Application of SOUTHERN CALIFORNIA GAS COMPANY for authority to update its gas revenue requirement and base rates effective January 1, 2024 (U 904-G)	))))

Application No. 22-05-015

Exhibit No.: (SCG-04-CWP-R)

REVISED CAPITAL WORKPAPERS TO PREPARED DIRECT TESTIMONY OF MARIO A. AGUIRRE ON BEHALF OF SOUTHERN CALIFORNIA GAS COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

AUGUST 2022

2024 General Rate Case - REVISED

INDEX OF WORKPAPERS

Exhibit SCG-04-CWP-R - GAS DISTRIBUTION

2024 General Rate Case - REVISED

INDEX OF WORKPAPERS

Exhibit SCG-04-CWP-R - GAS DISTRIBUTION

Overall Summary For Exhibit No. SCG-04-CWP-R

Area: GAS DISTRIBUTION

Witness: Mario A. Aguirre

	In 2021 $ (000) Adjusted-Forecast		
	2022	2023	2024
A. New Business	54,308	60,300	62,164
B. Pressure Betterments	18,846	18,846	18,846
C. Main Replacements	19,839	17,626	17,626
D. Service Replacements	45,229	42,597	42,597
E. Main and Service Abandonments	14,135	14,135	14,135
F. Regulator Stations	10,014	10,014	10,014
G. Control Center Modernization (CCM) Distribution Pr	23,506	26,403	21,534
H. Cathodic Protection Capital	6,993	6,527	6,527
I. Pipeline Relocations – Freeway	1,904	1,904	1,904
J. Pipeline Relocations – Franchise	20,289	20,289	20,289
K. Meter Protection	8,250	9,900	11,550
L. Other Distribution Capital Projects	13,367	26,313	9,045
M. Measurement and Regulation Devices	42,224	42,891	46,426
N. Capital Tools	14,635	14,635	14,635
O. Field Capital Support	93,370	99,723	92,981
P. Remote Meter Reading	1,877	1,252	1,252
Total	**388,786**	**413,355**	**391,525**

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: A. New Business
Workpaper: VARIOUS

Summary for Category: A. New Business

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	11,438	11,902	13,057	13,416
Non-Labor	48,892	51,269	56,106	57,611
NSE	-7,058	-8,863	-8,863	-8,863
Total	**53,272**	**54,308**	**60,300**	**62,164**
FTE	117.2	122.0	133.8	137.5
001510 New Business Construction				
Labor	11,438	11,902	13,057	13,416
Non-Labor	47,922	49,864	54,701	56,206
NSE	-7,058	-8,863	-8,863	-8,863
Total	**52,302**	**52,903**	**58,895**	**60,759**
FTE	117.2	122.0	133.8	137.5
A01510 New Business Trench Reimbursement				
Labor	0	0	0	0
Non-Labor	970	1,405	1,405	1,405
NSE	0	0	0	0
Total	**970**	**1,405**	**1,405**	**1,405**
FTE	0.0	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
001510 - New Business Construction

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00151.0
Category: A. New Business
Category-Sub: 1. New Business
Workpaper Group: 001510 - New Business Construction

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	Zero-Based	13,086	14,252	15,122	12,885	11,438	11,902	13,057	13,416
Non-Labor	Zero-Based	50,025	56,651	59,148	49,844	47,922	49,864	54,701	56,206
NSE	Zero-Based	-15,193	-10,014	-10,410	-10,799	-7,058	-8,863	-8,863	-8,863
Total		**47,918**	**60,889**	**63,860**	**51,930**	**52,302**	**52,903**	**58,895**	**60,759**
FTE	Zero-Based	110.3	127.9	136.6	115.0	117.2	122.0	133.8	137.5

Business Purpose:

Budget Codes: 150-161, 165, 166, 239

This work category provides for changes and additions to the existing gas distribution system to connect new residential, commercial, and industrial customers.

Physical Description:

The activities of this category include installation of gas mains and services, meter set assemblies, regulator stations and the associated facilities necessary to provide service to new customers.

Project Justification:

The activities contained in New Business are necessary to provide a safe and reliable gas distribution system. These costs are being incurred in response to SoCalGas's obligation to serve the growing customer base.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00151.0
Category:	A. New Business
Category-Sub:	1. New Business
Workpaper Group:	001510 - New Business Construction

Forecast Methodology:

Labor - Zero-Based

A zero-based forecast methodology was chosen for the labor portion of this workpaper. The New Business expenditures for each forecast year was based on the projected number of new meter sets multiplied by the cost per meter set, which yielded the total projected cost. This total cost was then multiplied by the historical labor ratio to yield the corresponding forecasted labor cost. This zero-based approach was deemed the most appropriate forecasting methodology for the labor component as it is based on the projected meter set growth. The projected number of meter sets for 2022 through 2024 was calculated based on the IHS/ Global Insight's November 2021 Regional Forecast for the aggregated 12 counties of Fresno, Imperial, Kern, Kings, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, Tulare, and Ventura. The cost per meter set is based on the historical 2021 weighted average, which represents the most efficient value. The labor ratio used in the calculation also represents the historical 2021 weighted average.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-001 for calculation details.

Non-Labor - Zero-Based

Similarly, the forecast for the non-labor component was determined by multiplying the projected number of new meter sets with the cost per meter set. This total cost was then multiplied by the historical non-labor ratio to yield the corresponding forecasted non-labor cost. This zero-based approach was deemed the most appropriate forecasting methodology for the non-labor component because it accounts for all the activities required to construct new main extensions and associated service laterals. These activities include the use of contractor services, third-party services, municipal permit fees, and the proportionate use of plastic and steel materials. The projected number of new meter sets was calculated based on the IHS/ Global Insight's November 2021 Regional Forecast for the aggregated 12 counties of Fresno, Imperial, Kern, Kings, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, Tulare, and Ventura. The cost per meter set is based on the historical 2021 weighted average, which represents the most efficient value. The non-labor ratio used in the calculation also represents the historical 2021 weighted average.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-001 for calculation details.

NSE - Zero-Based

Forfeiture amounts are dependent on customer gas throughput levels incurred over a three to ten-year period after commencement of service. Due to the volume of activity and the inherent complexity to track each customer's construction job and the associated throughput over a period of time, SoCalGas forecasted Forfeitures based on the historical five-year (2017 through 2021) average in nominal dollars and entered the forecast as non-standard escalation. This methodology allows SoCalGas to capture years of high as well as years with low forfeiture activity.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-002 for calculation details.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00151.0
Category: A. New Business
Category-Sub: 1. New Business
Workpaper Group: 001510 - New Business Construction

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	Zero-Based	11,902	13,057	13,416	0	0	0	11,902	13,057	13,416
Non-Labor	Zero-Based	49,864	54,701	56,206	0	0	0	49,864	54,701	56,206
NSE	Zero-Based	-8,863	-8,863	-8,863	0	0	0	-8,863	-8,863	-8,863
Total		**52,903**	**58,895**	**60,759**	**0**	**0**	**0**	**52,903**	**58,895**	**60,759**
FTE	Zero-Based	122.0	133.8	137.5	0.0	0.0	0.0	122.0	133.8	137.5

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00151.0
Category: A. New Business
Category-Sub: 1. New Business
Workpaper Group: 001510 - New Business Construction

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	7,976	9,193	10,098	9,075	9,323
Non-Labor	37,328	44,772	48,975	43,329	48,892
NSE	0	0	0	0	0
Total	**45,304**	**53,965**	**59,073**	**52,404**	**58,215**
FTE	89.4	103.6	109.8	91.5	94.6
Adjustments (Nominal $) **					
Labor	374	416	427	448	399
Non-Labor	0	0	0	0	-970
NSE	-11,337	-7,914	-8,619	-9,387	-7,058
Total	**-10,963**	**-7,498**	**-8,192**	**-8,939**	**-7,629**
FTE	4.3	4.8	4.6	4.7	4.0
Recorded-Adjusted (Nominal $)					
Labor	8,350	9,609	10,525	9,523	9,722
Non-Labor	37,328	44,772	48,975	43,329	47,922
NSE	-11,337	-7,914	-8,619	-9,387	-7,058
Total	**34,341**	**46,467**	**50,881**	**43,465**	**50,586**
FTE	93.7	108.4	114.4	96.2	98.6
Vacation & Sick (Nominal $)					
Labor	1,415	1,654	1,996	1,678	1,716
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**1,415**	**1,654**	**1,996**	**1,678**	**1,716**
FTE	16.6	19.5	22.2	18.8	18.6
Escalation to 2021$					
Labor	3,321	2,989	2,601	1,684	0
Non-Labor	12,696	11,880	10,173	6,515	0
NSE	-3,856	-2,100	-1,790	-1,411	0
Total	**12,162**	**12,768**	**10,984**	**6,787**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	13,086	14,252	15,122	12,885	11,438
Non-Labor	50,025	56,651	59,148	49,844	47,922
NSE	-15,193	-10,014	-10,410	-10,799	-7,058
Total	**47,918**	**60,889**	**63,860**	**51,930**	**52,302**
FTE	110.3	127.9	136.6	115.0	117.2

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00151.0
Category: A. New Business
Category-Sub: 1. New Business
Workpaper Group: 001510 - New Business Construction

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	374	416	427	448	399
Non-Labor	0	0	0	0	-970
NSE	-11,337	-7,914	-8,619	-9,387	-7,058
Total	**-10,963**	**-7,498**	**-8,192**	**-8,939**	**-7,629**
FTE	4.3	4.8	4.6	4.7	4.0

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017	0	0	-11,337	-11,337	0.0
Explanation:	New Business Forfeitures - Reimbursement for cost of unused or underutilized facilities constructed at the request of new business customers				
2017	374	0	0	374	4.3
Explanation:	Customer Services Drive Time for Initial Turn-On Orders. $373,749 (2017), $416,406 (2018), $427,059 (2019), $448,296 (2020), $398,728 (2021)				
2017 Total	374	0	-11,337	-10,963	4.3
2018	0	0	-7,914	-7,914	0.0
Explanation:	New Business Forfeitures - Reimbursement for cost of unused or underutilized facilities constructed at the request of new business customers				
2018	416	0	0	416	4.8
Explanation:	Customer Services Drive Time for Initial Turn-On Orders: $373,749 (2017), $416,406 (2018), $427,059 (2019), $448,296 (2020), $398,728 (2021)				
2018 Total	416	0	-7,914	-7,498	4.8
2019	0	0	-8,619	-8,619	0.0
Explanation:	New Business Forfeitures - Reimbursement for cost of unused or underutilized facilities constructed at the request of new business customers				
2019	427	0	0	427	4.6
Explanation:	Customer Services Drive Time for Initial Turn-On Orders: $373,749 (2017), $416,406 (2018), $427,059 (2019), $448,296 (2020), $398,728 (2021)				
2019 Total	427	0	-8,619	-8,192	4.6
2020	0	0	-9,387	-9,387	0.0
Explanation:	New Business Forfeitures - Reimbursement for cost of unused or underutilized facilities constructed at the request of new business customers				
2020	448	0	0	448	4.7

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00151.0
Category: A. New Business
Category-Sub: 1. New Business
Workpaper Group: 001510 - New Business Construction

Year	Labor	NLbr	NSE	Total	FTE
Explanation:	Customer Services Drive Time for Initial Turn-On Orders: $373,749 (2017), $416,406 (2018), $427,059 (2019), $448,296 (2020), $398,728 (2021)				
2020 Total	448	0	-9,387	-8,939	4.7
2021	0	0	-7,058	-7,058	0.0
Explanation:	New Business Forfeitures - Reimbursement for cost of unused or underutilized facilities constructed at the request of new business customers				
2021	0	-970	0	-970	0.0
Explanation:	Transferred historical recorded cost of Trench Reimbursement out of workpaper 001510 and into workpaper A01510 where costs are forecasted.				
2021	399	0	0	399	4.0
Explanation:	Customer Services Drive Time for Initial Turn-On Orders: $373,749 (2017), $416,406 (2018), $427,059 (2019), $448,296 (2020), $398,728 (2021)				
2021 Total	399	-970	-7,058	-7,629	4.0

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 001510

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00151.0
Category: A. New Business
Category-Sub: 1. New Business
Workpaper Group: 001510 - New Business Construction
Workpaper Detail: 001510.001 - [RAMP] Safety Related Field Orders

In-Service Date: Not Applicable

Description:

Field service technicians respond to the customer orders taken by the Customer Call Center. They are trained to rectify safety hazards on customer premises in order to maintain safe operations of Company facilities. Some of these customer requests are safety related, such as checking appliances upon move in. However, any customer call about a gas leak, both hazardous and non-hazardous, is dispatched to a field service technician to perform a gas leak investigation. SoCalGas requires that all hazardous and non-hazardous leak orders are responded to by a field technician within the same day of receiving the customer call, with the response to the highest priority gas leak orders within 30 minutes.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	3,868	4,816	4,948
Non-Labor	247	307	313
NSE	0	0	0
Total	**4,115**	**5,123**	**5,261**
FTE	35.2	43.8	45.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00151.0
Category: A. New Business
Category-Sub: 1. New Business
Workpaper Group: 001510 - New Business Construction
Workpaper Detail: 001510.001 - [RAMP] Safety Related Field Orders

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-3 Incident Related to the Medium Pressure System (Excluding Dig-in)

RAMP Line Item ID: C32

RAMP Line Item Name: Safety Related Field Orders

Tranche(s): Tranche1: Meter and Beyond the Meter

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	5,819	4,115	5,123	5,261	14,499	16,966	20,539

Cost Estimate Changes from RAMP:
The forecasted number of orders is below the forecasted range in the 2021 RAMP report.

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of work orders issued	44,761.00	39,654.00	43,500.00	44,697.00	127,851.00	132,417.00	160,295.00

Work Unit Changes from RAMP:
The forecasted number of orders is below the forecasted range in the 2021 RAMP report.

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	0.750	3.000

RSE Changes from RAMP:
General changes to risks scores or RSE values are primarily due to changes in the MAVF and RSE methodology , as discussed in the RAMP to GRC Integration testimony of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Chapter 2).

