded Base Costs	TY2024 Estimated Total	TY2024 Estimated Incremental	GRC RSE*
2GT000.000	SCG-Risk-1 - C4 T1 & T2	Leak Survey & Patrol (HCA & Non-HCA)	1,836	2,217	381	-
2GT000.000	SCG-Risk-1 - C7 T1 & T2	Pipeline Maintenance (HCA & Non-HCA)	465	846	381	-
2GT000.000	SCG-Risk-1 - C13 T1 & T2	Measurement & Regulation Stations - Maintenance (HCA & non-HCA)	2,077	2,139	62	-
2GT000.000	SCG-Risk-1 - C14	Odorization	620	682	62	0.100

Workpaper	RAMP ID	Description	BY2021 Embedded Base Costs	TY2024 Estimated Total	TY2024 Estimated Incremental	GRC RSE*
2GT000.000	SCG-Risk-2 - C02	Locate & Mark Training (HP)	5	5	0	-
2GT000.000	SCG-Risk-2 - C04	Locate & Mark Activities (HP)	3,111	3,111	0	53.000
2GT000.000	SCG-Risk-2 - C06	Locate and Mark Annual Refresher Training and Competency Program (HP)	9	9	0	158.000
2GT000.000	SCG-Risk-2 - C26	Pipeline Patrol and Pipeline Markers (HP)	452	452	0	46
2GT000.000	SCG-Risk-2 - C28	Company Excavator Training (HP)	14	14	0	0

*Tranche level RSEs and additional details are available in Ex. SCG-06-WP.

2. Forecast Method

The TY 2024 forecast was established using the base year recorded forecast methodology plus the incremental costs for nine new employees. In developing the TY 2024 forecast, SoCalGas evaluated the historical expenditures from 2017 through 2021 for the Pipeline and Instrumentation category. Increases in recent years for Pipeline and Instrumentation Operations are present and can be attributed to newly installed automated equipment by the Pipeline Safety Enhancement Plan (PSEP) which requires more compliance inspections and increased pipeline patrol in areas susceptible to land movement and washouts. The increased workload associated with this work, as well as an increase in system maintenance, makes using historical averages an inaccurate method of forecasting. Therefore, the most accurate estimate of anticipated future needs is provided by base year recorded plus incremental costs.

3. Cost Drivers

SoCalGas forecasts a $886,000 increase in TY 2024 expenditure. This increase is primarily connected to the incremental hires in 2022. Maintenance and enhancement of the integrity of the transmission pipeline system drives a need for ongoing labor and non-labor costs. Newly automated equipment with commercial power requires incremental activities such as locating and marking electrical lines. In addition, these sites have new monthly charges from the responsible utility companies. There is also newly automated equipment that utilizes solar power to operate. These sites require more consumable parts such as solar panels, batteries, and other spare parts. In addition, increased instrument leak surveys and pipeline patrols are required due to the refinement of the interpretation of Class 4 locations. 49 C.F.R. § 192.5 defines Class 4 as a class location unit where buildings with four or more stories above ground are prevalent. SoCalGas modified their definition to be in alignment with the Pipeline and Hazardous Materials Safety Administration (PHMSA) interpretation (PI-07-0102). The enhanced interpretation reduced the number of four-story or higher buildings that need to be present near a high-pressure line for it to be considered Class 4. This change resulted in an increase of approximately 53 miles of pipeline that require more frequent compliance leak surveys and pipeline patrols. In addition, there is incremental activity to operate and maintain equipment at the Hydrogen Home. Lastly, Gas Transmission employees will support the maintenance of automated equipment at Distribution Regulator Stations until Gas Distribution has sufficient personnel trained to maintain their system.

B. Compressor Station Operations

TABLE CHB-9
Southern California Gas Company
Summary of Non-Shared O&M Costs

GAS TRANSMISSION CONSTRUCTION & OPERATIONS In 2021 $ (000s)			
Compressor Station Operations	**BY 2021 Adjusted Recorded**	**TY 2024 Estimate**	**Change**
Labor	4,886	6,217	1,331
• Non-Labor	5,786	5,786	0
• NSE Total	0	0	0
Total Non-Shared Services	**10,672**	**12,003**	**1,331**
FTE	**41.4**	**54.3**	**12.9**

1. Description of Costs and Underlying Activities

The Gas Compression Operations function is responsible for the safe and reliable day-to-day operation and maintenance of SoCalGas's nine compressor station facilities and related infrastructure. This responsibility includes operating and maintaining compressor engines and ancillary equipment, all associated monitoring, metering, and control facilities, odorization equipment, filtration vessels, cooling equipment, and real-time operating data telemetry communications between compression facilities and Gas Control. Additional responsibilities include:

- Developing and implementing gas compression operating and maintenance procedures for new equipment;
- Air emission monitoring and testing;
- Conducting compressor unit and station inspections under planned maintenance schedules as well as after service interruptions caused by events such as earthquakes, wildfires, pipeline shut-ins, etc., to maximize system and equipment availability and reliability and therefore minimize the impact of such events upon the Gas Transmission, Underground Storage, Gas Distribution, and Customer Services operations;
- Adjust operating parameters to maintain Gas Transmission system integrity and address/mitigate gas quality issues;
- Adapt to evolving company policies, reporting, documentation, and best engineering and maintenance practices;
- Provide 24-hour response and staffing at strategic locations to address any compression operation issues;
- Support CARB Oil & Gas / LDAR[11] inspections with escorting contractor for safe access throughout the facility and making timely repairs[12]; and
- Maintain compliance with applicable regulatory requirements. Applicable regulatory requirements include, but are not limited to, those pertaining to

[11] *See* Environmental Services testimony of Albert J. Garcia (Ex. SCG-20) for additional information on these programs.

[12] Id.

air quality, asbestos, lead, polychlorinated biphenyls, natural resources, ground water, storm water, process wastewater, hazardous waste and materials, above-ground, and below-ground tanks. Gas Transmission continually tracks and analyzes changes in regulatory requirements and adjusts and adds operations to maintain compliance with regulations and to support the Company's sustainability goal of achieving net zero energy by 2045 as well as supporting permitting and reporting requirements.

TABLE CHB-10
Southern California Gas Company
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
2GT001.000	SCG-Risk-1 - C11	Compressor Station Maintenance	10,671	12,003	1,332	3.000

2. Forecast Method

The TY 2024 forecast was established using the base year recorded methodology to which the anticipated incremental activity costs for new hires were added. This methodology was selected because 2021 spending best represents the starting point for future anticipated annual O&M costs associated with the completion of multiple compressor upgrade projects across the organization. The new incremental hires are essential to the completion of the planned upgrade work. Therefore, this represents the most accurate estimate of the anticipated future expenditure during the forecast period.

3. Cost Drivers

SoCalGas forecasts a $1,332,000 increase in TY 2024 spending. The key driver of this increase is related to the hiring of incremental employees. SoCalGas anticipates we will need eight new employees in 2022, four additional employees in 2023, and one additional employee in 2024. The additional funding requested is needed to support the incremental workload needed to maintain and operate new and modernized equipment, as well as to support federal, state, and local regulations. These positions are required to perform the following tasks:

- Support facility with administrative duties involving station personnel, staff payroll, environmental records, maintenance files, and facility resources.
- Assist with the incremental work resulting from ongoing environmental regulations impacting station resources. Regulatory compliance requirements include enhanced monitoring, recording, reporting, and performing time-sensitive repairs. In addition, main units and compressors are required to operate at optimum efficiency and require scheduled maintenance and immediate repairs to operate in compliance with strict parameters.
- Operations equipment management, balancing station performance, and throughput to achieve system demand. There are several critical aspects to the continuous operation of SoCalGas staffed compressor facilities. Staff must operate and monitor equipment ranging from reciprocating engines, turbine-driven compressors, cooling towers, generators, auxiliary equipment, and emissions controls and monitoring systems. This must be performed in tandem with operating the existing and new infrastructure.
- Address the increased activity and maintenance at Blythe Station. The modernization of equipment has increased the need for higher-skilled instrumentation personnel and requires specialized training unique to each station. Installation of Blythe Compressor Plant 4 is heavily equipped with instrumentation and controls for system automation and monitoring which need to be maintained and inspected regularly. The increased volume of maintenance on instrumentation and controls is crucial to upholding station reliability and system performance.
- Help improve processes and procedures, monitoring, reporting, management of change documentation, improve employee training, support the development of integrity programs, and ensure knowledge transfer.

C. Cathodic Protection

TABLE CHB-11
Southern California Gas Company
Summary of Non-Shared O&M Costs

GAS TRANSMISSION CONSTRUCTION & OPERATIONS In 2021 $ (000s)			
Cathodic Protection	**BY 2021 Adjusted Recorded**	**TY 2024 Estimate**	**Change**
Labor	1,044	1,044	0
• Non-Labor	309	309	0
• NSE Total	0	0	0
Total Non-Shared Services	**1,353**	**1,353**	**0**
FTE	**9.7**	**9.7**	**0**

1. Description of Costs and Underlying Activities

Cathodic protection (CP) is used to control corrosion of underground structures and is commonly used as a supplement to coatings on underground structures. The control of corrosion is achieved by forcing direct current to flow into the earth through an anode connection outside the structure and then through the earth to the structure to be protected, converting the underground structure into a cathode where corrosion should not take place. Gas Transmission Operations utilizes two types of cathodic protection: (1) galvanic anode cathodic protection, which relies on the voltage difference between dissimilar metals to cause the current flow mentioned above; and (2) impressed current cathodic protection, where the current from the source is impressed using a power source and the current flow mentioned above is forced between the underground structure and anode bed. The CP activity within Gas Transmission ensures the safe day-to-day operation and maintenance of gas transmission pipeline facilities and related infrastructure pertaining to the mitigation of corrosion. This includes annual Electrical Test Station (ETS) reads, bi-monthly current source inspections, and annual rectifier maintenance on transmission pipelines; these activities involve the following: reading/recording voltage and verifying compliance, inspecting ETS for signs of damage, verifying identification tags and test leads for correct information and good condition, verifying rectifier proper operation, reading/recording voltage and amperage across rectifier, cleaning and tightening all current-carrying connections on rectifier, cleaning all ventilating screens on rectifier units, calibrating voltage and amperage meters on rectifier, repairing any damaged wires, checking all

fuses/circuit breakers, cleaning off rectifier unit, replacing rectifier identification tags, and diagnosing and troubleshooting substandard conditions or out-of-tolerance reads. These activities are necessary to maintain or improve the pipeline's CP system, extend the life of the pipeline, and maintain CP compliance as prescribed by 49 C.F.R Subpart I – Requirements for Corrosion Control:

- Each pipeline that is under cathodic protection must be tested at least once each calendar year, but with intervals not exceeding 15 months, to determine whether the cathodic protection meets the requirements of § 192.463.
- Each cathodic protection rectifier or other impressed current power source must be inspected six times each calendar year, but with intervals not exceeding 2 ½ months, to ensure that it is operating and identify or remediate any developing system deficiencies related to corrosion.

Cathodic protection work includes inspecting, replacing, upgrading, or altering components of the CP system such as bonds, test points, electric drops, and insulators. Significant work is required to maintain CP system components as they reach the end of their useful life. Additionally, ongoing maintenance costs are associated with anode depletion that is often accelerated by drought conditions. Dry soil does not allow the current to travel as far and reduces pipeline protection. In addition, some soils are more resistive than others, causing anodes to deplete at a higher rate. The typical life of an anode will vary depending on a variety of factors, including the weather, soil conditions, the pipeline length it is protecting, and the effectiveness of the pipeline coating.

TABLE CHB-12
RAMP Activity O&M Forecasts by Workpaper

GAS TRANSMISSION OPERATIONS & CONSTRUCTION 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***
2GT002.000	SCG-Risk-1 -	Cathodic Protection -	1,351	1,351	0	-

	C02 T1&T2	Maintenance (HCA & Non-HCA)				

*Tranche level RSEs and additional details are available in Ex. SCG-06-WP.

2. Forecast Method

The TY 2024 forecast was established using the base year recorded methodology. SoCalGas evaluated the historical expenditures from 2017 through 2021 for Cathodic Protection Operations. Since the costs in this category are primarily labor driven, the most recent year's actual expenditures provide the best estimate of future expenses. Therefore, the base year recorded is the most accurate representation of future costs for this category during the forecast period.

3. Cost Drivers

SoCalGas forecasts a $0 increase in TY 2024 costs. No incremental employees are forecast to be hired at this time. Cathodic protection work activities are driven by the need to safeguard the integrity of the pipeline system and minimize future corrosion-related leaks, thus mitigating risks associated with hazards to public safety. Costs for this workgroup are related to compliance inspections and associated evaluations (troubleshooting), as well as planned and unplanned maintenance actions, some of which must be completed each year in every CP area and isolated CP segment.

D. Technical Services

TABLE CHB-13
Southern California Gas Company
Summary of Non-Shared O&M Costs

GAS TRANSMISSION CONSTRUCTION & OPERATIONS In 2021 $ (000s)			
Technical Services	**BY 2021 Adjusted Recorded**	**TY 2024 Estimate**	**Change**
Labor	1,003	810	(193)
• Non-Labor	6,516	4,564	(1,952)
• NSE Total	0	0	0
Total Non-Shared Services	**7,519**	**5,374**	**(2,145)**
FTE	**10.9**	**8.4**	**(2.5)**

1. Description of Costs and Underlying Activities

Technical Services provides many of the technical and administrative services needed for the successful and timely completion of O&M activities. The primary activities and costs in this category include the planning and permitting of projects, including right-of-way maintenance and strength testing for class location change projects.

All gas transmission pipelines are installed in one of four class locations. The class location is determined by the buildings in a class location unit. A class location unit is an onshore area that extends 220 yards on either side of the centerline of any continuous one-mile length of pipeline. Class location changes often occur when gas transmission pipelines exist within new developments. To meet the requirements of the new class location, pipelines need to be re-evaluated to meet the MAOP requirements. Strength testing existing pipelines is an effective method to ensure pipeline safety and compliance with regulations while maintaining system reliability. Re-evaluation and remediation are required to be completed within two years per 49 C.F.R. Section 192.611. Technical Services activity has increased due to California's dramatic growth in commercial, residential, and industrial development in undeveloped areas.

A portion of the costs in this category are driven by an increase in hydrotesting pipeline segments due to the refinement of the interpretation of Class 4 locations. 49 C.F.R. Section 192.5 defines Class 4 as a class location unit where buildings with four or more stories above ground are prevalent. SoCalGas modified its definition to be in alignment with the PHMSA interpretation (PI-07-0102). The enhanced interpretation reduced the number of four-story or higher buildings that need to be present near a high-pressure line for it to be considered Class 4. This change resulted in an increase in the number of segments of pipeline that need to be evaluated, which has in turn increased needed projects. One incremental Project Manager is needed to support the increased class location change projects.

Right-of-way (ROW) maintenance is also impacted by new development. As development expands into areas where SoCalGas operates pipelines, the environment changes. Areas that were once left in a natural state now require routine maintenance to remove weeds to reduce fire risks for adjacent communities. Technical Services facilitates public outreach, obtains permitting, and establishes contracts with third- party contractors to complete right-of-way maintenance work. Right-of-way maintenance projects in outlying and rural areas are

required as well. These projects typically include patrol road maintenance and span-painting projects and require the support of specialized contractors.

The Technical Services team performs many other duties, including:

- Identifying and developing construction design requirements
- Negotiating and coordinating with third parties proposed improvements near Gas Transmission facilities
- Evaluating engineering design criteria
- Developing construction cost estimates
- Coordinating with external agencies
- Identifying and procuring required material
- Acquiring third-party contract services (*e.g.*, survey, engineering, mechanical, electrical, inspection, etc.)

Technical Services also coordinates Gas Transmission Operations' emergency response efforts by managing the Transmission Branch Support. The Transmission Branch Support is part of SoCalGas's Incident Command Structure (ICS) and is activated during a significant event (*e.g.*, fire, earthquake, pipeline damage, etc.). The Transmission Branch Support assists field operations with engineering, pipeline planning, mapping, coordination, and other resources vital to returning normal operations to Gas Transmission Operations facilities.

The work associated with the RAMP mitigation engineering, oversight, and compliance review is completed by the Technical Services group. These activities consist of utility plan checks and review of all completed compliance orders on transmission pipeline systems. This work is necessary to avoid third-party damage, uphold the structural integrity of the pipeline, maintain feasible access to the pipeline system, and verify that the Company is meeting regulatory standards.

TABLE CHB-14
Southern California Gas Company
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*
2GT003.000	SCG-Risk-1 - C19	Engineering, Oversight and Compliance Review	1,500	2,498	998	0
2GT003.000	SCG-Risk-1 - C8 T1& T2	Right of Way (HCA & Non-HCA)	4,450	2,156	(2,294)	-
2GT003.000	SCG-Risk-1 - C9 T1 & T2	Class Location (Hydrotest) (HCA-Non-HCA)	0	720	720	-

*Tranche level RSEs and additional details are available in Ex. SCG-06-WP.

2. Forecast Method

The TY 2024 forecast was developed using the five-year average methodology to which the anticipated incremental costs of a new employee were added. Given the activities described previously and a review of historical costs and underlying cost drivers, SoCalGas determined that the five-year average forecast methodology best reflects the anticipated needs of Technical Services in the forecast period.

3. Cost Drivers

SoCalGas forecasts a $2,145,000 decrease in TY 2024 adjusted recorded spend from the 2021 adjusted recorded spend. Although a decrease is forecasted, a variety of expanding activities are expected. Right-of-way activities are estimated to be consistent over the coming years. The expansion of housing into areas that were previously unpopulated has increased the need for right-of-way maintenance and as well as class location changes. Many of these maintenance projects in outlying areas require added time due to permitting requirements from agencies such as the National Park Service, Bureau of Land Management, and state and federal fish and wildlife agencies. The cost of these projects is driven by factors such as accessibility, permitting constraints, and proximity to available resources. In addition, class location changes

require several pipelines to be hydrotested where it was not previously required. An incremental project manager is required to complete the planning, design, engineering, construction, and reconciliation of hydrotest projects.

E. Storage Products Manager

TABLE CHB-15
Southern California Gas Company
Summary of Non-Shared O&M Costs

GAS TRANSMISSION CONSTRUCTION & OPERATIONS In 2021 $ (000s)			
Storage Products Manager	**BY 2021 Adjusted Recorded**	**TY 2024 Estimate**	**Change**
Labor	136	136	0
• Non-Labor	22	28	6
• NSE Total	0	0	0
Total Non-Shared Services	**158**	**164**	**6**
FTE	**1.0**	**1.0**	**0**

1. Description of Costs and Underlying Activities

The Storage Products Manager operates the California Energy Hub (CEH)/Operational Hub to provide unbundled natural gas storage and parking services (SoCalGas Rate Schedules G-TBS and G-PAL). Staff responsibilities include managing the sale of storage products and CEH/Operational Hub services through sales campaigns, open seasons, and bilateral negotiations to meet customer needs and to maximize reliability and value for SoCalGas and SDG&E ratepayers.[13] SoCalGas staff are subject matter experts on the natural gas market and examine general market conditions to assess the value of transmission products like Backbone Transportation Service (BTS) and Off System Delivery service. This role also actively participates in various regulatory proceedings and provides analytical and regulatory compliance support to many groups throughout SoCalGas. Staff also procure and sell spot purchases and baseload gas supply to support System Reliability, as mentioned in SoCalGas's Rule No. 41,[14] to

[13] Marketing operations of the CEH/Operational Hub are currently suspended (per SoCalGas Advice Letter Nos. 5609 and 5650) due to the lower inventory limit currently ordered by the Commission per D.20-02-045 (2020 TCAP) and D.21-11-008 (SB 380).

[14] SoCalGas Rule No. 41 "Utility System Operation," June 24, 2020, *available at*: https://tariff.socalgas.com/regulatory/tariffs/tm2/pdf/41.pdf.

meet the company's goals of maintaining system reliability and avoiding curtailments per SoCalGas's Rule No. 41.

2. Forecast Method

The TY 2024 forecast was developed using the five-year average methodology. Given the activities described previously and a review of historical costs and underlying cost drivers, SoCalGas determined that the five-year average forecast methodology best reflects the anticipated needs of the Storage Products Manager in the forecast period.

3. Cost Drivers

SoCalGas forecasts a $6,000 increase in TY 2024 base year adjusted recorded spend. The cost drivers behind this forecast are increased costs associated with the existing workforce requirements approved in previous GRCs to implement the activities described above. These activities help meet the Company's goals of maintaining system reliability and avoiding curtailments.

F. Control Center Modernization

The Control Center Modernization (CCM) project is made up of multiple O&M and capital activities that impact areas within this Transmission testimony as well as several other witness testimony areas. The CCM broader business justification for the entire CCM project scope, O&M and capital, can be found in Section VIII of this testimony. To keep costs presented by category, O&M costs are discussed here.

TABLE CHB-16
Southern California Gas Company
Summary of Non-Shared O&M Costs

GAS TRANSMISSION CONSTRUCTION & OPERATIONS In 2021 $ (000s)			
Control Center Modernization	**BY 2021 Adjusted Recorded**	**TY 2024 Estimate**	**Change**
Labor	324	721	397
• Non-Labor	366	428	62
• NSE Total	0	0	0
Total Non-Shared Services	**690**	**1,149**	**459**
FTE	**2.7**	**7**	**4.3**

1. Description of Costs and Underlying Activities

The O&M costs related to the CCM project consist of the activities and expenses related to the PMO, change management, CCM Operations Technology (OT) enhancements, and maintenance related to the CCM OPM stations and HCA methane sensors. Each of these areas play a key role in the successful deployment and implementation of the CCM project, which will digitalize the distribution system and further enhance the transmission system through the installation and integration of data from over 9,800 new and existing field assets into Gas Control. They will also support the planning, building, and commissioning of the new Gas Control and Emergency Operations Center building.

a. Project Management Office operating costs:

The operating expense forecast for the PMO that will be required for TY 2024 is $17,000. The PMO defines and maintains standards of project management and compliance for the CCM project. The PMO manages the scope, resources, budget, schedules, dependencies, risks, and issues of the CCM project. Additionally, the PMO enforces standardization and compliance with established project change control processes, quality management of project deliverables, document management practices, and regulatory compliance. Finally, the PMO facilitates the identification, calculation, and tracking of project benefits.

In the governance function, the CCM PMO provides a framework for initiating, planning, executing, monitoring, controlling, and closing each of the CCM project activities. The PMO has developed standards and processes for consistency across the CCM project, as well as providing common guidelines for achieving specific results. In this function, the PMO manages project scope through the CCM project delivery lifecycle, which is a framework that defines key stages of each of the various CCM project activities from start to close out. Progress through each stage of the cycle is dependent on a governance checkpoint, where a project activity is assessed for quality, completeness, and readiness to continue to the next stage. The PMO facilitates and manages these checkpoints and the approval processes at each stage of the lifecycle.

In the schedule management function, the PMO tracks and reports on the progress of the project. The PMO maintains the Integrated Project Plan, which serves as a mechanism to both assist in structuring the work required to meet project goals and to detect early impacts to the overall project schedule. Given the complexity of the CCM project, work has been divided into

sub-projects. Each sub-project has a schedule detailing the work that provides information to the PMO for managing the Integrated Project Plan. In conjunction, the PMO facilitates the alignment of sub-project cross dependencies to minimize schedule impacts.

Risk management is used to identify potential problems before they occur so that risk mitigation and contingency activities may be planned and acted upon as needed to diminish adverse impacts on achieving project objectives. Early detection and categorization of risk minimizes project costs, maximizes productivity, and increases the probability of success. The PMO has standardized the processes for the identification of risks as well as developing and executing mitigation strategies. Additionally, the PMO conducts regular reviews to discuss the risks with the project stakeholders during their respective regularly scheduled meetings.

The PMO also facilitates issue management. Issues have an impact on project scope, schedule, or budget and require discussion, agreement, and a resolution to move the project forward. The PMO has established guidelines which the CCM project teams implement to ensure effective issue management, including proper visibility, accountability, and resolution. Additionally, the PMO manages the project-wide change control process, which identifies proposed changes to the project scope, schedule, benefits, or budget and gains management consensus on approved execution strategies.

PMO expenses included are associated with labor resources who focus on these governance and lifecycle activities as well as support all CCM project related regulatory activities. The PMO is essential to the success of the CCM project as it manages standardization and consistency across all the CCM project efforts. It also manages the overall budget, aligns organizational goals, addresses data requests, develops reports, centralizes data repositories, and supports training and project education.

b. Change Management operating costs:

The operating expense forecast for change management that will be required for TY 2024 is $46,000. The change management team and activities are critical to the success of the CCM project and the implementation of the various CCM activities. A successful change journey requires actions from everyone impacted by the change, from leadership to the project team to the impacted stakeholders. The CCM change management team will leverage the Prosci methodology as each of the project activities are implemented. This methodology provides extensive guidance for end-to-end change management, training, and communication guidelines.

Change management is important to the CCM project because it provides a structured approach as well as language and framework for leading the people side of change in parallel with management of the CCM activities. It also drives business results by changing behaviors and focusing on individual transitions from current to future state. Change management also supports leadership within all levels of an organization, including executives, directors, managers, and supervisors.

Change management expenses include costs for labor associated with key change management activities that include the evaluation, identification, and implementation of new and changing business processes. Additionally, the activities include evaluating the workforce impacts and identifying opportunities to restructure where needed, designing and developing training materials, performing train the trainer activities, implementing knowledge transfer practices, and performing post deployment training and refresher courses. These change management activities are critical for the successful implementation of the CCM project in that they assess and understand the need and the impact of change; define and implement new and related business processes; align resources within the business to support change; reduce the time needed to implement change; and help stakeholders understand the change process.

c. Optical Pipeline Monitoring (OPM) Station Maintenance:

The maintenance forecast for OPM stations that will be required for TY 2024 is $360,000. These expenses are related to the operating and maintenance expenses needed to maintain and inspect seven new OPM stations installed from 2022 through 2024. These activities are necessary for the stations to operate safely and effectively and to transmit alarms and other relevant site-based data to Gas Control.

The OPM stations will have a maintenance schedule associated with them and will include activities such as general maintenance, troubleshooting, annual service contracts, battery replacement, and utility power. The labor and non-labor forecast leveraged information from maintenance programs from the initial pilot OPM station as well as analysis of replacement rates for similar activities. The annual maintenance schedule and forecast is based on the total number of OPM stations commissioned in the years prior to the given year.

d. High Consequence Area (HCA) Methane Sensor Maintenance:

The maintenance forecast for HCA methane sensors that will be required for TY 2024 is $16,000. These expenses are related to the operating and maintenance activities needed to

maintain and inspect the newly installed HCA methane sensors. These activities are necessary for the methane sensors to operate safely and to effectively transmit alarms and data to Gas Control.

The HCA methane sensor units installed by the CCM project will have a maintenance schedule associated with them and will include activities such as general maintenance, pole inspection, troubleshooting, and equipment replacement. The labor and non-labor forecast leveraged information from maintenance programs established for the pilot sites as well as analysis of equipment replacement rates for similar activities. The annual maintenance schedule and forecast is based on the total number of methane sensor sites commissioned in the years prior to the given year.

e. Operations Technology (OT) Enhancements operating expenses:

The CCM OT enhancements operating expense forecast that will be required for TY 2024 is $710,000. The CCM OT enhancements expenses include application subscription costs and secure cell data/production costs. These costs support the collection of field asset data and the routing of that data to Gas Control. Additionally, the labor and non-labor forecast includes costs for the ongoing resource support required to maintain the situational awareness, forecasting, and alarm management tools and applications within Gas Control. These resources will also work closely with company IT and control room personnel to align cybersecurity policies and procedures with the new CCM integrated field asset and control room technologies. These CCM OT enhancement expenses help to maintain the field asset data, software applications, and equipment needed to monitor and respond to field incidents in alignment with the control room schedule. The reliability of these systems will allow for faster response and communication times to both planned and unplanned incidents.

f. Description of RAMP Mitigation

The OPM station and HCA methane sensor maintenance work is associated with the RAMP Mitigation/C37 - Pipeline Monitoring Technologies which will deploy new field pipeline monitoring technologies along existing high-consequence and evacuation-challenged areas as well as along new and replaced transmission pipelines. These field monitoring assets will enhance Gas Control's ability to monitor pipelines to more quickly identify and respond to abnormal operating or emergency conditions resulting from a dig-in incident. Since the CCM project is still in the design and execution phase, there is no historical data available to develop

an RSE for the risk mitigations of Dig-Ins, and subject matter expert input cannot fill the information gap.