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00151.0
Category: A. New Business
Category-Sub: 1. New Business
Workpaper Group: 001510 - New Business Construction
Workpaper Detail: 001510.002 - Installation of gas main services and meter set assemblies for new customers

In-Service Date: Not Applicable

Description:

The activities contained in New Business are necessary to provide a safe and reliable gas distribution system. These costs are being incurred in response to SoCalGas's obligation to serve the growing customer base.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	8,034	8,241	8,468
Non-Labor	49,617	54,394	55,893
NSE	0	0	0
Total	**57,651**	**62,635**	**64,361**
FTE	86.8	90.0	92.5

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00151.0
Category:	A. New Business
Category-Sub:	1. New Business
Workpaper Group:	001510 - New Business Construction
Workpaper Detail:	001510.003 - New business forfeitures are recorded as reductions to new business expenditures
In-Service Date:	Not Applicable

Description:

New business forfeitures are Customer Advances for Construction (CAC) that are no longer deemed refundable and are considered utility property in accordance with CPUC Rule 20 – Gas Main Extensions and Rule 21 – Gas Service Extensions.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	0	0	0
Non-Labor	0	0	0
NSE	-8,863	-8,863	-8,863
Total	**-8,863**	**-8,863**	**-8,863**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 001510

SCG-04-MAA-CAP-SUP-001
Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre
Supplemental Workpaper Calculations for the Zero Based New Business Construction Forecast
New Business Workpaper

Assumptions:

[A] & [J] SoCalGas's 12-County area total housing completions from IHS/Global Insight's November 2021 Regional Forecast for the aggregated 12 counties of Fresno, Imperial, Kern, Kings, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, Tulare, and Ventura. Also refer to Table MA-40 in my testimony for the new meter set forecast methodology.

Amounts are shown in 2021 dollars and include vacation and sick.

5-Year 2017-2021 Historical Data

	[A]	[B]	[C]	[D]	[E]	[F]	[G] ([D]/[F])	[H] ([C]/[B])
	Average Housing Completion	**Historical New Meter Set Installations**	**Adjusted Recorded Historical Total**	**Adjusted Recorded Historical Labor**	**Adjusted Recorded Historical Non-Labor**	**Historical FTEs**	**Historical Average Labor / FTE**	**Historical Average Cost Per Meter Set**
2017	47,871	39,915	$ 63,111,069	$ 13,086,345	$ 50,024,724	110.3		
2018	51,739	40,715	$ 70,903,252	$ 14,251,859	$ 56,651,393	127.9		
2019	50,545	40,151	$ 74,270,132	$ 15,122,033	$ 59,148,099	136.6		
2020	52,956	38,732	$ 62,728,364	$ 12,884,769	$ 49,843,595	115		
2021	47,374	39,651	$ 59,359,703	$ 11,438,178	$ 47,921,525	117.2	$97,595.38	$1,497.05

	[I] ([D]/[C])
2021 Historical Average Labor Ratio:	**19%**

Forecast Calculations

	[J]	[K]	[L] ([K]x[H])	[M] ([L]x[I])	[N] ([L]-[M])	[O] ([M]/[G])
	Average Housing Completion	**Projected Meter Set Installations**	**Total Forecast**	**Labor Forecast**	**Non-Labor Forecast**	**Forecasted FTEs**
2022	51,891	41,259	$ 61,766,966	$ 11,902,494	$ 49,864,472	122.0
2023	56,924	45,261	$ 67,758,178	$ 13,057,001	$ 54,701,177	133.8
2024	58,490	46,506	$ 69,622,011	$ 13,416,162	$ 56,205,849	137.5

SCG-04-MAA-CAP-SUP-002
Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre
Supplemental Workpaper Calculations for Forfeitures Related to New Business
New Business Workpaper

		Historical Fully Loaded Forfeitures (Nominal $)				
	New Business Forfeitures	**2017**	**2018**	**2019**	**2020**	**2021**
[A]	Main & Stub Forfeitures	$9,874,188	$3,783,834	$4,897,523	$3,024,569	$2,333,457
[B]	Service & Meter Set Assembly Forfeitures	$6,790,902	$7,850,321	$7,772,816	$10,774,664	$8,041,074
([A]+[B])	**Total Loaded**	$16,665,090	$11,634,155	$12,670,339	$13,799,233	$10,374,531

[C]	Direct Cost Factor (Estimated Ratio of Loaded Forfeitures to Direct Forfeitures)	1.47	1.47	1.47	1.47	1.47

		Historical Direct Cost (Nominal Dollars of the Year)					5-yr Average Forecast (NSE)		
	New Business Forfeitures	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
([A]/[C])	Main & Stub Forfeitures	$6,717,135	$2,574,037	$3,331,648	$2,057,530	$1,587,386	$3,253,547	$3,253,547	$3,253,547
([B]/[C])	Service & Meter Set Assembly Forfeitures	$4,619,661	$5,340,355	$5,287,630	$7,329,704	$5,470,119	$5,609,494	$5,609,494	$5,609,494
([D]+[E])	**Total Direct**	$11,336,796	$7,914,391	$8,619,278	$9,387,233	$7,057,504	$8,863,041	$8,863,041	$8,863,041

Beginning of Workpaper Group
A01510 - New Business Trench Reimbursement

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00151.0
Category: A. New Business
Category-Sub: 1. New Business
Workpaper Group: A01510 - New Business Trench Reimbursement

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	5-YR Average	0	0	0	0	0	0	0	0
Non-Labor	5-YR Average	1,249	1,508	1,872	1,424	970	1,405	1,405	1,405
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**1,249**	**1,508**	**1,872**	**1,424**	**970**	**1,405**	**1,405**	**1,405**
FTE	5-YR Average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

In accordance with CPUC Rules 20 and 21, customers who provide their own trench receive reimbursement for this contribution from SoCalGas.

Physical Description:

In conjunction with the installation of gas facilities (mains and services, and meter set assemblies) necessary to provide service to the customers, a trench in which the pipeline is placed must be developed. If SoCalGas develops the trench, the costs are included in the new business construction costs. If the customer provides the trench, SoCalGas reimburses the customer for this cost. This workpaper covers the reimbursement only.

Project Justification:

The activities contained in New Business Trench Reimbursements are necessary to provide a safe and reliable gas distribution system. These expenses are necessary to comply with customers' rights as defined in CPUC Rules 20 and 21.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00151.0
Category:	A. New Business
Category-Sub:	1. New Business
Workpaper Group:	A01510 - New Business Trench Reimbursement

Forecast Methodology:

Labor - 5-YR Average

Labor is not applicable in this workbook.

Non-Labor - 5-YR Average

The estimate of expenditures in this category consists of reimbursement costs based on the five-year historical average (2017 through 2021). This average covers variations in spending levels from year to year.

NSE - 5-YR Average

NSE is not applicable in this workbook.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00151.0
Category: A. New Business
Category-Sub: 1. New Business
Workpaper Group: A01510 - New Business Trench Reimbursement

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	5-YR Average	0	0	0	0	0	0	0	0	0
Non-Labor	5-YR Average	1,405	1,405	1,405	0	0	0	1,405	1,405	1,405
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**1,405**	**1,405**	**1,405**	**0**	**0**	**0**	**1,405**	**1,405**	**1,405**
FTE	5-YR Average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00151.0
Category: A. New Business
Category-Sub: 1. New Business
Workpaper Group: A01510 - New Business Trench Reimbursement

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	0	0	0	0	0
Non-Labor	932	1,191	1,550	1,238	0
NSE	0	0	0	0	0
Total	**932**	**1,191**	**1,550**	**1,238**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	970
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**970**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	0	0	0	0	0
Non-Labor	932	1,191	1,550	1,238	970
NSE	0	0	0	0	0
Total	**932**	**1,191**	**1,550**	**1,238**	**970**
FTE	0.0	0.0	0.0	0.0	0.0
Vacation & Sick (Nominal $)					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Escalation to 2021$					
Labor	0	0	0	0	0
Non-Labor	317	316	322	186	0
NSE	0	0	0	0	0
Total	**317**	**316**	**322**	**186**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	0	0	0	0	0
Non-Labor	1,249	1,508	1,872	1,424	970
NSE	0	0	0	0	0
Total	**1,249**	**1,508**	**1,872**	**1,424**	**970**
FTE	0.0	0.0	0.0	0.0	0.0

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00151.0
Category: A. New Business
Category-Sub: 1. New Business
Workpaper Group: A01510 - New Business Trench Reimbursement

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	970
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**970**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017 Total	0	0	0	0	0.0
2018 Total	0	0	0	0	0.0
2019 Total	0	0	0	0	0.0
2020 Total	0	0	0	0	0.0
2021	0	970	0	970	0.0
Explanation:	Transferred historical recorded cost of Trench Reimbursement out of workpaper 001510 and into workpaper A01510 where costs are forecasted.				
2021 Total	0	970	0	970	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group A01510

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00151.0
Category:	A. New Business
Category-Sub:	1. New Business
Workpaper Group:	A01510 - New Business Trench Reimbursement
Workpaper Detail:	A01510.001 - Customers who provide their own trench receive reimbursement for this from SoCalGas
In-Service Date:	Not Applicable

Description:

The activities contained in New Business are necessary to provide a safe and reliable gas distribution system. These costs are being incurred in response to SoCalGas's obligation to serve the growing customer base.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	0	0	0
Non-Labor	1,405	1,405	1,405
NSE	0	0	0
Total	**1,405**	**1,405**	**1,405**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: B. Pressure Betterments
Workpaper: 002510

Summary for Category: B. Pressure Betterments

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	871	871	871	871
Non-Labor	17,975	17,975	17,975	17,975
NSE	0	0	0	0
Total	**18,846**	**18,846**	**18,846**	**18,846**
FTE	8.8	8.8	8.8	8.8

002510 Pressure Betterments

Labor	871	871	871	871
Non-Labor	17,975	17,975	17,975	17,975
NSE	0	0	0	0
Total	**18,846**	**18,846**	**18,846**	**18,846**
FTE	8.8	8.8	8.8	8.8

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002510 - Pressure Betterments

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00251.0
Category: B. Pressure Betterments
Category-Sub: 1. Pressure Betterments
Workpaper Group: 002510 - Pressure Betterments

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	Base YR Rec	588	505	673	1,045	871	871	871	871
Non-Labor	Base YR Rec	33,073	21,589	23,563	46,672	17,975	17,975	17,975	17,975
NSE	Base YR Rec	0	0	0	0	0	0	0	0
Total		**33,661**	**22,094**	**24,236**	**47,717**	**18,845**	**18,846**	**18,846**	**18,846**
FTE	Base YR Rec	4.6	4.0	5.0	8.1	8.8	8.8	8.8	8.8

Business Purpose:

Budget Code: 251

This work category records expenditure for gas distribution pressure betterment projects performed on an ongoing basis to maintain system reliability and service to all customers. Pressure Betterment projects are performed in areas where there is an anticipated insufficient capacity or pressure to meet the growth in load. Pressure Betterment projects maintain reliable service to existing customers as new load is added to the gas distribution system. Once a pipeline system is designed and installed, the available capacity remains relatively fixed. However, as load increases due to population expansion and increased population density, as well as businesses coming online with added load, the existing pipeline pressure decreases, which reduces the available gas flow capacity. If the diminishing pressure is not addressed, gas service to the customers could be interrupted.

Physical Description:

Pressure betterment projects typically involve one or more of the following:

- Installing new mains.
- Upsizing existing mains.
- Uprating existing mains to higher pressure.

Project Justification:

To determine the areas that require pressure betterments, information is gathered from the customers, builders, city, county, and state agencies. In addition, SoCalGas collects data from electronic pressure recorders. This information is used to model the system flow and identify any capacity constraints. Based on the analysis of these constraints, local distribution engineers identify specific pressure betterment projects and the estimated timing in which the projects will need to be constructed.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00251.0
Category:	B. Pressure Betterments
Category-Sub:	1. Pressure Betterments
Workpaper Group:	002510 - Pressure Betterments

Forecast Methodology:

Labor - Base YR Rec

Pipeline Pressure Betterment requirements are identified during the year, as part of the regular course of maintenance activities and system testing and evaluation. SoCalGas's gas infrastructure is a large dynamic system of pipelines exposed to continual changes in customer load demand, which makes it difficult to identify and estimate specific routine pressure betterment projects more than a year into the future. Hence, the latest load and growth information are used. While the timing to complete each project can be unpredictable due to the need for detailed planning requirements, required permits, and coordination and scheduling of resources, base year forecast best represents the cost requirement based on the identified projects.

Non-Labor - Base YR Rec

Pipeline Pressure Betterment requirements are identified during the year, as part of the regular course of maintenance activities and system testing and evaluation. SoCalGas's gas infrastructure is a large dynamic system of pipelines exposed to continual changes in customer load demand, which makes it difficult to identify and estimate specific routine pressure betterment projects more than a year into the future. Hence, the latest load and growth information are used. While the timing to complete each project can be unpredictable due to the need for detailed planning requirements, required permits, and coordination and scheduling of resources, base year forecast best represents the cost requirement based on the identified projects.

NSE - Base YR Rec

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00251.0
Category: B. Pressure Betterments
Category-Sub: 1. Pressure Betterments
Workpaper Group: 002510 - Pressure Betterments

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	Base YR Rec	871	871	871	0	0	0	871	871	871
Non-Labor	Base YR Rec	17,975	17,975	17,975	0	0	0	17,975	17,975	17,975
NSE	Base YR Rec	0	0	0	0	0	0	0	0	0
Total		**18,846**	**18,846**	**18,846**	**0**	**0**	**0**	**18,846**	**18,846**	**18,846**
FTE	Base YR Rec	8.8	8.8	8.8	0.0	0.0	0.0	8.8	8.8	8.8

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00251.0
Category: B. Pressure Betterments
Category-Sub: 1. Pressure Betterments
Workpaper Group: 002510 - Pressure Betterments

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	375	341	468	772	740
Non-Labor	24,679	17,062	17,951	40,043	18,028
NSE	0	0	0	0	0
Total	**25,055**	**17,402**	**18,419**	**40,815**	**18,768**
FTE	3.9	3.4	4.2	6.8	7.4
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	1,560	530	-54
NSE	0	0	0	0	0
Total	**0**	**0**	**1,560**	**530**	**-54**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	375	341	468	772	740
Non-Labor	24,679	17,062	19,510	40,572	17,975
NSE	0	0	0	0	0
Total	**25,055**	**17,402**	**19,979**	**41,344**	**18,715**
FTE	3.9	3.4	4.2	6.8	7.4
Vacation & Sick (Nominal $)					
Labor	64	59	89	136	131
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**64**	**59**	**89**	**136**	**131**
FTE	0.7	0.6	0.8	1.3	1.4
Escalation to 2021$					
Labor	149	106	116	137	0
Non-Labor	8,394	4,527	4,053	6,100	0
NSE	0	0	0	0	0
Total	**8,543**	**4,633**	**4,169**	**6,237**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	588	505	673	1,045	871
Non-Labor	33,073	21,589	23,563	46,672	17,975
NSE	0	0	0	0	0
Total	**33,661**	**22,094**	**24,236**	**47,717**	**18,845**
FTE	4.6	4.0	5.0	8.1	8.8

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00251.0
Category: B. Pressure Betterments
Category-Sub: 1. Pressure Betterments
Workpaper Group: 002510 - Pressure Betterments