TABLE CHB-17
Southern California Gas Company
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
2GT005.000	SCG-Risk-2 – C37	Pipeline Monitoring Technologies – (HP)	0	376	0	N/A

2. Forecast Method

The TY 2024 forecast was determined using zero-based methodology. CCM project staffing commenced in 2020 and to date, the CCM project continues to mobilize as project activities are being scoped, designed, built, tested, and deployed. The zero-based methodology is most appropriate because the CCM project does not have adequate historical costs to accurately reflect the staffing and operating expenses needed for the PMO, change management activities, CCM OT enhancements, and maintenance activities related to OPM stations and HCA methane sensors from 2022 through 2024. The costs for 2022, 2023, and 2024 were based on forecasted number of labor and non-labor Full Time Equivalents (FTEs) needed to support each of these activities as well as using per unit maintenance costs multiplied by the number of units in service prior to the given year.

3. Cost Drivers

The cost drivers behind this forecast are for project support resource expenses associated to the PMO, change management activities, CCM OT enhancements, and maintenance activities related to OPM stations and HCA methane sensors.

The PMO expenses are needed for resource support to manage the daily PMO activities. This resource support will establish standardization and consistency, identify cost reductions, align organizational goals, respond to data requests, develop reports, and centralize data

repositories. Given the various CCM project activities, the PMO will also focus on integrating project plans and tracking key milestones, risks, dependencies, and decisions. The forecast for the PMO was calculated based on the forecasted number of FTEs needed to support these project management activities. TY 2024 accounts for a reduction in FTEs in this area to align with the completion of some CCM project activities.

Change management resource support needs and activities are also driving these expenses. Given the large scope of the CCM project, there is a need for a strong change management support team. The CCM project will impact directly and indirectly more than 2,000 employees and 13 business units over the duration of the project. The change management team will support the implementation of change related to people, processes, and technology, and will be pivotal in establishing change agent networks and communications. The change agent networks are a group of impacted stakeholders who will engage with the CCM team throughout the project. They will provide a two-way communication platform for the CCM team to communicate updates about project activities and for the stakeholders to provide feedback, questions, or concerns to the CCM project. The forecast was calculated based on the forecasted number of FTEs needed to support these critical change management activities. TY 2024 accounts for a reduction in FTEs in this area to align with the completion of some CCM project activities.

The labor and non-labor forecast for OPM stations and HCA methane sensors leveraged information from maintenance programs for pilot sites as well as from the analysis of equipment replacement rates for similar activities. The labor forecast consists of costs for internal resources for maintenance and troubleshooting. The non-labor forecast consists of costs for external resources, battery replacement, utility power, service contracts, and equipment replacement. The OPM stations and HCA methane sensors will be visited annually. The OPM station visits will include local site maintenance, equipment inspection, operations checks, and system updates. The HCA methane sensor visits will include calibration of the units and battery replacements as well as troubleshooting technical issues, repairing defective or damaged units, and performing pole inspections.

CCM OT enhancement efforts will incur O&M expenses related to the distribution regulator stations enhancements, OPM stations, HCA methane sensors, and data management systems and applications being leveraged by Gas Control to monitor and control the pipeline

system. The detailed labor and non-labor forecast for CCM OT enhancements is broken down into three cost areas: Gas Control applications support team, secure cell, and application subscriptions. The labor resource costs are based on the number of FTEs needed to support the operations and maintenance of the CCM deployed applications, tools, and data management systems within Gas Control. The non-labor expenses include application subscription costs related to data analytics, work scheduling Software as a Service (SAAS), and cloud services. Additionally, the non-labor forecast includes secure cell costs for CCM field assets, data center circuits, and prod/pre prod Access Point Name (APN). The non-labor forecast was based on vendor estimates. The OT enhancement operating expenses gradually increase each year as systems are deployed and resources transition from capital deployment activities to supporting and maintaining the implemented control room technology solutions.

V. SHARED COSTS

The costs presented in this testimony are necessary to support the following shared services function groups within SoCalGas's Gas Transmission Operations and Gas Control and System Planning organizations:

- Director Gas Transmission
- FOM East Transmission
- FOM Compressor Station Operations
- Governance and Compliance
- Transmission and Storage Strategy Manager
- Capacity Products Support
- Gas Scheduling
- Gas Transmission Planning
- Gas Control
- SCADA

Table CHB-18 summarizes the total shared O&M forecasts for the listed cost categories.

TABLE CHB-18
Southern California Gas Company
Total Shared Services O&M Summary of Costs

GAS TRANSMISSION CONSTRUCTION & OPERATIONS In 2021 $ (000s)			
	BY 2021 Adjusted Recorded	**TY 2024 Forecast**	**Change**
Total Shared Services (Incurred)	9,008	13,303	4,295

As described in Angel Le and Paul Malin's testimony (Ex. SCG-30), shared services are activities performed by a utility shared services department (*i.e.*, functional area) for the benefit of: (i) SDG&E or SoCalGas, (ii) Sempra Energy Corporate Center, and/or (iii) any affiliate subsidiaries. The utility providing shared services allocates and bills incurred costs to the entity or entities receiving those services. This testimony sponsors the forecasts on a total incurred basis, as well as the shared services allocation percentages related to those costs. Those percentages are presented in the shared services workpapers, along with a description explaining the activities being allocated.[15] The dollar amounts allocated to affiliates are presented in the Shared Services Policy and Procedures testimony of Ms. Le (Ex. SCG-30).

The purpose of the shared services section of this testimony is to demonstrate that the following SoCalGas and SDG&E Shared Services O&M forecast expenditures are reasonable and should be adopted by the CPUC. Forecast expenditures are to support management of operations, maintenance, project support, and Gas Control and System Planning and Supervisory Control and Data Acquisition (SCADA) services related to the gas transmission operations at both SoCalGas and SDG&E.

SDG&E's Gas Transmission Operations are managed and supported, in part, by SoCalGas management personnel. This section addresses changes in shared services expenses in TY 2024 compared to 2021 base year adjusted expenses incurred. These expenses support overall Gas Transmission Operations including Pipeline and Gas Compression Operations, Field Engineering, Technical Support, and Gas Control and System Planning.

Total TY 2024 forecast funding requirements for SoCalGas's Shared Services function groups within Gas Transmission Operations are shown in Table CHB-19.

[15] *See* Ex. SCG-WP-06.

TABLE CHB-19
Southern California Gas Company
Shared Services Total O&M Summary of Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)			
Gas Control System Planning	**BY 2021 Adjusted Recorded**	**TY 2024 Forecast**	**Change**
A. Director of Gas Transmission –2200-0253	183	238	55
B. FOM East Transmission – 2200-0265	376	376	0
C. FOM Compressor Station Operations – 2200-2173	566	566	0
D. Governance & Compliance – 2200-0931	465	900	435
E. Transmission & Storage Strategy Manager – 2200-0330	906	906	0
F. Capacity Products Support – 2200-0328	686	686	0
G. Gas Scheduling –2200-2158	796	796	0
H. Gas Transmission Planning – 2200-2329	861	861	0
I. Gas Control – 2200-2289	2,983	6,683	3700
J. SCADA Operations – 2200-0329	1,186	1,291	105
Total Shared O&M	**9,008**	**13,301**	**4,295**

A. Director of Gas Transmission – Cost Center 2200-0253

TABLE CHB-20
Southern California Gas Company
Summary of O&M Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)			
Director of Gas Transmission	**BY 2021 Adjusted Recorded**	**TY 2024 Estimate**	**Change**
Labor	152	198	46
• Non-Labor	31	40	9
• NSE Total	0	0	0
Total Non-Shared Services	**183**	**238**	**55**
FTE	**1.4**	**1.3**	**(0.1)**

1. Description of Costs and Underlying Activities

The Director of the Gas Transmission Operations organization is responsible for Gas Transmission Operations' overall operational and directional leadership, operation and maintenance performance, regulatory compliance, financial performance, and work measurement reporting. These tasks are administered by the Director with the support of an administrative associate. Expenses are allocated 90.23% to SoCalGas and 9.77% to SDG&E based on annual gas throughput.

2. Forecast Method

The TY 2024 forecast was developed using the five-year average methodology. The base year recorded methodology is not representative of the forecast period because the costs for a full year of an administrative associate are not accounted for, since this employee joined the team midway through 2021. Given the activities described previously and a review of historical costs and underlying cost drivers, SoCalGas determined that the five-year average forecast methodology best reflects the anticipated needs of the Storage Products Manager in the forecast period.

3. Cost Drivers

The costs behind this forecast are the leadership and guidance provided by the Director of Gas Transmission Operations and the full year of support of the Administrative Associate.

B. FOM East Transmission – Cost Center 2200-0265

TABLE CHB-21
Southern California Gas Company
Summary of O&M Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION GAS CONTROL SYSTEM PLANNING In 2021 $ (000s)			
FOM East Transmission	**BY 2021 Adjusted Recorded**	**TY 2024 Estimate**	**Change**
Labor	336	336	0
• Non-Labor	40	40	0
• NSE Total	0	0	0
Total Non-Shared Services	**376**	**376**	**0**
FTE	**3.0**	**3.0**	**0**

1. Description of Costs and Underlying Activities

The Field Operations Manager (FOM) East Transmission organization is responsible for departmental operational leadership, staffing management, operation and maintenance performance, regulatory compliance, financial and work measurement performance, and reporting for Gas Transmission within both SoCalGas and SDG&E. The scope of operation and maintenance management includes SDG&E's 221 miles of Gas Transmission operated pipeline assets. Pipeline operation and maintenance activities for these SDG&E assets are performed by SDG&E employees, with managerial responsibilities administered by a mixture of SoCalGas and SDG&E personnel, specifically SoCalGas's Gas Transmission Field Operations Manager, Construction Manager, and Field Operations Supervisor. Projects on all SoCalGas Transmission pipelines have direct impacts on field operations. Projects in the North Desert area under the FOM East Transmission category require management oversight such as project planning review, construction management oversight, and project reconciliation. Expenses are allocated 90.23% to SoCalGas and 9.77% to SDG&E based on annual gas throughput.

2. Forecast Method

The TY 2024 forecast was established using the base year recorded methodology. The three-year and four-year historical averages would not accurately capture the costs for the four management employees overseeing the pipeline and instrumentation assets. Since the costs in this category are primarily labor driven, the most recent year's actual expenditures provide the best estimate of future expenses. Therefore, the base year recorded provides the most accurate representation of future costs for this category during the forecast period.

3. Cost Drivers

SoCalGas forecasts a $0 increase in TY 2024 expenditure. Although it is expected that expenditures in this area will remain consistent, cost drivers behind this forecast include the workforce required to implement the activities described above.

C. FOM Compressor Station Operations – Cost Center 2200-2173

TABLE CHB-22
Southern California Gas Company
Summary of O&M Costs

GAS TRANSMSSION OPERATIONS & CONSTRUCTON GAS CONTROL SYSTEM PLANNING In 2021 $ (000s)			
FOM Compressor Station Operations	**BY 2021 Adjusted Recorded**	**TY 2024 Estimate**	**Change**
Labor	457	457	0
• Non-Labor	109	109	0
• NSE Total	0	0	0
Total Non-Shared Services	**566**	**566**	**0**
FTE	**4.2**	**4.2**	**0**

1. Description of Costs and Underlying Activities

The Field Operations Manager Compressor Stations organization is responsible for departmental operational leadership, operation and maintenance, regulatory compliance, financial and work measurement performance and reporting for Gas Transmission Operations compressor station operations, within both SoCalGas and SDG&E. The scope of operation and maintenance management includes SoCalGas's nine compressor stations and SDG&E's Moreno Compressor Station. Compressor Station operation and maintenance activities for Moreno Compressor Station are performed by SDG&E employees, with managerial responsibilities administered by SoCalGas's Gas Transmission Field Operations Manager, a Station Operations Manager, an Engineering Team Lead, and Administrative Clerk personnel. The support from these positions is needed to provide critical design selections, review procedural requirements, and complete comprehensive reviews of control system performance. Local station procedures are essential to maintain compliance reporting and to use for training and knowledge transfer. These documents are impacted by the installation of new equipment and the removal of obsolete equipment that is identified via inspections to maintain a safe working environment. In addition, support is needed to coordinate baseline inspections of electrical equipment and rotating equipment. These inspections will help with a comprehensive list of potential threats to compressor units and their ancillary equipment. These baseline inspections will help support future repairs. Expenses are allocated 90.23% to SoCalGas and 9.77% to SDG&E based on annual gas throughput.

2. Forecast Method

The TY 2024 forecast was established using the base year recorded methodology. The three-year, four-year, and five-year historical averages would not accurately capture the costs for the six management employees overseeing the compressor station assets. Since these costs are primarily labor driven, the most recent actual expenditures from 2021 provide the best estimate of what future expenses will be. Therefore, the base year recorded most accurately represents the future recurring annual O&M costs associated with the overall management and supervision of SoCalGas's nine compressor stations, as well as SDG&E's Moreno Compressor Station.

3. Cost Drivers

SoCalGas forecasts a $0 increase in TY 2024 expenditure. Although it is expected that expenditures in this area will remain consistent, the cost drivers behind this forecast are the costs associated with the existing workforce requirements approved in the previous GRC to implement the activities described above.

D. Governance and Compliance 2200-0931

TABLE CHB-23
Southern California Gas Company
Summary of O&M Costs

GAS TRANSMSSION & GAS CONTROL SYSTEM PLANNING In 2021 $ (000s)			
Governance and Compliance	**BY 2021 Adjusted Recorded**	**TY 2024 Estimate**	**Change**
Labor	437	872	435
Non-Labor	27	27	0
NSE Total	0	0	0
Total Non-Shared Services	**465**	**900**	**435**
FTE	**4.3**	**8.3**	**94**

1. Description of Costs and Underlying Activities

The Governance and Compliance Manager's organization is responsible for system business governance and compliance across the Gas Transmission organization. Governance and Compliance provides monitoring and tracking of compliance performance for both SoCalGas and SDG&E utilities, including tracking and reporting pipeline leaks and repairs, developing and monitoring compliance work orders within the computerized asset maintenance system, and ensuring compliance with all state and federal regulatory requirements such as 49 CFR. § 192,

GO 112F, Air Quality Management District (AQMD) rules, etc. This organization was created to improve oversight and support for compliance-related activities. Four new employees are forecast in 2022-2024. Two of the new positions will support the RAMP goal of establishing an enterprise asset management model, as discussed in the Gas System Staff and Technology testimony of Wallace Rawls (Exhibit SCG-05). These new positions will be focused on providing policy direction, program management, coordination management, and change management. An additional new position will support equipment inspections, as well as repairs at compressor stations and pressure limiting stations. Another additional position will support project controls and reconciliation of Gas Transmission Operations projects. This position will provide leadership and direction for the planning, development, and implementation of major, large-scale strategic business and technology projects.

Expenses are allocated 90.23% to SoCalGas and 9.77% to SDG&E based on annual gas throughput.

TABLE CHB-24
Southern California Gas Company
RAMP Activity O&M Forecasts by Workpaper
In 2021 $ (000)

Workpaper	RAMP ID	Description	BY2021 Embedded Base Costs	TY2024 Estimated Total	TY2024 Estimated Incremental	GRC RSE
2200-0931.000	SCG-CFF-1 - 7	Establish an Enterprise Asset Management Operating Model	200	200	0	0

2. Forecast Method

The TY 2024 forecast was established using the base year recorded methodology. Since this is a new department created in late 2020 there are no historical costs to evaluate. BY 2021 actual expenditure with adjusted costs to account for the incremental positions is the best forecast option to provide the funding required to meet the projected costs over the forecast years.

3. Cost Drivers

SoCalGas forecasts a $435,000 increase in TY 2024. The costs behind this forecast are existing and incremental workforce requirements required to implement and complete the

activities described above. The incremental management employees include two document advisors to work on records management as well as one project manager and one project specialist.

E. Transmission and Storage Strategy Manager – Cost Center 2200-0330

TABLE CHB-25
Southern California Gas Company
Summary of O&M Costs

GAS TRANSMSSION OPERATIONS & CONSTRUCTION GAS CONTROL SYSTEM PLANNING (In 2021 $)			
Transmission and Storage Strategy Manager	**BY 2021 Adjusted Recorded**	**TY 2024 Estimate**	**Change**
Labor	788	788	0
Non-Labor	118	118	0
NSE Total	0	0	0
Total Non-Shared Services	**906**	**906**	**0**
FTE	**5.6**	**5.6**	**0**

1. Description of Costs and Underlying Activities

The Transmission and Storage Strategy Manager group supports the System Operator by monitoring and analyzing market and pricing information, recommending changes to capacity and storage market activities in response to market developments, developing pricing guidelines for storage and CEH products, and monitoring the financial performance of CEH product offerings. The Transmission and Storage Strategy Manager also provides support to all other Energy Markets & Capacity Products groups. Staff examine general market conditions to assess the value of major transmission products such as BTS and Off System Delivery.

Expenses are allocated 95.12% to SoCalGas and 4.88% to SDG&E. Annual gas throughput is allocated 90.23% to SoCalGas and 9.77% to SDG&E for other categories, but the split for SDG&E's percentage was reduced by 50% for this category since half of this group's time is spent supporting storage services (all SoCalGas) and the other half of their time is spent supporting gas transportation.

2. Forecast Method

The TY 2024 forecast was established using the base year recorded methodology. Since the costs in this category are primarily labor-driven, the most recent year's actual expenditures

provide the best estimate of future expenses. Therefore, the base year recorded provides the most accurate representation of future costs for the Transmission and Storage Strategy Manager cost category during the forecast period.

3. Cost Drivers

SoCalGas forecasts no increase in TY 2024 expenditure. Costs are expected to remain consistent with the 2021 expenses. The cost drivers are the management employees that manage the activities mentioned above.

F. Capacity Products Support – Cost Center 2200-0328

TABLE CHB-26
Southern California Gas Company
Capacity Products Support Summary of O&M Costs

GAS TRANSMSSION & GAS CONTROL SYSTEM PLANNING (in 2021 $)			
Capacity Products Support	**BY 2021 Adjusted Recorded (000s)**	**TY 2024 Estimate (000s)**	**Change (000s)**
Labor	641	641	0
Non-Labor	45	45	0
NSE Total	0	0	0
Total Non-Shared Services	**686**	**686**	**0**
FTE	**5**	**5**	**0**

1. Description of Costs and Underlying Activities

Capacity Products Support group is responsible for direct customer service and staff support for functions supporting direct customer service. Responsibilities include developing and maintaining ENVOY® business requirements; administering BTS; managing and supporting gas marketer, supplier, and upstream pipeline business relationships; administering the core transportation aggregation (CTA) program; providing back-office support for the CEH; participating in North American Energy Standards Board (NAESB) activities at the committee level on behalf of SoCalGas and SDG&E for industry standard development; monitoring regulatory matters under the authority of the Federal Energy Regulatory Commission (FERC) concerning the upstream pipelines serving the SoCalGas and SDG&E system that affect operations; and supporting implementation of modification to policies and procedures for scheduling and nominations on the SoCalGas and SDG&E system. These activities are required for SoCalGas to lawfully implement gas transportation service on its system in compliance with

its tariffs. Expenses are allocated 90.23% to SoCalGas and 9.77% to SDG&E based on annual gas throughput.

2. Forecast Method

The TY 2024 forecast was established using the base year recorded methodology. Since the costs in this category are primarily labor-driven, the most recent year's actual expenditures provide the best estimate of future expenses. Therefore, the base year recorded provides the most accurate representation of future costs for Capacity Products Support during the forecast period.

3. Cost Drivers

SoCalGas forecasts no increase in TY 2024 expenditure. Costs are expected to remain consistent with the 2021 expenses.

G. Gas Scheduling – Cost Center 2200-2158

TABLE CHB-27
Southern California Gas Company
Gas Scheduling Summary of O&M Costs

GAS TRANSMSSION & GAS CONTROL SYSTEM PLANNING (In 2021 $)			
Gas Scheduling	**BY 2021 Adjusted Recorded (000s)**	**TY 2024 Estimate (000s)**	**Change (000s)**
Labor	765	765	0
Non-Labor	31	31	0
NSE Total	0	0	0
Total Non-Shared Services	**796**	**796**	**0**
FTE	**6.8**	**6.8**	**0**

1. Description of Costs and Underlying Activities

Gas Scheduling is a 365-day-per-year operation that manages the daily scheduling of nominations for gas transportation service, storage injections, and withdrawals for all gas quantities transported on the SoCalGas and SDG&E systems each day. The Gas Scheduling group is also responsible for implementing the Operational Flow Order (OFO) rules when required to balance system capacity with demand. As part of the scheduling processes, the Gas Scheduling group manages transportation nominations for on-system and off-system deliveries based on capacity rights, confirms nominations to interstate and intrastate suppliers, reports scheduled quantities to customers, tracks storage accounts, tracks and clears shipper imbalances,

and administers the imbalance trading process. The Gas Scheduling group also makes regular postings on ENVOY® (SDG&E's and SoCalGas's electronic bulletin board), including critical and non-critical notices, transmission and storage system conditions, and hourly and daily capacity operational information. This allows SoCalGas to communicate in a transparent and consistent manner with the gas marketplace. Expenses are allocated 90.23% to SoCalGas and 9.77% to SDG&E based on annual gas throughput.

2. Forecast Method

The TY 2024 forecast was established using the base year recorded methodology. BY 2021 actual expenditures provide the funding to meet the projected costs over the forecast years and represent the best forecast option. In 2021, a new Gas Scheduling Manager was hired to provide needed support. The expenditure for this position was not accounted for in previous years, therefore an average forecast would not provide sufficient funding in future years. Since the costs in this category are primarily labor-driven, the most recent year's actual expenditures provide the best estimate of future expenses. Therefore, base year recorded provides the most accurate representation of future costs for Gas Scheduling during the forecast period.

3. Cost Drivers

The cost drivers in this category are the existing workforce requirements required to manage the day-to-day system and operations for nominations, allocations, and scheduled gas transportation for SoCalGas's and SDG&E's non-core customers.

H. Gas Transmission Planning – Cost Center 2200-2329

TABLE CHB-28
Southern California Gas Company
Summary of O&M Costs

GAS TRANSMSSION OPERATIONS & CONSTRUCTION GAS CONTROL SYSTEM PLANNING In 2021 $ (000s)			
Gas Transmission Planning	**BY 2021 Adjusted Recorded**	**TY 2024 Estimate**	**Change**
Labor	820	820	0
Non-Labor	41	41	0
NSE Total	0	0	0
Total Non-Shared Services	**861**	**861**	**0**
FTE	**7.5**	**7.5**	**0**

1. Description of Costs and Underlying Activities

Gas Transmission Planning is responsible for the long-term planning and design of the SoCalGas and SDG&E gas transmission systems. Using hydraulic analytical tools, Gas Transmission Planning continually assesses the transmission system's ability to meet CPUC-mandated design standards, meet existing service obligations, serve new customer demand, and access new sources of gas supply. Gas Transmission Planning also works closely with departments tasked with maintaining the safety and integrity of the gas transmission system to assess the potential impact on operations and customer service resulting from these maintenance activities and represents planning and operations in regulatory matters that involve the gas transmission system's design, operation, and future capabilities.

The department is also solely responsible for developing analysis and reporting on the system's ability to remain reliable through major system outages and making recommendations to maintain system resiliency. These activities are necessary to uphold public safety, maintain system reliability, and meet regulatory requirements (including those prescribed by 49 C.F.R 192).

Expenses are allocated 66.67% to SoCalGas and 33.33% to SDG&E based on estimated work splits between the two utilities.

TABLE CHB-29
RAMP Activity O&M Forecasts by Workpaper
In 2021 Dollars ($000s)

Workpaper	RAMP ID	Description	BY2021 Embedded Base Costs	TY2024 Estimated Total	TY2024 Estimated Incremental	GRC RSE
2200-2329.000	SCG-Risk-1 - C18	Gas Transmission Planning	860	860	0	0

2. Forecast Method

The TY 2024 forecast was established using the base year recorded methodology. Since the costs in this category are primarily labor-driven, the most recent year's actual expenditures provide the best estimate of future expenses. Therefore, the base year recorded provides the most accurate representation of future costs for this category during the forecast period.

3. Cost Drivers

SoCalGas forecasts a $0 increase in TY2024 expenditures. This forecast provides funding for the leadership, management, and supervision needed to support Gas Transmission Planning's objectives. It also enables Gas Transmission Planning to assess and plan the gas transmission system and to remain in compliance with the CPUC's mandates and expectations. This level of funding is attributable to evaluating operational and planning challenges arising from gas transmission maintenance projects and other compliance-driven maintenance requirements.

I. Gas Control – Cost Center 2200-2289

TABLE CHB-30
Southern California Gas Company
Summary of O&M Costs

GAS TRANSMSSION OPERATIONS & CONSTRUCTION GAS CONTROL SYSTEM PLANNING In 2021 $ (000s)			
Gas Control	**BY 2021 Adjusted Recorded**	**TY 2024 Estimate**	**Change**
Labor	2,825	6,340	3,515
Non-Labor	157	342	185
NSE Total	0	0	0
Total Non-Shared Services	**2,983**	**6,683**	**3,700**
FTE	**25.2**	**59.2**	**34**

1. Description of Costs and Underlying Activities

Control Room Monitoring and Operation activities consist of 24/7 operation of the transmission pipeline system in a real-time control room environment. This is necessary to provide a centralized and holistic view of system health. The remote monitoring and operation of valves, compressor stations, pressure regulation equipment, and gas flow across the system enables controllers to acknowledge, react, and respond to both normal and abnormal operating conditions. This allows coordination of necessary pipeline shutdowns for maintenance and/or emergency measures. The control room serves as a communication center between various departments conducting maintenance on the transmission pipeline system, upholding public safety, maintaining system reliability, and developing a daily operating plan that includes demand forecasts and facility utilization. It also allows for preparation of contingencies for changes in system conditions resulting from changes in weather patterns, forecast errors, and abnormal operating conditions. The unit's responsibilities include compliance with Control

Room Management PHMSA Rule 49 C.F.R. § 192.631 regarding alarm management, system change management, fatigue mitigation, system operating experience, and personnel training requirements. Fatigue management consists of implementing methods to reduce risk associated with controller fatigue that could inhibit their ability to carry out their role and responsibilities. Analysis is required of fatigue management, shift lengths, and schedule rotations to ensure controllers are provided adequate rest. Training is required for controllers and supervisors to recognize the effects of fatigue and provide mitigation strategies.

Historically, Gas Control manages and operates both the SoCalGas and SDG&E gas transmission pipeline network. The Control Center Modernization (CCM) project scope will enable Gas Control to have visibility of the distribution system and operational control over select distribution regulator stations. Additionally, the CCM project will further digitalize the transmission system with new field assets such as OPM stations and HCA methane sensors. The installation of these new field assets along with the enhancement of existing field assets on both distribution and transmission pipelines will result in an increase in Gas Control's roles, responsibilities, and personnel. The CCM project will drive the change or creation of new and existing business processes due to the integration of data from over 9,800 new and existing field assets that will be monitored by the Gas Control organization. As a result, more personnel will be needed to support the following:

- Regulator Station monitoring and control functionality on the distribution system; OPM stations and HCA methane sensors on the transmission system;
- Routing and monitoring of distribution system electronic pressure monitors (EPMs) and select customer meter data;
- Alarm response, planned/unplanned incidents, and maintenance activities related to the newly deployed distribution and transmission field assets;
- Expansion of distribution outage management, coordination, and engineering support;
- Coordination with Distribution Field Operations, Dispatch, Transmission, and Emergency Management and Preparedness organizations; and
- Data analysis through new situational awareness platforms being introduced via CCM technologies.

These incremental costs driven by the CCM project in the Gas Control area will help shape and prepare the organization as the pipeline network continues to become more digitalized with the integration of data from over 9,800 new and existing field assets into Gas Control by the end of 2028. These new processes and resources will support increased 24/7 workload management and serve to drive faster response and communication times when abnormal operating conditions arise. Through new data analytics tools, the increased Gas Control personnel will be able to leverage the real-time and near real-time data coming in from the new and existing field assets. These new tools and data will enable Gas Control to assess the ongoing health of the system and to proactively identify areas of concern or take preventative maintenance measures.

Expenses are allocated 90.23% to SoCalGas and 9.77% to SDG&E based on annual gas throughput.

TABLE CHB-31
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
2200-2289.000	SCG-Risk-1 – C17	Control Room Monitoring, Operation and Fatigue Management	2,982	2,982	0	0

2. Forecast Method

The TY 2024 forecast was established using the base year recorded methodology to which the anticipated costs for incremental hires were added. BY 2021 actual expenses, along with the costs for the incremental employees, is the most effective forecast method and will provide the necessary funding during the forecast period. Historical averages would not accurately reflect the incremental employees needed to support CCM during the forecast period. Since the costs in this category are primarily labor-driven, the most recent year's actual expenditures provide the best estimate of future expenses. Therefore, the base year recorded provides the most accurate representation of future costs for Gas Control during the forecast period.

3. Cost Drivers

SoCalGas forecasts a $3,700,000 increase in TY 2024 expenditure. This increase is directly tied to the incremental employees associated with CCM project and the increased Gas Control workload associated with it. The base costs support control room functions, including monitoring and managing the pipeline system in accordance with pipeline safety parameters as established by Federal and State agencies. Control Room employees analyze and respond to abnormal and/or emergency pipeline system situations. They coordinate necessary pipeline shutdowns for maintenance and/or emergency measures and serve as a communication center between various departments that conduct maintenance on the transmission pipeline system.

The incremental costs are the result of the CCM project, which will deploy and integrate data from over 9,800 new and existing field assets into Gas Control by the end of 2028. Several areas within the Gas Control organization will be impacted and restructured as this new data transforms the way Gas Control monitors and manages the distribution and transmission systems.

The core control room team will grow by 19 FTEs in the areas of system controllers, field operations coordinators, leads, and supervisors because of the new and existing field assets being added to the distribution and transmission pipelines. The distribution assets will result in additional resources to provide 24/7 monitoring, management, and response to alarms as well as planned and unplanned events. The installation of OPM stations and HCA methane sensors to the transmission system will require additional resources to monitor and manage the data coming from these newly installed assets. These new field assets will also require field support resources within the control room that will help coordinate across multiple business units during planned and unplanned activities on the distribution system. As a result of incremental system controllers, more leads and supervisors will be needed to provide additional experience, knowledge, shift management, oversight, and support to the organization.

An additional six FTEs will be needed to focus on continuous improvement. With this new pipeline data and the expansion of oversight to the distribution system, a team of resources is needed to focus on changing processes, developing documentation procedures, and optimizing capabilities to enhance how cross-departmental action items and deliverables are tracked and completed. This team will lead multiple projects to drive key performance indicators, analyze Gas Control data, and provide insights and recommendations on how to optimize operational

practices. They will also engage with business leaders and users to increase effectiveness by identifying and facilitating changes to processes, products, services, software, and hardware.

The outage coordination team will grow by four FTEs due to the integration of the distribution system into Gas Control as well as the additional transmission field assets. These resources will help develop and support the alarm response strategies as well as perform system analysis. These resources include system reliability engineers to provide technical support and engineering analysis during planned and unplanned outages on both the distribution and transmission systems.

As new and existing distribution and transmission field assets are integrated into Gas Control, the control room support resources will grow by two FTEs. These resources will handle control room responsibilities that include control room security management and provide project management support to transformational activities directly impacting the control room. The security management resource will work closely with IT personnel and provide strategic Cybersecurity support. The project management resource will serve as a subject matter expert supporting control room transformational projects and taking on responsibilities related to long-term forecasting, alarm management reporting, closing out safety sensitive alarms, and configuration of alarms.

Lastly, the control room training and compliance team will increase by three FTEs, as there will be a need to expand training content and implement training in support of the new roles, responsibilities, and processes. These resources will also address the increase in system controller training needs and will update the control room management plan as well as operator qualification materials.

J. SCADA Operations – Cost Center 2200-0329

TABLE CHB-32
Southern California Gas Company
Summary of O&M Costs

GAS TRANSMSSION OPERATIONS & CONSTRUCTION GAS CONTROL SYSTEM PLANNING In 2021 $ (000s)			
SCADA Operations	**BY 2021 Adjusted Recorded**	**TY 2024 Estimate**	**Change**
Labor	686	791	105
Non-Labor	500	500	0
NSE Total	0	0	0
Total Non-Shared Services	**1,186**	**1,291**	**105**
FTE	**5.7**	**6.7**	**1**

1. Description of Costs and Underlying Activities

The Supervisory Control and Data Acquisition (SCADA) Operations department manages the planning, operation, and maintenance of the SCADA system. The SCADA system provides for remote monitoring and operation of valves, compressors, pressure regulation equipment, and gas flow across the system. The organization's responsibilities include compliance with Control Room Management – PHMSA Rule 49 C.F.R § 192.631 regarding the costs represented for this department support all the Control Room and SCADA Operations functions. One incremental employee is forecasted to help effectively operate the SCADA system and to add the new assets into SCADA as they come online. All work included in this category is considered RAMP.

Expenses are allocated 90.23% to SoCalGas and 9.77% to SDG&E based on annual gas throughput.

TABLE CHB-33
RAMP Activity O&M Forecasts by Workpaper
In 2021 Dollars ($000s)

Workpaper	RAMP ID	Description	BY2021 Embedded Base Costs	TY2024 Estimated Total	TY2024 Estimated Incremental	GRC RSE
2200-0329.000	SCG-Risk-1 - C16	SCADA Operations	1,185	1,185	0	0
2200-0329.000	SCG-Risk-1 - C16	SCADA Operations	0	105	105	0

2. Forecast Method

The TY 2024 forecast was established using the base year recorded methodology. SoCalGas anticipates that costs related to SCADA Operations will remain consistent with BY 2021 actual expenditures over the forecast period. Forecasted incremental costs associated with one new hire were then added to the base year result to establish the TY 2024 forecast. Since the costs in this category are primarily labor-driven, the most recent year's actual expenditures provide the best estimate of future expenses. Therefore, base year recorded is the most accurate representation of future costs for this category during the forecast period.

3. Cost Drivers

SoCalGas forecasts a $105,000 increase in TY 2024 expenditure. The cost driver behind this forecasted increase is the addition of a new SCADA advisor who is needed to effectively operate the SCADA system and to add the new assets into SCADA system. The non-labor cost drivers are made up of servers and workstations that make up the SCADA system, in addition to telecom costs for the Very Small Aperture Terminal (VSAT) and cellular communications used to communicate with field devices.

VI. CAPITAL

The primary objective of SoCalGas's capital investments is to provide safe and reliable delivery of natural gas to customers at reasonable rates. In addition to this, SoCalGas is committed to investing in the infrastructure and support services needed to transition to a net zero greenhouse gas emissions future. This will require expanding on both proven and new

technologies in energy efficiency, renewable natural gas, renewable electricity, fuel cells, hydrogen, and carbon management. The main factors that drive the purpose and need for Gas Transmission Operations capital projects relate to follow-up projects that are the result of compliance inspections and the increasing average age of natural gas transportation infrastructure. In many cases capital projects are driven by the desire to leverage the benefits of automation and remote operating capabilities, coupled with obsolete equipment that may no longer be supported by the manufacturer, and the increasing scarcity of replacement parts.

Each workpaper in Ex. SCG-06-CWP includes a Summary of Adjustments to Forecast section. This details the portion that is forecasted to be ratepayer funded (non-collectible) and the portion anticipated to be collected from third parties (collectible), if applicable. The capital projects for Gas Transmission Operations and Construction often have a portion of the forecast that is collectible. The collectible portion is necessary for calculating the proper allocation of overhead amounts to these projects, but the fully loaded collectible amounts are not included in the requested revenue requirement.

With respect to collectible portions, SoCalGas is requesting approval of a Litigated Project Cost Memorandum Account (LPCMA) to record the capital-related costs associated with projects that are intended to qualify as a collectible project to be recovered from third-party customers (*e.g.*, Contributions in Aid of Construction from a local government entity) instead of ratepayers but are later deemed by a court to be non-collectible from third-party customers. Collectible costs are costs that SoCalGas expects to collect from third parties (*i.e.*, not to be collected from ratepayers). For example, in some situations, a local governmental entity (*e.g.*, Los Angeles) may be responsible for certain costs associated with relocating utility infrastructure as part of a development project. In this example, such costs are considered collectible because they are to be collected from the city. Non-collectible costs are costs that are not expected to be collected from a third party and instead are treated as costs to be collected from ratepayers. A situation may arise in the context of utility disputes with public entities over who should pay for the relocation of utility facilities necessitated by municipal or other public entity projects, such as water, sewer, or transit projects. For instance, while the utility may argue in a litigated proceeding that the public entity should bear the relocation costs, courts may rule otherwise.

If a court rules that a utility must bear the costs of the activity – effectively deeming the costs as non-collectible – SoCalGas will record to the LPCMA any historical capital-related costs (*i.e.*, depreciation, return, and taxes) based on the timing of when the project went into service, no earlier than the effective date of SoCalGas's TY 2024 GRC Decision. For example, if a court rules a project is non-collectible in late 2024 and it had gone into service in 2023, capital-related costs would be recorded to the LPCMA as of January 1, 2024, or the effective date of the TY 2024 GRC. Memorandum account treatment for these costs is reasonable and just, as it will allow SoCalGas the opportunity to litigate, where appropriate, whether the third-party customer should bear the costs at issue, while preserving the ability to later seek recovery of the incremental capital-related costs from ratepayers associated with projects that can no longer be collected from a third-party customer, if the litigation proves unsuccessful.

SoCalGas would not record revenue requirement prior to any ruling for tracking purposes and would treat a project as collectible consistent with its understanding. If thereafter a project is deemed non-collectible, SoCalGas proposes to record any historical revenue requirement associated with the project based on the timing of when the project went into service, no earlier than January 1, 2024. Any costs recorded to the memo account would be subject to a reasonableness review prior to inclusion in rates and rate base. Additionally, costs recorded in the LPCMA may be addressed in a GRC or other applicable proceeding. SoCalGas seeks authorization for the LPCMA in this GRC to avoid the prohibition against retroactive ratemaking, and therefore requests Commission approval of the LPCMA.[16] In preparing the TY 2024 General Rate Case forecast for this testimony, we conducted a review of historical project activity and associated spending levels and compared it to base year activities to develop an assessment of future requirements that are necessary to maintain the safe and reliable operation of the gas transmission system while mitigating risks and supporting greater integration of alternative fuels. Over the last three years, Gas Transmission Operations and Construction organizations have implemented process improvements that have resulted in capital project efficiencies. These efficiencies include:

[16] *See* Regulatory Accounts testimony of Rae Marie Yu for details on the LPCMA (Ex. SCG-38).

a. Development of the Technical Services Request (TSR) process, which allows capital project requests from the operating districts to be submitted, stored, and prioritized.

b. Utilization of the Capital Delivery Model (CDM) that sets forth the various stages of the project lifecycle for managing capital projects.

c. Utilization of improved project control support that provides project managers the necessary support on project costs and schedule milestones.

d. Development of a Construction Management Department and a Governance and Compliance Department that support project closeout.

In addition, capital projects that involve welding have increased costs due to a new process improvements implemented in 2020 for all welding inspectors requested by the CPUC's Safety and Enforcement Division (SED). This process improvement includes several welding checklists:

a. Welding Inspection Knowledge Checklist – completed by the Construction Management groups to validate competency of each Welding Inspector and demonstrate their understanding of their requirements as set forth in Company standards.

b. Welding Inspections Elements Checklist – completed by an independent third-party oversight inspection to provide governance review and evaluate welding inspector for programmatic compliance.

c. Quality Assurance Assessment Checklist – completed by the Gas Compliance Quality Management assessor to perform QA assessments with a holistic project view, with a focus on welding inspections.

Lastly, all high-pressure projects will go through an improved project closeout process, improving the time it takes to close them out. High-pressure project closeout is performed in accordance with applicable Company standards.[17]

Based on the foregoing, the forecast methodologies for capital workpapers in this testimony utilize five-year averages, three-year averages, and base year recorded forecast methods where appropriate, that were then adjusted to account for anticipated work. The Control

[17] *See* Ex. SCG-27 for additional details related to the associated quality assessments.

Center Modernization (CCM) project utilized a zero-based forecast methodology as historical costs reflected ramp up years and did not reflect the full deployment forecasts for the CCM capital projects. Compressor Station Modernization and New Pipeline costs were also forecast using a zero-based methodology due to detailed costs that are known.

Table CHB-34 summarizes the total capital forecasts for 2022, 2023, and 2024.

TABLE CHB-34
Southern California Gas Company
Summary of Capital Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)				
	2021 Adjusted-Recorded	**Estimated 2022**	**Estimated 2023**	**Estimated 2024**
A. New Construction Pipeline	657	13,864	18,890	173
B. Pipeline Replacements	54,926	40,000	40,000	35,000
C. Pipeline Relocation - Freeway	25	1,701	201	201
D. Pipeline Relocation-Franchise/Private/ROW	11,005	11,364	10,007	10,007
E. Compressor Stations	25,741	13,000	13,000	10,000
F. Cathodic Protection	12,496	8,000	8,000	7,000
G. Measurement & Regulation Stations	73,504	47,631	52,774	35,632
H. Security & Auxiliary Equipment	10,421	4,000	3,000	3,000
I. Buildings & Improvements	2,487	1,000	1,000	1,000
J. Capital Tools	1,205	892	892	892
K. Blythe Compressor Station Modernization	57,810	39,004	370	0
L. Control Center Modernization	633	2,038	2,608	3,746
Total	**250,910**	**182,494**	**150,742**	**106,651**

A. New Construction Pipeline

TABLE CHB-35
Southern California Gas Company
Summary of Capital Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)				
New Construction Pipeline	**2021 Adjusted-Recorded**	**Estimated 2022**	**Estimated 2023**	**Estimated 2024**
New Construction Pipeline, *Collectible* [18]	657	13,864	18,890	173
Total	**657**	**13,864**	**18,890**	**173**

1. Description of Costs and Underlying Activities

The construction of new pipeline is required to provide the backbone of the local gas transmission system with additional resiliency, capacity, or reliability to serve load and to provide gas supply reinforcement to existing areas, or to supply new areas where new natural gas service is required.

The related forecast captures the collectible costs of the Lakewood project, which includes the construction of 3.6 miles of new Transmission Lateral. The specific project details of this installation can be found in Ex. SCG-06, Workpaper Group 301.1.

2. Forecast Method

New pipeline construction is driven by the need to deliver natural gas to new or increased load where the service is required. In developing the forecast for this work category, SoCalGas reviewed historical (2017 through 2021) expenditures as well as available data on future projects. A zero-based forecast was determined to be the best forecast method since one project is known at this time, while additional projects may be identified. The Lakewood project has costs associated with it in 2022, 2023, and 2024.

[18] *See* Ex. SCG-06-CWP for additional information about the treatment of collectible projects. The collectible portion is necessary for calculating the proper allocation of overhead amounts to these projects, but the fully loaded collectible amounts are not included in the requested revenue requirement.

3. Cost Drivers

The primary cost driver for the construction of new pipeline is the need to install a new pipeline at the request of an end user. This collectible project includes costs for company labor, contractor services, third-party services, and materials, such as pipes and fittings.

B. Pipeline Replacements

TABLE CHB-36
Southern California Gas Company
Summary of Capital Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)				
	2021 Adjusted-Recorded	**Estimated 2022**	**Estimated 2023**	**Estimated 2024**
Pipeline Replacements, *Non-Collectible*	54,926	40,000	40,000	35,000
Total	**54,926**	**40,000**	**40,000**	**35,000**

1. Description of Costs and Underlying Activities

SoCalGas operates transmission pipelines that are up to 36 inches in diameter in a geographical area that extends from the Colorado River in the East to the Pacific Coast in the West, and from Tulare County to the North to the San Diego County line to the South. The condition of the pipelines is routinely assessed through operation and maintenance activities, including pipeline patrols, leak surveys, in-line inspections, and external assessments. When deteriorated conditions are found on a pipeline, an engineering evaluation of the pipeline is performed to determine if repair or replacement is needed to reduce risk. Pipeline conditions that may necessitate repair or replacement include corrosion, damage, and leakage. In addition, external and environmental factors, such as changes in class location due to expanding development, insufficient soil cover due to erosion, and other hazards such as subsidence and landslides, can lead to pipeline replacements.

Leak repair activities consist of the planning, installation, construction, and closeout of projects initiated due to leaks on transmission pipelines or appurtenances. Classification of leaks is based on relative degree of hazard and must be remediated in accordance with the timelines set out by GO 112 F. Leak repair activities are necessary to uphold public safety, maintain system reliability, and meet regulatory requirements. The cost associated with leak repair does not

include any accelerated leak repair activity. Details for accelerated leak repair work can be found in SB 1371 2022 Tier 3 Advice Letter and Compliance Plan. A Warning Mesh is often included in leak repair projects.

Pipeline relocation and replacement activities consist of the planning, installation, construction, and closeout of pipeline reroutes triggered by either weather-related external forces, municipality requests, right-of-way agreements, or class location changes. Pipeline replacements due to changes in operating class are time sensitive and must be remediated within 24 months of the class location change. These relocation and replacement activities are necessary to reduce the potential for pipeline damage, uphold public safety, and maintain pipeline access. A Warning Mesh is always included in pipeline relocation/replacement projects.

Shallow or exposed pipe activities consist of the planning, installation, construction, and closeout of projects to add additional cover or protection to Transmission pipelines. Exposed pipelines are inspected for signs of corrosion, metallurgical flaws, construction flaws, and mechanical damage. Concrete revetment mats (technology designed to help prevent shoreline erosion) and/or additional earth coverage are installed to prevent damage to exposed/shallow pipe caused by corrosion, third-party damage, erosion, or other external forces. These activities are necessary to uphold public safety, reduce the potential for pipeline damage, and extend the life of the pipeline.

TABLE CHB-37
RAMP Activity Capital Forecasts by Workpaper
In 2021 Dollars ($000s)

Workpaper	RAMP ID	Description	2022 Estimated RAMP Total	2023 Estimated RAMP Total	2024 Estimated RAMP Total	GRC RSE*
003020.001	SCG-Risk-1 - C03	Leak Repair T1 & T2 (HCA and Non-HCA)	10,711	10,000	10,500	-
003020.002	SCG-Risk-1 - C05 - T1&T2	Pipeline Relocation/ Replacement (HCA & Non- HCA)	21,421	20,001	21,000	-
003020.003	SCG-Risk-1 -	Shallow/ Exposed Pipe	3,570	3,334	3,500	-

Workpaper	RAMP ID	Description	2022 Estimated RAMP Total	2023 Estimated RAMP Total	2024 Estimated RAMP Total	GRC RSE*
	C06 T1 & T2	Remediations (HCA & Non-HCA)				
003020.004	SCG-Risk-1 - C5 - T1 & T2	Pipeline Relocation/ Replacement (HCA & Non- HCA)	4,298	6,665	0	-
Total			40,000	40,000	35,000	-

*Tranche level RSEs and additional details are available in Ex. SCG-06-WP.

2. Forecast Method

The TY 2024 forecast was determined using the five-year average methodology and then adjusted to provide adequate funding for anticipated projects. The base year recorded as well as the historical average forecast methodologies provide excess funding for the anticipated work during this GRC forecast period and are therefore not effective as choices for this cost category.

3. Cost Drivers

The primary costs for pipeline replacements are related to correcting pipeline conditions that could pose a safety risk. The potential loss of throughput presents a reliability risk that drives mitigation costs since the RAMP items are driven by safety and reliability. Project costs are impacted by the pipeline size and pressure, project location (*i.e.*, urban vs. rural), contractor availability, soil conditions, and permitting conditions. The primary costs in this category are company labor, contractor services, third-party services, and materials such as pipe and fittings. SoCalGas's emissions reduction program, in compliance with SB 1371, requires the use of additional contractor support to cross-compress gas from an impacted section of pipeline into a non-impacted section of pipeline utilizing the new incremental fittings. SoCalGas's adoption of this pre-construction practice of gas capture rather than releasing pipeline gas into the atmosphere reduces methane loss and provides an environmental benefit, but also increases costs that are captured in the Gas System Staff and Technology testimony of Wallace Rawls (Ex. SCG-05). Another cost driver is the new process improvement of the Welding Inspector Knowledge Checklist mentioned above.

C. Pipeline Relocation – Freeway

TABLE CHB-38
Southern California Gas Company
Summary of Capital Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)				
	2021 Adjusted-Recorded	**Estimated 2022 (000s)**	**Estimated 2023 (000s)**	**Estimated 2024 (000s)**
Pipeline Relocation Freeway, *Non-Collectible*	25	1,701	201	201
Total	**25**	**1,701**	**201**	**201**

1. Description of Costs and Underlying Activities

The forecasted capital costs in the Pipeline Relocation - Freeway category includes expenditures associated with relocating or altering SoCalGas facilities in response to external requests, as specified by the provisions of utility agreements with state and local agencies. Pipelines and related facilities must occasionally be relocated due to their proximity to planned construction projects on freeways.

Freeway relocation projects in SoCalGas service territory are initiated by requests from the California Department of Transportation (Caltrans). This agency must submit requests for SoCalGas to relocate pipelines and related facilities that, if maintained in their current location, would interfere with planned construction or reconstruction of freeways.

Gas facility projects and work initiated to accommodate freeway enhancements include altering pipelines crossing over and under a freeway overpass, any gas facility interfering with construction within the agency's right-of-way, or any gas facility in the general vicinity that interferes with the freeway project construction. The exact timing and number of freeway pipeline projects is driven by the schedules and budgets of Caltrans. Therefore, these expenditures are outside of SoCalGas's control, and are dependent on the number, extent, and timing of these requests. When projects do occur, however, SoCalGas must promptly complete its portion of the work to minimize scheduling delays for Caltrans.

2. Forecast Method

The TY 2024 forecast was determined using the five-year average methodology. In 2021, front-end engineering and design started for two Caltrans projects. The cost estimates for these projects were considered when adjusting the five-year average up in 2022. The forecasted

amount in 2023 and 2024 is designed to be used for project requests from Caltrans during the forecast period.

3. Cost Drivers

The primary cost driver for pipeline relocation near freeways is the need to relocate or alter a Gas Transmission facility due to a request from Caltrans. The cost drivers include company labor, contractor services, third-party services, and materials such as pipe and fittings. As mentioned previously, regulations such as SB 1371 have increased project costs. These planned pipeline replacement projects now require additional fittings to capture natural gas pipeline blowdowns. This natural gas capture also requires the use of additional contractor support to cross-compress gas from the impacted section of pipeline into the non-impacted section of pipeline utilizing these new mandated fittings. The cost is also driven by the new Welding Inspector Knowledge Checklist mentioned previously.

D. Pipeline Relocation – Franchise/Private/ROW

TABLE CHB-39
Southern California Gas Company
Summary of Capital Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)				
	2021 Adjusted-Recorded	**Estimated 2022**	**Estimated 2023**	**Estimated 2024**
Pipeline Relocation – Franchise/Private/ROW, *Non-Collectible (NC)*	11,005	11,007	10,007	10,007
Pipeline Relocation - Franchise/Private/ROW, – *Collectible (CO)*[19]	0	357	0	0
Total	**11,005**	**11,364**	**10,007**	**10,007**

[19] *See* Ex. SCG-06-CWP for additional information about the activities described herein. Each workpaper includes a Summary of Adjustments to Forecast section and workpaper details that separate the portion that is forecasted to be ratepayer funded (non-collectible) and the portion anticipated to be collected from third parties (collectible), if applicable. The collectible portion is necessary for calculating the proper allocation of overhead amounts to these projects; the fully loaded collectible amounts are not included in the requested revenue requirement.

1. Description of Costs and Underlying Activities

The forecasted capital costs in the Pipeline Relocations – Franchise/Private category include expenditures associated with relocating or altering SoCalGas facilities in response to private property and external requests, as specified under the provisions of SoCalGas's franchise agreements with city and county agencies.

Franchise/private pipeline relocation work is driven by external agencies, such as private property owners, cities, counties, or the state. These agencies submit requests for SoCalGas to relocate the pipeline that, if left in its current location, would interfere with the construction or reconstruction of roads or railway systems. Some examples of the type of municipality work that drives SoCalGas franchise pipe relocations include street widening, resurfacing, storm drain work, and municipal water and sewer work.

It is difficult to predict with any degree of accuracy when franchise projects will be executed since SoCalGas does not have control over the agencies' construction schedules. When projects do come up, SoCalGas must promptly complete its portion of the work to minimize schedule delays for the private property owner, municipality, or agency.

TABLE CHB-40
RAMP Activity Capital Forecasts by Workpaper
In 2021 Dollars ($000s)

Workpaper	RAMP ID	Description	2022 Estimated RAMP Total	2023 Estimated RAMP Total	2024 Estimated RAMP Total	GRC RSE*
003040.001	SCG-Risk-1 - C5 T1 &T2	Pipeline Relocation/ Replacement (HCA and Non-HCA)	9,823	6,880	9,757	-

*Tranche level RSEs and additional details are available in Ex. SCG-06-WP.

2. Forecast Method

The TY 2024 forecast was established using the base year recorded methodology. This was then adjusted down by $1,000,000 in both 2023 and 2024, because during the preparation of this filing, we found that there are no known projects in those years. Long-term forecasting of franchisee work is challenging, given the changes in governmental project funding, the considerable number of governmental jurisdictions involved, and limited long-term information

on upcoming specific projects. It is anticipated that there will be projects throughout the forecast period. Base year recorded, with adjustments, provides the most effective way of determining the funding needed for this category during the forecast period.

3. Cost Drivers

The primary cost driver for franchise/private pipeline relocation is the need to relocate or alter a Gas Transmission facility at the request of private property owners and external agencies, such as cities or counties. Other cost drivers include company labor, contractor services, third-party services, and materials such as pipe and fittings. In addition, regulations such as SB 1371 have increased project costs as all planned pipeline replacement projects incur investing in additional fittings to capture natural gas pipeline blowdowns. This natural gas capture also requires the use of additional contractor support to cross-compress gas from the impacted section of pipeline into the non-impacted section of pipeline utilizing the new incremental fittings. Another cost driver is the new process improvement of the Welding Inspector Knowledge Checklist mentioned above.

E. Compressor Stations Routine Capital

TABLE CHB-41
Southern California Gas Company
Summary of Routine Capital Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)				
Categories of Management	**2021 Adjusted-Recorded**	**Estimated 2022 (000s)**	**Estimated 2023 (000s)**	**Estimated 2024 (000s)**
Compressor Stations, *Non-collectible*, RAMP C10	25,741	13,000	13,000	10,000
Total	**25,741**	**13,000**	**13,000**	**10,000**

1. Description of Costs and Underlying Activities

The forecasted capital costs in compressor stations include routine maintenance activity (non-compressor modernization) associated with the installation and replacement of compressor station equipment used in operating the transmission system. The nature of compressor station operation requires consistent maintenance and replacement of key engine components and control equipment to maintain the reliability and safety of the facility, and to monitor and comply with air emissions permits. The nine SoCalGas compressor stations are strategically located

throughout the service territory to help increase the gas pressure in the pipeline to move gas through transmission pipelines and transport it to storage, large-volume customers, and distribution. The availability and reliability of SoCalGas's compressor stations are at the core of SoCalGas's operational success and are critical to all operational departments.

Compressor station work is primarily driven by compliance maintenance activities, unplanned equipment outages, and changes to regulations (*e.g.*, AQMD Rules). This work consists of the planning, installation, construction, and closeout of existing compressor upgrades, pipe replacements, valve replacements, and equipment upgrades. These upgrades are required over time due to normal wear and tear on compressor station equipment. These activities are necessary to maintain or improve system reliability, extend equipment and system life, and uphold public safety. Many of the compressor stations have been in service for several decades, which has resulted in increasing capital upgrades to support continued reliability and safety of operations. SoCalGas must manage its operations in accordance with mandated regulations, which drive the need for technological asset additions and foundational mechanical systems that can support advanced controls.

TABLE CHB-42
RAMP Activity Capital Forecasts by Workpaper
In 2021 D$ (000s)

Workpaper	RAMP ID	Description	2022 Estimated RAMP Total	2023 Estimated RAMP Total	2024 Estimated RAMP Total	GRC RSE
003050.002	SCG-Risk-1 - C10	Compressor Stations - Capital	13,000	13,000	10,000	2

2. Forecast Method

The TY 2024 forecast was determined using the five-year average methodology, which was then adjusted in the forecast period to reflect anticipated needs. It is anticipated that the modernization of two Gas Transmission compressor stations will require fewer capital improvements, which supports the reduced forecast methodology. SoCalGas determined that the base year recorded methodology and the other historical averages would provide excess funding during the forecast period.

3. Cost Drivers

The primary cost driver for Compressor Stations is maintaining system throughput and delivering safe, reliable natural gas. If an upgrade or replacement is not completed, unit availability and system reliability can decrease, causing potential curtailments. The costs for Compressor Stations are driven by specialized equipment costs, specialized services provided by compressor services contractors, planning costs (which include engineering design and construction costs), and material costs ranging from transmitters to new compressor units.