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	1,560	530	-54
NSE	0	0	0	0	0
Total	**0**	**0**	**1,560**	**530**	**-54**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017 Total	0	0	0	0	0.0
2018 Total	0	0	0	0	0.0
2019	0	1,560	0	1,560	0.0
Explanation:	To add material costs (cost elements 6215567 and 6215568) that were initially misclassified as indirect costs.				
2019 Total	0	1,560	0	1,560	0.0
2020	0	530	0	530	0.0
Explanation:	To add material costs (cost elements 6215567 and 6215568) that were initially misclassified as indirect costs.				
2020 Total	0	530	0	530	0.0
2021	0	-54	0	-54	0.0
Explanation:	To add material costs (cost elements 6215567 and 6215568) that were initially misclassified as indirect costs.				
2021 Total	0	-54	0	-54	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002510

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00251.0
Category:	B. Pressure Betterments
Category-Sub:	1. Pressure Betterments
Workpaper Group:	002510 - Pressure Betterments
Workpaper Detail:	002510.001 - Pressure betterment projects performed in areas of insufficient capacity or pressure to meet growth
In-Service Date:	Not Applicable

Description:

Routine pressure betterment activities that support system reliability.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	871	871	871
Non-Labor	17,975	17,975	17,975
NSE	0	0	0
Total	**18,846**	**18,846**	**18,846**
FTE	8.8	8.8	8.8

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: C. Main Replacements
Workpaper: 002520

Summary for Category: C. Main Replacements

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	2,328	2,254	2,003	2,003
Non-Labor	22,439	17,585	15,623	15,623
NSE	0	0	0	0
Total	**24,767**	**19,839**	**17,626**	**17,626**
FTE	22.4	18.8	16.7	16.7

002520 Main Replacements

Labor	2,328	2,254	2,003	2,003
Non-Labor	22,439	17,585	15,623	15,623
NSE	0	0	0	0
Total	**24,767**	**19,839**	**17,626**	**17,626**
FTE	22.4	18.8	16.7	16.7

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002520 - Main Replacements

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00252.0
Category: C. Main Replacements
Category-Sub: 1. Main Replacements
Workpaper Group: 002520 - Main Replacements

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	3-YR Average	6,776	3,701	2,699	2,813	2,328	2,254	2,003	2,003
Non-Labor	3-YR Average	45,235	32,311	14,092	24,622	22,439	17,585	15,623	15,623
NSE	3-YR Average	0	0	0	0	0	0	0	0
Total		**52,011**	**36,013**	**16,791**	**27,435**	**24,768**	**19,839**	**17,626**	**17,626**
FTE	3-YR Average	55.2	32.6	20.1	22.8	22.4	18.8	16.7	16.7

Business Purpose:

Budget Codes: 252, 253, 255, 267, 278

This work category includes expenditures to replace distribution mainlines. Some of the major drivers for these replacement projects include deteriorating pipe conditions, risk to the public, and increased maintenance costs.

Physical Description:

SoCalGas's distribution pipeline system consists of approximately 51,670 miles of steel and plastic main supporting the delivery of gas to more than 5.9 million customers. Activities in the Main Replacements work category include:

- The installation of new mains to replace existing mains.
- Service line replacements associated with main replacements.
- Existing service line "tie-overs" to newly installed replacement main.
- Meter set re-builds associated with newly installed replacement main.
- Main replacements completed in advance of public infrastructure improvement projects.

Project Justification:

Leakage is often the driving factor for pipeline replacements; however, there are other considerations. Other factors are identified from information collected from various O&M activities and field observations. Other criteria taken into consideration are whether the steel pipe meets cathodic protection mandates, or the main is found to have active corrosion. In addition, the pipeline may be deemed unsafe or unfit for service under pressure due to manufacturing or other defects. Leak history and pending leaks on individual segments is the primary factor in qualifying the majority of SoCalGas's main replacements. These replacements are critical to sustain operational reliability and public safety.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00252.0
Category:	C. Main Replacements
Category-Sub:	1. Main Replacements
Workpaper Group:	002520 - Main Replacements

Forecast Methodology:

Labor - 3-YR Average

SoCalGas forecasts continuing main replacements at the three-year (2019 through 2021) historical average to mitigate potential risks associated with pipeline integrity, system reliability, and public safety. This approach also allows SoCalGas to capture historical spending under a variety of conditions that reflect fluctuations in labor expenditures associated with this work category, including, but not limited to, pipeline location, municipality requirements, scope of work, and resource coordination. In addition, the three-year average best accounts for a reduction in replacement costs related to Code 3 – Steel leaks in 2019, 2020, and 2021 as a result of SB 1371. Concurrently, this forecast methodology accounts for the reduced cost in Gas Distribution's Main Replacements workpaper due to SB 1371 in the forecast years.

Non-Labor - 3-YR Average

SoCalGas forecasts continuing main replacements at the three-year (2019 through 2021) historical average to mitigate potential risks associated with pipeline integrity, system reliability, and public safety. This approach also allows SoCalGas to capture historical spending under a variety of conditions that reflect fluctuations in non-labor expenditures associated with this work category, including, but not limited to, pipeline location, municipality requirements, scope of work, and resource coordination. In addition, the three-year average best accounts for a reduction in replacement costs related to Code 3 – Steel leaks in 2019, 2020, and 2021 as a result of SB 1371. Concurrently, this forecast methodology accounts for the reduced cost in Gas Distribution's Main Replacements workpaper due to SB 1371 in the forecast years.

NSE - 3-YR Average

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00252.0
Category: C. Main Replacements
Category-Sub: 1. Main Replacements
Workpaper Group: 002520 - Main Replacements

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	3-YR Average	2,613	2,613	2,613	-359	-610	-610	2,254	2,003	2,003
Non-Labor	3-YR Average	20,384	20,384	20,384	-2,799	-4,761	-4,761	17,585	15,623	15,623
NSE	3-YR Average	0	0	0	0	0	0	0	0	0
Total		**22,997**	**22,997**	**22,997**	**-3,158**	**-5,371**	**-5,371**	**19,839**	**17,626**	**17,626**
FTE	3-YR Average	21.8	21.8	21.8	-3.0	-5.1	-5.1	18.8	16.7	16.7

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022	-359	-2,799	0	-3,158	-3.0
Explanation:	SB1371 Reduction - Pending approval of the recent SB 1371 Compliance Plan, submitted on March 15, 2022, Gas Distribution anticipates the cost of main replacement related to Code 2, Code 3 - Steel, and Code 3 - Plastic leaks to be included as a part of California's Leak Abatement Program. SoCalGas anticipates a reduction of approximately $3,158,000, $5,371,000, and $5,371,000 in 2022, 2023, and 2024, respectively.				
2022 Total	-359	-2,799	0	-3,158	-3.0
2023	-610	-4,761	0	-5,371	-5.1
Explanation:	SB1371 Reduction - Pending approval of the recent SB 1371 Compliance Plan, submitted on March 15, 2022, Gas Distribution anticipates the cost of main replacement related to Code 2, Code 3 - Steel, and Code 3 - Plastic leaks to be included as a part of California's Leak Abatement Program. SoCalGas anticipates a reduction of approximately $3,158,000, $5,371,000, and $5,371,000 in 2022, 2023, and 2024, respectively.				
2023 Total	-610	-4,761	0	-5,371	-5.1
2024	-610	-4,761	0	-5,371	-5.1
Explanation:	SB1371 Reduction - Pending approval of the recent SB 1371 Compliance Plan, submitted on March 15, 2022, Gas Distribution anticipates the cost of main replacement related to Code 2, Code 3 - Steel, and Code 3 - Plastic leaks to be included as a part of California's Leak Abatement Program. SoCalGas anticipates a reduction of approximately $3,158,000, $5,371,000, and $5,371,000 in 2022, 2023, and 2024, respectively.				
2024 Total	-610	-4,761	0	-5,371	-5.1

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00252.0
Category: C. Main Replacements
Category-Sub: 1. Main Replacements
Workpaper Group: 002520 - Main Replacements

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	4,369	2,499	1,878	2,079	539
Non-Labor	33,822	25,719	11,671	21,404	5,417
NSE	0	0	0	0	0
Total	**38,190**	**28,218**	**13,549**	**23,483**	**5,956**
FTE	47.5	27.7	16.8	19.1	4.8
Adjustments (Nominal $) **					
Labor	-45	-3	0	0	1,440
Non-Labor	-67	-183	-3	0	17,022
NSE	0	0	0	0	0
Total	**-112**	**-187**	**-3**	**0**	**18,462**
FTE	-0.6	-0.1	0.0	0.0	14.0
Recorded-Adjusted (Nominal $)					
Labor	4,323	2,496	1,878	2,079	1,979
Non-Labor	33,755	25,536	11,668	21,404	22,439
NSE	0	0	0	0	0
Total	**38,078**	**28,031**	**13,547**	**23,483**	**24,419**
FTE	46.9	27.6	16.8	19.1	18.8
Vacation & Sick (Nominal $)					
Labor	733	429	356	366	349
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**733**	**429**	**356**	**366**	**349**
FTE	8.3	5.0	3.3	3.7	3.6
Escalation to 2021$					
Labor	1,720	776	464	368	0
Non-Labor	11,481	6,776	2,424	3,218	0
NSE	0	0	0	0	0
Total	**13,200**	**7,552**	**2,888**	**3,586**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	6,776	3,701	2,699	2,813	2,328
Non-Labor	45,235	32,311	14,092	24,622	22,439
NSE	0	0	0	0	0
Total	**52,011**	**36,013**	**16,791**	**27,435**	**24,768**
FTE	55.2	32.6	20.1	22.8	22.4

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00252.0
Category: C. Main Replacements
Category-Sub: 1. Main Replacements
Workpaper Group: 002520 - Main Replacements

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	-45	-3	0	0	1,440
Non-Labor	-67	-183	-3	0	17,022
NSE	0	0	0	0	0
Total	**-112**	**-187**	**-3**	**0**	**18,462**
FTE	-0.6	-0.1	0.0	0.0	14.0

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017	-42	-2	0	-44	-0.5
Explanation:	Transfer of DIMP-related project trailing cost from Gas Distribution 002520 to Integrity Management 002770. $44,366 (2017)				
2017	-3	-65	0	-68	-0.1
Explanation:	Incremental costs that are anticipated to be requested for recovery through a non-GRC Catastrophic Event Memorandum Account (CEMA).				
2017 Total	-45	-67	0	-112	-0.6
2018	-3	-183	0	-187	-0.1
Explanation:	Incremental costs that are anticipated to be requested for recovery through a non-GRC Catastrophic Event Memorandum Account (CEMA).				
2018 Total	-3	-183	0	-187	-0.1
2019	0	-0.197	0	-0.197	0.0
Explanation:	To add material costs (cost elements 6215567 and 6215568) that were initially misclassified as indirect costs.				
2019	0	-3	0	-3	0.0
Explanation:	Incremental costs that are anticipated to be requested for recovery through a non-GRC Catastrophic Event Memorandum Account (CEMA).				
2019 Total	0	-3	0	-3	0.0
2020 Total	0	0	0	0	0.0
2021	1,441	17,023	0	18,464	14.1
Explanation:	Included historical recorded cost of budget code 253 in workpaper 002520 where costs are forecasted.				
2021	-0.890	-0.516	0	-1	-0.1
Explanation:	Included historical recorded cost of budget code 278 in workpaper 002520 where costs are forecasted.				

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00252.0
Category: C. Main Replacements
Category-Sub: 1. Main Replacements
Workpaper Group: 002520 - Main Replacements

Year	Labor	NLbr	NSE	Total	FTE
2021 Total	1,440	17,022	0	18,462	14.0

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002520

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00252.0
Category:	C. Main Replacements
Category-Sub:	1. Main Replacements
Workpaper Group:	002520 - Main Replacements
Workpaper Detail:	002520.001 - [RAMP] Expenditures to Replace Main due to Leakage, Abnormal Operating Conditions, CP, etc.
In-Service Date:	Not Applicable

Description:

This work category includes expenditures to replace main. Some of the major drivers for these replacement projects include deteriorating pipe conditions, risk to the public, and increased maintenance costs.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	2,254	2,003	2,003
Non-Labor	17,585	15,623	15,623
NSE	0	0	0
Total	**19,839**	**17,626**	**17,626**
FTE	18.8	16.7	16.7

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00252.0
Category: C. Main Replacements
Category-Sub: 1. Main Replacements
Workpaper Group: 002520 - Main Replacements
Workpaper Detail: 002520.001 - [RAMP] Expenditures to Replace Main due to Leakage, Abnormal Operating Conditions, CP, etc.

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-3 Incident Related to the Medium Pressure System (Excluding Dig-in)

RAMP Line Item ID: C19

RAMP Line Item Name: Main Replacements - Leakage, Abnormal Op. Conditions, CP Related

Tranche(s): Tranche1: High Pressure Supply Lines; Tranche2: Medium Pressure Mains - Plastic; Tranche3: Medium Pressure Mains - Steel

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	3,130	2,507	2,507	2,507	7,521	63,000	83,319
Tranche 2 Cost Estimate	20,882	16,727	14,582	14,582	45,891	63,000	83,319
Tranche 3 Cost Estimate	755	605	537	537	1,679	63,000	83,319

Cost Estimate Changes from RAMP:
SoCalGas anticipates a reduction in this workpaper for costs related to Code 3 and Code 2 leaks that will be incorporated into SB1371 as a part of the 2022 Compliance Plan, submitted on March 15, 2022.

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of feet - main replacements	1,690.00	1,646.00	1,646.00	1,646.00	4,938.00	157,500.00	208,293.00
Tranche 2 # of feet - main replacements	61,498.00	58,270.00	50,798.00	50,798.00	159,866.00	157,500.00	208,293.00
Tranche 3 # of feet - main replacements	3,099.00	1,217.00	1,080.00	1,080.00	3,377.00	157,500.00	208,293.00

Work Unit Changes from RAMP:
None

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00252.0
Category:	C. Main Replacements
Category-Sub:	1. Main Replacements
Workpaper Group:	002520 - Main Replacements
Workpaper Detail:	002520.001 - [RAMP] Expenditures to Replace Main due to Leakage, Abnormal Operating Conditions, CP, etc.