F. Cathodic Protection

TABLE CHB-43
Southern California Gas Company
Summary of Capital Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)				
Categories of Management	**2021 Adjusted-Recorded**	**Estimated 2022**	**Estimated 2023**	**Estimated 2024**
Cathodic Protection, *Non-collectible (NC),* RAMP C01	12,496	8,000	8,000	7,000
Total	**12,496**	**8,000**	**8,000**	**7,000**

1. Description of Costs and Underlying Activities

Cathodic protection (CP) is a technique used to control the corrosion of a metal surface by making it the cathodic side of an electrochemical cell. CP activities consist of the planning, installing, and closeout of 1) rectifiers/deep well anode beds, 2) remote power, and 3) pipeline coating replacements on transmission pipelines. Rectifiers/deep well anode beds are utilized to drive the electrochemical reaction required for CP via an impressed current system along SoCalGas pipelines. The utilization of remote power allows SoCalGas the flexibility to install impressed current systems without having to find a power supply and instead focus on the most effective placement for an impressed current system. Pipeline coating replacements allow SoCalGas to replace the pipeline's first line of defense against corrosion related defects and lower the amount of CP current needed to protect the newly recoated portion of pipeline. These activities are necessary to maintain or improve the pipeline's CP system, extend the life of the pipeline, and maintain CP compliance prescribed by 49 CFR § 192.463. The entirety of the

work associated with cathodic protection is RAMP-related. CP projects are often completed proactively, which provides significant cost savings over addressing issues as they arise.

TABLE CHB-44
RAMP Activity Capital Forecasts by Workpaper
In 2021 $(000s)

Workpaper	ID	Description	2022 Estimated RAMP Total	2023 Estimated RAMP Total	2024 Estimated RAMP Total	GRC RSE*
003060.001	SCG-Risk-1 - C01 - T1&T2	Cathodic Protection - Capital (HCA & Non-HCA)	8,000	8,000	7,000	-

*Tranche level RSEs and additional details are available in Ex. SCG-06-WP.

2. Forecast Method

The TY 2024 forecast was determined using the five-year average methodology. Using this forecast method and then adjusting it down each year provided adequate funding to meet the needs of cathodic protection. SoCalGas determined that the base year recorded methodology and the other historical averages would provide excess funding during the forecast period.

3. Cost Drivers

The underlying cost drivers for CP activities are driven by pipeline coating conditions, lack of adequate CP current along pipelines, adverse effects from nearby foreign pipelines, replacement of rectifier/deep well systems, High Voltage Alternating Current areas around the pipeline, permitting (*i.e.*, land, right-of way, and environmental), and proactive and preventative measures.

The primary cost driver for this category is related to the remediation activities for any out-of-tolerance reads. These remediation activities include inspecting, replacing, upgrading, or altering components of the CP system such as deep well anodes, rectifiers, bonds, test points, electric drops, and insulators. Significant work is required to maintain CP system components as they reach the end of their useful life. CP projects require excavation to expose the pipeline, stripping the existing coating, rewrapping, backfill, and compaction, as well as repaving of the impacted area if needed. The location of a project as well as drilling contractor availability are cost drivers. There are limited qualified drilling contractors in Southern California, and they also perform work for customers other than SoCalGas.

G. Measurement & Regulation Stations

TABLE CHB-45
Southern California Gas Company
Summary of Capital Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)				
	2021 Adjusted-Recorded	**Estimated 2022**	**Estimated 2023**	**Estimated 2024**
Measurement & Regulation Stations, *Non-Collectible (NC)*	73,504	40,000	40,000	35,000
Measurement & Regulation Stations, *Collectible (CO)*[20]	0	7,631	12,774	632
Total	**73,504**	**47,631**	**52,774**	**35,632**

1. Description of Costs and Underlying Activities

The safety and reliability of SoCalGas's transmission system is dependent on the measurement and regulation equipment that is used to control the flow and pressure of natural gas in transmission pipelines with valves and pressure limiting stations. This equipment is controlled locally or through remote commands from a central SCADA system. The communication equipment includes programmable logic controllers, pressure transmitters, uninterruptible power supply systems, temperature probes, gas quality sensors, and communication/interface technologies. Measurement and regulation stations are key pieces of control equipment on the transmission pipeline network that support the mitigation of risks associated with public safety, system reliability, and infrastructure integrity. As such, this equipment not only controls the flow of natural gas but is also the first line of defense against over-pressurization. This equipment plays a vital role in SoCalGas's ability to blend renewable natural gas into the system.

Measurement and regulation activities consist of the planning, installation, construction, and closeout of redesigns/upgrades for producer vessels, meters, stations, Company-owned facilities at customer meter set assemblies, and control valve stations on transmission pipeline systems. These upgrades are required to replace aging equipment with new equipment to enhance functionality. Both the safety and reliability of SoCalGas's transmission system is dependent on the meter and regulator equipment that is used to control the flow of natural gas in

[20] *See* Ex. SCG-06-CWP for additional information about the activities described herein.

transmission pipelines. These activities are necessary to maintain or improve system reliability, extend equipment and system life, and uphold public safety.

TABLE CHB-46
Southern California Gas Company
RAMP Activity Capital Forecasts by Workpaper

GAS TRANSMISSION OPERATIONS & CONSTRUCTION RAMP Activity Capital Forecasts by Workpaper In 2021 $ (000s)						
Workpaper	**RAMP ID**	**Description**	**2022 Estimated RAMP Total**	**2023 Estimated RAMP Total**	**2024 Estimated RAMP Total**	**GRC RSE***
003080.001	SCG-Risk-1 - C12-T1&T2	Measurement & Regulation - Capital (HCA & Non-HCA)	30,000	30,000	26,250	-
003080.002	SCG-Risk-1 - C12-T1&T2	Measurement & Regulation - Capital (HCA & Non-HCA)	10,000	10,000	8,750	-

*Tranche level RSEs and additional details are available in Ex. SCG-06-WP.

2. Forecast Method

The TY 2024 forecast was determined using the five-year average forecast methodology and then adjusted to provide adequate funding for anticipated projects. The anticipated projects in the forecast period are smaller in scale than what was completed in the most recent years. In addition, there have been many improvements from PSEP projects at some of the Transmission M&R sites over the last few years, which has improved conditions and reduced the need to upgrade these sites. The base year recorded, and the other historical average forecast methodologies would provide excess funding for the anticipated work during the forecast period.

3. Cost Drivers

Work activities within the Measurement and Regulation Stations category are driven by regulatory requirements as well as the need to safeguard the safety and integrity of the pipeline system and mitigate risks associated with customer/public and employee/contractor safety, system reliability, and infrastructure integrity. The equipment replacements are driven by several factors including the condition of the equipment, the need to support system

reinforcement, and the need to address infrastructure maintenance. The collectible projects are driven by the installation of interconnection facilities to allow injection of Renewable Natural Gas (RNG) in compliance with SoCalGas Rule 45 (Standard Renewable Gas Interconnection).[21]

The underlying cost drivers for this capital work category relate to internal labor, third-party services, and materials such as piping, tubing, fittings, solar panels, actuators, and valves.

H. Security & Auxiliary Equipment

TABLE CHB-47
Southern California Gas Company
Summary of Capital Costs

GAS TRANSMISSION In 2021 $ (000s)				
	2021 Adjusted-Recorded	**Estimated 2022**	**Estimated 2023**	**Estimated 2024**
Security & Auxiliary Equipment	10,421	4,000	3,000	3,000
Total	**10,421**	**4,000**	**3,000**	**3,000**

1. Description of Costs and Underlying Activities

The Security and Auxiliary Equipment capital request captures the cost of equipment installation to address security for critical gas facilities owned and operated by SoCalGas. This category will further harden the security at critical sites to better protect them from security breaches. Additional security measures are taken in consultation with Corporate Security. This category includes but is not limited to the installation of control shelters housing video recording systems, cameras that provide perimeter protection, perimeter fencing, motion sensors, and high security key systems. These upgrades are required to address the physical security for critical gas facilities owned and operated by SoCalGas. The loss of these facilities would have a significant impact on the normal operation of the Transmission system. These activities harden the security at pressure limiting stations, valve stations, compressor stations, increase personnel safety, and reduce the potential of system damage.

Workplace Violence Prevention Program Enhancements include the use of physical security systems. The purpose of these activities is to reduce the likelihood of a workplace

[21] SoCalGas Rule No. 45 "Standard Renewable Gas Interconnection," October 28, 2020, *available at*: https://tariff.socalgas.com/regulatory/tariffs/tm2/pdf/45.pdf.

violence event by increasing protective measures at Company facilities that have employees. SoCalGas will be adding Physical Security System upgrades that will replace end of life equipment, improve integration, reduce nuisance alarms, and embrace recent industry security technology enhancements. Security enhancements to facilities and infrastructure improve access control, intrusion detection, and interdiction capabilities to deter, detect, delay, communicate, and respond to undesirable events. Currently, an electronic key system to replace mechanical keys is being implemented. The electronic key system will provide logging and audit capabilities, can be placed in remote locations without a network connection, and can be disabled by an administrator or set to disable after a period.

TABLE CHB-48
Southern California Gas Company
RAMP Activity Capital Forecasts by Workpaper

GAS TRANSMISSION OPERATIONS & CONSTRUCTION RAMP Activity Capital Forecasts by Workpaper In 2021 $ (000s)						
Workpaper	**RAMP ID**	**Description**	**2022 Estimated RAMP Total**	**2023 Estimated RAMP Total**	**2024 Estimated RAMP Total**	**GRC RSE***
003090.001	SCG-Risk-1 - C15	Security and Auxiliary Equipment	1,701	701	701	6.000
003090.002	SCG-CFF-5-1	RAMP SCG-CFF-5 Physical Security	2,218	2,218	2,218	0
003090.003	SCG-Risk-5 – M07	Workplace Violence Prevention Program Enhancement	81	81	81	162.000

2. Forecast Method

The TY 2024 forecast was determined using the five-year average forecast methodology and then adjusted to provide adequate funding for anticipated projects. The base year recorded and the other historical average forecast methodologies provide funding in excess of the anticipated work during the forecast period. The anticipated forecasted stand-alone physical

security projects are small in nature. In addition, costs have been reduced due to inter-departmental coordination of physical security hardening on projects.[22]

3. Cost Drivers

The cost drivers for this capital work category relate to equipment needed to keep SoCalGas's facilities safe. Security equipment in this category typically includes fencing, panoramic cameras, thermal imaging cameras, badge readers, and gauntlet fencing. Costs associated with this work vary depending on equipment type, operating location, and the availability of qualified contractors or service professionals.

I. Buildings & Improvements

TABLE CHB-49
Southern California Gas Company
Summary of Capital Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)			
	Forecast 2022 (000s)	**Forecast 2023 (000s)**	**Forecast 2024 (000s)**
Building & Improvements	1,000	1,000	1,000
Total	**1,000**	**1,000**	**1,000**

1. Description of Costs and Underlying Activities

Buildings and Improvements provides funding for construction and replacement or upgrades to structures used by Gas Transmission to contain, shelter, and/or protect equipment such as meter stations, pressure-regulating equipment, critical valves, or controls equipment. This protection is necessary to safeguard vulnerable and expensive equipment, particularly in remote locations.

2. Forecast Method

The TY 2024 forecast was developed using the three-year historical average methodology and then adjusted each year to account for anticipated spending on Buildings and Improvements. The activity anticipated in this category is projected to be lower than both the base year recorded costs and the historical averages. The three-year historical average is the closest starting point to the anticipated forecast spending.

[22] *See* Corporate Center – General Administration testimony of Derick R. Cooper (Ex. SCG-23).

3. Cost Drivers

The underlying cost drivers for this capital project category relate to the general construction costs in industrialized settings, typically gas valve or pressure-regulating stations, and the specialized nature of structures related to Gas Transmission pipelines. Usually, every building, shelter, and pipe support is a unique, one-time structure and the costs of building or modifying it are unique to a specialized class of third-party contractors.

J. Capital Tools

TABLE CHB-50
Southern California Gas Company
Summary of Capital Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION in 2021 $ (000s)			
	Forecast 2022	**Forecast 2023**	**Forecast 2024**
Capital Tools	892	892	892
Total	**892**	**892**	**892**

1. Description of Costs and Underlying Activities

Capital tools expenditures are associated with the purchase of tools and equipment used by Gas Transmission field personnel for the inspection, maintenance, and repair of gas pipeline systems and appurtenances to replace existing tools that are damaged, broken, outdated technologically, or have outlived their useful lives. In addition, SoCalGas invests in new tools that reduce customer disruptions, improve pipeline facility documentation, improve gas system safety, and improve employee safety.

2. Forecast Method

The TY 2024 forecast was established using the three-year average methodology. Routine tool purchase requirements are identified throughout each year as part of the regular course of maintenance and construction activities and are expected to continue during the forecast period. The three-year average provides funding for these anticipated purchases during the forecast period.

3. Cost Drivers

The cost driver for capital tools and equipment purchases is the need to continuously equip SoCalGas's employees with safe and reliable tools and equipment. SoCalGas's tools and

equipment are exposed to rigorous environments that impact their useful lives. Many of the tools and equipment being utilized in the field contain sensitive components that are subject to shock, vibration, rain, and dusty conditions, which are factors that contribute to the deterioration of the equipment. Cost drivers for this category include the need to replace existing tools that are damaged, broken, outdated, or have outlived their useful lives.

K. Blythe Compressor Station Modernization

The forecast for the Blythe Compressor Modernization Project for 2022, 2023, and 2024 are $39,000,000, $400,000, and $0, respectively, for which we are seeking rate recovery in this GRC.

TABLE CHB-51
Southern California Gas Company
Gas Transmission - Major Projects Capital Expenditures Summary of Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION– In 2021 $ (000s)			
Major Projects	**Forecast 2022**	**Forecast 2023**	**Forecast 2024**
A. Blythe Compressor Modernization	$39,004	$370	$0
Total	$39,004	$370	$0

1. Description of Costs and Underlying Activities

In the SoCalGas TY 2019 General Rate Case Decision, the Commission authorized capital investments for the Blythe Compressor Modernization Project.[23] SoCalGas has completed construction, installation, and commissioning of Plant 4 of the Blythe Compressor Modernization project. Units 11, 12, 14, and 15 of Blythe Compressor Modernization Project's Plant 2 have been retrofitted and commissioned. Blythe Station Integration scope will be completed and commissioned in 2023 followed by Plant 2 Unit 13 scope to complete the full scope of work of the Blythe Compressor Modernization Project.

Additional details for the Blythe Compressor Modernization project are provided in Appendix B – Blythe Compressor Modernization Supplemental Project Description.

[23] D.19-09-051 at 116-117.

TABLE CHB-52
Southern California Gas Company
RAMP Activity Capital Forecasts by Workpaper
In 2021 $ (000s)

Workpaper	RAMP ID	Description	2022 Estimated RAMP Total	2023 Estimated RAMP Total	2024 Estimated RAMP Total	GRC RSE
003350.001	SCG-Risk-1 - C23-T1	Blythe Compressor Station Modernization	29,350	0	0	-*
003350.002	SCG-Risk-1 - C23-T1	Blythe Compressor Station Modernization	9,654	370	0	-*

* An RSE will be calculated and submitted at a later date.

2. Forecast Method

The forecast developed for this cost category was developed using a zero-based methodology. This was completed using estimates based on knowledge of experienced personnel, vendor quotes for major equipment and material, and previously completed similar sized project work.

3. Cost Drivers

The underlying cost drivers for this capital project relate to schedule, equipment and material pricing, craft availability, wage rates and productivity.

L. Control Center Modernization (CCM) / Optical Pipeline Monitoring Stations and High Consequence Area (HCA) Methane Sensors

The Control Center Modernization (CCM) project is made up of multiple O&M and capital activities that impact areas within this Transmission testimony as well as several other witness areas. The CCM broader business justification for the entire CCM project scope, O&M and capital, can be found in Section VIII. Control Center Modernization of this testimony.

The section below details the capital costs and activities specifically related to the OPM stations and HCA methane sensors.

TABLE CHB-53
Southern California Gas Company
Summary of Capital Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)			
Control Center Modernization	**Forecast 2022**	**Forecast 2023**	**Forecast 2024**
Optical Pipeline Stations	1,469	1,469	1,469
HCA Methane Sensors	569	1,139	2,277
Total	**2,038**	**2,608**	**3,746**

1. Description of Costs and Underlying Activities

a. OPM Stations

The OPM stations capital forecasts for 2022, 2023, and 2024 are $1,500,000, $1,500,000, and $1,500,000, respectively. The CCM project's installation of the OPM stations are a continuation of activities described and approved in the 2019 GRC and support the installation of optical pipeline sensing line activities on new or replaced transmission lines meeting the following criteria:

- 12 inches in diameter or greater.
- One mile or more in continuous length.
- Operating at over 20% of Specified Minimum Yield Strength (SMYS).

OPM technology utilizes specialized fiber optic cables to provide temperature, strain, and vibration sensing capabilities. The cable is a distributed sensor and is not planned or optimized for communication. OPM stations will help control room and operations personnel identify when intrusions into the pipeline rights-of-way have occurred or when a pipeline, or right-of-way, has experienced movement that might pose a threat to the pipeline. The OPM station capabilities include:

- Sensing leaks by detecting temperature differences in the pipeline trench.
- Sensing ground movements by detecting elongation of the cable along the pipeline trench.
- Sensing intrusion by detecting acoustic and sound pressure changes (i.e., vibrations or impacts from heavy earth moving or digging equipment) in the pipeline trench.

- Collecting and viewing data for trending and analysis as well as communicating to a centralized system at Gas Control.

Advances in OPM sensing and data analysis now allow an operator to pinpoint, within ten feet, where a direct buried (12 to 18 inches above the pipeline) optical sensing cable has been disturbed, severed, or otherwise has sensed abnormal operating conditions. This data analysis can be used to monitor pipeline right of way activity in real-time and help drive decisions to send field operation crews to investigate when a suspected incident that might pose a risk to a pipeline's operational integrity has occurred.

Through continuous 24/7 monitoring as well as real-time data collection, Gas Control personnel, in conjunction with Gas Engineering and Field Operations, will be able to provide faster response times to detected incidents and will be able to quickly act on and communicate potential impacts as well as identify opportunities for proactive and preventative maintenance. These OPM stations will help increase system reliability, support sustainability efforts, and enhance the overall safety of our system.

SoCalGas has placed one of these OPM stations in service as of January 1, 2022 and plans to place in service an additional seven OPM stations by the end of 2024. The CCM project scope and costs are for the overall project management activities and development of new business processes, as well as for identifying new roles and responsibilities due to the new field technology. To date, the CCM project has primary project management responsibility for the installation of three OPM station projects by the end of 2024.

Following the commissioning of these OPM stations, Gas Control will assume monitoring oversight following the delivery of all required documentation and training. Gas Control will then begin to receive and monitor all applicable warnings, alerts, and alarms from the newly installed OPM stations and will engage the Transmission organization for on-site field evaluations in the event of a pipeline safety alarm or incident.

b. HCA Methane Sensors

The CCM project's HCA methane sensors capital forecast for 2022, 2023, and 2024 are $600,000, $1,100,000, and $2,300,000, respectively. The safety of the SoCalGas system will be further enhanced through the addition of near real-time pipeline right-of-way gas detection methane sensors near buildings that are considered high-occupancy, pose evacuation challenges, and are located within 220 yards of a high-pressure, large-diameter gas transmission pipeline.

The HCA methane sensors will enable 24/7 control room monitoring personnel to accelerate the identification of, response to, and remediation of potential leaks on the transmission system within high consequence and evacuation challenged areas. The HCA methane sensors will help increase system reliability, support sustainability efforts, and enhance the overall safety of our system.

The CCM capital costs are for activities that include new business process and policy development as well as project management responsibility for scoping, designing, testing, and deploying the HCA methane sensors on the transmission pipelines.

The CCM project has extended the HCA methane sensor deployment through 2028 because additional time is needed to assess emerging methane sensor technologies, verify optimal methane sensor performance for their intended application, and further develop the methane sensor site selection criteria. The CCM project will deploy and place 140 units in service by the end of 2024 and an additional 1,540 units by the end of 2028. The CCM project will be responsible for the project management of the HCA methane sensor deployment effort.

TABLE CHB-54
RAMP Activity Capital Forecasts by Workpaper
In 2021 Dollars ($000s)

Workpaper	RAMP ID	Description	2022 Estimated RAMP Total	2023 Estimated RAMP Total	2024 Estimated RAMP Total	GRC RSE
004050.001	SCG-Risk-2 - C37	Pipeline Monitoring Technologies	2,038	2,608	3,746	-

All costs associated with the OPM stations and HCA methane sensing activities are a part of RAMP (Pipeline Monitoring Technologies – C37: High Pressure).

c. RAMP Mitigation / C37 - Pipeline Monitoring Technologies

The CCM project will deploy new field pipeline monitoring technologies along existing high-consequence and evacuation-challenged areas as well as along new and replaced transmission pipelines. These field monitoring assets will enhance Gas Control's ability to monitor pipelines to identify and respond to abnormal operating or emergency conditions resulting from a dig-in incident more quickly.

Expanding Gas Control's ability to monitor and respond to incidents on the natural gas system is a prudent safety and reliability measure for California's energy grid. By increasing the amount of data points on the transmission system, the CCM project will allow for potential issues to be identified and resolved by Gas Control, such as dig-in detection and response, leak detection, and incidents due to ground subsidence. Overall, the CCM project will decrease the consequence of incidents through the opportunity for faster abnormal condition identification and a timelier response. Since the CCM project is still in the design and execution phase, there is no historical data available to develop an RSE for the risk mitigations of dig-ins.

2. Forecast Method

CCM project activities began mobilizing in mid-2020 and carried into 2021. As a result, the historical costs for those years are not an adequate reflection of the activities accounted for in the 2022, 2023, and 2024 forecasts. The forecast method developed for this cost category is zero-based methodology, which employs a per-site cost estimate for each OPM station or HCA methane sensor to be installed multiplied by the number of annual targeted sites. Per-site costs are based on vendor estimates for equipment and subject matter expert experience with similar types of technologies and deployment activities. The forecast also includes costs for CCM project management and sensor evaluation as well as costs for new roles, responsibilities, and procedure development.

3. Cost Drivers

The underlying cost drivers for this capital project relate to schedule, equipment and material pricing, craft availability, wage rates, and productivity. The per-site unit cost includes labor for project planning, configuration, and commissioning. The per-site unit cost includes non-labor for commissioning support, engineering, mechanical and electrical construction, environmental, survey, monitoring equipment, and mounting racks. The forecast also includes costs for annual CCM project management and engineering oversight as well as development of new roles, responsibilities, and procedures.

M. Envoy 3.0 Upgrade and RNG Project

Capital costs for the forecast years 2022, 2023, and 2024 for two ENVOY® information technology systems that support Gas System Control operations (Table CHB-55 below) are sponsored by Mr. Exon (Ex. SCG-21). The purpose of this section of this testimony is to

describe the operating need for these costs; refer to Mr. Exon's capital workpapers (Ex. SCG-261-CWP – Information Technology) for the basis for the costs.

SoCalGas plans to build and place in service the RNG project by TY 2024 and to migrate ENVOY® 2.0 to ENVOY® 3.0.

TABLE CHB-55
Summary of Capital Costs

GAS TRANSMISSION OPERATIONS & CONSTRUCTION In 2021 $ (000s)			
ENVOY® Upgrade Projects	**Forecast 2022**	**Forecast 2023**	**Forecast 2024**
ENVOY® 3.0 Upgrade Project	498	0	0
RNG Project	664	95	0
Total	**1162**	**95**	**0**

SoCalGas ENVOY® is the online electronic bulletin board where customers, marketers, producers, and Energy Service Providers ("ESPs") can manage their gas supplies, submit real-time nominations for gas delivery, trade imbalance positions, monitor metered gas consumption, manage storage accounts, and receive up-to-the minute news and information on our pipeline operations. SoCalGas provides its customers access to its electronic bulletin board ("EBB") system via SoCalGas ENVOY® to facilitate communication and utility-to-customer and customer-to-customer transactions for balancing and secondary market trading. The SoCalGas ENVOY® service is governed by Rule 33 of SoCalGas's tariffs.[24] This system is mandated by the Commission and must be in compliance with Affiliate Transactions Rules (D.97-12-088, issued December 1997, revised August 1998and December 2006) and Remedial Measures (D.98-03-073).

The SoCalGas ENVOY® 3.0 Project would upgrade from ENVOY® 2.0 that was implemented over five years ago. This project is aimed at modernizing the ENVOY® application to create an available and scalable system to support business needs. Benefits include:

- Reduction in security vulnerabilities;
- Improvement in reliability;
- Ability to quickly adapt to business and regulatory changes;

[24] SoCalGas Rule No. 33 "Electric Bulletin Board (EBB)," March 10, 2021, *available at*: https://tariff.socalgas.com/regulatory/tariffs/tm2/pdf/33.pdf

- Ability to provide more timely data to customers;
- Potential for reduction of future project costs because of faster development and testing efforts;
- Incorporation of modern cloud ready architecture that can scale up/down vertically and horizontally, easily and quickly;
- Increased customer productivity through advanced search capabilities; and
- Push notifications on cycle events and critical notices to customer iOS/Android devices.

In compliance with CPUC D.20-08-035, SoCalGas plans to build and place in service RNG functionality as an enhancement to the ENVOY® Electronic Bulletin Board. Decision 20-08-035 requires:

> The Utility shall provide nondiscriminatory open access to its system to any party for the purpose of physically interconnecting with the Utility and effectuating the delivery of Renewable Gas, subject to the terms and conditions set forth in this Rule and the Utility's applicable interconnection, operating, and balancing agreements.

As part of this compliance effort, SoCalGas is adding RNG elements to the existing ENVOY® Electronic Bulletin Board. The RNG project is an enhancement to ENVOY ® that will require significant changes to be made to SoCalGas's ENVOY® including:

- Creating three new California Production (CP) RNG receipt points for the Northern, Southern and Wheeler Ridge transmission zones.
- Adding new CP-RNG information to existing balancing reports and user screens.
- Providing new Backbone Transportation Service contract type for each of the new CP receipt points to allow for the contracting for firm capacity.
- Modifying Operational Screens and External Reports on public and internal websites to reflect these new CP zones.
- Updating CP billing screens.
- Incorporating gas flow and capacity data from SCADA system from the new receipt points that will be needed for the gas scheduling process and displaying of data on ENVOY® public website.
- Modifying and testing gas nominations and confirmation rules needed to include these new receipts.

The RNG enhancements will go into operation in 2023 at a cost of $716,000.

VII. REASONABLENESS REVIEW

A. Core Balancing Project Summary

TABLE CHB-56
Summary of Capital and O&M Costs through December 2021, and Ongoing O&M Support Expense ($000)

Core Balancing Project	**DAS** (Data Aggregation System)	**SQTA** (Scheduled Quantity Trading Automation)	**Total**
Capital Investment	5,425	640	6,065
O&M Expenses	255	34	289
Ongoing O&M Support Expenses[25]	560	0	560
Total	6,240	674	6,914
Authorized Total CPUC Budget	(DAS) 7,000 +(SQTA) 1,700= **8,700**		
Difference Under Budget	8,700 - 6,914= **1,786**		

SoCalGas is seeking reasonableness review of $6,914,000 ($6,065,000 in capital expenditures and $849,000 in O&M expenses including ongoing O&M) incurred in the successful implementation of the Core Balancing Project which comprises the Advanced Metering Infrastructure Data Aggregation System (AMI DAS) and Scheduled Quantity Trading Automation (SQTA).

These costs were incurred for activities related to building AMI DAS and SQTA pursuant to D.19-08-002. In accordance with Ordering Paragraph (OP) 8 in D.19-08-002, these costs are being presented in SoCalGas's GRC. These costs are reasonable and should be approved by the Commission because:

- The activities are consistent with the Commission's approved D.19-08-002 and approved Roadmap Advice Letter 5511;
- The activities were conducted by qualified employees and contractors; and
- The activities support SoCalGas's commitment to enhance system reliability.

[25] Ongoing O&M support expenses represent a projected total through December 31, 2023.

The regulatory accounting treatment of costs associated with AMI DAS and SQTA are recorded in the Core Gas Balancing Memorandum Account (CGBMA). Disposition of the CGBMA is discussed in Ms. Yu's testimony (Ex. SCG-38). At the end of 2023, the CGBMA will be closed.