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	0.460	0.300
Tranche 2	0.220	0.300
Tranche 3	0.150	0.300

RSE Changes from RAMP:
General changes to risks scores or RSE values are primarily due to changes in the MAVF and RSE methodology , as discussed in the RAMP to GRC Integration testimony of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Chapter 2). In addition, SoCalGas tranched this RAMP mitigation by High Pressure Supply Lines , Medium Pressure Mains - Plastic, and Medium Pressure Mains - Steel based on the pressure and material of the main pipe within the distribution system.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: D. Service Replacements
Workpaper: 002560

Summary for Category: D. Service Replacements

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	3,625	4,400	3,620	3,620
Non-Labor	45,848	40,829	38,977	38,977
NSE	0	0	0	0
Total	**49,473**	**45,229**	**42,597**	**42,597**
FTE	29.7	32.6	26.9	26.9

002560 Service Replacements

Labor	3,625	4,400	3,620	3,620
Non-Labor	45,848	40,829	38,977	38,977
NSE	0	0	0	0
Total	**49,473**	**45,229**	**42,597**	**42,597**
FTE	29.7	32.6	26.9	26.9

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002560 - Service Replacements

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00256.0
Category: D. Service Replacements
Category-Sub: 1. Service Replacements
Workpaper Group: 002560 - Service Replacements

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	3-YR Average	11,244	7,785	5,688	5,225	3,625	4,400	3,620	3,620
Non-Labor	3-YR Average	37,642	47,856	37,296	46,504	45,848	40,829	38,977	38,977
NSE	3-YR Average	0	0	0	0	0	0	0	0
Total		**48,887**	**55,641**	**42,984**	**51,729**	**49,472**	**45,229**	**42,597**	**42,597**
FTE	3-YR Average	86.1	62.0	41.1	36.8	29.7	32.6	26.9	26.9

Business Purpose:

Budget Codes: 256, 257, 258, 260.

Service replacements represented in this category include expenditures specific to the replacement of isolated distribution service pipelines to maintain system reliability and to safely deliver gas to the customer, thus mitigating the risks associated with loss of service and public safety. Services are replaced by two construction methods, “insertion” and "direct bury". With the insertion method, a new plastic replacement service pipe is inserted into the to-be abandoned steel service pipe such that the steel service becomes casing for the plastic pipe. The direct bury technique specifies to the construction crews that the installation of new pipe does not need casing, and any installation method can be utilized such as boring or open trench.

Physical Description:

SoCalGas has approximately 49,933 miles of service pipe. These distribution service lines are used to transport gas from a common source of supply to an individual residence, or to two adjacent or adjoining residences, or a small commercial customer. It is also common to serve multi-residential buildings and multi-commercial customers through a meter header or a manifold. A service line ends at the end of the customer meter or at the connection to a customer’s piping , whichever is further downstream.

Project Justification:

There are many reasons for service replacements. It could be replaced because a large leak occurred or has a significant number of past leaks. Steel services in particular get replaced when active corrosion is found or when a leak is found on a non-cathodically protected steel service. During maintenance activities, it is possible to encounter services containing obsolete material such as cellulose, acetate butyrate or polyvinyl chloride which will prompt the service to be replaced. Services may also be replaced when the makeup of the service is found to contain Aldyl-A material. These replacements are critical to sustain operational reliability and public safety, especially since these laterals enter into private property.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00256.0
Category:	D. Service Replacements
Category-Sub:	1. Service Replacements
Workpaper Group:	002560 - Service Replacements

Forecast Methodology:

Labor - 3-YR Average

The level of spending for routine service replacements is highly dependent on the condition of the pipe, as observed during maintenance activities. SoCalGas forecasts for labor the service line replacements at the three-year (2019 through 2021) average to mitigate potential risks associated with pipeline integrity, system reliability, and public safety and account for the impact of SB1371 within this work category. The three-year average best accounts for a reduction in replacement costs related to Code 3 – Steel leaks in 2019, 2020, and 2021 as a result of SB 1371. Concurrently, this forecast methodology accounts for the reduced cost in Gas Distribution's Service Replacements workpaper due to SB 1371 in the forecast years.

In addition, a subworkpaper was created to capture the forecasted collectible portion of this work category. See Supplemental Workpaper SCG-04-MAA-CAP-SUP-003 for calculation details.

Non-Labor - 3-YR Average

The non-labor expenditures were also calculated using the historical three-year (2019 through 2021) average. This methodology was selected because it complements the labor component in that it best represents the volume of work performed by pipeline contracts and third-party services and account for the impact of SB1371 within this work category. The three-year average best accounts for a reduction in replacement costs related to Code 3 – Steel leaks in 2019, 2020, and 2021 as a result of SB 1371. Concurrently, this forecast methodology accounts for the reduced cost in Gas Distribution's Service Replacements workpaper due to SB 1371 in the forecast years.

In addition, a subworkpaper was created to capture the forecasted collectible portion of this work category. See Supplemental Workpaper SCG-04-MAA-CAP-SUP-003 for calculation details.

NSE - 3-YR Average

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00256.0
Category: D. Service Replacements
Category-Sub: 1. Service Replacements
Workpaper Group: 002560 - Service Replacements

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	3-YR Average	4,846	4,846	4,846	-446	-1,226	-1,226	4,400	3,620	3,620
Non-Labor	3-YR Average	43,216	43,216	43,216	-2,387	-4,239	-4,239	40,829	38,977	38,977
NSE	3-YR Average	0	0	0	0	0	0	0	0	0
Total		**48,062**	**48,062**	**48,062**	**-2,833**	**-5,465**	**-5,465**	**45,229**	**42,597**	**42,597**
FTE	3-YR Average	35.9	35.9	35.9	-3.3	-9.0	-9.0	32.6	26.9	26.9

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022	-446	-2,387	0	-2,833	-3.3
Explanation:	SB1371 Reduction - Pending approval of the recent SB 1371 Compliance Plan, submitted on March 15, 2022, Gas Distribution anticipates the cost of service replacement related to Code 2, Code 3 - Steel, and Code 3 - Plastic leaks to be included as a part of California's Leak Abatement Program. SoCalGas anticipates a reduction of approximately $2,833,000, $5,465,000, and $5,465,000 in 2022, 2023, and 2024, respectively.				
2022 Total	-446	-2,387	0	-2,833	-3.3
2023	-1,226	-4,239	0	-5,465	-9.0
Explanation:	SB1371 Reduction - Pending approval of the recent SB 1371 Compliance Plan, submitted on March 15, 2022, Gas Distribution anticipates the cost of service replacement related to Code 2, Code 3 - Steel, and Code 3 - Plastic leaks to be included as a part of California's Leak Abatement Program. SoCalGas anticipates a reduction of approximately $2,833,000, $5,465,000, and $5,465,000 in 2022, 2023, and 2024, respectively.				
2023 Total	-1,226	-4,239	0	-5,465	-9.0
2024	-1,226	-4,239	0	-5,465	-9.0
Explanation:	SB1371 Reduction - Pending approval of the recent SB 1371 Compliance Plan, submitted on March 15, 2022, Gas Distribution anticipates the cost of service replacement related to Code 2, Code 3 - Steel, and Code 3 - Plastic leaks to be included as a part of California's Leak Abatement Program. SoCalGas anticipates a reduction of approximately $2,833,000, $5,465,000, and $5,465,000 in 2022, 2023, and 2024, respectively.				
2024 Total	-1,226	-4,239	0	-5,465	-9.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00256.0
Category: D. Service Replacements
Category-Sub: 1. Service Replacements
Workpaper Group: 002560 - Service Replacements

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	7,174	5,249	3,959	3,862	3,081
Non-Labor	28,089	37,820	30,881	40,426	45,848
NSE	0	0	0	0	0
Total	**35,263**	**43,070**	**34,840**	**44,288**	**48,929**
FTE	73.2	52.6	34.4	30.8	25.0
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	-0.1	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	7,174	5,249	3,959	3,862	3,081
Non-Labor	28,089	37,820	30,881	40,426	45,848
NSE	0	0	0	0	0
Total	**35,263**	**43,070**	**34,840**	**44,288**	**48,929**
FTE	73.1	52.6	34.4	30.8	25.0
Vacation & Sick (Nominal $)					
Labor	1,216	903	751	680	544
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**1,216**	**903**	**751**	**680**	**544**
FTE	13.0	9.4	6.7	6.0	4.7
Escalation to 2021$					
Labor	2,854	1,633	978	683	0
Non-Labor	9,554	10,035	6,415	6,078	0
NSE	0	0	0	0	0
Total	**12,407**	**11,668**	**7,393**	**6,761**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	11,244	7,785	5,688	5,225	3,625
Non-Labor	37,642	47,856	37,296	46,504	45,848
NSE	0	0	0	0	0
Total	**48,887**	**55,641**	**42,984**	**51,729**	**49,472**
FTE	86.1	62.0	41.1	36.8	29.7

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00256.0
Category: D. Service Replacements
Category-Sub: 1. Service Replacements
Workpaper Group: 002560 - Service Replacements

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	-0.1	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017	-0.027	0	0	-0.027	-0.1
Explanation:	Transfer of DIMP-related project trailing cost from Gas Distribution 002560 to Integrity Management 002770. $27 (2017)				
2017 Total	-0.027	0	0	-0.027	-0.1
2018 Total	0	0	0	0	0.0
2019 Total	0	0	0	0	0.0
2020 Total	0	0	0	0	0.0
2021 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002560

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00256.0
Category:	D. Service Replacements
Category-Sub:	1. Service Replacements
Workpaper Group:	002560 - Service Replacements
Workpaper Detail:	002560.001 - [RAMP] Expenditures to Replace Service due to Leakage, Abnormal Operating Conditions, CP, etc.
In-Service Date:	Not Applicable

Description:

This work category includes expenditures to replace services. Some of the major drivers for these replacement projects include deteriorating pipe conditions, risk to the public, and increased maintenance costs.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	2,600	2,045	2,045
Non-Labor	23,246	21,168	21,168
NSE	0	0	0
Total	**25,846**	**23,213**	**23,213**
FTE	19.3	15.2	15.2

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00256.0
Category: D. Service Replacements
Category-Sub: 1. Service Replacements
Workpaper Group: 002560 - Service Replacements
Workpaper Detail: 002560.001 - [RAMP] Expenditures to Replace Service due to Leakage, Abnormal Operating Conditions, CP, etc.

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-3 Incident Related to the Medium Pressure System (Excluding Dig-in)

RAMP Line Item ID: C16

RAMP Line Item Name: Service Replacements - Leakage, Abnormal Op. Conditions, CP Related

Tranche(s): Tranche1: High Pressure Supply Lines; Tranche2: Medium Pressure Services - Plastic

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	11	159	159	159	477	36,546	44,220
Tranche 2 Cost Estimate	27,612	25,687	23,054	23,054	71,795	36,546	44,220

Cost Estimate Changes from RAMP:
The scope of this mitigation has been extended to include additional risks associated with service replacements, including leakage, abnormal operating conditions, and encroachment, in addition to CP10.

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of replacements	1.00	4.00	4.00	4.00	12.00	5,961.00	7,215.00
Tranche 2 # of replacements	2,489.00	2,490.00	2,235.00	2,235.00	6,960.00	5,961.00	7,215.00

Work Unit Changes from RAMP:
None

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	0.280	1.900
Tranche 2	0.630	1.900

RSE Changes from RAMP:

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00256.0
Category:	D. Service Replacements
Category-Sub:	1. Service Replacements
Workpaper Group:	002560 - Service Replacements
Workpaper Detail:	002560.001 - [RAMP] Expenditures to Replace Service due to Leakage, Abnormal Operating Conditions, CP, etc.

General changes to risks scores or RSE values are primarily due to changes in the MAVF and RSE methodology , as discussed in the RAMP to GRC Integration testimony of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Chapter 2). In addition, SoCalGas tranched this RAMP mitigation by High Pressure Supply Lines and Medium Pressure Services - Plastic based on the pressure and material of the service pipe within the distribution system.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00256.0
Category:	D. Service Replacements
Category-Sub:	1. Service Replacements
Workpaper Group:	002560 - Service Replacements
Workpaper Detail:	002560.002 - Expenditures specific to the replacement of isolated distribution service pipelines -Collectible
In-Service Date:	Not Applicable

Description:

Service replacements represented in this category include expenditures specific to the replacement of isolated distribution service pipelines to maintain system reliability, and secure customer safety by addressing aging infrastructure. This workpaper contains the collectible portion of this forecast.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	248	248	248
Non-Labor	2,211	2,211	2,211
NSE	0	0	0
Total	**2,459**	**2,459**	**2,459**
FTE	1.8	1.8	1.8

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00256.0
Category:	D. Service Replacements
Category-Sub:	1. Service Replacements
Workpaper Group:	002560 - Service Replacements
Workpaper Detail:	002560.003 - Expenditures specific to the replacement of isolated distribution service pipelines -Non-Collectible
In-Service Date:	Not Applicable

Description:

Service replacements represented in this category include expenditures specific to the replacement of isolated distribution service pipelines to maintain system reliability, and secure customer safety by addressing aging infrastructure. This workpaper contains the non-collectible portion of this forecast.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	1,552	1,327	1,327
Non-Labor	15,372	15,598	15,598
NSE	0	0	0
Total	**16,924**	**16,925**	**16,925**
FTE	11.5	9.9	9.9

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 002560

SCG-04-MAA-CAP-SUP-003
Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre
Supplemental Workpaper Calculations for Collectible Cost Related to Service Replacements
Service Replacements Workpaper

Assumptions:

* Direct Cash Credits were excluded from historical data, but are shown here to calculate the collectible portion of capital.

** The forecasted ratio of cash to total direct cost is the three-year (2019-2021) average ratio. This ratio is applied to the forecasted amount to calculate the collectible and non-collectible portions.

Amounts are shown in thousands of 2021 dollars and include vacation and sick.

		Adjusted Recorded History					2019-2021 Total	Forecast (3 Year Average)		
		2017	2018	2019	2020	2021		2022	2023	2024
Total Capital										
[A]	Labor	$ 11,244	$ 7,785	$ 5,688	$ 5,225	$ 3,625		$ 4,846	$ 4,846	$ 4,846
[B]	Non-Labor	$ 37,642	$ 47,856	$ 37,296	$ 46,504	$ 45,848		$ 43,216	$ 43,216	$ 43,216
[C]	**Total**	**$ 48,887**	**$ 55,641**	**$ 42,984**	**$ 51,729**	**$ 49,472**	**$ 144,185**	**$ 48,062**	**$ 48,062**	**$ 48,062**
[D]	FTEs	86.1	62.0	41.1	36.8	29.7		35.9	35.9	35.9
Collectible Ratio Calculations										
[E]	Historical Direct Cash Credits*	$ (1,111)	$ (2,146)	$ (3,146)	$ (1,776)	$ (2,456)	$ (7,378)			
[F] (-[E]/[C])	Ratio Cash to Total Direct Cost**	2%	4%	7%	3%	5%	5%	5%	5%	5%
Collectible Portion of Forecast										
[G] ([A]x[F])	Labor							$ 248	$ 248	$ 248
[H] ([B]x[F])	Non-Labor							$ 2,211	$ 2,211	$ 2,211
([G]+[H])	**Total**							**$ 2,459**	**$ 2,459**	**$ 2,459**
[I] ([D]x[F])	FTEs							1.8	1.8	1.8
Non-Collectible Portion of Forecast										
[J] ([A]-[G])	Labor							$ 4,598	$ 4,598	$ 4,598
[K] ([B]-[H])	Non-Labor							$ 41,005	$ 41,005	$ 41,005
([J]+[K])	**Total**							**$ 45,602**	**$ 45,602**	**$ 45,602**
([D]-[I])	FTEs							34.1	34.1	34.1

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: E. Main and Service Abandonments
Workpaper: 002540

Summary for Category: E. Main and Service Abandonments

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	2,059	2,875	2,875	2,875
Non-Labor	9,839	11,260	11,260	11,260
NSE	0	0	0	0
Total	**11,898**	**14,135**	**14,135**	**14,135**
FTE	19.4	24.1	24.1	24.1

002540 Main & Service Abandonments

Labor	2,059	2,875	2,875	2,875
Non-Labor	9,839	11,260	11,260	11,260
NSE	0	0	0	0
Total	**11,898**	**14,135**	**14,135**	**14,135**
FTE	19.4	24.1	24.1	24.1

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002540 - Main & Service Abandonments

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00254.0
Category: E. Main and Service Abandonments
Category-Sub: 1. Main and Service Abandonments
Workpaper Group: 002540 - Main & Service Abandonments

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	5-YR Average	3,929	3,451	2,755	2,179	2,059	2,875	2,875	2,875
Non-Labor	5-YR Average	8,957	12,468	13,209	11,827	9,839	11,260	11,260	11,260
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**12,887**	**15,920**	**15,964**	**14,006**	**11,898**	**14,135**	**14,135**	**14,135**
FTE	5-YR Average	32.6	29.0	22.6	17.1	19.4	24.1	24.1	24.1

Business Purpose:

Budget Codes: 254, 259

This work category includes expenditures associated with the abandonment of distribution pipeline mains and services without the installation of new pipeline to replace the old.

Physical Description:

Abandonment of mains and services can only occur when abandonment of the pipeline is deemed to not cause a negative effect on the distribution system; otherwise, a replacement plan will be pursued. Mains are retired from service by stopping the flow of gas into the section of pipe to be abandoned. This is typically accomplished with pressure control fittings installed on both extremes of the section of pipe in order to isolate from gas flow. Abandonment of service lines is accomplished by cutting and capping at the service-to-main connection.

Project Justification:

The activities contained in main and service abandonments are necessary to eliminate the risk that may result from a hazardous condition due to the potential for third party damage, and to eliminate unnecessary continued maintenance activities. The main abandonments are typically driven by city and state requests involving the vacating and demolition of public property at which point there is no opportunity for replacement. Service abandonments are driven by customers requesting cancellation of gas service due to building demolitions, or to terminate a temporary service.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00254.0
Category:	E. Main and Service Abandonments
Category-Sub:	1. Main and Service Abandonments
Workpaper Group:	002540 - Main & Service Abandonments

Forecast Methodology:

Labor - 5-YR Average

The level of spending in this routine abandonment category is highly dependent on the demand for demolition and grading on private and public property. This work is often driven by economic conditions and, as the economy continues to improve over the forecast period, so will the need for main and service abandonments. Furthermore, the timing of individual projects is based on a number of factors including the need for review of operating conditions, detailed planning requirements, acquisition of required permits, and coordination and scheduling of resources. Due to the unscheduled and unpredictable nature of this work, SoCalGas chose the five-year (2017 through 2021) average to forecast the labor expenditures for this work category.

Non-Labor - 5-YR Average

The level of spending in this routine abandonment category is highly dependent on the demand for demolition and grading on private and public property. This work is often driven by economic conditions and, as the economy continues to improve over the forecast period, so will the need for main and service abandonments. Furthermore, the timing of individual projects is based on a number of factors including the need for review of operating conditions, detailed planning requirements, acquisition of required permits, and coordination and scheduling of resources. Due to the unscheduled and unpredictable nature of this work, SoCalGas chose the five-year (2017 through 2021) average to forecast the non-labor expenditures for this work category.

NSE - 5-YR Average

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00254.0
Category: E. Main and Service Abandonments
Category-Sub: 1. Main and Service Abandonments
Workpaper Group: 002540 - Main & Service Abandonments

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	5-YR Average	2,875	2,875	2,875	0	0	0	2,875	2,875	2,875
Non-Labor	5-YR Average	11,260	11,260	11,260	0	0	0	11,260	11,260	11,260
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**14,135**	**14,135**	**14,135**	**0**	**0**	**0**	**14,135**	**14,135**	**14,135**
FTE	5-YR Average	24.1	24.1	24.1	0.0	0.0	0.0	24.1	24.1	24.1

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00254.0
Category: E. Main and Service Abandonments
Category-Sub: 1. Main and Service Abandonments
Workpaper Group: 002540 - Main & Service Abandonments

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	2,597	2,476	1,922	1,610	1,750
Non-Labor	6,706	11,927	11,472	10,282	9,839
NSE	0	0	0	0	0
Total	**9,303**	**14,403**	**13,394**	**11,892**	**11,589**
FTE	28.0	25.3	19.0	14.3	16.3
Adjustments (Nominal $) **					
Labor	-90	-149	-5	0	0
Non-Labor	-22	-2,074	-534	0	0
NSE	0	0	0	0	0
Total	**-112**	**-2,223**	**-539**	**0**	**0**
FTE	-0.3	-0.7	-0.1	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	2,507	2,327	1,917	1,610	1,750
Non-Labor	6,684	9,854	10,937	10,282	9,839
NSE	0	0	0	0	0
Total	**9,191**	**12,181**	**12,855**	**11,892**	**11,589**
FTE	27.7	24.6	18.9	14.3	16.3
Vacation & Sick (Nominal $)					
Labor	425	400	364	284	309
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**425**	**400**	**364**	**284**	**309**
FTE	4.9	4.4	3.7	2.8	3.1
Escalation to 2021$					
Labor	997	724	474	285	0
Non-Labor	2,273	2,615	2,272	1,546	0
NSE	0	0	0	0	0
Total	**3,271**	**3,338**	**2,746**	**1,831**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	3,929	3,451	2,755	2,179	2,059
Non-Labor	8,957	12,468	13,209	11,827	9,839
NSE	0	0	0	0	0
Total	**12,887**	**15,920**	**15,964**	**14,006**	**11,898**
FTE	32.6	29.0	22.6	17.1	19.4

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00254.0
Category: E. Main and Service Abandonments
Category-Sub: 1. Main and Service Abandonments
Workpaper Group: 002540 - Main & Service Abandonments

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	-90	-149	-5	0	0
Non-Labor	-22	-2,074	-534	0	0
NSE	0	0	0	0	0
Total	**-112**	**-2,223**	**-539**	**0**	**0**
FTE	-0.3	-0.7	-0.1	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017	-90	-22	0	-112	-0.3
Explanation:	Incremental costs that are anticipated to be requested for recovery through a non-GRC Catastrophic Event Memorandum Account (CEMA).				
2017 Total	-90	-22	0	-112	-0.3
2018	-149	-2,074	0	-2,223	-0.7
Explanation:	Incremental costs that are anticipated to be requested for recovery through a non-GRC Catastrophic Event Memorandum Account (CEMA).				
2018 Total	-149	-2,074	0	-2,223	-0.7
2019	-5	-534	0	-539	-0.1
Explanation:	Incremental costs that are anticipated to be requested for recovery through a non-GRC Catastrophic Event Memorandum Account (CEMA).				
2019 Total	-5	-534	0	-539	-0.1
2020 Total	0	0	0	0	0.0
2021 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002540

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00254.0
Category:	E. Main and Service Abandonments
Category-Sub:	1. Main and Service Abandonments
Workpaper Group:	002540 - Main & Service Abandonments
Workpaper Detail:	002540.001 - Expenditures associated with the abandonment of distribution pipeline mains and services
In-Service Date:	Not Applicable

Description:

This work category includes expenditures associated with the abandonment of distribution pipeline mains and services without the installation of new pipeline to replace the old.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	2,875	2,875	2,875
Non-Labor	11,260	11,260	11,260
NSE	0	0	0
Total	**14,135**	**14,135**	**14,135**
FTE	24.1	24.1	24.1

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: F. Regulator Stations
Workpaper: 002650

Summary for Category: F. Regulator Stations

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	859	1,037	1,037	1,037
Non-Labor	7,433	8,977	8,977	8,977
NSE	0	0	0	0
Total	**8,292**	**10,014**	**10,014**	**10,014**
FTE	7.5	9.1	9.1	9.1

002650 Regulator Stations

Labor	859	1,037	1,037	1,037
Non-Labor	7,433	8,977	8,977	8,977
NSE	0	0	0	0
Total	**8,292**	**10,014**	**10,014**	**10,014**
FTE	7.5	9.1	9.1	9.1

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002650 - Regulator Stations

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00265.0
Category: F. Regulator Stations
Category-Sub: 1. Regulator Stations
Workpaper Group: 002650 - Regulator Stations

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	Base YR Rec	543	501	595	468	859	1,037	1,037	1,037
Non-Labor	Base YR Rec	8,381	2,776	6,346	6,472	7,433	8,977	8,977	8,977
NSE	Base YR Rec	0	0	0	0	0	0	0	0
Total		**8,924**	**3,277**	**6,941**	**6,940**	**8,292**	**10,014**	**10,014**	**10,014**
FTE	Base YR Rec	4.2	4.4	4.4	3.3	7.5	9.1	9.1	9.1

Business Purpose:

Budget Code: 265

Represented in this work category are expenditures for the construction of new installations, relocations, replacements, and abandonment of distribution regulator stations.

Physical Description:

Regulator Stations are key assemblies of control equipment on the SoCalGas pipeline system. They are installed to reduce the pressure of gas from high-pressure pipelines to provide the lower pressures used on the distribution pipeline system, which provides steady operating conditions to the customers. These stations consist of pipes, electronics, valves and regulators, which are installed in either below-ground vaults or above-ground fenced facilities, and in some instance inside specially built housing. These stations serve not only to control gas pressure but also as a line of defense against over-pressurization. Many of the modern stations are designed with dual run feeds to maintain continued operation of the station in the event of a failure within either of the two runs.

Project Justification:

Annual maintenance and inspections are used to record the condition of each station. These evaluation elements are used to identify station replacement projects. Stations identified for replacement contain one or more of the following risk factors and are prioritized accordingly: design obsolescence, active corrosion, deteriorating vaults or equipment, exposure to flooding, hazardous traffic conditions, or considered ergonomically unsafe. SoCalGas proactively targets these stations for replacement before operation and safety issues arise.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00265.0
Category:	F. Regulator Stations
Category-Sub:	1. Regulator Stations
Workpaper Group:	002650 - Regulator Stations

Forecast Methodology:

Labor - Base YR Rec

Given the need to continue the replacement of regulator stations at an increasing rate, SoCalGas used the 2021 base year forecast to capture the labor expenditures for this work category. In addition, SoCalGas developed a risk model to prioritize regulator station replacement across its operating regions based on criteria that prioritize stations that have outdated designs, are prone to corrosion, have limited capacity, and have single run designs that create labor intensive routine maintenance.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-004 for calculation details.

Non-Labor - Base YR Rec

Given the need to continue the replacement of regulator stations at an increasing rate, SoCalGas used the 2021 base year forecast to capture the non-labor expenditures for this work category. In addition, SoCalGas developed a risk model to prioritize regulator station replacement across its operating regions based on criteria that prioritize stations that have outdated designs, are prone to corrosion, have limited capacity, and have single run designs that create labor intensive routine maintenance.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-004 for calculation details.

NSE - Base YR Rec

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00265.0
Category: F. Regulator Stations
Category-Sub: 1. Regulator Stations
Workpaper Group: 002650 - Regulator Stations

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	Base YR Rec	859	859	859	178	178	178	1,037	1,037	1,037
Non-Labor	Base YR Rec	7,433	7,433	7,433	1,544	1,544	1,544	8,977	8,977	8,977
NSE	Base YR Rec	0	0	0	0	0	0	0	0	0
Total		**8,292**	**8,292**	**8,292**	**1,722**	**1,722**	**1,722**	**10,014**	**10,014**	**10,014**
FTE	Base YR Rec	7.5	7.5	7.5	1.6	1.6	1.6	9.1	9.1	9.1

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022	178	1,544	0	1,722	1.6
Explanation:	Regulator Station Replacement - SoCalGas plans to replace additional stations based on the relative risk scores of all distribution stations in the system. SoCalGas is requesting incremental funding of $1,722,000 each year in 2022, 2023, and 2024, respectively.				
2022 Total	178	1,544	0	1,722	1.6
2023	178	1,544	0	1,722	1.6
Explanation:	Regulator Station Replacement - SoCalGas plans to replace additional stations based on the relative risk scores of all distribution stations in the system. SoCalGas is requesting incremental funding of $1,722,000 each year in 2022, 2023, and 2024, respectively.				
2023 Total	178	1,544	0	1,722	1.6
2024	178	1,544	0	1,722	1.6
Explanation:	Regulator Station Replacement - SoCalGas plans to replace additional stations based on the relative risk scores of all distribution stations in the system. SoCalGas is requesting incremental funding of $1,722,000 each year in 2022, 2023, and 2024, respectively.				
2024 Total	178	1,544	0	1,722	1.6

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00265.0
Category: F. Regulator Stations
Category-Sub: 1. Regulator Stations
Workpaper Group: 002650 - Regulator Stations

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	346	338	414	346	797
Non-Labor	6,254	2,194	5,255	5,626	7,478
NSE	0	0	0	0	0
Total	**6,600**	**2,532**	**5,668**	**5,972**	**8,275**
FTE	3.6	3.7	3.7	2.8	6.9
Adjustments (Nominal $) **					
Labor	0	0	0	0	-67
Non-Labor	0	0	0	0	-45
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**-112**
FTE	0.0	0.0	0.0	0.0	-0.6
Recorded-Adjusted (Nominal $)					
Labor	346	338	414	346	731
Non-Labor	6,254	2,194	5,255	5,626	7,433
NSE	0	0	0	0	0
Total	**6,600**	**2,532**	**5,668**	**5,972**	**8,163**
FTE	3.6	3.7	3.7	2.8	6.3
Vacation & Sick (Nominal $)					
Labor	59	58	78	61	129
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**59**	**58**	**78**	**61**	**129**
FTE	0.6	0.7	0.7	0.5	1.2
Escalation to 2021$					
Labor	138	105	102	61	0
Non-Labor	2,127	582	1,092	846	0
NSE	0	0	0	0	0
Total	**2,265**	**687**	**1,194**	**907**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	543	501	595	468	859
Non-Labor	8,381	2,776	6,346	6,472	7,433
NSE	0	0	0	0	0
Total	**8,924**	**3,277**	**6,941**	**6,940**	**8,292**
FTE	4.2	4.4	4.4	3.3	7.5

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00265.0
Category: F. Regulator Stations
Category-Sub: 1. Regulator Stations
Workpaper Group: 002650 - Regulator Stations

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	-67
Non-Labor	0	0	0	0	-45
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**-112**
FTE	0.0	0.0	0.0	0.0	-0.6