The following sections of this testimony establish the reasonableness of Capital & O&M costs incurred in successfully building and implementing AMI DAS and SQTA.

1. Procedural Background

To comply with D.19-08-002, SoCalGas submitted the following Advice Letters (AL) and reports as described in Table CHB-57:

TABLE CHB-57
SoCalGas Advice Letters, Communications, and Reports

Reports or Advice Letter	Date of Compliance	Commission Action (if any)/ Ordering Paragraph (OP)
Establishment of the CGBMA	Filed Advice Letter No. 5506 on August 30, 2019.	Commission approved AL 5506-G on October 3, 2019, effective as of August 1, 2019/OP 8
Implementation of AMI DAS Procedures	Filed AL 5511 on September 3, 2019	Commission adopted Resolution G-3563 with approved AL 5511 on March 12, 2020/OP 9
Request for Extension to Comply with OP 1 of Resolution G-3563	Filed June 25, 2020	Commission approved Request for Extension to November 1, 2020, on July 14, 2020

On August 1, 2019, the Commission adopted D.19-08-002, which directs, among other things, SoCalGas to incorporate advanced metering infrastructure data into its gas scheduling and balancing process.

On September 3, 2019, SoCalGas submitted AL 5511, providing a roadmap towards completing the AMI DAS, in compliance with D.19-08-002, OP 9.

On March 12, 2020, the Commission adopted Resolution G-3563, approving SoCalGas's AMI DAS roadmap as submitted in AL 5511.[26]Specifically, OP 1 noted that

[26] Res. G-3563 slightly modified a portion of a related project described in AL 5511, the Automated Scheduled Quantity Trading System, so that the new system would be available on all days, rather than just on operational flow order (OFO) days, as proposed by SoCalGas.

SoCalGas's "request in Advice Letter 5511 for an extension of four months to complete the [AMI DAS] by August 1, 2020, is approved." OP 2 further clarified that SoCalGas's "request in Advice Letter 5511 to use a preliminary manual system for incorporating AMI and Smart Meter data from April 1, 2020 through July 31, 2020, to estimate core demand, rather than the 'residual' formula ordered in D.19-08-002, is approved."

As noted in AL 5511, SoCalGas condensed its build-out schedule by six months (from 18 months to 12 months) to expeditiously deliver the AMI DAS in compliance with D.19-08-002. Previously, the AMI system had been used primarily for billing and customer service reports and inquiries. The new AMI DAS needs to handle many additional functions. Newer technology is required to ingest millions of data points every 15 minutes.

2. AMI DAS Extension from August 1 to November 1, 2020, in Resolution 3563.

DAS has been impacted by multiple delays in the delivery of critical components due to the onboarding of critical vendor resources because of COVID-19 constraints. These delays led to SoCalGas submitting an AL requesting an extension for its compliance obligation on June 25, 2020, which was subsequently approved by the Commission on July 14, 2020.

On July 14, 2020, in response to the AL, Executive Director Alice Stebbins found "that an extension of time to comply with OP 1 of Resolution G-3563 is reasonable given the complexity of the AMI DAS and the extraordinary circumstances of the COVID-19 pandemic. Pursuant to CPUC Rules of Practice and Procedure, Rule 16.6, the deadline for the launch of SoCalGas's AMI DAS required by OP 1 of Resolution G-3563 is extended to November 1, 2020."[27]

To support the proposed November 1, 2020, AMI DAS release, SoCalGas identified project checkpoints to be communicated to the Commission's Energy Division. To meet these checkpoints, several automations for "exception processing" were delayed until after the release.[28]

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[27] CPUC Executive Director Stebbins letter, Approval of SoCalGas's Request for a Three-Month Extension to Comply with Resolution G-3563 Concerning the Advanced Meter Infrastructure Data Aggregation System, July 14, 2020, for details regarding the extension for AMI completion data.

[28] *See* SoCalGas Request for Extension of Time to Comply with Ordering Paragraph 1 of Resolution G-3565 at 3.

3. Scheduled Quantity Trading Automation (SQTA)

In addition to developing the AMI DAS, SoCalGas was directed to implement an Automated Scheduled Quantity Trading System ASQTS.[29] In D.19-08-002, the Commission found a 13-month implementation schedule to be reasonable and would cost approximately $1,700,000.[30] Resolution G-3563 approved SoCalGas's SQTA to be built by September 1, 2020.

SQTA will bring greater reliability and expedite the transactions necessary for the smooth functioning of the SoCalGas system. Quicker resolution of imbalances puts less strain on the operational aspects of the entire system.[31] SQTA was successfully completed by September 1, 2020, as planned.

4. Project Organization and Governance Controls

SoCalGas's Customer Service, and Field Operations teams developed and implemented the SQTA and AMI DAS project scope and requirements. IT formed and utilized a team structure led by management personnel who are experienced and knowledgeable in the IT lifecycle (guidelines and methodology) to document the enhancements required to complete the AMI DAS and SQTA implementation efficiently and in a timely manner.

SoCalGas's Core Balancing management team implemented a series of tools and controls to enable identification of risks and issues which could negatively impact scope, schedule, and cost. To implement the Core Balancing project, SoCalGas formed a team led by management personnel experienced in each of the core competencies required by the Core Balancing project (*i.e.*, Governance, Finance, Planning, Design and Implementation, and Testing). In support of a lean team that shares both costs and lessons learned, certain roles including Program Management Office (PMO) Manager and Governance and Finance Administrator are shared across SoCalGas and SDG&E's Core Balancing project.

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[29] D.19-08-002, OP 5, 6.

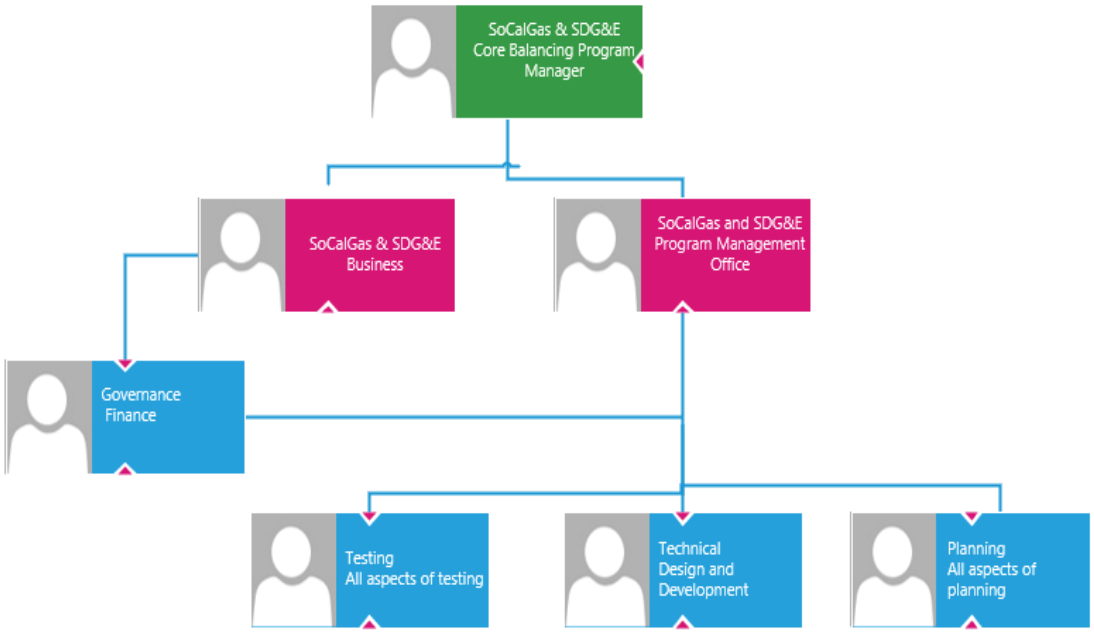
[30] *Id*. at OP 7.

[31] *Id*. at 23.

Figure CHB-2 depicts the AMI DAS Implementation team structure:

Figure CHB-2

SoCalGas & SDG&E Core Balancing Program Organizational Structure



The responsibilities and workstreams in the AMI DAS and SQTA Implementation team structure are briefly described below:

- Program Management Office: The PMO defines and maintains standards of project management and compliance within the Core Balancing Program. PMO activities include program strategy, project controls during the project life cycle, reporting, finance, budgeting, and accounting functions. PMO activities also include communicating progress to relevant stakeholders.
  - Planning: The PMO establishes the scope of the project and develops a project plan which includes identifying roles and responsibilities, timeline, cost estimates, and potential risks and issues. In addition, the PMO develops functional and technical requirement documents.
  - Technical Design and Development Teams: Oversee and implement system design, development, unit tests, source and version control management, system environment utilization, and deployments of application.

- Testing Teams: Performs system testing efforts and provides detailed requirements, functional specifications, test case validations, and user acceptance testing.

- Business Team: Supports project oversight. Engaged in weekly project review with the IT PMO and monthly project review with management, directors, and executives. Reporting review includes status, schedule, accomplishments, issues and risks, and financials.
- Governance and Finance Team (and part of the PMO): Responsible for establishing and implementing cost and budget controls to confirm accurate cost tracking. Activities include cost accounting, invoice processing, budgeting, and financial reporting.
  - Standards and Controls: Through the PMO, the governance team developed program standards and controls to allow for the timely identification of risks and issues that may affect scope, schedule, and costs.
  - Program Monitoring: SoCalGas produces periodic financial and schedule reporting for its management teams to allow continual oversight over the program. The monitoring of the project progress enables early identification of risks and issues impacting schedule and costs. Examples are weekly and monthly review of project status and risk with management, directors, and executives, monthly budget review, monthly labor hours validation, and monthly IT work and expense report validation.
  - Estimation: SoCalGas tracks the costs for the Core Balancing project through internal Work Order Authorizations (WOAs), which are used to track costs for further review and approval through reauthorizations.
  - Invoice Validation: Invoices are reviewed by the corresponding IT manager to validate that work has been completed in accordance with the contractual agreement at the negotiated rates and within authorized limits.
  - Project Closeout and Quality Assurance: SoCalGas performs reconciliation and quality assurance following completion of every project

to confirm that: 1) records in support of both program and project compliance are reviewed; 2) oversight was provided for project decisions and/or associated changes that occurred; 3) documents are stored in centralized repositories for proper records management; and 4) when final costs have been recorded, total project financial records are reviewed for validity.

5. Cost Summary

Table CHB-58 summarizes the cost for AMI DAS project from August 2019 through 2021.

TABLE– CHB-58

AMI DAS Cost Summary ($000)

	AMI DAS	**Costs**
Capital	Internal Labor	1, 268
	Consultants	2,752
	Hardware	77
	Software	83
	Indirect Costs	1,105
	AFUDC	140
	Total Capital	**5,425**
O&M	O&M Expense	258
	Ongoing O&M Expense	560
	Total Spent = Capital + O&M	**6,240**
	Authorized CPUC Budget	**7,000**
	Difference Under Budget	**760**

Table CHB-59 summarizes the cost of the SQTA project from August 1, 2019, through 2021

TABLE CHB-59
SQTA Cost Summary ($000)

	SQTA	Costs
Capital	Internal Labor	191
	Consultants	268
	Indirect Costs	166
	AFUDC	15
	Total Capital	**640**
O&M	O&M Expense	31
	Total Spent = Capital + O&M	671
	Authorized CPUC Budget	**1,700**
	Difference Under Budget	**1,029**

The costs associated with SoCalGas's labor consisted of in-house experts in the project management team, business analysis team, and technical teams. Internal experts in project management were used to set the overall scope and timeline of the project. They were also involved in the testing of the application prior to implementation. Internal experts in the technical team were tasked with the overall design and architecture of the system. The costs associated with consultants consist of contract labor which was used for the day-to-day project management and work. Contract labor was also used in the technical team for building and deployment of the application. Testing of the application was conducted with the assistance of consultants who are experts in that field.

Indirect costs are all costs not directly charged to capital or O&M projects or to O&M accounts.

Allowance for Funds Used During Construction (AFUDC) is the Sempra Energy Utilities' net cost of borrowed funds used for construction purposes plus a reasonable rate on other funds, such as equity.

6. On-Going O&M Needed

During the development of Core Balancing project, new and emerging technologies were implemented to ensure the timely daily aggregation of 144 million data points of AMI consumption data. These new technologies are not currently part of the knowledge base found in SoCalGas. Senior resources with specific technical expertise are required to support and

transition knowledge from our IT consultants, currently working on the Core Balancing project to the Analytics team post project deployment.

The DAS requires availability 24 hours a day, 365 days a year to provide critical data. Additional resources will be required to support the DAS. The analytics team will require two additional contract resources to help administer activities including but not limited to:

- Augmenting the existing offshore resource;
- After-hours support and onshore management;
- Operational maintenance support to manage system health 24/7;
- Implementing break/fix defects; and
- Ongoing upgrades to multiple technical solutions as well as ensuring that all processes are up to date with evolving IT standards.

Ongoing O&M support from September 1, 2021, through December 31, 2023, at an approximate total cost of $0.56M is included in the project total cost for safe and reliable system operations.

Future O&M costs for ongoing upgrades to the multiple technical solutions as well as ensuring that all processes are up to date with evolving IT standards are included in Daniel Rendler's Customer Services – Field and Advanced Meter Operations testimony (Ex. SCG-14).

This testimony demonstrates that the $6,914,000, including the $6,243,000 DAS costs plus $674,000 SQTA costs recorded to the CGBMA through December 31, 2023, for the implementation and ongoing maintenance support of Core Balancing project, have been reasonably incurred. These costs directly support achievement of the Commission's stated objective to build an AMI DAS system to incorporate AMI data into Gas Acquisition's scheduling and balancing process and support the buildout of SQTA to automate scheduling trading every day. In accordance with the reasonable manager standard, SoCalGas has designed and executed the Core Balancing project under budget with reasonable costs through prudent planning and oversight, while maintaining the safety and reliability of the utility service.

VIII. FUTURE GAS TRANSMISSION MAJOR PROJECTS

SoCalGas intends to continue project development and execution on the Line 235 Project.

Line 235 Project: SoCalGas is requesting to replace a portion of Line 235. SoCalGas is also providing a comparison of estimated project costs for repairing the transmission pipeline versus the requested full replacement of part of the pipeline. This testimony presents, for the Commission's guidance, a cost estimate comparison, estimated schedule for both options, and anticipated benefits for each option. Given the timing of the work, capital forecasts and associated revenue requirement for the replacement will be provided in a future General Rate Case.

A. Line 235 Project

1. Summary of Request

As addressed in Amy Kitson and Travis Sera's Gas Integrity Management Programs testimony[32] and further described herein, SoCalGas believes that replacement of the portion of Line 235 from Newberry Springs compressor station to Victorville (Valve 17)[33] shown in Figure CHB-3 below (replacement) is the optimal near-term and long-term strategy from a system integrity, system reliability, service continuity, customer experience, and cost effectiveness standpoint. SoCalGas requests Commission approval to proceed with the Line 235 Replacement option. Our testimony compares the costs of replacement and a repair option (repair) and the benefits of replacement, including long-term operational reliability of Line 235, resiliency of the gas transmission system, and capacity confidence. Due to the expected completion date of either the Repair or Replacement option extending beyond the 2024 General Rate Case cycle, there is no revenue requirement requested in this GRC. SoCalGas will present updated capital expenditures and the associated revenue requirement in a future GRC.

2. Background

Line 235 is a transmission pipeline located in SoCalGas's Northern Transmission Zone, extending west from the North Needles Compressor Station to the Santa Clarita Valley. It is a primary feed to the SoCalGas transmission system from interstate sources. Line 235 is currently operating at a reduced operating pressure of 750 psig between the Newberry and Adelanto compressor stations. Both the Repair and Replacement options will allow this segment of Line 235 to operate at its MAOP of 936 psig. See Figure CHB-3 below for the location of Line 235.

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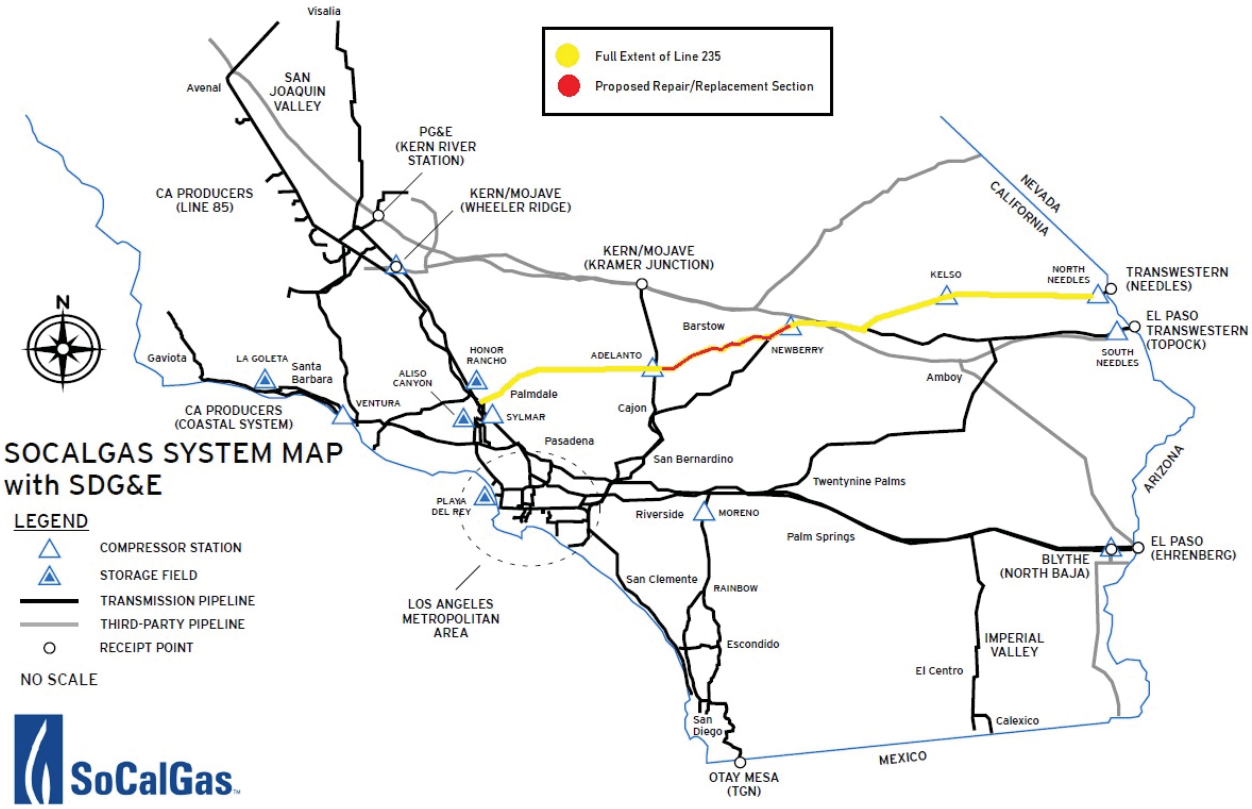
[32] Ex. SCG-09.

[33] Mile Post (MP) 124.69 to MP 170.55.

FIGURE CHB-3
Line 235 Location



In the test year 2019 GRC, SoCalGas presented two hydrotest projects (Line 235 West Section 1 and Line 235 West Section 2) on Line 235.[34] SoCalGas proposed to hydrotest approximately 45 miles of natural gas transmission pipe that do not have sufficient documentation of a pressure test to at least 1.25 times the MAOP.[35] The location of the hydrotests were between Newberry Station in Newberry Springs, California and the east side of the Mojave River span near Victorville, California. The Commission did not authorize rate recovery for Line 235 West Sections 1 and 2 hydrotests, and instead required SoCalGas to file a Tier 2 Advice Letter for rate recovery.[36]

[34] Pipeline Safety Enhancement Plan testimony of Rick Phillips (Exhibit SCG-15-R) at 28-29.

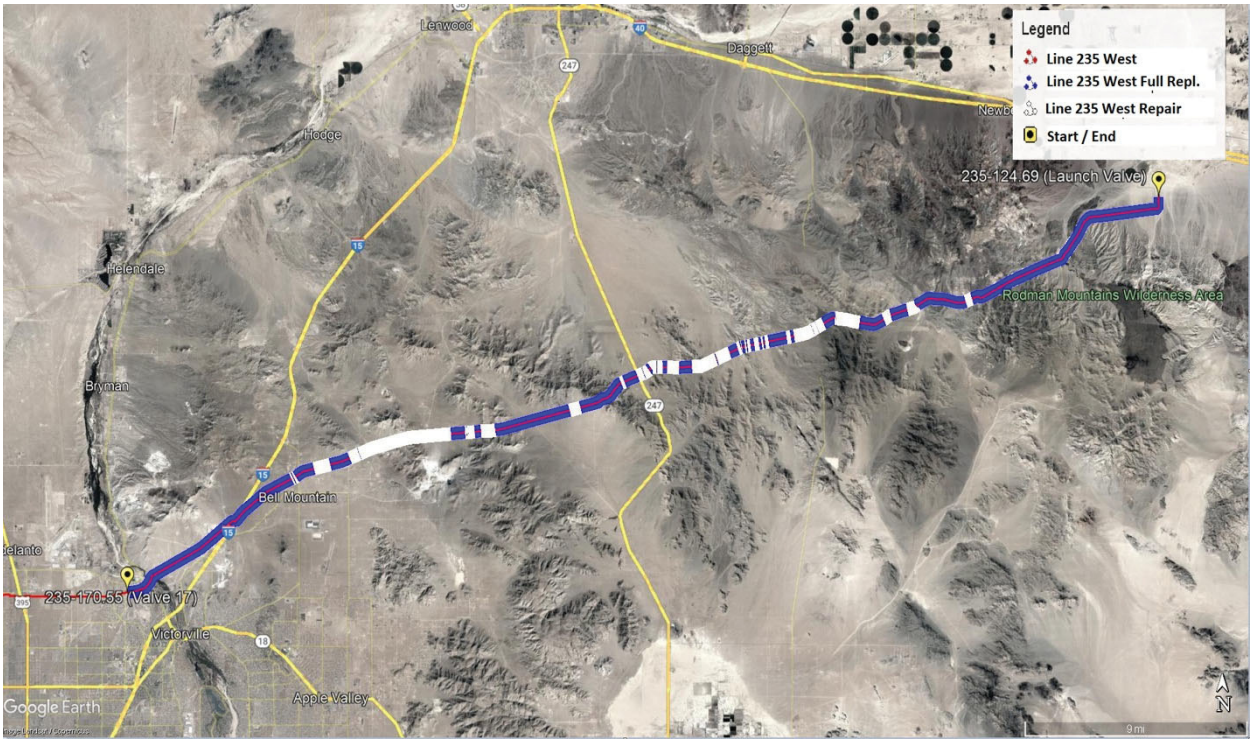
[35] These projects are characterized as Phase 2A, following the risk prioritization framework authorized in D.14-06-007.

[36] D.19-09-051, OP 13.

3. Line 235 Scope Options

Line 235 can be restored to its intended MAOP by performing repair of the existing line or by replacing the section between Newberry Springs compressor station and Victorville (Valve 17). Both options are described below along with geographical sketch shown in Figure CHB-4.

FIGURE CHB-4
Line 235 Scope Options



a. Replacement Option Scope

The Line 235 Replacement option will replace approximately 47 contiguous miles of 30" pipeline between the Newberry Springs compressor station and Victorville (Valve 17) in San Bernardino County. The preliminary scope also includes other improvements such as fiber optic installation throughout, monitoring stations positioned every ten miles, installation of five new deep well anodes for cathodic protection, installation of nine new mainline valves at approximately five-mile intervals,[37] and installation of a new pipeline bridge (approximately 400 linear feet) over an environmentally sensitive waterway. The new pipeline will run adjacent to

[37] Valve work will be scoped in accordance with new requirements introduced by the PHMSA Valve Installation and Minimum Rupture Detection Standards final rule. As discussed in Ex. SCG-09, SoCalGas is in the process of evaluating the rule, which was recently issued by PHMSA on March 31, 2022.

the existing pipeline, minimizing existing pipeline outages during new pipeline construction activities. Upon completion of the replacement, the existing pipeline will be either removed or abandoned.

The current direct cost estimate (in 2021 dollars) to implement the Replacement option is approximately $549.2M. A Class 5 estimate has been developed consistent with the Association for the Advancement of Cost Engineering (AACE) International Recommended Practice No. 97R-18,[38] which denotes an estimated final project cost between +100% or -50% of the current project cost.[39]

b. Repair Option Scope

The Line 235 Repair option would replace approximately 15 non-contiguous miles of 30" pipeline at 32 locations extending from just west of Newberry Springs to near the pipeline crossing of Dale Evans Parkway in Apple Valley. Ms. Kitson and Mr. Sera's testimony (Ex. SCG-09) provides the basis for these repairs within the Transmission Integrity Management Program (TIMP) testimony.[40] The Repair scope includes installation of five new deep well anodes for cathodic protection and would require hydrotesting of Line 235 West Sections 1 and 2, to allow the repaired line to be operated at the MAOP of 936 psig.

The direct estimated cost (in 2021 dollars) to implement the Repair option, including repair and hydrotests of the line, is $378,400,000. In a future GRC filing, SoCalGas will be requesting cost recovery of approximately $286.6M under TIMP Line 235. SoCalGas would record costs of approximately $92,000,000[41] for the Line 235 hydrotest to the Line 235 Memorandum Account (as ordered in D.19-09-51) for cost recovery as described in the Pipeline Safety Enhancement Plan testimony of Bill Kostelnik (Ex. SCG-08). A Class 5 estimate for the Repair option has been developed consistent with AACE International Recommended Practice

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[38] AACE International, Recommended Practice No. 97R-18: Cost Estimate Classification System - As Applied in Engineering, Procurement, and Construction for the Process Industries, August 7, 2020.

[39] Project costs are presented in direct 2021 dollars and exclude SoCalGas Overheads, Property Taxes, AFUDC, and escalation.

[40] Ex. SCG-09.

[41] The $92,000,000 is based on 2021 dollars and assumes cost efficiencies gained, assuming the hydrotest project will happen concurrently with the Repair Option and under the same construction contractor.

No. 97R-18, which denotes an estimated final project cost between +100% or -50% of the current project cost.[42]

4. Line 235 Scope Options – Total Effective Costs

In developing the cost estimates discussed above, SoCalGas has considered costs for engineering design, equipment and material procurement, company operations support, external contractor support, construction, land rights and environmental services support, permitting support and fees, project risks, and contingencies. To assess the total effective cost of either of the project scope options, auxiliary cost impacts should be considered in the decision-making process. The effective costs for either of the options are summarized in Figure CHB-5. A California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) review may be necessary for the Replacement option. Remediation methodologies, remediation scope, and route alignment will need to be further assessed. It is anticipated that the new installation of, among other activities, fiber optic cable, monitoring stations, lake tanks, additional mainline valves, and cathodic protection stations may trigger the CEQA/NEPA review, as these items were not included in the existing Line 235 Bureau of Land Management (BLM) easement. The Repair option would be executed under the existing environmental framework and is not anticipated to require a CEQA/NEPA review.

Much of the existing Line 235 West route is located within BLM territory under an existing easement. Following completion of detailed design for the Line 235 Replacement option, should the proposed alignment extend outside of the existing BLM easement, SoCalGas may be required to renegotiate the easement. The cost associated with the potential modification of the existing BLM easement is captured as direct costs in the Replacement option.

5. Total Effective Costs – Auxiliary Factors

There are various auxiliary factors described below, beyond the direct cost, that should be considered in determining the effectiveness of the Line 235 Repair versus Replacement options.

[42] Project costs are presented in direct 2021 dollars and exclude SoCalGas Overheads, Property Taxes, AFUDC, and escalation.

a. Ongoing TIMP Assessment[43]

TIMP is required to perform routine inspections and maintenance on Line 235 West. At present, due to existing pipe conditions, this cycle is performed every five years. The last inspection on this line was performed in 2019 with the next inspection anticipated to occur in 2024. Once Line 235 has been repaired, SoCalGas's TIMP may adjust the maintenance cycle on Line 235 West to occur every seven years for pipeline segments within HCA or every ten years for pipeline segments within non-HCAs. SoCalGas has assumed each future assessment will perform an In-Line Inspection (ILI) at approximately $1.3M and an Electro-Magnetic Acoustic Transducer (EMAT) at approximately $2M, at an anticipated maintenance budget of $3.3M in O&M cost for each future visit.

For Line 235 Replacement option, 2029 will likely be the last five-year reassessment cycle. Upon completion, the baseline assessment will be ten years, followed by every seven or ten years beyond.