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017 Total	0	0	0	0	0.0
2018 Total	0	0	0	0	0.0
2019 Total	0	0	0	0	0.0
2020 Total	0	0	0	0	0.0
2021	-67	-45	0	-112	-0.6
Explanation:	Transferred historical recorded cost of Gas Ops Control Center - Pilot Sites out of workpaper 002650 and into workpaper 002500 where costs are forecasted.				
2021 Total	-67	-45	0	-112	-0.6

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002650

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00265.0
Category:	F. Regulator Stations
Category-Sub:	1. Regulator Stations
Workpaper Group:	002650 - Regulator Stations
Workpaper Detail:	002650.001 - Distribution Regulator Station expenditures to install, relocate, replace, or abandon stations
In-Service Date:	Not Applicable

Description:

Represented in this work category are expenditures for the construction of new installations, relocations, replacements, and abandonments of distribution regulator stations.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	721	721	721
Non-Labor	6,206	6,206	6,206
NSE	0	0	0
Total	**6,927**	**6,927**	**6,927**
FTE	6.4	6.4	6.4

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00265.0
Category: F. Regulator Stations
Category-Sub: 1. Regulator Stations
Workpaper Group: 002650 - Regulator Stations
Workpaper Detail: 002650.002 - [RAMP] Base expenditures for Regulator Station Replacement

In-Service Date: Not Applicable

Description:

Represented in this work category are expenditures for the replacement of distribution regulator stations based on the relative risk scores of all stations within the system based on various factors, including the existing equipment and design, operating performance, damages, corrosion, and operating pressure.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	49	49	49
Non-Labor	455	455	455
NSE	0	0	0
Total	**504**	**504**	**504**
FTE	0.4	0.4	0.4

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00265.0
Category: F. Regulator Stations
Category-Sub: 1. Regulator Stations
Workpaper Group: 002650 - Regulator Stations
Workpaper Detail: 002650.002 - [RAMP] Base expenditures for Regulator Station Replacement

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-3 Incident Related to the Medium Pressure System (Excluding Dig-in)

RAMP Line Item ID: C05

RAMP Line Item Name: Regulator Station Installation & Replacement

Tranche(s): Tranche1: High Pressure Supply Lines; Tranche2: Medium Pressure Mains - Plastic & Steel

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	0	0	0	0	0	8,217	10,868
Tranche 2 Cost Estimate	504	504	504	504	1,512	8,217	10,868

Cost Estimate Changes from RAMP:
None

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of replacements	0.00	0.00	0.00	0.00	0.00	24.00	31.00
Tranche 2 # of replacements	1.00	1.00	1.00	1.00	3.00	24.00	31.00

Work Unit Changes from RAMP:
None

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	114.000	4.700
Tranche 2	3.800	4.700

RSE Changes from RAMP:

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00265.0
Category:	F. Regulator Stations
Category-Sub:	1. Regulator Stations
Workpaper Group:	002650 - Regulator Stations
Workpaper Detail:	002650.002 - [RAMP] Base expenditures for Regulator Station Replacement

General changes to risks scores or RSE values are primarily due to changes in the MAVF and RSE methodology , as discussed in the RAMP to GRC Integration testimony of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Chapter 2). In addition, SoCalGas tranched this RAMP mitigation by High Pressure Supply Lines and Medium Pressure Mains - Plastic & Steel based on the pressure of the distribution system that the regulator station is supplying.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00265.0
Category: F. Regulator Stations
Category-Sub: 1. Regulator Stations
Workpaper Group: 002650 - Regulator Stations
Workpaper Detail: 002650.003 - [RAMP] Incremental expenditures for Regulator Station Replacement

In-Service Date: Not Applicable

Description:

Represented in this work category are expenditures for the replacement of distribution regulator stations based on the relative risk scores of all stations within the system based on various factors, including the existing equipment and design, operating performance, damages, corrosion, and operating pressure.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	267	267	267
Non-Labor	2,316	2,316	2,316
NSE	0	0	0
Total	**2,583**	**2,583**	**2,583**
FTE	2.3	2.3	2.3

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00265.0
Category: F. Regulator Stations
Category-Sub: 1. Regulator Stations
Workpaper Group: 002650 - Regulator Stations
Workpaper Detail: 002650.003 - [RAMP] Incremental expenditures for Regulator Station Replacement

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-3 Incident Related to the Medium Pressure System (Excluding Dig-in)

RAMP Line Item ID: C05

RAMP Line Item Name: Regulator Station Installation & Replacement

Tranche(s): Tranche1: High Pressure Supply Lines; Tranche2: Medium Pressure Mains - Plastic & Steel

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	0	0	0	309	309	8,217	10,868
Tranche 2 Cost Estimate	0	2,583	2,583	2,274	7,440	8,217	10,868

Cost Estimate Changes from RAMP:
None

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of replacements	0.00	0.00	0.00	1.00	1.00	24.00	31.00
Tranche 2 # of replacements	0.00	9.00	9.00	8.00	26.00	24.00	31.00

Work Unit Changes from RAMP:
None

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	114.000	4.700
Tranche 2	3.800	4.700

RSE Changes from RAMP:

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00265.0
Category:	F. Regulator Stations
Category-Sub:	1. Regulator Stations
Workpaper Group:	002650 - Regulator Stations
Workpaper Detail:	002650.003 - [RAMP] Incremental expenditures for Regulator Station Replacement

General changes to risks scores or RSE values are primarily due to changes in the MAVF and RSE methodology , as discussed in the RAMP to GRC Integration testimony of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Chapter 2). In addition, SoCalGas tranched this RAMP mitigation by High Pressure Supply Lines and Medium Pressure Mains - Plastic & Steel based on the pressure of the distribution system that the regulator station is supplying.

Supplemental Workpapers for Workpaper Group 002650

SCG-04-MAA-CAP-SUP-004
Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre
Supplemental Workpaper for Zero Based Calculations Related to Incremental Regulator Stations
Regulator Stations Workpaper

Assumptions: Amounts are shown in thousands of 2021 dollars and include vacation and sick.

Table 1: Historical Labor and Non Labor Cost for Regulation Stations:

	Labor **[A]**	Non-Labor **[B]**	FTE **[C]**	Total Labor and Non-Labor **[D]** ([A]+[B])	Labor % ([A]/[D])	Non-Labor % ([B]/[D])	FTE/Labor ([A]/[C])
2017	$ 542,647	$ 8,381,466	4.2	$ 8,924,113	6%	94%	$ 129,202
2018	$ 501,341	$ 2,775,985	4.4	$ 3,277,326	15%	85%	$ 113,941
2019	$ 594,639	$ 6,346,142	4.4	$ 6,940,781	9%	91%	$ 135,145
2020	$ 467,985	$ 6,472,341	3.3	$ 6,940,326	7%	93%	$ 141,814
2021	$ 859,484	$ 7,432,816	7.5	$ 8,292,300	10%	90%	$ 114,598

Average Incremental Cost per RAMP Reg Station **[E]**
$ 215,250

2021 Average Labor % **[F]**	2021 Average Non-Labor % **[G]**	2021 Average FTE/Labor **[H]**
10%	90%	$ 114,598

Table 2: Incremental Forecasted Regulator Station Cost:

	Incremental Reg Stations **[I]**	Labor **[J]** ([I]x([E]X[F])	Non-Labor **[K]** ([I]x([E]X[G])	FTE **[L]** ([J]/[H])	Total Labor and Non-Labor
2022	8	$ 178,483	$ 1,543,517	1.6	$ 1,722,000
2023	8	$ 178,483	$ 1,543,517	1.6	$ 1,722,000
2024	8	$ 178,483	$ 1,543,517	1.6	$ 1,722,000

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: G. Control Center Modernization (CCM) Distribution Pr
Workpaper: 002500

Summary for Category: G. Control Center Modernization (CCM) Distribution Pr

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	3,035	6,219	7,273	6,639
Non-Labor	12,011	17,287	19,130	14,895
NSE	0	0	0	0
Total	**15,046**	**23,506**	**26,403**	**21,534**
FTE	25.8	51.8	60.6	55.3

002500 CCM (Control Center Modernization) Distribution Project

Labor	3,035	6,219	7,273	6,639
Non-Labor	12,011	17,287	19,130	14,895
NSE	0	0	0	0
Total	**15,046**	**23,506**	**26,403**	**21,534**
FTE	25.8	51.8	60.6	55.3

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002500 - CCM (Control Center Modernization) Distribution Project

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00250.0
Category: G. Control Center Modernization (CCM) Distribution Pr
Category-Sub: 1. Control Center Modernization (CCM) Distribution Pr
Workpaper Group: 002500 - CCM (Control Center Modernization) Distribution Project

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	Zero-Based	0	0	109	814	3,035	6,219	7,273	6,639
Non-Labor	Zero-Based	0	0	231	5,809	12,011	17,287	19,130	14,895
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**339**	**6,623**	**15,047**	**23,506**	**26,403**	**21,534**
FTE	Zero-Based	0.0	0.0	0.8	5.5	25.8	51.8	60.6	55.3

Business Purpose:

The purpose of the Control Center Modernization (CCM) project is to construct a new modernized Gas Control facility which will include advanced technology and be sized to accommodate the expanding workforce needed to monitor, maintain, and respond to data transmitted by the over 9,800 new and existing field assets and incidents on a continuous 24/7 basis. The costs detailed in this section are related to the field assets that will be deployed on the SoCalGas distribution system and the enhanced technology platform that will strengthen Gas Control's situational awareness, data analytics, forecasting, visibility, and responsiveness to the overall system.

Physical Description:

The CCM project plans to enhance a total of 75 regulator stations with SCADA capabilities through the TY 2024. In addition to enhancements at regulator stations, the CCM project will also integrate data from 2,123 electronic pressure monitors (EPMs) and 4,282 meters, both core and non-core, into Gas Control. The meters will require replacement and/or reconfiguration of their communication modules. To meet the purpose of strengthening Gas Control's ability to view our system and increase the intake of data points from field assets, the CCM Operations Technology (OT) team will develop enhancements that will include the expansion of the OT network, adding hardware to store and process new field asset data, and the implementation of tools to govern and analyze field asset data through new visualization platforms.

Project Justification:

The CCM project will deploy remote control and real-time monitoring at distribution regulator stations, which will give Gas Control not only visibility into the dynamic pressures and flows across the gas distribution system but also the ability to control select stations. The CCM project will integrate EPM data with advanced analytics use cases to provide Gas Control with additional near real-time insights to the distribution system. The CCM project will also integrate EPM and meter data to provide near real-time customer demand data to Gas Control. The integration of these field assets along with the implementation of OT enhancements will transform field asset data into usable information for Gas Control to manage and control the overall gas system.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00250.0
Category:	G. Control Center Modernization (CCM) Distribution Pr
Category-Sub:	1. Control Center Modernization (CCM) Distribution Pr
Workpaper Group:	002500 - CCM (Control Center Modernization) Distribution Project

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is zero-based methodology. CCM project activities commenced in 2020 and continue to ramp up. Historical costs do not adequately reflect full deployment labor costs that will be seen in 2022, 2023, and 2024.
Enhanced Distribution Regulator Station Labor: The forecast uses a per unit cost multiplied by the annual number of targeted distribution regulator station enhancements. The per unit costs are based on analysis of pilot sites costs for both real-time monitoring and control sites. The labor forecast consists of costs for internal resources for the project management, planning, engineering, permitting, field supervision, and close out of the enhanced distribution regulator stations.
Meter Data Labor: The forecast uses a per unit cost multiplied by the annual number of targeted meter communication module reconfigurations and/or replacements. The per unit costs are based on analysis of similar type of meter work. This labor forecast consists of costs for internal resources for field installation hours and back-office field verification hours.
Operations Technology (OT) Enhancements Labor: The forecast primarily consists of project team internal resources focused on project managing, developing, and implementing the OT enhancements.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-005 for calculation details.

Non-Labor - Zero-Based

The forecast method developed for this cost category is zero-based methodology. CCM project activities commenced in 2020 and continue to ramp up. Historical costs do not adequately reflect full deployment non-labor costs that will be seen in 2022, 2023, and 2024.
Enhanced Distribution Regulator Station Non-Labor: The forecast uses a per unit cost multiplied by the annual number of targeted distribution regulator station enhancements. The per unit costs are based on analysis of pilot sites costs for both real-time monitoring and control sites. The non-labor forecast consists of costs for external resources and contractor services for project management, engineering, permitting, construction, commissioning, and close out of the enhanced distribution regulator stations.
Meter Data Non-Labor: The forecast uses a per unit cost multiplied by the annual number of targeted meter communication module reconfigurations and/or replacements. The per unit costs are based on an analysis of a similar type of meter work. The non-labor forecast consists of costs for the communication module replacement.
Operations Technology (OT) Enhancements Non-Labor: The forecast is for external resources, hardware, and software. The non-labor is made up of external resources that will also perform development and implementation. Additionally, the non-labor consists of software and hardware for OT environment system enhancements.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-005 for calculation details.

NSE - Zero-Based

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00250.0
Category: G. Control Center Modernization (CCM) Distribution Pr
Category-Sub: 1. Control Center Modernization (CCM) Distribution Pr
Workpaper Group: 002500 - CCM (Control Center Modernization) Distribution Project

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	Zero-Based	6,219	7,273	6,639	0	0	0	6,219	7,273	6,639
Non-Labor	Zero-Based	17,287	19,130	14,895	0	0	0	17,287	19,130	14,895
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**23,506**	**26,403**	**21,534**	**0**	**0**	**0**	**23,506**	**26,403**	**21,534**
FTE	Zero-Based	51.8	60.6	55.3	0.0	0.0	0.0	51.8	60.6	55.3

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00250.0
Category: G. Control Center Modernization (CCM) Distribution Pr
Category-Sub: 1. Control Center Modernization (CCM) Distribution Pr
Workpaper Group: 002500 - CCM (Control Center Modernization) Distribution Project

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	0	0	76	602	505
Non-Labor	0	0	191	5,049	3,580
NSE	0	0	0	0	0
Total	**0**	**0**	**267**	**5,651**	**4,085**
FTE	0.0	0.0	0.7	4.6	4.6
Adjustments (Nominal $) **					
Labor	0	0	0	0	2,075
Non-Labor	0	0	0	0	8,432
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**10,506**
FTE	0.0	0.0	0.0	0.0	17.1
Recorded-Adjusted (Nominal $)					
Labor	0	0	76	602	2,580
Non-Labor	0	0	191	5,049	12,011
NSE	0	0	0	0	0
Total	**0**	**0**	**267**	**5,651**	**14,591**
FTE	0.0	0.0	0.7	4.6	21.7
Vacation & Sick (Nominal $)					
Labor	0	0	14	106	455
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**14**	**106**	**455**
FTE	0.0	0.0	0.1	0.9	4.1
Escalation to 2021$					
Labor	0	0	19	106	0
Non-Labor	0	0	40	759	0
NSE	0	0	0	0	0
Total	**0**	**0**	**58**	**866**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	0	0	109	814	3,035
Non-Labor	0	0	231	5,809	12,011
NSE	0	0	0	0	0
Total	**0**	**0**	**339**	**6,623**	**15,047**
FTE	0.0	0.0	0.8	5.5	25.8

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00250.0
Category: G. Control Center Modernization (CCM) Distribution Pr
Category-Sub: 1. Control Center Modernization (CCM) Distribution Pr
Workpaper Group: 002500 - CCM (Control Center Modernization) Distribution Project

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	2,075
Non-Labor	0	0	0	0	8,432
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**10,506**
FTE	0.0	0.0	0.0	0.0	17.1

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017 Total	0	0	0	0	0.0
2018 Total	0	0	0	0	0.0
2019 Total	0	0	0	0	0.0
2020 Total	0	0	0	0	0.0
2021	1,363	4,680	0	6,043	11.4
Explanation:	Transferred historical recorded cost of Gas Operations PMO/Engineering/Field and Gas Operations Control Center Technology out of workpaper 002700 and into workpaper 002500 where costs are forecasted.				
2021	67	45	0	112	0.6
Explanation:	Transferred historical recorded cost of Gas Ops Control Center - Pilot Sites out of workpaper 002650 and into workpaper 002500 where costs are forecasted.				
2021	645	3,707	0	4,352	5.1
Explanation:	Transferred historical recorded cost of Gas Operations Control Center - Software out of workpaper 007560 and into workpaper 002500 where costs are forecasted.				
2021 Total	2,075	8,432	0	10,506	17.1

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002500

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00250.0
Category:	G. Control Center Modernization (CCM) Distribution Pr
Category-Sub:	1. Control Center Modernization (CCM) Distribution Pr
Workpaper Group:	002500 - CCM (Control Center Modernization) Distribution Project
Workpaper Detail:	002500.001 - [RAMP] Distribution Operations Control Center and Technology Management
In-Service Date:	Not Applicable

Description:

This is a continuation of work proposed under the 2019 GRC (Major Projects -M. Bermel witness) which was labeled "Distribution Operations Control Center" (DOCC) and embodies the installation and integration of data from field assets on the distribution pipeline system to remotely control distribution regulator stations and provide Gas Control expanded continuous monitoring of the system. The activities in this section include:
• Remote control and real-time monitoring at distribution regulator stations, which will give Gas Control not only visibility into the dynamic pressures and flows across the gas distribution system but also the ability to control select stations in the event of a regulator failure or other incident affecting regulator function
• Integrate Electronic Pressure Monitoring (EPM) data with advanced analytics use cases to provide Gas Control with additional near real-time insights to the distribution system.
• Replacement and reconfiguration of core and non-core meters communication modules to provide near real-time customer demand data to Gas Control.

Forecast In 2021 $(000)

Years	2022	2023	2024
Labor	4,384	5,388	5,114
Non-Labor	12,497	12,550	11,655
NSE	0	0	0
Total	**16,881**	**17,938**	**16,769**
FTE	36.5	44.9	45.5

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00250.0
Category:	G. Control Center Modernization (CCM) Distribution
Category-Sub:	1. Control Center Modernization (CCM) Distribution Pr
Workpaper Group:	002500 - CCM (Control Center Modernization) Distribution Project
Workpaper Detail:	002500.001 - [RAMP] Distribution Operations Control Center and Technology Management

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-3 Incident Related to the Medium Pressure System (Excluding Dig-in)

RAMP Line Item ID: C24

RAMP Line Item Name: CCM SCG Distribution Field Asset Real Time Monitoring and Control Site Installations/Upgrades and New Control Room Technologies

Tranche(s): Tranche1: Medium Pressure Mains - Plastic & Steel

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	10,583	16,881	17,938	16,769	51,588	49,676	71,754

Cost Estimate Changes from RAMP:
None

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of installations	9.00	53.00	64.00	95.00	212.00	192.00	275.00

Work Unit Changes from RAMP:
None

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	0.000	0.000

RSE Changes from RAMP:
RSE was not calculated for this activity in both the 2021 RAMP Report and the GRC.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00250.0
Category:	G. Control Center Modernization (CCM) Distribution Pr
Category-Sub:	1. Control Center Modernization (CCM) Distribution Pr
Workpaper Group:	002500 - CCM (Control Center Modernization) Distribution Project
Workpaper Detail:	002500.002 - [RAMP] Distribution Operations Control Center and Technology Management (Software)
In-Service Date:	Not Applicable

Description:

Control Center Modernization (CCM) operations technology (OT) enhancements will deliver several critical technologies to support the CCM field asset deployments and the collection of data from the enhanced distribution regulator stations, electronic pressure monitors (EPMs), meters, OPM stations, and high consequence area (HCA) methane sensors. The implemented technology will help manage and transform the collected field asset data into information that will provide a comprehensive real-time view of the overall gas system for Gas Control. These are software costs related for the CCM OT enhancements, which will focus on expanding the current Gas Control Room technology needed for greater system visibility and control.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	1,835	1,885	1,525
Non-Labor	4,640	6,480	3,240
NSE	0	0	0
Total	**6,475**	**8,365**	**4,765**
FTE	15.3	15.7	9.8

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00250.0
Category:	G. Control Center Modernization (CCM) Distribution
Category-Sub:	1. Control Center Modernization (CCM) Distribution Pr
Workpaper Group:	002500 - CCM (Control Center Modernization) Distribution Project
Workpaper Detail:	002500.002 - [RAMP] Distribution Operations Control Center and Technology Management (Software)

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-3 Incident Related to the Medium Pressure System (Excluding Dig-in)

RAMP Line Item ID: C24

RAMP Line Item Name: CCM SCG Distribution Field Asset Real Time Monitoring and Control Site Installations/Upgrades and New Control Room Technologies

Tranche(s): Tranche1: Medium Pressure Mains - Plastic & Steel

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	4,408	6,475	8,365	4,765	19,605	49,676	71,754

Cost Estimate Changes from RAMP:
None

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of installations	9.00	53.00	64.00	95.00	212.00	192.00	275.00

Work Unit Changes from RAMP:
None

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	0.000	0.000

RSE Changes from RAMP:
RSE was not calculated for this activity in both the 2021 RAMP Report and the GRC.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00250.0
Category:	G. Control Center Modernization (CCM) Distribution Pr
Category-Sub:	1. Control Center Modernization (CCM) Distribution Pr
Workpaper Group:	002500 - CCM (Control Center Modernization) Distribution Project
Workpaper Detail:	002500.003 - [RAMP] Distribution Operations Control Center and Technology Management (Hardware)
In-Service Date:	Not Applicable

Description:

Control Center Modernization (CCM) operations technology (OT) enhancements will deliver several critical technologies to support the CCM field asset deployments and the collection of data from the enhanced distribution regulator stations, electronic pressure monitors (EPMs), meters, OPM stations, and high consequence area (HCA) methane sensors. The implemented technology will help manage and transform the collected field asset data into information that will provide a comprehensive real-time view of the overall gas system for Gas Control. These are the hardware costs related to the CCM OT enhancements, which will focus on expanding the current Gas Control Room technology needed for greater system visibility and control.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	0	0	0
Non-Labor	150	100	0
NSE	0	0	0
Total	**150**	**100**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00250.0
Category:	G. Control Center Modernization (CCM) Distribution
Category-Sub:	1. Control Center Modernization (CCM) Distribution Pr
Workpaper Group:	002500 - CCM (Control Center Modernization) Distribution Project
Workpaper Detail:	002500.003 - [RAMP] Distribution Operations Control Center and Technology Management (Hardware)

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-3 Incident Related to the Medium Pressure System (Excluding Dig-in)

RAMP Line Item ID: C24

RAMP Line Item Name: CCM SCG Distribution Field Asset Real Time Monitoring and Control Site Installations/Upgrades and New Control Room Technologies

Tranche(s): Tranche1: Medium Pressure Mains - Plastic & Steel

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	56	150	100	0	250	49,676	71,754

Cost Estimate Changes from RAMP:
None

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of installations	9.00	53.00	64.00	95.00	212.00	192.00	275.00

Work Unit Changes from RAMP:
None

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	0.000	0.000

RSE Changes from RAMP:
RSE was not calculated for this activity in both the 2021 RAMP Report and the GRC.

Supplemental Workpapers for Workpaper Group 002500

SCG-04-MAA-CAP-SUP-005

Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre

Supplemental Workpaper Calculations for Control Center Modernization (CCM) Distribution

Control Center Modernization (CCM) Distribution Workpaper

CCM Summary - Distribution Witness Area (SoCalGas)

Capital Forecast

	2022	2023	2024	Total
Labor	$ 6,219,050.00	$ 7,273,990.00	$ 6,638,990.00	$ 20,132,030.00
Non-Labor	$ 17,286,514.00	$ 19,130,200.00	$ 14,895,200.00	$ 51,311,914.00
Total	$ 23,505,564.00	$ 26,404,190.00	$ 21,534,190.00	$ 71,443,944.00
FTE	51.8	60.6	55.3	

**$120k used for Distribution FTE calculation*

SCG-04-MAA-CAP-SUP-005
Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre
Supplemental Workpaper Calculations for Control Center Modernization (CCM) Distribution
Control Center Modernization (CCM) Distribution Workpaper

CCM Distribution Regulator Station (DRS) Enhancements - Control Sites & Monitor Only Sites (SoCalGas)

Unit Count

	2022	2023	2024	2022-2024 Total	2025-2028 Total
SCADA Enhanced Sites	25	25	25	75	105

note: *25 Control sites w/ some select Monitor Only sites Annually thru 2028
**continuation of RT sites is dependent on the information gathered

Cost Per Unit Breakdown & Assumptions

Cost Per Site: Project Management & Field Engineering

COST TYPE	LABOR/NON-LABOR	CLASSIFICATION	DESCRIPTION	COST
Capital	Labor	Internal Resources	Project Management, Engineering Design Support & Commissioning	$ 26,354.00
Capital	Non-Labor	External Resources	Contractor Services	$ 7,422.00
Capital	Non-Labor	Materials & Expenses	Travel, Parking, Overnights	$ 450.00
			Total Unit Cost	$ 34,226.00

Cost Per DRS Control site

COST TYPE	LABOR/NON-LABOR	CLASSIFICATION	DESCRIPTION	COST
Capital	Labor	Internal Resources	Planning, Permitting, Contracting	$ 75,000.00
Capital	Labor	Internal Resources	Inspections	$ 27,500.00
Capital	Labor	Internal Resources	Construction & Engineering oversight	$ 17,500.00
Capital	Labor	Internal Resources	Documentation & Close-out	$ 40,000.00
Capital	Non-Labor	External Resources	Engineering Design	$ 75,000.00
Capital	Non-Labor	External Resources	Mechanical construction	$ 270,000.00
Capital	Non-Labor	External Resources	Electrical construction	$ 100,000.00
Capital	Non-Labor	External Resources	Inspections	$ 27,500.00
Capital	Non-Labor	External Resources	Construction & Engineering oversight	$ 17,500.00
Capital	Non-Labor	Materials & Expenses	Mechanical, electrical, & telecommunications equipment	$ 110,000.00
			Total Unit Cost	$ 760,000.00

Cost per DRS Monitor-only site

COST TYPE	LABOR/NON-LABOR	CLASSIFICATION	DESCRIPTION	COST
Capital	Labor	Internal Resources	Planning, Permitting, Contracting	$ 45,000.00
Capital	Labor	Internal Resources	Inspections	$ 17,500.00
Capital	Labor	Internal Resources	Construction & Engineering oversight	$ 12,500.00
Capital	Labor	Internal Resources	Documentation & Close-out	$ 30,000.00
Capital	Non-Labor	External Resources	Engineering Design	$ 45,000.00
Capital	Non-Labor	External Resources	Mechanical construction	$ 175,000.00
Capital	Non-Labor	External Resources	Electrical construction	$ 70,000.00
Capital	Non-Labor	External Resources	Inspections	$ 17,500.00
Capital	Non-Labor	External Resources	Construction & Engineering oversight	$ 12,500.00
Capital	Non-Labor	Materials & Expenses	Mechanical, electrical, & telecommunications equipment	$ 45,000.00
			Total Unit Cost	$ 470,000.00

Capital Forecast

Control sites		2022	2023	2024	Total
Labor	Internal Labor	$ 3,727,080.00	$ 3,727,080.00	$ 2,795,310.00	$ 10,249,470.00
Non-Labor	External Labor	$ 9,948,440.00	$ 9,948,440.00	$ 7,461,330.00	$ 27,358,210.00
	Materials & Expenses	$ 909,000.00	$ 909,000.00	$ 681,750.00	$ 2,499,750.00
	Total NL	$ 10,857,440.00	$ 10,857,440.00	$ 8,143,080.00	$ 29,857,960.00

Monitoring Sites		2022	2023	2024	Total
Labor	Internal Labor	$ 656,770.00	$ 656,770.00	$ 1,313,540.00	$ 2,627,080.00
Non-Labor	External Labor	$ 1,412,110.00	$ 1,412,110.00	$ 2,824,220.00	$ 5,648,440.00
	Materials & Expenses	$ 227,250.00	$ 47,250.00	$ 454,500.00	$ 729,000.00
	Total NL	$ 1,639,360.00	$ 1,459,360.00	$ 3,278,720.00	$ 6,377,440.00

Total Control & Real Time Stations		2022	2023	2024	Total
Total	Total Labor	$ 4,383,850.00	$ 4,383,850.00	$ 4,108,850.00	$ 12,876,550.00
	Total Non-Labor	$ 12,496,800.00	$ 12,316,800.00	$ 11,421,800.00	$ 36,235,400.00
	Total Capital	$ 16,880,650.00	$ 16,700,650.00	$ 15,530,650.00	$ 49,111,950.00

Assumptions

Cost assumptions leveraged refinement of costs from pilot sites to determine per unit cost
Multiple mechanical and electrical estimates provided by vendors and incorporated into per unit cost
Total cost calculation uses blended rate of 60 control sites ($760K/unit) and 20 real time monitoring sites ($470K/unit)
Deployment schedule consistent with projects requiring specialized planning, permitting, and construction
Control sites have a 16-month Engineering, Planning & Permitting duration; Monitoring sites have a 10-month Engineering, Planning & Permitting duration
FTE Calculation used $120k
Site selection based on current risk-based prioritization (consequence of failure and downstream customer impacts)

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Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre
Supplemental Workpaper Calculations for Control Center Modernization (CCM) Distribution
Control Center Modernization (CCM) Distribution Workpaper

CCM - Core & Non-Core Meter (SoCalGas)