For Line 235 Repair option, SoCalGas will repair many of the sections over the next two cycles post 2024 (*i.e.*, 12 years). Upon completion of repairs, assessments are anticipated to be on a five-year cycle through 2034, then adjust to a seven-year or ten-year maintenance cycle going forward.

Based on the benefits of replacing Line 235, SoCalGas requests the Commission approve the replacement scope for this project instead of the TIMP planned repair. As stated above and in Ms. Kitson and Mr. Sera's testimony (Ex. SCG-09), the repair scope is required to safely operate the pipeline at its necessary MAOP. The TIMP costs for both the Repair and Replacement options are stated in Figure CHB-5 below, and the revenue requirement for these costs will be presented in a future GRC through the TIMP cost recovery mechanism.

b. Integrated Safety Enhancement Plan (ISEP) – Scope Overlap

Both options for Line 235 Replacement or Repair will overlap the ISEP scope discussed in Ms. Kitson and Mr. Sera's testimony (Ex. SCG-09), which is driven in part by the Gas Transmission Safety Rule (GTSR) Part 1 requirement to reconfirm pipeline MAOP.[44] The Line 235 Replacement option mitigates approximately 3.99 miles (21,075 feet) of current in-scope

[43] *See* Ex. SCG-09.

[44] *See* 49 C.F.R § 192.624.

ISEP segments within the Line 235 West bounds of this project, assuming a rough order of magnitude (ROM) of $24M in avoided cost. The Line 235 Repair option, being a spot-repair option, only mitigates 0.71 miles (3,739 feet) of the current in-scope ISEP segments, assuming an ROM of $4.3M in avoided cost, and leaves approximately 3.28 miles (17,336 feet) to be mitigated to comply with 49 C.F.R Section 192.624 at an estimated cost of $20M.

c. Gas Transmission Technical Services (GTTS)45 – Scope Overlap

GTTS provides responsive and routine maintenance of gas transmission lines. Based on the option selected for Line 235, the cost overlap between the selected Line 235 option and the GTTS program may vary. For the Replacement option, it is assumed that once Line 235 is placed into service, the GTTS annual O&M will reduce significantly. For the Repair option, it is assumed that after Line 235 is placed back into service, the GTTS annual O&M costs may partially reduce, since only 15 miles of approximately 47 miles are being repaired through the Repair option.

6. Benefits of Line 235 Replacement

a. Reliability and Capacity Confidence

As mentioned above, Line 235 is a primary feed to the SoCalGas transmission system from interstate sources. Since the Line 235 failure in October 2017, the pipeline has been taken out of service multiple times for remediation. On each occasion, capacity to SoCalGas's Northern System has been impacted.

The transmission pipeline is currently operating at a reduced operating pressure of 750 psig. The Line 235 Repair option and the Line 235 Replacement option would allow for a return of the line to operate at its MAOP of 936 psig, but the Replacement option would provide a higher level of confidence in the reliability and resiliency of the pipeline.

Because the Replacement option includes the installation of a new pipeline with additional safety- and reliability-enhancing features, as stated above, it is anticipated to provide longer term protection from service interruptions. The probability of integrity assessments identifying conditions that would require the pipeline to be taken out of service for future remediations is lower with the Replacement option. The Line 235 Replacement option would

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[45] *Id*.

more effectively mitigate failures that may occur on the pipeline operating at higher pressure and reduce the potential for leakage due to external pitting corrosion. Moreover, the Replacement option allows for longer inspection cycles of up to ten years, whereas the Repair option would continue to require more frequent inspections.

During execution of either Line 235 option, construction activities for the projects themselves would necessitate significantly different pipeline outage durations to complete the work. Service interruptions, for either option, require close coordination with other major transmission pipelines to manage gas system supply reliability. The outage duration for the Replacement option is much shorter since the new pipeline will be constructed adjacent to the existing line, referred to as a "lay-by," and would only require Line 235 to be taken out of service when the new pipeline is connected. The Repair option includes multiple non-contiguous spot repairs on the existing pipeline, and each repair would require Line 235 to be taken out of service.

b. Enhanced Safety

The Line 235 Replacement option includes fiber optic monitoring to detect disturbances, dig-ins, and leaks. This option installs new automated main line valves that enable prompt isolation during emergency incidences. These additional features enhance the safety for the public and employees, making the Line 235 Replacement option preferred over the Line 235 Repair option.

c. Future Decarbonization

With a focus toward long-term sustainability, addressing pipeline capacity requirements and maintaining a reliable pipeline network would help meet the decarbonization driven peak natural gas demand.[46]Additionally, replacing this section of Line 235 would not only mitigate the need for continuing repairs, but could also potentially provide an opportunity to use hydrogen-ready materials to support SoCalGas's sustainability goals.

Based on the new decarbonization-driven trendline, the role of the high-pressure transmission system to provide high just-in-time volumes of fuel to power generators will evolve while the annual natural gas throughput and demand will decline, as addressed before the CPUC

[46] *See* Ex. SCG-02.

by experts such as Arne Olson of Energy and Environmental Economics.[47] The California Energy Commission also recognizes that the functions of and services from the gas grid are increasingly weighted towards electric reliability as decarbonization measures are deployed in the future.[48]

d. Long Term Maintenance Cost Savings

For the Line 235 Replacement option, it is assumed that once Line 235 is placed back into service, the GTTS annual O&M and TIMP inspection cycle duration costs will reduce, leading to longer term cost savings not accounted for in the below Figure CHB-5: Line 235 – Total Cost and Benefits Comparison Summary.

[47] *Id*.

[48] *See* California Energy Commission, 2021 Integrated Energy Policy Report (IEPR), *available at*: https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2021-integrated-energy-policy-report.

FIGURE CHB-5
Line 235 – Total Cost and Benefits Comparison Summary

	REPAIR	REPLACEMENT
Project Scope & Maintenance Comparison		
Operating Pressure *(Current is 750 psig)*	936 psig *(MAOP)*	936 psig *(MAOP)*
Pipeline Scope of Work	15.1 miles of non-contiguous repair via 'replace in place'	46.6 miles of pipeline replacement via 'lay-by'
Outage Duration	12-18 months	2-3 months
TIMP Inspection Cycle	• Present - 2034: $3.3M every 5 years • 2034 and Beyond: $3.3M every 7 years	• Present - 2029: $3.3M every 5 years • 2029 and Beyond: $3.3M every 7 to 10 years
Future GTTS O&M	Partial reduction	Greater reduction
Fiber-Optic Monitoring	Not included	Enhanced safety monitoring
Capacity Confidence	• ILI may not detect all anomalies • Future remediations require outage	Increased capacity confidence with new pipeline and monitoring technology
Project Cost Comparison *		
Line 235 Replacement *(Base Cost)*		$509
Line 235 Repair *(Base Cost)*	$287	
PSEP Scope **	$92	-
Regulatory & Outreach	-	$10
BLM Easement	-	$31
Total Direct Project Cost *($ 2021 MM)*	**$378**	**$549**

	REPAIR	REPLACEMENT
Supplemental Project Cost *		
Ongoing TIMP Assessment *(Through 2029)*	$77	$39
ISEP *(Driven by GTSR Part 1)* ***	$20	-
GTTS O&M *(Through 2029)*	$13	$19
Recurring TIMP Reassessment *(Through 2029)*	$7	$7
Overall Project Cost Through 2029 *($ 2021 MM)*	**$495**	**$613**

- * Project costs are preliminary and subject to change.
- ** PSEP scope coordinated with Line 235 Repair option.
- *** Assumes GTSR segments are remediated through PSEP scope in Line 235 Repair option.

7. SoCalGas's Recommendation is to Replace Line 235

SoCalGas's Line 235 is a critical pipeline both within the Northern Transmission Zone and SoCalGas's overall high-pressure transmission pipeline system. As discussed above, SoCalGas believes the Replacement option of Line 235 section between the Newberry Compressor Station and Victorville (Valve 17) is the most prudent option as it promotes reliability and capacity confidence, safety, future decarbonization goals, and long-term maintenance cost savings. SoCalGas requests that the Commission find it prudent and reasonable to authorize Line 235 Replacement option for SoCalGas to begin planning and developing the project to be included in the 2028 GRC.

IX. CONTROL CENTER MODERNIZATION

A. Summary and Overview

The purpose of this testimony is to provide the business justification for the refined scope of the Distribution Operations Control Center (DOCC) project, now the Control Center Modernization (CCM) project, and to update the Commission on the project status and the

benefits of the updated scope. The DOCC and Gas Control facility project was first presented and authorized in the 2019 GRC[49].

The CCM project will enhance distribution regulator stations with real-time monitoring and control capabilities, integrate existing electronic pressure monitoring (EPM) and meter data to Gas Control,[50] further digitalize the transmission system through the installation of OPM stations and HCA methane sensors, and construct a modernized building to house the expanded Gas Control and Emergency Management and Preparedness organizations, including the Emergency Operations Center (EOC). The CCM project will provide Gas Control with an end-to-end solution for delivery and transformation of the new and existing field asset[51] data through a series of technological enhancements. These activities will enhance Gas Control's ability to establish a comprehensive view of the gas network and respond to abnormal operating conditions in real time.

Oversight and execution of the CCM project is provided by a PMO as described in Section IV.F. Control Center Modernization above. The CCM project activity costs are sponsored and described across five testimonies aligned with the organization that will ultimately manage these system enhancements. Continuation of the project activities, new installations, and on-going maintenance will be assumed by the managing organization, at which time the PMO will be dissolved. Full details of the CCM project are included in Appendix D – Control Center Modernization Supplemental Project Description.

The specific costs and activities related to the CCM project are sponsored as follows, and as shown in Tables CHB-63 and CHB-64:

- Gas Distribution testimony of Mario Aguirre (Ex. SCG-04) and L. Patrick Kinsella (Ex. SDG&E-04) requests capital funding for the enhancement of distribution regulator stations, the replacement and integration of EPMs and meters, and Operations Technology (OT) enhancements. Additionally, SoCalGas

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[49] *See* Ex. SCG-08-R at 19-25; D.19-09-051 at 127-132; (Ex. SCG-23-Rat 42, 45; D.19-09-051 at 406.

[50] The Gas Control team is part of the Gas Control and System Planning Organization. The Gas Control team is currently located at SoCalGas's Spence Street Facility. The System Planning and other control room support resources are currently located at the Gas Company Tower.

[51] "New field assets" refer to the deployment of remote control and real-time monitoring capabilities on distribution regulator stations, OPM stations, HCA methane sensors, EPMs on the SDG&E system, and replacement and reconfiguration of core and non-core meter communication modules.

and SDG&E request O&M funding for incremental resources, training, and maintenance for the new equipment and additional functionality.

- Gas Transmission Operations and Construction testimony of Rick Chiapa, Steve Hruby, and Aaron Bell (Ex. SCG-06/SDG&E-06) requests capital funding for deployment of optical pipeline monitoring (OPM) stations and HCA methane sensors. Additionally, SoCalGas and SDG&E request O&M funding for additional Gas Control resources, PMO resources, change management, OT enhancements, and OPM station and HCA methane sensor maintenance.
- Real Estate and Facility Operations testimony of Brenton Guy (Ex. SCG-19) requests capital and O&M funding for the construction activity related to the new Gas Control and EOC facility and ongoing facility maintenance.

TABLE CHB-63
Southern California Gas Company
Control Center Modernization Summary of Capital Costs

CCM Project Area	Sponsoring Testimony	Workpaper Reference	Forecast		
			2022 ($000s)	2023 ($000s)	2024 ($000s)
SCG Distribution Field Assets & OT Enhancements	Ex. SCG-04 Distribution Operations	Ex. SCG-04-CWP, Workpaper Group 002500	23,506	26,403	21,534
SCG Transmission Field Assets	Ex. SCG-06 Transmission Operations & Construction	Ex. SCG-06-CWP, Workpaper Group 004050	2,038	2,608	3,746
SDG&E Distribution Field Assets	Ex. SDG&E – 04 Distribution Operations	Ex. SDGE-04-CWP, Workpaper Group 215740	449	3,235	4,080
SDG&E Transmission Field Assets	Ex. SDG&E-06 Transmission Operations & Construction	Ex. SDGE-06-CWP, Workpaper Group 004190	-	87	174
CCM Building	Ex. SCG-19 Real Estate & Facility Operations	Ex. SCG-19-CWP, Workpaper Group 006530	7,108	29,048	39,434
TOTAL			**33,101**	**61,381**	**68,968**

TABLE CHB-64
Southern California Gas Company
Control Center Modernization Summary of O&M Costs

CCM Project Area	Sponsoring Testimony	Workpaper Reference	Forecast		
			2022 ($000s)	2023 ($000s)	2024 ($000s)
SCG Distribution Field Assets	Ex. SCG-04 Distribution Operations	Ex. SCG-04-WP, Workpaper Group 2GD000.000 Ex. SCG-04-WP, Workpaper Group 2GD007.000	362	1,316	1,370
SCG Transmission Field Assets, PMO, Change Management, & OT Enhancements	Ex. SCG-06 Transmission Operations & Construction	Ex. SCG-06-WP, Workpaper Group GT005.000	708	873	1,149
Gas Control	Ex. SCG-06 Transmission Operations & Construction	Ex. SCG-06-WP, Workpaper Group 2200-2289-USS	1,151	2,525	3,700
SDG&E Distribution Field Assets	Ex. SDG&E – 04 Distribution Operations	Ex. SDGE-06-WP, Workpaper Group 1GD007.000	125	500	480
CCM Building	Ex. SCG-19 Real Estate & Facility Operations	Ex. SCG-19-WP, Workpaper Group 2RE004.000	-	-	340
TOTAL			**2,346**	**5,214**	**6,962**

B. Background and Project Overview

Currently, Gas Control manages and operates the SoCalGas and SDG&E gas transmission pipeline system, whereas the gas distribution systems are monitored and controlled locally by distribution personnel that rely on common technologies used throughout the gas distribution industry. The technologies on the distribution system are not integrated with the Gas Control systems. In the event of an abnormal operating condition, the distribution system relies on EPMs to alarm and notify Distribution personnel. Once notified, field operations crews are

dispatched to investigate and manually close distribution regulator station valves. On the transmission pipeline system, Gas Control utilizes Supervisory Control and Data Acquisition (SCADA) technology to monitor pressures, flows, and related data from facilities such as compressor stations, storage fields, pressure limiting stations, and main line isolation valves. The SCADA system uses alarms to notify Gas Control of operating conditions that require attention and enables operators to remotely control system flows and pressures at key points.

In the 2019 GRC Decision 19-09-051, the Commission authorized SoCalGas to proceed with the DOCC project, finding that SoCalGas provided sufficient evidence and justification for the necessity of these projects,[52] which included four main components:

1. Distribution Field Assets

a. Installation of remote control and real-time monitoring equipment at distribution regulator stations, which will give Gas Control visibility into the dynamic pressures and flows across the gas distribution system and the ability to control select stations.

b. Integration of EPM data to provide Gas Control with additional near real-time insights to the distribution system.

c. Replacement of EPMs in the SDG&E territory to provide near real-time distribution system data to Gas Control.

d. Replacement and reconfiguration of core and non-core meter communication modules to provide near real-time customer demand data to Gas Control.

2. Transmission Field Assets

a. Installation of HCA methane sensors that will communicate methane detection incidents to Gas Control.

b. Installation of OPM[53] stations near transmission lines that will communicate potential leaks, right-of-way intrusions, and ground subsidence incidents to Gas Control.

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[52] D.19-09-051 at 127-129, 406.

[53] Formerly referred to as Fiber-Optic Monitoring.

3. CCM Operational Technology (OT) Enhancements[54]

a. Enhancement of the existing company IT systems and expansion of the OT network to visualize field asset data and provide daily system status monitoring and alarming capabilities to Gas Control.

4. Facilities

a. Expansion and enhancement of office space to house the increase in Gas Control staffing and equipment needed to monitor and manage the new and existing field assets.

C. Updated CCM Project Status and Scope

As the design process developed, the CCM project's scope evolved from that described in the 2019 GRC, impacting the schedule, resourcing, and costs. As deployment plans for each activity were advanced and pilot site costs and technologies were assessed to account for advancements in technology and equipment, engineering designs, and end-to-end project planning duration, the CCM project revised the targets and schedule. The project schedule was extended, the targeted number of units has decreased, and the cost per project exceeds the preliminary estimated forecast. Additionally, it was determined that incremental resources are needed for both project deployment efforts and Gas Control staffing to monitor and maintain the new and existing field assets and control room capabilities, as described above in Section V. I. Gas Control. Lastly, the Gas Control facility expansion plan was updated from facility improvements at an existing space at SoCalGas's Monterey Park facility to new construction at SoCalGas's site in Pico Rivera. This update to the plan will allow SoCalGas to co-locate Gas Control, System Planning, control room support, and Emergency Management and Preparedness teams, including the EOC[55].

The distribution field assets component of the CCM project was initiated in 2020 and a technology pilot provided the information needed to optimize the distribution of field site equipment selection and design requirements that incorporated technological advancements not previously included in the design plan. The project scope was refined to focus efforts on

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[54] Formerly referred to as Pipeline Information Management System (PIMS).

[55] Gas Control is currently located at the Company-owned Spence Street facility. System Planning, control room support, and Emergency Management and Preparedness organizations including the EOC currently lease space at the Gas Company Tower.

enhancing distribution regulator stations (DRS) with both control and real-time monitoring capabilities as well as further enhancing the existing EPMs with an advanced data analytics solution to deliver safety and operational benefits, similar to a real-time monitoring-only site. The refined scope aligns with the CCM project's objective to enhance safety by bringing distribution control, pressure monitoring, and system visibility to Gas Control. The forecasted project costs for each component are included in the testimonies as listed in Tables CHB-63 and CHG-64 above. In addition, the project team has learned that the installation process requires more design and construction activity than originally planned for, including unforeseen permitting requirements. The CCM project schedule has been refined accordingly and the final CCM project deployment completion date has been moved from 2024 to 2028. System benefits will accrue gradually during the implementation phases. During this GRC forecast period, the CCM project will deploy 80 new control sites in SoCalGas and SDG&E service territories, rather than the 200 control sites and 665 real-time monitoring-only sites previously forecasted to be deployed by 2024. By the end of 2024, the CCM project will have also implemented the following:

- Replacement of 300 existing SDG&E EPMs configured to report hourly pressure reads.
- Integration and routing of data from 2,213 SoCalGas EPMs to Gas Control.
- Replacement of existing 1,282 SoCalGas and 139 SDG&E non-core metering communication modules reconfigured to report hourly demand data.
- Replacement of existing 3,000 SoCalGas and 500 SDG&E core metering communication modules reconfigured to report hourly demand data.

The CCM project has also begun installing transmission field assets. The current scope, deployment activities, and schedule are discussed in more detail in the Control Center Modernization sections within the Non-Shared Operations and Maintenance Costs IV. F and Capital VI. K of this testimony. SDG&E-related details can be found in Mr. Chiapa and Mr. Hruby's Gas Transmission Operations and Construction testimony (Ex. SDG&E-06, Section V. E. Security & Auxiliary Equipment).

The CCM OT enhancement efforts to date include initiation of a SCADA upgrade. Other planned IT infrastructure updates are underway, which will enhance the field asset network to enable secure network connectivity to Gas Control for the CCM deployed assets, including DRS,

EPM, HCA methane sensors, and OPM stations. These updates will also enhance stability, security, and functionality for control room operations and include advanced data analytics platforms for interface with data from SoCalGas & SDG&E operations and customer service systems such as SAP, Maximo, GIS, and AMI, among others.[56]

The CCM plan to renovate existing space at SoCalGas's Monterey Park facility intended to house the Gas Control staff, has been reimagined to co-locate Gas Control and the Emergency Management and Preparedness and relocate the System Planning, the EOC, and control room support teams out of leased space and into a Company-owned facility. It was determined that a new building, uniquely designed to accommodate these specialized uses, was an optimal solution.

The co-location of the Gas Control and System Planning, Emergency Management and Preparedness, and other control room support teams would allow for the control room to serve as the single point of centralized coordination to support the operation of distribution, transmission, and storage systems, and will enhance SoCalGas and SDG&E's ability to manage the system and to more quickly identify incidents and coordinate a response. Moving these organizations and support staff out of leased space will result in the reduction of the existing EOC space and approximately one floor of leased space at the Gas Company Tower. The cost savings from the lease reduction is estimated to be $47.5M, offsetting about 93% of the forecasted incremental building costs over the 33-year asset life.

The CCM project estimates that groundbreaking will occur in the third quarter of 2022 and building completion and commissioning by July 2024. The building is designed as a LEED-accredited facility to cater to 24/7 critical operations. To ensure staffing, training, and technical requirements are supported, the new building will include:

- Increased control room suite capabilities supported by system controller and associated support staff needed to monitor, manage, and analyze data from an additional 9,800 new and existing field assets.
- Functionally enhanced and physically expanded EOC space to facilitate and respond to company events and safety-related situations, as well as provide 24/7 service territory monitoring for possible system-threat developments.

[56] *See* Appendix D for additional details.

- A Gas Control classroom, where new control room personnel can complete necessary classroom training and compliance activities.
- A control room training simulator with full-size consoles and a matched scale display wall for simulating system events in a true control room atmosphere.
- A SCADA clean room and test lab to bench test new hardware and ensure compatibility, as well as configure hardware before deployment.

More details regarding the updated CCM building are in Appendix D – Control Center Modernization Project Supplemental Information.

In addition to the sustainability benefits derived from operating out of a LEED-certified building, the CCM project supports SoCalGas's climate commitment objectives through the installation of various field assets. The installation of optical pipeline monitoring (OPM) stations and HCA methane sensors will enhance Gas Control's ability to monitor transmission pipelines to detect leaks and dig-ins, identify potential incidents due to ground subsidence, and respond to emergency conditions. Through the continuous 24/7 monitoring as well as real-time data collection, Gas Control personnel, in conjunction with Gas Engineering and Field Operations, will be able to provide faster response times to detected incidents and will be able to quickly act on and communicate potential impacts as well as identify opportunities for proactive preventative maintenance.

In sum, the Commission previously authorized the Control Center (formerly the Distribution Operations Control Center) in D. 19-09-051, finding that the real-time information and monitoring of gas distribution and transmission pipelines will provide meaningful safety benefits and that real-time monitoring and remote-control access to key points in the pipeline system allow faster detection of abnormal changes in pressure and speed up response times to address these issues. SoCalGas has thoughtfully and prudently initiated the CCM project and to date has enhanced four distribution regulator stations, installed one OPM station, and piloted five methane sensors. It has also been determined that by co-locating Gas Control, System Planning, control room support, and the Emergency Management and Preparedness organizations, SoCalGas can more quickly identify incidents and coordinate a response. Additionally, the avoided lease costs will nearly offset the incremental capital expense over the 33-year asset life of the new building. The adjustments to scope reflect the lessons learned through the detailed design phase and the technology pilots performed, and, most importantly, will further enhance

the safety benefits originally envisioned. These updates have impacted the project cost, schedule, and resourcing requirements, extending the CCM deployment activities into 2028.

X. CONCLUSION

SoCalGas requests the Commission adopt the TY 2024 forecast of $52,057 for Gas Transmission Operations and Construction, Gas Control and System Planning, and Control Center Modernization (CCM) O&M expenses, which is composed of $38,754 for non-shared service activities and $13,303 for shared service activities. This request is driven by increased agency regulations and requirements, economic conditions, system expansion, infrastructure renewal, risk mitigation activities, and integration and support of new tools.

SoCalGas further requests the Commission adopt its capital forecast of $182,494,000, $150,742,000, and $106,651,000 in 2022, 2023, and 2024, respectively. The primary factors influencing the capital forecast are ongoing business-related activity and system infrastructure renewal work.

These forecast expenditures support SoCalGas's overarching objective to maintain operational excellence while providing safe, reliable delivery of natural gas at a reasonable cost to customers. The Commission should approve these requests because:

- The activities are necessary to maintain the delivery of safe and reliable service that SoCalGas has been providing customers for many years;
- The activities are consistent with operational codes and standards established by local, state, and federal agencies;
- The activities respond to operations, maintenance, and construction needs associated with projected customer and system growth and demands of city, county, and state agencies under the Company's franchise agreements; and
- The forecast amounts are reasonable and reflect a prudent level of funding needed for critical functions and activities to take place during this GRC term.

The forecast presented in this testimony reflects SoCalGas's best judgment of the work and the associated costs required to:

- Operate and maintain its gas transmission system in a manner that complies with applicable laws and regulations and safeguards the safety of the public and employees;

- Construct new gas transmission facilities in accordance with the Company's obligation to serve and to maintain system reliability;
- Replace existing facilities that are experiencing deterioration to safeguard public safety and preserve infrastructure integrity; and
- Respond to reasonable customer and governmental agency requests.

Accordingly, SoCalGas's GRC request reflects SoCalGas's commitment to sustaining safe and reliable service to our customers while also striving to control costs without compromising safety or regulatory compliance and should be adopted by the Commission.

This concludes our prepared direct testimony.

XI. WITNESS QUALIFICATIONS

My name is Rick Chiapa and since 2018 I have been the Field Operations Manager for Gas Transmission. My responsibilities include providing leadership to a team responsible for the safe and reliable delivery of natural gas through the SoCalGas pipeline network in the western transmission territory. I manage the operation, maintenance, installation, and replacement of the facilities, equipment, and pipeline system associated with this segment of the service territory. Since joining SoCalGas in 1998, I have held positions of increasing responsibility within the Operations (Gas Transmission and Gas Distribution) and Project Management Departments. I have a Bachelor of Science degree in Mechanical Engineering from California State University, Northridge, and a Master of Business Administration from Pepperdine University. This is my first time appearing before the California Public Utilities Commission.

My name is Steve Hruby and I have been a Business Manager in Complex Facilities Project Development, Construction since May 2019. I hold a Bachelor of Science degree in Geology from the University of California, Riverside, and a Master of Business Administration with a concentration in Finance from the University of La Verne. Before joining SoCalGas I was employed by Arcadis in 2000 and Tetra Tech until 2005. In my time at SoCalGas I have held positions with increasing responsibilities in the Commercial and Industrial Services, Regulatory Affairs, Major Projects, and Construction organizations. This is my first time appearing before the California Public Utilities Commission.

My name is Aaron Bell and I am currently the Project and Construction Management Manager for the Control Center Modernization (CCM) organization at SoCalGas, where I oversee the construction and project management office (PMO) activities for new buildings, field sites, and overall project delivery. I have worked for SoCalGas for 17 years in various departments and held positions of increasing responsibility in Gas Distribution, Engineering, and Operations. I hold a Bachelor of Science degree in Mechanical Engineering and Bachelor of Arts degree in Psychology from the University of California, San Diego. This is my first time appearing before the California Public Utilities Commission.

APPENDIX A
GLOSSARY OF TERMS

APPENDIX A

Glossary of Terms

Acronym	Definition
AACE	Association for the Advancement of Cost Engineering
AFUDC	Allowance for Funds Used During Construction
AL	Advice Letter
AMI DAS	Advanced Metering Infrastructure Data Aggregation System
AQMD	Air Quality Management District
APN	Access Point Name
BCM	Blythe Compressor Modernization
BLM	Bureau of Land Management
BTS	Backbone Transportation Service
BY	Base Year
CCM	Control Center Modernization
CDM	Capital Delivery Model
CEH	California Energy Hub
CEMA	Catastrophic Event Memorandum Account)
CEQA	California Environmental Quality Act
CFF	Cross Functional Factor
CFR	Code of Federal Regulations
CGBMA	Core Gas Balancing Memorandum Account
CO	Collectible
CP	Cathodic Protection
CPUC	California Public Utilities Commission
CWP	Capital Workpapers
CTA	Core Transportation Aggregation
DIG-IN	Damage Involving Gas Infrastructure
DOCC	Distribution Operations Control Center
DOT	Department of Transportation
DRS	Distribution Regulator Stations
EAM	Enterprise Asset Management
EBB	Electronic Bulletin Board
EMAT	Electro-Magnetic Acoustic Transducer
EOC	Emergency Operations Center
EPC	Engineering, Procurement and Construction
EPM	Electronic Pressure Monitoring
ESP	Energy Service Provider
ETS	Electrical Test Station
FEED	Front End Engineering Design
FERC	Federal Energy Regulatory Commission
FOM	Field Operations Manager
FTE	Full Time Equivalent

Acronym	Definition
GHG	Green House Gas
GIS	Geographic Information System
GRC	General Rate Case
GT	Gas Transmission
GTSR	Gas Transmission Safety Rule
GTTS	Gas Transmission Technical Services
HCA	High Consequence Area
HP	High Pressure
HVAC	Heating, Ventilation and Air-Conditioning
ICS	Incident Command Structure
IEPR	Integrated Energy Policy Report
ILI	In-Line Inspection
IS	Instrumentation Specialist
ISEP	Integrated Safety Enhancement Plan
IT	Information Technology
LEED	Leadership in Energy and Environmental Design
M&R	Measurement & Regulation
MAOP	Maximum Allowable Operating Pressure
MSA	Meter Set Assembly
NC	Non-Collectible
NAESB	North American Energy Standard Board
NEPA	National Environmental Policy Act
NSE	Non-Standard Escalation
O&M	Operations and Maintenance
OFO	Operational Flow Order
OP	Ordering Paragraph
OPM	Optical Pipeline Monitoring
OT	Operations Technology
PHMSA	Pipeline and Hazardous Materials Safety Administration
PIMS	Pipeline Information Management System
PLC	Programable Logic Controllers
PMO	Project Management Office
PSEP	Pipeline Safety Enhancement Plan
psi	Pounds Per Square Inch
psig	Pounds Per Square Inch Gauge
PTY	Post-Test Year
QA	Quality Assurance
RAMP	Risk Assessment Mitigation Phase
RNG	Renewable Natural Gas
ROM	Rough Order of Magnitude
ROW	Right of Way
RSE	Risk Spend Efficiency
SAP	Systems, Applications & Products, Data Processing Software
SB	Senate Bill

Acronym	Definition
SCADA	Supervisory Control and Data Acquisition
SCG	Southern California Gas
SDG&E	San Diego Gas & Electric Company
SED	Safety and Enforcement Division
SF	Square Feet
SMS	Safety Management System
SMYS	Specified Minimum Yield Strength
SoCalGas	Southern California Gas Company
SPD	Safety Policy Division
SQTA	Scheduled Quantity Trading Automation
SAAS	Software as a Service
TCAP	Triennial Cost Allocation Proceeding
TIMP	Transmission Integrity Management Program
TSA	Transportation Security Administration
TSR	Technical Services Request
TY	Test Year
VSAT	Very Small Aperture Terminal
WOA	Work Order Authorizations

APPENDIX B

BLYTHE SUPPLEMENTAL PROJECT DESCRIPTION – SCG-06

APPENDIX B

BLYTHE SUPPLEMENTAL PROJECT DESCRIPTION – SCG-06

APPENDIX B
BLYTHE SUPPLEMENTAL PROJECT DESCRIPTION – SCG-06

I. PURPOSE AND OVERVIEW

The main purpose of this Supplemental Project Description is to provide additional detail on the scope, cost, schedule and sustainability of the Blythe Compressor Modernization (BCM) project.

In the following sections, I have provided the background and the summary of the project in section II, project scope in section III, project cost details in section IV, and project schedule in section V. In section VI, I describe how Compressor Modernization Projects support the achievement of SoCalGas's sustainability goals. Finally, in section VII, I provide an overview of SoCalGas's project management activities that enable the safe and successful execution of the Projects to meet or exceed quality expectations and compliance with governing environmental and regulatory requirements.

II. BACKGROUND

A. Regulatory History

In the SoCalGas TY 2019 General Rate Case, the Commission authorized capital investments for Blythe Compressor Modernization[1] and recognized the importance of compressor modernization projects to maintain operational reliability and the safety of the gas transmission system.

B. Background - Blythe Compressor Modernization Project

Prior to the completion of the Blythe Compressor Modernization Project, the Blythe Compressor Station utilized much of the original vintage equipment, including eight Clark compressors that were installed in the 1940s. Blythe Station's function is to receive natural gas from the Kinder Morgan interstate pipeline and compress it westward into SoCalGas's Southern System. The transmission pipelines that comprise SoCalGas's Southern System provide the natural gas supply to Imperial County, Riverside County, San Diego County, parts of Orange County and parts of San Bernardino County. Much of this gas flows through the Blythe

[1] Decision 19-09-051, Pages 116-117.

Compressor Station, and thus the ongoing reliability of the Blythe facility is critical to SoCalGas meeting its current and future obligation to serve customers reliably.

C. Cost Summary – Blythe Compressor Modernization Project

The forecasted capital investment to complete the BCM Project is summarized below:

Figure BCM-1
Summary of Total Costs by Year (2021 Dollars)

Project	Actuals	2022	2023	Total
Plant 2	$78,007	$29,350	$0	$107,357
Plant 4	$259,561	$9,654	$370	$269,585
Total	$337,568	$39,004	$370	$376,942

Costs are presented in thousands in 2021 dollars. Project actuals presented are since 2015. These costs do not include SoCalGas Overheads, Property Taxes, Allowance for Funds Used During Construction (AFUDC), or escalation beyond 2021 dollars.

III. PROJECT SCOPE

A. Blythe Compressor Modernization Project - Project Scope

The scope of Blythe Compressor Modernization (BCM) Project included the installation of a new compressor building with two (2) new Siemens/Dresser SGT-300 Turbo-Compressor/Driver units (7226 HPeach) and associated inlet filters and Selective Catalytic Reduction (SCR) Emissions Packages. New auxiliary systems including instrument air, fuel gas supply and cooling water to support the new units were installed. A new generator building with five new 715 kW electric generators was installed to replace existing generators and power the new and existing infrastructure. The BCM Project included the relocation of 30”- diameter (Baja Norte Intertie) and 36"- diameter (Line 5000) natural gas transmission pipelines. The BCM Project scope was divided into Plant 2 and Plant 4. The Plant 2 scope included the retrofit of existing Plant 2 compressors including station integration and electrical infrastructure upgrades. The new Plant 4 scope included the installation of two new turbine-driven compressors and supporting ancillary systems & infrastructure. At Blythe station, SoCalGas has completed construction,

installation, and commissioning of Plant 4. Units 11, 12, 14 and 15 of Blythe Compressor Modernization Project's Plant 2 have been retrofitted and commissioned while Unit 13 and the station integration scope will be completed and commissioned in 2022.

IV. PROJECT COSTS

A. Blythe Compressor Modernization – Project Cost

Project costs are presented in direct 2021 dollars, in $000's, and exclude SoCalGas Overheads, Property Taxes, AFUDC, and escalation.

Figure BCM-3
Cost Breakdown

Components	Costs ($ in 000s)
Plant 2	**$107,357**
Engineering/Planning	$15,958
Equipment/Material	$29,077
Construction	$57,516
Company Labor	$3,304
Contingency	$1,501
Plant 4	**$269,585**
Engineering/Planning	$62,600
Equipment/Material	$56,400
Construction	$138,300
Company Labor	$8,490
Contingency	$3,795
Project Total	**$376,942**

Figure BCM-4
Cost Breakdown Activities

Sub-Component	Activities
Engineering/Planning	Pre-FEED, FEED, and detailed design and engineering
Equipment/Material	Procurement and handling of bulk material and equipment
Construction	Construction labor, activities, and subcontractors
Company Labor	SoCalGas employee labor
Contingency	Estimate contingency

V. SCHEDULE

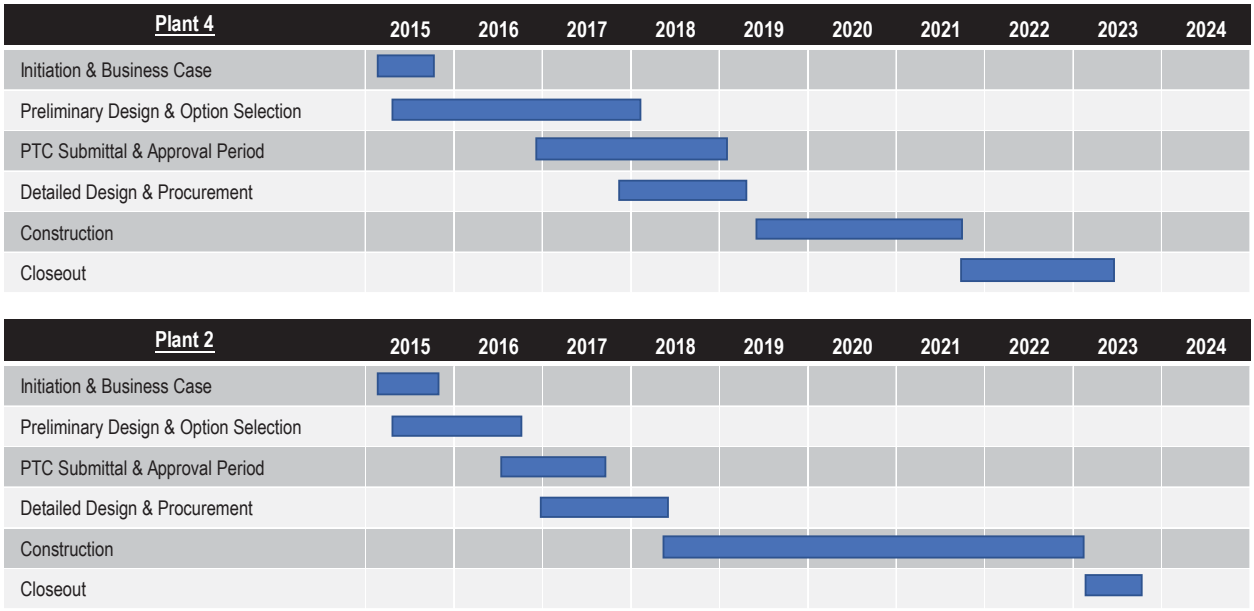
A. Blythe Compressor Modernization – Project Schedule

The BCM Project, Plant 4, was placed into service (Notice of Operation or "NOP") in October 2021. The remaining BCM Project assets, as described above, are expected to be placed into service in early 2023.

Figure BCM-7
BCM Project Major Milestones

Major Milestones	Plant 4 Date	Plant 2 Date
PTC Received	Jan-2019	May-2018
Construction Begins	Aug-2019	May-2018
Detailed Design & Procurement Complete	Jun-2022	Mar-2022
NOP Date	Oct -2021	Jan-2023
Project Close-Out	May-2023	Sep-2023

Figure BCM-8
BCM Schedule by Stages



VI. COMMISSIONING NEW EQUIPMENT AND DECOMMISSIONING OLD EQUIPMENT

Commissioning compressor equipment is a systematic process to verify the station meets the expected design criteria, operates as expected, the safety systems are operational, and the natural gas fueled equipment complies with air emission requirements. The commissioning process tests and documents the condition of each system to verify the station is fit for service. The verification includes approvals of the installation and design, fabrication and testing document reviews, and all required functional testing and tuning is completed to provide safe operation of the system.

After the safety and operating systems have been commissioned and are acceptable for service, a site performance test is conducted. This test verifies the system meets the specified operational requirements and performance guarantees. The tests mimic multiple operating points to simulate station operation. The operational requirements and performance guarantees include automation, acceptable emissions, flow rate, power output, cooling, and inlet and outlet pressure. The site performance test is performed in collaboration with SoCalGas Transmission Operations, equipment manufacturers, construction contractors, and design-engineering firm(s) that

integrated the systems. Upon the successful completion of these tests, the station will be turned over to SoCalGas Transmission Operations.

Once the new equipment becomes fully operational, the existing compressor assets will be decommissioned.

VII. PROJECT EXECUTION

A. Project Management

SoCalGas's primary project objective is to successfully execute the Compressor Modernization Projects safely, reliably, on schedule and at reasonable cost, while meeting applicable SoCalGas Gas Standards, and complying with environmental and regulatory requirements. To achieve this objective, SoCalGas has formed a well-trained and qualified team comprised of Project Management, Engineering, Construction Management, Project Control, Quality Risk and Compliance, Safety, Procurement, Environmental, Communications and Stakeholder Outreach personnel to oversee compliance with applicable regulatory and quality assurance requirements and continuously improve project controls to validate project tasks are performed safely, and cost effectively. The project teams develop and implement Project Execution Plan(s) to outline the project execution and governance principles utilized by the project teams to conduct and manage the projects. Compliance with the Project Execution Plan supports achievement of project safety, operational safety, schedule, cost, quality, stakeholder engagement, compliance and risk mitigation goals.

1. Safety

Compressor Modernization Projects utilize SoCalGas's integrated approach to safety called the Safety Management System (SMS). SMS aligns and integrates safety, risk, asset, and emergency management across the Company. The SMS takes a holistic and pro-active approach to safety and expands beyond "traditional" occupational safety principles to include asset safety, system safety, cyber safety, and psychological safety for improved safety performance and culture. SoCalGas's SMS is a systematic, enterprise-wide framework that utilizes data to collectively manage and reduce risk and promote continuous learning and improvement in safety performance through deliberate, routine, and intentional processes.

APPENDIX B

BLYTHE SUPPLEMENTAL PROJECT DESCRIPTION – SCG-06

SoCalGas's safety-focused culture and structure allow us to be proactive and accountable in the safe delivery of gas and associated business operations.

- The safety process for the projects is supplemented through use of the HAZOP or Process Hazard Analysis (PHA) process. PHA/HAZOP reviews are scheduled by the project engineering manager and managed by the SoCalGas process engineer assigned to the projects. Each review session has appropriate participants in attendance from transmission operations, project management, SoCalGas engineering and the engineering contractor. Facilitation of the PHA/HAZOP review is performed by a third-party contractor. For the Compressor Modernization Projects, the PHA is completed during the FEED phase. Comments and feedback obtained from the project team during the FEED PHA are resolved. To the extent items cannot be resolved, they are tracked and addressed during the Detailed Engineering phase. In the EPC phase of the project, HAZOP reviews are completed to integrate safety in all aspects of the design.
- Additional reviews for maintenance, accessibility, and human factors, commonly called Constructability Reviews, are scheduled by transmission operations and the Construction organization. Construction, transmission operations, and safety personnel are invited to the Constructability Reviews to make certain that plant operability and safety-related matters are addressed throughout the project's engineering design lifecycle. For the Compressor Modernization Projects, Constructability Reviews are conducted during the FEED phase of the project and will be scheduled at regular intervals during the Detailed Engineering phase to inherently build safety into the design.
- On-site safety training is required for all SoCalGas employees and contractors supporting field activity and inspection work. During the construction phase, the importance of working safely and following SoCalGas's zero incident culture is emphasized every day, at all levels of the project organization. Job specific safety plans are developed for the SoCalGas employees, contractors, and subcontractors working on the Compressor Modernization Projects and includes an emergency

notification, response & evacuation plan.

SoCalGas leadership is fully committed to safety as a core value. SoCalGas's Executive Leadership is responsible for overseeing reported safety concerns and promoting a strong, positive safety culture and an environment of trust that includes empowering employees to identify risks and to "Stop the Job."

SoCalGas's approach to safety is one of continuous learning and improvement where all employees and contractors are encouraged and expected to engage in areas of opportunity for learning and promote open dialogue where learning can take place.

2. Phased Project Execution

SoCalGas has adopted the Capital Delivery Model (CDM) that sets forth the various stages of the project lifecycle for managing major projects. The CDM principles guide SoCalGas and its contractors through various management and document requirements prior to proceeding to the next stage of each project. The stages are:

Stage 1 - Initiation & Feasibility

Stage 2 - Preliminary Engineering

Stage 3 - Detail Engineering and Procurement

Stage 4 - Construction

Stage 5 – Closeout

3. Project Controls

The Compressor Modernization Projects Management team has established project controls and management practices that provide the Project teams with the means to execute the projects and achieve their objectives. The Project teams track and report performance indicators and metrics to facilitate communication and evaluation of project health among the Project teams and key stakeholders, with the goal of risk mitigation and continuous improvement. The Compressor Modernization Projects Management teams have established project cost and schedule controls to assist the Project teams in identifying changes compared to project baseline plans and project adjustment options as early as possible.

4. Estimating

Project teams regard estimating integrity as a critical part of project planning and development. Project estimating is an iterative process which begins during the initiation of the project. The estimates are updated and presented to management for approval. Multiple alignments with project stakeholders and the estimating teams occur throughout the life cycle of a project to seek up-to-date information for the continued development of the project cost estimate and project schedule. Project estimate and schedule basis documents are developed and updated throughout the lifecycle of the project to meet the corresponding accuracy requirement for that phase of the project.

The estimates are developed by SoCalGas estimating group in conjunction with input from the third-party contractors and the Compressor Modernization Project Management team. The output of the cost estimate is used to determine project economic feasibility, assist with decision making, establish a baseline budget, and track accuracy of material quantities throughout the lifecycle of the project. The estimate deliverables include the estimate basis, estimate details, and a contingency recommendation. The contingency recommendation is derived from the project risk register portion of the Project Execution Plan (PEP).

SoCalGas's CDM staged execution model estimate alignment with the Association for the Advancement of Cost Engineering (AACE) standards[2] can be represented as shown below:

Estimate Class	Usage	Accuracy Range	Stage
Class 5	Concept Screening	+100%/-50%	1
Class 4	Feasibility Study	+50%/-30%	1 & 2
Class 3	Budget Authorization	+30%/-20%	2 & 3

5. Engineering

SoCalGas employs a multi-pronged approach to the engineering associated with capital projects of the size and complexity of the Compressor Modernization Projects. SoCalGas uses: 1) SoCalGas's Gas Engineering Department supplemented with third-party engineers (Owner's Engineer); 2) a third-party engineering firm for Front End Engineering & Design (FEED); and 3)

[2] AACE International Recommended Practice No. 18R-97.

a third-party firm responsible for Engineering, Procurement and Construction (EPC). In addition, specialty engineering expertise is employed throughout the projects, as needed.

B. SoCalGas Engineering & Owner's Engineer

SoCalGas's Gas Engineering department may supplement their expertise from third-party engineers (Owner's Engineer), and are responsible for the following project activities:

- Support for the initial scoping, analysis of requirements, and development of alternatives;
- Preparation of requirements for FEED third-party bid development, provide analysis of bid responses, and support selection of the FEED contractor;
- Review and approval of FEED work products;
- Develop Engineering, Procurement and Construction (EPC) bid requirements, provide analysis of bid responses and support selection of EPC contractor;
- Review and approve EPC work products; and
- Support commissioning of new compressor station and project closeout.

C. Front End Engineering Design (FEED) Contractor

For the Compressor Modernization Projects, FEED contractors are selected during a competitive bid process. In this phase of the project, the FEED contractor is responsible for completing engineering and design of the new compressor station to a 30% design level. The engineering and design (30%) deliverables include mechanical equipment, utility system, instrument and control systems, electrical components, civil, architectural, structural, and piping designs. Also, as part of the deliverables of this phase, the FEED contractor provides engineering and design information necessary to include in the EPC bid package along with an updated project cost estimate and schedule.

D. Engineering – EPC Phase

SoCalGas typically contracts the EPC phase of the project to a third-party contractor. Under this approach, the EPC contractor is responsible for all activities relating to the engineering, design, material and equipment procurement, construction, and commissioning of the project, including mechanical equipment, utility system, instrument and control systems,

electrical components, civil, architectural, structural, and the piping for the new compressor station. This contracting approach allows for the development of a well-defined project scope, single point responsibility, project cost control, and schedule control.

E. Specialty Engineering

Additional third-party engineering firms are retained, as needed, to support routine engineering and specialty engineering activities, such as preparing permit packages, geotechnical and environmental evaluations, etc.

1. Environmental and Permitting Support

The Environmental team is responsible for informing the project team of environmental compliance requirements applicable to the project. The Environmental team is also responsible for obtaining environmental permits, participating in agency consultations for environmental permits, preparing and conducting environmental training, obtaining plan approvals, and performing environmental regulatory updates and/or interpretations. The Permitting team is responsible for supporting submittal and receipt of all project permits. They are also responsible for ministerial actions such as street use permits, traffic control permits, and for obtaining permits associated with the use of non-Owner equipment.

2. Procurement of Services and Materials

Procurement of services and materials is often a significant component of project expenditures. As such, an important aspect of prudent project execution is the evaluation, selection, and retention of qualified suppliers and contractors at reasonable rates. To achieve this, the Compressor Modernization Project Management team utilizes competitive solicitations to obtain materials and services at market-based rates. Supply management techniques and practices may include implementation of available procurement processes and cost control measures for the preparation, solicitation, competitive bidding, evaluation, award, and administration of qualified and best-value contractors, subcontractors, and suppliers.

The procurement process for competitively bidding contracts involves soliciting bids from potential contractors and suppliers based on the scope, specifications, terms and conditions of the proposed contract. While pricing is a major factor used in the selection process, other

factors such as safety, supplier performance, experience, key personnel, life-cycle cost analyses, Disadvantage Business Enterprise (DBE) participation, and history, among others, are also considered for award recommendation and contractor selection.

3. Construction Management

SoCalGas's Construction Management team performs and oversees the construction of the project and manages vendors and contractors effectively, in alignment with the defined scope of work and SoCalGas's Gas Standards. The Construction Management team makes certain that the project is constructed per the design to allow for safe and reliable operation. Construction Management is integrated into the project in the early stages of the project lifecycle to provide constructability guidance and reviews, to identify potential risk to the construction schedule and cost of the project. The Construction Management team is comprised of a Construction Manager, Construction Team Lead, Field Engineers, Construction Inspectors, and third-party contractors.

4. Quality, Risk and Compliance Management

Quality management for the projects focuses on implementation oversight and review of projects components to: (1) conduct quality reviews and/or audits; (2) report on corrective actions and closure; and (3) promote continuous improvement through quality review metrics, feedback and/or lessons learned. This function is managed by the Compressor Modernization Project Management team with assistance from the Quality Risk and Compliance group, other Company personnel, qualified independent consultants, outside inspection agencies, and testing laboratories, as required.

Risk management practices are employed to identify potential project risk to proactively mitigate or avoid negative impact on the project cost and schedule. Although Project Managers have overall responsibility for managing project risks, it is a collective effort from leadership and project stakeholders to continuously identify and track the mitigation and management of project risk. Compressor Modernization Project Managers develop a risk register log to document, track, mitigate, and close project risks throughout the project lifecycle.

Document Control facilitates the process of gathering, organizing, reviewing, storing, and sharing documents, making it easier to collaborate, retrieve, and share information across the

project teams. Document Control also addresses version control, document quality, approvals, and generation of a compliance record for the life of each asset. The Project Engineer and a Document Control Specialist are assigned these responsibilities on the Compressor Modernization Projects.

5. Communication and Stakeholder Outreach

Stakeholder outreach is essential to keep our communities and our customers educated about our mission and how our facilities and projects accommodate the delivery of safe, affordable and increasingly cleaner energy. SoCalGas collaborates with the communities and local municipalities in which our facilities are located, and with regulatory agencies who have oversight of the facility. Regular and routine engagement of community stakeholders through various methods is conducted to share information about our operations and pending projects. SoCalGas has dedicated Public Affairs Managers to act as a primary point of contact for the public to share information. Communication methods may include public meetings, community canvasing, stakeholder briefings, station tours for local officials, informational newsletters, social media posts, radio ads and dedicated project website updates.

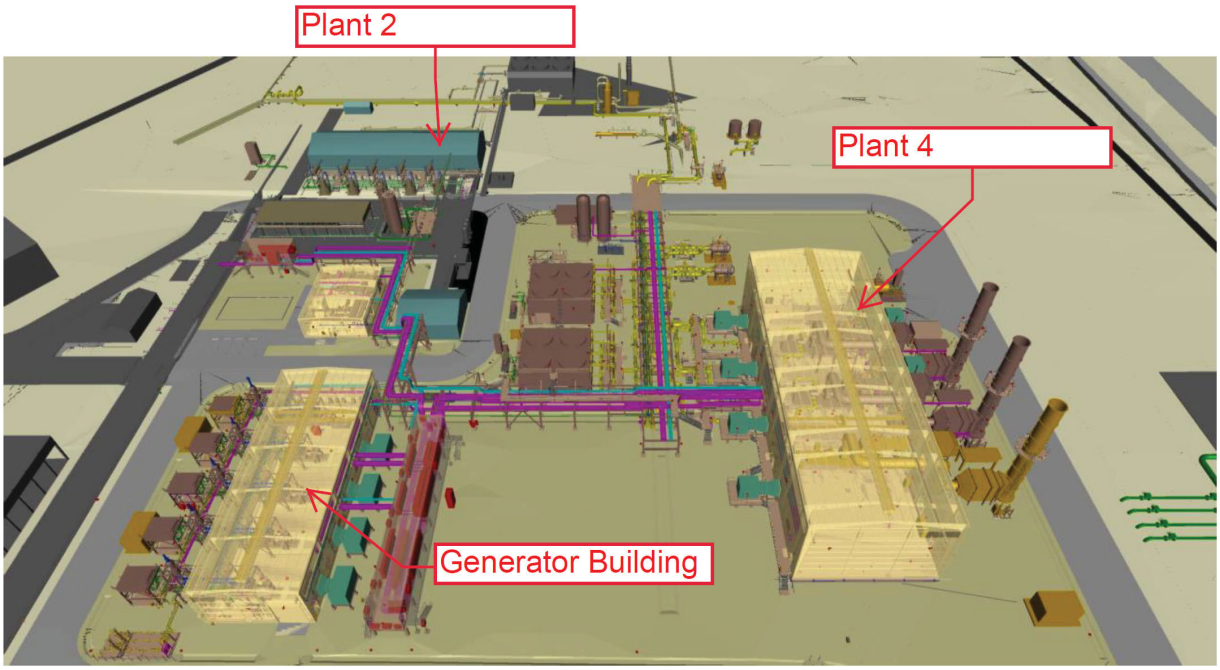
For example, for the Ventura Compressor Station Modernization Project, our Public Affairs Manager has been in contact with the City of Ventura via phone, email and virtual meetings about the project since 2019. Additionally, SoCalGas hosted eight virtual community workshops in English and Spanish in April/May 2021 to share information about the project. Subsequently, as part of SoCalGas's effort to engage with, and respond to the greater Ventura area community's concerns, allow for feedback and answer questions, SoCalGas convened seven town hall meetings, in-person and virtually, over a week's time in October 2021. At these meetings, we gathered community feedback to inform our feasibility study. We then held six public forums virtually and in person on March 29, 31, and April 2, 2022, with Spanish translation provided to share information about the findings of our feasibility study.

Our communications efforts are a critical part of our mission to engage with and learn from our community partners and customers.

APPENDIX B

BLYTHE SUPPLEMENTAL PROJECT DESCRIPTION – SCG-06

Figure BCM-1 - Blythe Compressor Modernization



APPENIDX C
RAMP ACTIVITY FORECASTS BY WORKPAPER

APPENDIX C

RAMP Activity Forecasts by Workpaper

O&M Summary

GAS TRANSMISSION OPERATIONS & CONSTRUCTION RAMP Activity O&M Forecasts by Workpaper (In 2021 $)						
Workpaper	**RAMP ID**	**Description**	**BY2021 Embedded Base Costs (000s)**	**TY2024 Estimated Total (000s)**	**TY2024 Estimated Incremental (000s)**	**GRC RSE***
2200-0329.000	SCG-Risk-1 - C16	SCADA Operation	1,185	1,185	0	0
2200-0329.000	SCG-Risk-1 - C16	SCADA Operations	0	105	105	0
2200-0931.000	SCG-CFF-1 - 7	Establish an Enterprise Asset Management Operating Model	200	200	0	0
2200-2289.000	SCG-Risk-1 - C17	Control Room Monitoring, Operation and Fatigue Management	2,982	2,982	0	0
2200-2329.000	SCG-Risk-1 - C18	Gas Transmission Planning	860	860	0	0
2GT000.000	SCG-Risk-1 - C04 T1 & T2	Leak Survey & Patrol (HCA & Non-HCA)	1,836	2,217	381	-
2GT000.000	SCG-Risk-1 - C07 T1 & T2	Pipeline Maintenance (HCA & Non-HCA)	465	846	381	-
2GT000.000	SCG-Risk-1 - C13 T1 & T2	Measurement & Regulation Stations - Maintenance (HCA & non-HCA)	2,077	2,139	62	-
2GT000.000	SCG-Risk-1 - C14	Odorization	620	682	62	0.100
2GT000.000	SCG-Risk-2 - C02	Locate & Mark Training (HP)	5	5	0	0

2GT000.000	SCG-Risk-2 - C04	Locate & Mark Activities (HP)	3,111	3,111	0	53.000
2GT000.000	SCG-Risk-2 - C06	Locate and Mark Annual Refresher Training and Competency Program (HP)	9	9	0	158.000
2GT000.000	SCG-Risk-2 - C26	Pipeline Patrol and Pipeline Markers (HP)	452	452	0	46
2GT000.000	SCG-Risk-2 - C28	Company Excavator Training (HP)	14	14	0	0
2GT001.000	SCG-Risk-1 - C11	Compressor Station Maintenance	10,671	12,002	1,331	3.000
2GT002.000	SCG-Risk-1 - C02 T1&T2	Cathodic Protection - Maintenance (HCA & Non-HCA)	1,351	1,351	0	-
2GT003.000	SCG-Risk-1 - C08 T1& T2	Right of Way (HCA & Non-HCA)	4,450	2,156	-2,294	-
2GT003.000	SCG-Risk-1 - C09 T1 & T2	Class Location (Hydrotest) (HCA-Non-HCA)	0	720	720	-
2GT003.000	SCG-Risk-1 - C19	Engineering, Oversight and Compliance Review	1,500	2,498	998	0
Total			**31,788**	**33,534**	**1,746**	

Capital Summary

GAS TRANSMISSION RAMP Activity Capital Forecasts by Workpaper (In 2021 $)						
Workpaper	**RAMP ID**	**Description**	**2022 Estimated RAMP Total (000s)**	**2023 Estimated RAMP Total (000s)**	**2024 Estimated RAMP Total (000s)**	**GRC RSE**
003020.001	SCG-Risk-1 - C03 T1 & T2	Leak Repair T1 & T2 (HCA and Non-HCA)	10,711	10,000	10,500	-
003020.002	SCG-Risk-1 - C05 T1 & T2	Pipeline Relocation/ Replacement (HCA & Non-HCA)	21,421	20,001	21,000	-
003020.003	SCG-Risk-1 - C06 T1 & T2	Shallow/ Exposed Pipe Remediations (HCA & Non-HCA)	3,570	3,334	3,500	-
003020.004	SCG-Risk-1 - C05 T1 & T2	Pipeline Relocation/ Replacement (HCA & Non-HCA)	4,298	6,665	0	-
003040.001	SCG-Risk-1 - C05 T1 & T2	Pipeline Relocation/ Replacement (HCA and Non-HCA)	9,823	6,880	9,757	-
003050.002	SCG-Risk-1 - C10	Compressor Stations - Capital	13,000	13,000	10,000	2.000
003060.001	SCG-Risk-1 - C01 - T1&T2	Cathodic Protection - Capital (HCA & Non-HCA)	8,000	8,000	7,000	-
003080.001	SCG-Risk-1 - C12 T1 & T2	Measurement & Regulation - Capital (HCA & Non-HCA)	30,000	30,000	26,250	-

003080.002	SCG-Risk-1 - C12 T1 & T2	Measurement & Regulation - Capital (HCA & Non-HCA)	10,000	10,000	8,750	-
003090.001	SCG-Risk-1 - C15	Security and Auxiliary Equipment	1,701	701	701	6.000
003090.002	SCG-CFF-5 - 1	RAMP SCG - CFF - 5 Physical Security	2,218	2,218	2,218	0
003090.003	SCG-Risk-5 - M07	Workplace Violence Prevention Program Enhancements	81	81	81	162.000
003350.001	SCG-Risk-1 - C23-T1	Blythe Compressor Station Modernization	29,350	0	0	-
003350.002	SCG-Risk-1 - C23-T1	Blythe Compressor Station Modernization	9,654	370	0	-
004050.001	SCG-Risk-2 - C37	Pipeline Monitoring Technologies	2,038	2,608	3,746	-
Total			**155,865**	**113,858**	**103,503**	

APPENDIX D

CONTROL CENTER MODERNIZATION SUPPLEMENTAL PROJECT DESCRIPTION

APPENDIX D

Control Center Modernization Supplemental Project Description

Control Center Modernization (CCM) Overall Project Description

The CCM project will integrate new and existing data points from the gas distribution system into Gas Control by enhancing distribution regulator stations with real-time monitoring and control capabilities, and by bringing near real-time electronic pressure monitoring (EPM) and meter data into the control room. The integration of the data from distribution field assets into Gas Control represents a shift from a monitor-and-respond approach to a monitor, operate, and control approach. This change in approach places emphasis on safety, system reliability, data analytics, remote control, and proactive maintenance. Gas Control will also receive additional data from transmission field assets as the CCM project further digitalizes the transmission system by installing OPM stations and HCA methane sensors, further described in Section IV.F. above. As the CCM project integrates these distribution and transmission field assets, Gas Control will serve as the single point of centralized coordination to monitor and manage data from over 9,800 new and existing field assets. It will also support the operation of both SoCalGas and SDG&E's pipeline systems that will enhance the ability to manage the system and more quickly identify incidents.

The CCM project will deploy and integrate data from over 7,600 new and existing field assets into Gas Control by the end of 2024 and an additional 2,200 field assets by the end of 2028. This increase in Gas Control's field asset data oversight and management will require new personnel, new roles and responsibilities, new processes and procedures, enhanced control room technology to support the management of pipeline data and data analytics tools, and a new building. The new building will be sized to accommodate the increase in Gas Control resources that are needed to effectively monitor, manage, respond, and analyze this new data. Additionally, the updated building scope will include an Emergency Operations Center (EOC) which will support the benefits of co-locating both Gas Control, System Planning, and Emergency Management and Preparedness organizations under one roof to provide 24/7 hours a day, 7 days a week resource support. The field assets, new building, resources, and technology will enhance SoCalGas and SDG&E's ability to support emergency response, provide reliable service to customers, and increase system-wide visibility, integrity, and planning.

Although the CCM distribution and transmission field asset deployment activities will span the next six years before completion, during this GRC cycle (between now and the end of 2024) the CCM project will:

- Enhance and maintain 80 distribution real-time monitoring and control regulator stations
- Integrate and route data from 7,344 EPMs and customer meter devices to Gas Control.
- Deploy and maintain over 170 HCA methane sensors.
- Install three and maintain seven OPM stations.
- Construct a new centralized building.
- Develop and implement a series of OT enhancements that will transform field asset data into usable information for Gas Control to manage and control the overall gas system.
- Support sustainability goals by utilizing new OPM stations and HCA methane sensors to further enhance leak detection and mitigation response.

CCM Overall Project Benefits

SoCalGas's implementation of the CCM project will support customer and employee safety as well as enhance operations. The CCM project will minimize incidents due to more visibility of the distribution system operating conditions and will reduce response times to incidents impacting the system through remote control and real-time monitoring functionality at select DRS. It will enhance system integrity, recognition, response, and remediation of potential leaks, third-party right-of-way intrusion, and ground subsidence on the transmission system by using HCA methane sensors and OPM stations.

The new building will house all Gas Control and System Planning, as well as Emergency Management and Preparedness and control room support teams, which will allow for increased situational awareness, coordination, collaboration, and communication among these departments. Centralizing these teams will also increase the capacity for faster emergency response by critical decision makers. Additionally, consolidation of critical support roles into a Company-owned facility will reduce space needs at the Gas Company Tower building equal to one floor as well as the current Emergency Operations Center. This new building will be designed to meet Leadership

in Energy and Environmental Design (LEED) standards, which supports SoCalGas's sustainability strategy.

The CCM OT Enhancements will include system upgrades that will enhance stability, security, and functionality for control room operations. They will leverage field asset data and increase system visibility through data analytics and situational awareness platforms to help identify and respond to potential risks as well as extend the lifecycle and operating performance of field assets through proactive and preventative maintenance.

CCM Project Components

- **Distribution Field Assets**

This is the updated plan for the CCM project proposed in the 2019 GRC,[57] and it embodies the installation and integration of data from new and existing field assets on the distribution pipeline system to remotely control distribution regulator stations and provide Gas Control expanded continuous monitoring of the system. This body of work was approved by the Commission in D.19-09-051. The activities in this section include:

Deployment of remote control and real-time monitoring at distribution regulator stations, which will give Gas Control visibility into the dynamic pressures and flows across the gas distribution system as well as the ability to control select stations.

- Integration of EPM data which will be transformed through advanced analytics use cases to provide Gas Control with additional near real-time insights into the distribution system.
- Replacement of EPMs in the SDG&E territory to provide near real-time distribution system data to Gas Control.
- Replacement and reconfiguration of core and non-core meter communication modules to provide near real-time customer demand data to Gas Control.

The CCM project, in coordination with the Distribution and Gas Control organizations, will establish new business processes, identify new roles and responsibilities, and project-manage the installation and integration of these enhanced distribution regulator stations (DRS), EPMs, and meter assets.

[57] *See* Ex. SCG-08-R.

- **Enhanced Distribution Regulator Stations (DRS)**

This capital and O&M work will allow SoCalGas and SDG&E to operate the gas distribution system to support operational efficiencies and enhance the management of abnormal operating conditions. This will be supported by expanding the capability to remotely close valves and obtain both real-time and near real-time pressure-monitoring information from new technology on DRS sites as well as from existing EPMs through an advanced data analytics platform.

The current deployment schedule reflecting the initiated number of projects for the period 2022-2024 is shown in Table CCM-1.

TABLE CCM-1
Southern California Gas Company
Control Center Modernization - Field Asset Deployment Units

Field Asset Deployment Units				
	2022 TOTALS	**2023 TOTALS**	**2024 TOTALS**	**Total 2024 GRC**
SoCalGas Deployment	25	25	25	75
SDG&E Deployment	0	2	3	5
			Total	80

As the CCM project began to mobilize in 2020, the original deployment timeline was refined for enhanced real-time monitoring and control at DRS sites. This allowed time to account for new business process development, site selection analysis, identification of new roles and responsibilities, hiring of project management resources, development of engineering designs, establishing an implementation schedule, and preparing for change management activities to educate and prepare impacted stakeholders. In addition, more time was needed to complete testing and evaluation of a new suite of equipment. This analysis was needed in order to optimize the field site equipment selection and design requirements, which incorporated technological advancements that include automated control valves, instrumentation, slam-shut regulators, and radio communication systems.

Once planning and construction activities were performed on the initial DRS pilot sites, the CCM project assessed the end-to-end per-project-site duration as well as the per-site costs. As a result of evaluating the lessons learned from pilot sites and early deployment activities, the end-to-end project duration and costs impacted the overall deployment schedule. The CCM project will

now enhance 80 DRS sites by the end of 2024 and an additional 120 DRS sites by the end of 2028. The key lesson learned from the pilot sites was that the per-unit cost for the real-time monitoring-only sites were approaching costs like those of sites enhanced with both real-time monitoring and control capabilities. With this information, efforts shifted to focusing on enhancing DRS with both real-time monitoring and control. In parallel, the CCM project will assess and leverage existing EPMs with an advanced data analytics solution to deliver safety and operational benefits, similar to a real-time monitoring-only site.

In summary, the CCM project remains committed to the original plan's objective to bring distribution control, pressure monitoring, and system visibility to Gas Control. The updated deployment plan for this work will extend over the 2024 GRC cycle and run through 2028, with a focus on enhancing each distribution regulator station with both control and real-time monitoring capabilities. This deployment plan will include a higher cost per unit based on the first pilot site installations. Additionally, the CCM project will assess and leverage existing EPMs with an advanced data analytics solution. Lastly, the CCM project will support the Distribution M&R organization with the hiring and training of the new Instrumentation Specialist (IS) classification. Once trained, these IS resources will perform maintenance on these new field assets and will respond to planned and unplanned incidents in coordination with Gas Control.

- **Electronic Pressure Monitor (EPM) & Meter Data**

EPM and Meter Data activities will bring near-real time EPM data and alarms, along with customer demand data (both select core and non-core customers), to Gas Control to enhance monitoring capability of the distribution system. Delivering this data to Gas Control will allow system operators to accelerate the identification, response, and remediation of incidents on the distribution system. This will enhance public safety, increase system reliability, and provide the framework for enhanced system planning.

The EPM and Meter Data scope includes the necessary project resources, process changes, technology enhancements, and field execution activities to provide the following capabilities to Gas Control:

EPMs: Provide distribution system pressure reads from existing EPMs at hourly intervals as well as near real-time alarming and minute pressure reads when over or under pressure limits or when abnormal pressure profiles are measured.

Meter data: Provide hourly customer demand data for end-point installations to provide for statistical determination/triangulation of hourly core/non-core load. Provide hourly core customer demand data and hourly non-core customer flow, temperature, and pressure data.

To enable these capabilities, the CCM OT enhancements and change management teams will provide related support efforts. Some of these activities include updating IT/OT infrastructure and developing new capabilities across the enterprise to enable enhanced field asset data collection, visibility, and presentation to the control room. Additionally, the CCM project will help develop new and update key business processes related to distribution field operational monitoring and alarm response for Gas Control and multiple related support organizations.

By the end of 2024, the CCM project plans to execute the following deployment plan and implementation:

- Replace 300 existing SDG&E EPMs with the latest EPM technologies and configure them to report hourly pressure reads.
- Integrate and route data from 2,123 SoCalGas EPMs to Gas Control.
- Replace existing 1,282 SCG and 139 SDG&E non-core metering communication modules and reconfigure to report hourly demand data.
- Replace existing 3,000 SCG and 500 SDG&E core metering communication modules and reconfigure to report hourly demand data.

These activities will require new field asset procedures and policy updates, development of meter site selection criteria, field resource support, and a field execution plan for meter communication module replacement and configuration. Lastly, these activities will also require delivery of updated field bulletins, communications, training, and work instruction associated with EPM replacements and customer meter data communication module replacements and reconfigurations.

- **Transmission Field Assets**

The CCM project will further digitalize the transmission system by installing OPM stations and HCA methane sensors. The CCM project, in coordination with transmission and other planning departments, will establish business processes, identify roles and responsibilities, and project-manage the installation and commissioning of both OPM stations and HCA methane sensors. The installation of these field assets will enhance Gas Control's ability to monitor transmission pipelines to detect leaks and dig-ins, identify potential incidents due to ground

subsidence, and respond to emergency conditions. Additionally, these field assets will help lessen the consequence of incidents through faster identification of abnormal operating conditions, timelier response, and decreased human involvement in the investigation of a potentially hazardous field condition. For further details on OPM stations and HCA methane sensors, please see the Control Center Modernization sections within the Non-Shared Operations and Maintenance Costs IV. F and Capital VI. K of this testimony. SDG&E related details can be found in the Gas Transmission Operations and Construction testimony of Rick Chiapa and Steve Hruby (Ex. SDG&E-06, Section V. E. Security & Auxiliary Equipment).

- **CCM New Construction Facility**

This is the updated plan of the facility work and funding requested in the 2019 GRC revised Fleet Services and Facility Operations testimony of Carmen L. Herrera (Exhibit SCG-23-R) for which the request was approved in D.19-09-051, as well as a portion of the $10M requested in the Gas Major Projects testimony of Michael Bermel (Ex. SCG-08-R) for the Distribution Operations Control Center (Ex. SCG-08-R) related to new facility enhancements. This section describes the scope of the CCM Building, which includes constructing a new building on SoCalGas's Pico Rivera property that will house the Gas Control suite, EOC, and related support staff workspace.

Description of Work

In the 2019 GRC, the integrated distribution and transmission Gas Control building was planned as a renovation of existing space at Monterey Park that would house the expanded Gas Control operations. This co-location of Gas Control activities would allow for the control room to serve as the single point of centralized coordination to support the operation of distribution, transmission, and storage systems, and would enhance SoCalGas and SDG&E's ability to manage the system and more quickly identify incidents. The building scope has evolved from the 2019 GRC and costs for the building have been updated in consideration of:

Expanding building capacity to consolidate additional organizations under one roof such as, the remaining Gas Control and System Planning, Emergency Management and Preparedness, and control room support teams, which further supports collaboration between mission-critical organizations.

Increasing control room suite capabilities supported by system controller and associated support staff needed to monitor, manage, and analyze the addition of data from over 9,800 new and existing field assets into Gas Control by the end of 2028.

Relocating a functionally enhanced and physically expanded EOC and support staff within the building to facilitate and respond to company events and safety-related situations, as well as to provide 24/7 service territory monitoring for possible system-threat developments.

Allowing for the design of a new LEED-accredited building catered to 24/7 critical operations that more effectively aligns with the SoCalGas's sustainability strategy.

SoCalGas previously compiled information from multiple architect firms to strategize planning efforts across multiple SoCalGas properties, including Pico Rivera. Considering these studies, the scope has evolved from the 2019 GRC to focus on creating a new building that will serve as a Gas Operations Hub at Pico Rivera. Relocating supporting organizations to this new building facilitates the consolidation of critical support roles to Company-owned facilities and results in a reduction of space at the Gas Company Tower equal to one floor, as well as the current EOC. Co-locating Gas Control and the EOC teams will also enable technology and process synergies, streamline decision making during incidents, enhance communication, enable greater collaboration across operating units, and support more effective management of abnormal system conditions. These scope additions will enhance the operation of a safer and more reliable system for the communities SoCalGas serves.

With the enhanced control room capabilities and increases in control room staffing, the CCM project is currently assessing backup facility options. The CCM team is gathering requirements for the development of a commensurate backup solution which will be able to sustain the enhanced functionality of the control room operations. This will allow for uninterrupted system coverage during planned maintenance of the primary control room, increased training opportunities, and operational flexibility.

In preparation for the new building being commissioned and as mentioned in the Distribution Field Asset section above, the CCM project has begun enhancing DRS sites at targeted locations across the distribution system. With the installation of these enhanced field assets as well as updates to software infrastructure, the integration of the distribution system into the control room is underway. This integration and expansion to distribution will also require an increase in the number of gas system controllers and control room support resources.

Additionally, there will be an increase in training needs for the new job roles and responsibilities resulting from the integration of not just the enhanced regulator stations, EPMs, and meters on the distribution system, but also the OPM stations and HCA methane sensors on transmission lines.

To ensure staffing, training, and technical requirements are supported, the new building will include:

- A gas control classroom, where new control room personnel can complete necessary classroom training and compliance activities.
- A control room training simulator with full-size consoles and a matched scale display wall for simulating system events in a true control-room atmosphere.
- A SCADA clean-room and test lab to bench-test new hardware and ensure compatibility, as well as configure hardware before deployment.

The architectural programming and conceptual design activities were completed in 2021 and detail design activities are nearing completion. A general contractor has been brought on board to provide constructability reviews throughout design as well as contribute valuable information to the permitting efforts. Permits have been submitted to the city of Pico Rivera and the CCM project is targeting groundbreaking in the 3rd quarter of 2022, with building completion and commissioning targeted for July 2024.

The request for funding for this building is sponsored by Brenton Guy in his Facilities Real Estate and Facility Operations testimony, (Ex. SCG-19). The testimony and the accompanying workpapers support this funding request. As mentioned earlier, relocating Emergency Management and Preparedness, System Planning, and other supporting organizations to this new facility results in the reduction of approximately one floor and the existing EOC from the Gas Company Tower. Cost savings for the floor reduction and EOC will mostly offset additional costs for the new building (during its 33-year asset life), starting with partial savings in 2024. Full annual savings begin in 2025 for the reduced floor and annual savings for the EOC will start in 2027. Although the expanded scope for the new facility to house Gas Control, the EOC, and the ancillary office space will increase the previous GRC authorized request by $51,200,000, the increase will be mostly offset by annual average O&M lease savings of $1,440,000. The total calculated savings over 33 years will be in the amount of $47,500,000 (or 92.8%) of the additional costs.

- **CCM Operations Technology (OT) Enhancements**

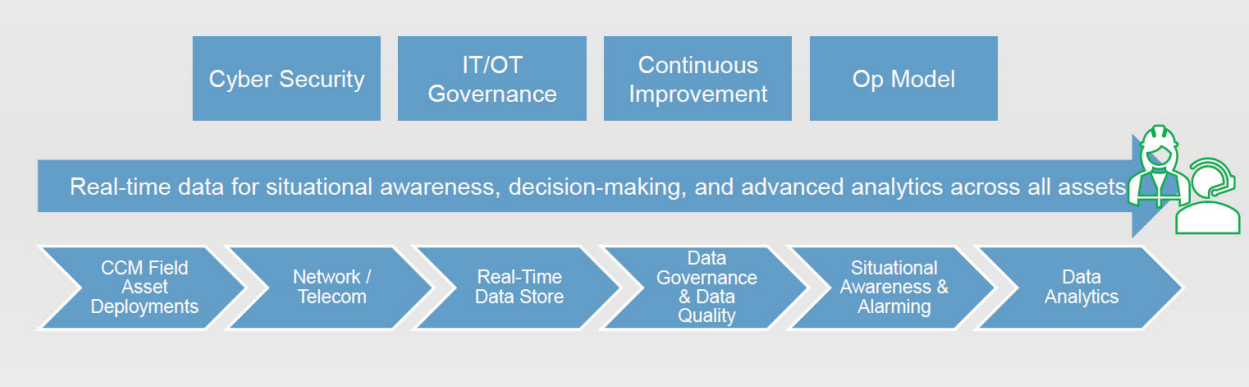
CCM OT enhancements will deliver several critical technologies to support the CCM field asset deployments and the collection of data from the enhanced DRS, EPMs, meters, OPM stations, and HCA methane sensors. The technology will help manage and transform the collected field asset data into information that will provide a comprehensive view of the overall gas system for Gas Control. CCM OT enhancements will be implemented following strict Cybersecurity guidelines, including but not limited to Transportation Security Administration (TSA) security directives for pipelines guidelines. The development and implementation of these CCM OT enhancements will extend the lifecycle and operating performance of field assets through proactive and preventative maintenance. These enhancements will also increase system reliability and support control room operator effectiveness.

Description of Work

This is a continuation of work proposed under the 2019 GRC (Ex. SCG-08-R), which was labeled "Distribution Operations Control Center" (DOCC), as well as "Pipeline Information Management System" (PIMS). The CCM OT enhancements strategy has evolved from the 2019 GRC. In the previous 2019 GRC, the proposed technology enhancement was identified as development of a PIMS. Although the CCM project is no longer referring to this effort as PIMS, the scope of work remains the same. CCM OT enhancements will still deliver a platform for managing the pipeline data. The data management strategy has been further defined and has identified the new and existing control room systems and enterprise systems that will be leveraged to deliver equivalent safety and operational benefits.

The CCM project has organized all CCM-driven control room OT activities under one CCM project area called CCM OT enhancements. The diagram below represents the CCM OT enhancement team's approach to transforming the control room and management of field asset data.

FIGURE CCM-1
Southern California Gas Company
CCM OT Enhancement Diagram



Represented in the top row are the four guiding principles of cybersecurity, IT/OT governance, continuous improvement, and the control room operating model, which will be applied and considered for all CCM OT enhancements. The second row represents the data management outputs, such as situational awareness and advanced analytics tools, that the CCM OT enhancement team will develop. The bottom row represents all the various data sets, data requirements, and foundational work that will need to be done to provide the control room with pipeline data management systems that will enable access to real-time and/or near real-time view of the overall gas system through situational awareness, decision-making, and advanced analytics tools.

The CCM OT enhancement effort will focus on delivering an end-to-end solution for delivery and transformation of the new field asset data through a series of technological enhancements. This will begin with the assessment and enhancement of the OT network and end with an advanced analytics platform that will transform the field asset data into valuable insights for the control room.

The CCM OT enhancements team will target key areas related to work and asset management, OT and IT Networks, upgrade and expansion of SCADA, data governance and data quality, data analytics, and situational awareness:

- Work and asset management: make enhancements to maintenance and inspection systems when new assets are deployed to the field.
- OT and IT network: assess and enhance the field asset network to enable secure network connectivity to Gas Control for the CCM-deployed assets including DRS, EPM, HCA methane sensors, and OPM stations.

- SCADA upgrade: Control room SCADA System will be upgraded to improve stability, security, and functionality for control room operations, and expanded to support newly deployed field assets.
- Governance and data quality: implement a technology solution to manage newly established data governance and data quality standards that align with enterprise IT policies and guidelines to maintain the integrity and structure of data for Gas Control user consumption.
- Data analytics: create advanced data analytics platforms for ingestion of field asset data as well as other data from SoCalGas and SDG&E operations and customer service systems. Some of these systems include SAP, Maximo, GIS, and AMI. The data analytics platforms will use data analytics models that leverage machine learning and artificial intelligence capabilities to increase situational intelligence of the gas pipeline system.
- Situational awareness: implement situational awareness technology to provide a set of user consumption tools for Gas Control. Some of these tools include dashboards, reports, and a control room management suite software. These tools will present new insights available from the data analytics platforms.

The CCM OT enhancement efforts to date include beginning a SCADA upgrade and creating a strategic vision and roadmap that supports the expansion of the technology needed for real-time monitoring and control capabilities to the distribution system and related assets. CCM OT enhancements have commenced work on identifying the overarching control room IT architecture and governance requirements. The CCM OT enhancement team has partnered with the IT organization to align architecture plans and project governance. Additionally, the CCM OT enhancements team has been heavily engaged in cybersecurity discussions and is working closely with the cybersecurity team to incorporate all system requirements into the various CCM-related technology activities. The team is also supporting the various field asset deployment activities for the enhanced distribution regulator stations, OPM stations, HCA methane sensors, and the integration of the existing EPM and meter data into the control room. These activities will require ongoing CCM OT resource and maintenance support as field assets are deployed and the supporting network and system solutions are implemented and integrated into Gas Control.

APPENDIX E

CONTROL CENTER MODERNIZATION – ENHANCED DISTRIBUTION REGULATOR STATION SITE SELECTION AND PRIORITIZATION APPROACH

APPENDIX E

Control Center Modernization – Enhanced Distribution Regulator Station Site Selection and Prioritization Approach

SoCalGas and SDG&E collectively operate more than 2,400 gas distribution regulation stations. To optimize the safety-driven benefits associated with enhancing the stations with real-time monitoring and control, a risk-based selection criteria and deployment prioritization approach was developed. This methodology was applied both to individual stations and aggregated to a pressure district level to guide project timelines.

The focus of the selection methodology was to mitigate the likelihood of overpressure and under-pressure incidents that could present public or operational safety risks. The approach considers both the core operating characteristics of the station as well as attributes of the downstream pressure district. Operating characteristics and attributes considered included upstream and downstream operating pressures, level of station pressure reduction, throughput, and pressure district size and configuration.

Following development of the selection approach, a prioritization model was developed to rank the relative safety benefits that the real-time monitoring and control enhancements would provide across the stations selected. At a high level, this model has the following two core components:

- Consequence of Failure - the magnitude of a potential downstream impact
- Likelihood of Failure – the chance of an issue arising based on station characteristics and historical performance
- Consequence of Failure focuses on identifying stations that present a higher downstream risk due to factors such as operating pressure, station configuration, and pressure district infrastructure, while Likelihood of Failure gives additional emphasis to factors inherent to the operations and location of the station that would not be easily addressed by equipment replacement or modernization.
- The selection and prioritization models were used as input when sequencing project implementation along with additional factors such as minimizing system disruption, project execution geographic economies of scale, and site upgrade synergies.

APPENDIX F

CCM NEW CONSTRUCTION FACILITY DESIGN & OPERATIONAL BENEFITS

APPENDIX F

CCM New Construction Facility Design & Operational Benefits

The new CCM building will provide benefits primarily in the areas of public safety, emergency response effectiveness, sustainable design, and gas service reliability. The increased operational effectiveness of the new building will enhance SoCalGas and SDG&E's ability to keep abnormal events from escalating to a safety-related condition. Through new technology, business processes, organizational changes, and more direct communication, personnel will have the ability to proactively monitor and control the gas system. This new building will:

- Enhance system safety and reliability by expanding the control room's ability to monitor and control the system through the addition of real-time and near-real time field assets.
- Co-locate the transmission and distribution gas control functions, as well as the Emergency Operations Center (EOC), providing an enhanced level of communication and coordination between the organizations.
- Support internal and external communications during emergencies, including 911 notification, by functioning as the central point of coordination.
- Relocate the facility away from the more densely populated Los Angeles city center, providing increased security and flexibility in the event of a natural disaster.
- Increase employee safety by locating a 24/7 operating facility within an existing SoCalGas property with more extensive and layered physical security.
- The Control Center is designed to have sufficient redundancy such that no single point of failure will affect operations. Key features of the design that support critical facility redundancies will include:
- Base load power to be supplied by an onsite microgrid made up of fuel cells and photovoltaics.
- Standby power supplied by two dedicated generators located in the mechanical yard, powered by independent fuel sources.
- Redundant uninterruptible power systems to provide core function protection from electrical faults.

- Independent Heating, Ventilation and Air Conditioning (HVAC) systems for the control room suite, EOC, and supporting office space with integrated mechanical and capacity redundancies throughout the system.
- Onsite potable water storage to cover local water supply interruptions.

APPENDIX G
ENHANCED OT SYSTEM ENVIRONMENT DIAGRAM

APPENDIX G

Enhanced OT System Environment Diagram