Unit Count

	2022	2023	2024	2022-2024 Total	2025-2028 Total
Core	**0**	1500	1500	**3000**	**0**
Non-Core - EVC	**0**	534	534	**1068**	**53**
Non-Core - Flow computers existing equipment	**0**	107	107	**214**	**0**

Cost Per Unit Breakdown

Cost Per Site: Core

COST TYPE	LABOR/NON-LABOR	CLASSIFICATION	DESCRIPTION	COST
Capital	Labor	Internal Resources	Field Installation and verification	$ 360.00
Capital	Labor	Internal Resources	Back-office verification	$ 180.00
Capital	Non-Labor	Materials & Expenses	Communication module replacement & materials	$ 120.00
			Total Unit Cost	$ 660.00

Cost Per Site: Non-Core - EVCs

COST TYPE	LABOR/NON-LABOR	CLASSIFICATION	DESCRIPTION	COST
Capital	Labor	Internal Resources	Back-office verification	$ 120.00
Capital	Labor	Internal Resources	Field verification	$ 108.00
Capital	Non-Labor	Materials & Expenses	Communication module replacement	$ 100.00
			Total Unit Cost	$ 328.00

Cost Per Site: Non-Core - Flow computers using existing equipment

COST TYPE	LABOR/NON-LABOR	CLASSIFICATION	DESCRIPTION	COST
Capital	Labor	Internal Resources	Back-office verification	$ 360.00
Capital	Labor	Internal Resources	Field verification	$ 324.00
			Total Unit Cost	$ 684.00

Capital Forecast

	2022	2023	2024	Total
Core units by year	0	1500	1500	3000
Non-core EVC units by year	0	534	534	1068
Non-core flow computer (existing equipment) by year	0	107	107	214

	2022	2023	2024	Total
Labor	$ -	$ 1,004,940.00	$ 1,004,940.00	$ 2,009,880.00
Non-Labor	$ -	$ 233,400.00	$ 233,400.00	$ 466,800.00
Total	$ -	$ 1,238,340.00	$ 1,238,340.00	$ 2,476,680.00

Assumptions

Bringing core and non-core customer meter data into the control room will provide additional insight into the state of the Distribution system as well as provide additional information for advanced gas forecasting

25% EVCs will require the replacement of the existing communication module (differs from SDGE scope, where entire EVC is being replaced, this is reflected in the costs)
80% of Flow computers will not require replacement/upgrade of existing field equipment are included in the 2022-2024 forecast
20% of Flow computers will require replacement/upgrade of existing field equipment and are not included in the 2022-2024 forecast

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Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre
Supplemental Workpaper Calculations for Control Center Modernization (CCM) Distribution
Control Center Modernization (CCM) Distribution Workpaper

CCM - Operations Technology (OT) Enhancements

Cost Breakdown

Description	Labor/NL	2022	2023	2024
CCM OT Enhancements - Software	Labor	$ 1,835,200.00	$ 1,885,200.00	$ 1,525,200.00
CCM OT Enhancements - Software	Non-Labor	$ 4,639,714.00	$ 6,480,000.00	$ 3,240,000.00
CCM OT Enhancements - Hardware	Non-Labor	$ 150,000.00	$ 100,000.00	$ -
	250.002 Total	$ 6,474,914.00	$ 8,365,200.00	$ 4,765,200.00
	250.003 Total	$ 150,000.00	$ 100,000.00	$ -
	Grand Total	$ 6,624,914.00	$ 8,465,200.00	$ 4,765,200.00

Capital Forecast

	2022	2023	2024	Total
Labor	$ 1,835,200.00	$ 1,885,200.00	$ 1,525,200.00	$ 5,245,600.00
Non-Labor	$ 4,789,714.00	$ 6,580,000.00	$ 3,240,000.00	$ 14,609,714.00
Total	$ 6,624,914.00	$ 8,465,200.00	$ 4,765,200.00	$ 19,855,314.00
FTE	15	16	13	

Assumptions

CCM OT Enhancements refers to the various upgrades made to the Network, SCADA system, Control Room mangement, interfaces, data analytics, cyber security, situational awareness, work management systems, and advanced analytics platforms.

These are the costs associated with 00250.002 and 00250.003
00250.002 is related to the Software costs and 00250.003 is related to the Hardware costs
CCM OT Enhancements that will enable 9,800 field asset sites to be integrated into Gas Control by 2028
The labor costs are driven by various resources such as project managers, business systems analysts, team leads, and IT and Business support from internal departments who charge time to the CCM project.

The non-labor costs for this project are driven by vendor services to build and implement these enhancements to Gas Control
Ramp down of capital labor and non-labor spend is seen in the 2024 costs as technology projects are fully implemented

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: H. Cathodic Protection Capital
Workpaper: 001730

Summary for Category: H. Cathodic Protection Capital

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	66	221	221	221
Non-Labor	5,030	6,772	6,306	6,306
NSE	0	0	0	0
Total	**5,096**	**6,993**	**6,527**	**6,527**
FTE	0.6	1.7	1.7	1.7

001730 Cathodic Protection (CP) Capital

Labor	66	221	221	221
Non-Labor	5,030	6,772	6,306	6,306
NSE	0	0	0	0
Total	**5,096**	**6,993**	**6,527**	**6,527**
FTE	0.6	1.7	1.7	1.7

Note: Totals may include rounding differences.

Beginning of Workpaper Group
001730 - Cathodic Protection (CP) Capital

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00173.0
Category: H. Cathodic Protection Capital
Category-Sub: 1. Cathodic Protection Capital
Workpaper Group: 001730 - Cathodic Protection (CP) Capital

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	5-YR Average	380	279	260	118	66	221	221	221
Non-Labor	5-YR Average	7,816	6,639	4,929	7,117	5,030	6,772	6,306	6,306
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**8,196**	**6,918**	**5,190**	**7,235**	**5,096**	**6,993**	**6,527**	**6,527**
FTE	5-YR Average	2.5	2.2	2.2	1.1	0.6	1.7	1.7	1.7

Business Purpose:

Budget Codes: 173, 263, 273

This work category includes the capital expenditures associated with the installation of cathodic protection equipment used to preserve the integrity of steel pipelines by protecting them from external corrosion. These projects are in compliance with federal and state pipeline safety regulations and provides for proper cathodic protection on company facilities.

Physical Description:

Typical projects for this workgroup include the capital expenditures associated with the installation of new and replacement cathodic protection stations and applying cathodic protection to existing steel mains and service lines. This includes the additions of new rectifier (impressed current) sites along with the associated anode installations, including the necessary cathodic protection instrumentation and remote monitoring equipment; shallow well and deep well anode bed replacements for existing rectified systems; as well as installation and replacement of larger surface bed magnesium anode systems.

Project Justification:

The activities contained in this work category are necessary to protect and mitigate corrosion on the steel piping system, comply with federal and state safety compliance requirements, and thus maintain a safe and reliable distribution system and extend the life of the asset.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00173.0
Category:	H. Cathodic Protection Capital
Category-Sub:	1. Cathodic Protection Capital
Workpaper Group:	001730 - Cathodic Protection (CP) Capital

Forecast Methodology:

Labor - 5-YR Average

SoCalGas selected a five-year (2017 through 2021) average for its labor forecast. This method is most appropriate because the expenditures for this capital work category vary from year to year due to a variety of risk factors that impact the effectiveness and productivity of a cathodic protection system , such as infrastructure age, rate of anode depletion, soil moisture and type, electric current interference system damages, customer actions, and pipe coating effectiveness. This allows the Company to capture the activity to respond to an aging CP system requiring increased rates of infrastructure renewal while accounting for the routine activities and the associated cost.

Non-Labor - 5-YR Average

SoCalGas selected a five-year (2017 through 2021) average for its non-labor forecast. This method is most appropriate because the expenditures for this capital work category vary from year to year due to a variety of risk factors that impact the effectiveness and productivity of a cathodic protection system , such as infrastructure age, rate of anode depletion, soil moisture and type, electric current interference system damages, customer actions, and pipe coating effectiveness. This allows the Company to capture the activity to respond to an aging CP system requiring increased rates of infrastructure renewal while accounting for the routine activities and the associated cost.

NSE - 5-YR Average

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00173.0
Category: H. Cathodic Protection Capital
Category-Sub: 1. Cathodic Protection Capital
Workpaper Group: 001730 - Cathodic Protection (CP) Capital

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	5-YR Average	221	221	221	0	0	0	221	221	221
Non-Labor	5-YR Average	6,306	6,306	6,306	466	0	0	6,772	6,306	6,306
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**6,527**	**6,527**	**6,527**	**466**	**0**	**0**	**6,993**	**6,527**	**6,527**
FTE	5-YR Average	1.7	1.7	1.7	0.0	0.0	0.0	1.7	1.7	1.7

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022	0	466	0	466	0.0

Explanation: Remote Monitoring Units (RMU) - Replacement and installation of RMUs to monitor the level of protection provided by rectifier units to steel pipelines. Current RMUs rely on cellular connections to communicate with software on 3G technology. SoCalGas will replace these units with 4G technology to maintain communication with these devices and continue monitoring rectifiers.

SoCalGas is requesting incremental funding of $466,000 in 2022.

2022 Total	0	466	0	466	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00173.0
Category: H. Cathodic Protection Capital
Category-Sub: 1. Cathodic Protection Capital
Workpaper Group: 001730 - Cathodic Protection (CP) Capital

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	243	188	181	87	56
Non-Labor	8,278	6,913	4,087	6,187	5,030
NSE	0	0	0	0	0
Total	**8,522**	**7,100**	**4,268**	**6,274**	**5,086**
FTE	2.2	1.9	1.8	0.9	0.5
Adjustments (Nominal $) **					
Labor	-1	0	0	0	0
Non-Labor	-2,446	-1,665	-5	0	0
NSE	0	0	0	0	0
Total	**-2,447**	**-1,665**	**-5**	**0**	**0**
FTE	-0.1	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	242	188	181	87	56
Non-Labor	5,832	5,247	4,082	6,187	5,030
NSE	0	0	0	0	0
Total	**6,075**	**5,435**	**4,263**	**6,274**	**5,086**
FTE	2.1	1.9	1.8	0.9	0.5
Vacation & Sick (Nominal $)					
Labor	41	32	34	15	10
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**41**	**32**	**34**	**15**	**10**
FTE	0.4	0.3	0.4	0.2	0.1
Escalation to 2021$					
Labor	96	58	45	15	0
Non-Labor	1,984	1,392	848	930	0
NSE	0	0	0	0	0
Total	**2,080**	**1,451**	**893**	**946**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	380	279	260	118	66
Non-Labor	7,816	6,639	4,929	7,117	5,030
NSE	0	0	0	0	0
Total	**8,196**	**6,918**	**5,190**	**7,235**	**5,096**
FTE	2.5	2.2	2.2	1.1	0.6

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00173.0
Category: H. Cathodic Protection Capital
Category-Sub: 1. Cathodic Protection Capital
Workpaper Group: 001730 - Cathodic Protection (CP) Capital

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	-1	0	0	0	0
Non-Labor	-2,446	-1,665	-5	0	0
NSE	0	0	0	0	0
Total	**-2,447**	**-1,665**	**-5**	**0**	**0**
FTE	-0.1	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017	-1	-2,446	0	-2,447	-0.1
Explanation:	Removed historical project cost to install or replace Remote Monitoring Units (RMU). -$2,447 (2017), -$1,665 (2018), -$4,956 (2019).				
2017 Total	-1	-2,446	0	-2,447	-0.1
2018	0	-1,665	0	-1,665	0.0
Explanation:	Removed historical project cost to install or replace Remote Monitoring Units (RMU). -$2,447 (2017), -$1,665 (2018), -$4,956 (2019).				
2018 Total	0	-1,665	0	-1,665	0.0
2019	0	-5	0	-5	0.0
Explanation:	Removed historical project cost to install or replace Remote Monitoring Units (RMU). -$2,447 (2017), -$1,665 (2018), -$4,956 (2019).				
2019 Total	0	-5	0	-5	0.0
2020 Total	0	0	0	0	0.0
2021 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 001730

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00173.0
Category:	H. Cathodic Protection Capital
Category-Sub:	1. Cathodic Protection Capital
Workpaper Group:	001730 - Cathodic Protection (CP) Capital
Workpaper Detail:	001730.001 - [RAMP] Capital expenditures associated with the installation of cathodic protection equipment
In-Service Date:	Not Applicable

Description:

Typical projects for this workgroup include the capital expenditures associated with the installation of new and replacement of cathodic protection stations and applying cathodic protection to existing steel mains and service lines. This includes the additions of new rectifier (impressed current) sites and the necessary cathodic protection instrumentation and remote monitoring unit equipment (RMUs); shallow well and deep well anode bed replacements; as well as installation and replacement of larger surface bed magnesium anode systems.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	221	221	221
Non-Labor	6,306	6,306	6,306
NSE	0	0	0
Total	**6,527**	**6,527**	**6,527**
FTE	1.7	1.7	1.7

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00173.0
Category:	H. Cathodic Protection Capital
Category-Sub:	1. Cathodic Protection Capital
Workpaper Group:	001730 - Cathodic Protection (CP) Capital
Workpaper Detail:	001730.001 - [RAMP] Capital expenditures associated with the installation of cathodic protection equipment

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-3 Incident Related to the Medium Pressure System (Excluding Dig-in)

RAMP Line Item ID: C14

RAMP Line Item Name: Cathodic Protection- Install / Replace Impressed Current Systems

Tranche(s): Tranche1: High Pressure Supply Lines; Tranche2: Medium Pressure Mains - Steel

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	408	522	522	522	1,566	17,693	23,399
Tranche 2 Cost Estimate	4,688	6,005	6,005	6,005	18,015	17,693	23,399

Cost Estimate Changes from RAMP:
None

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of installations or replacements - anodes and rectifiers	4.00	4.00	4.00	4.00	12.00	129.00	172.00
Tranche 2 # of installations or replacements - anodes and rectifiers	37.00	44.00	44.00	44.00	132.00	129.00	172.00

Work Unit Changes from RAMP:
In addition to the deep-well anode installations and replacements, SoCalGas is including rectifier installations and replacements, as well as any enhancement to the impressed current areas, under this RAMP mitigation, as both the anodes and the rectifiers are required to effectively protect the steel pipes from corrosion .

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	2.300	28.000

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00173.0
Category:	H. Cathodic Protection Capital
Category-Sub:	1. Cathodic Protection Capital
Workpaper Group:	001730 - Cathodic Protection (CP) Capital
Workpaper Detail:	001730.001 - [RAMP] Capital expenditures associated with the installation of cathodic protection equipment

Tranche 2	2.000	28.000

RSE Changes from RAMP:
General changes to risks scores or RSE values are primarily due to changes in the MAVF and RSE methodology , as discussed in the RAMP to GRC Integration testimony of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Chapter 2). In addition, SoCalGas tranched this RAMP mitigation by High Pressure Supply Lines and Medium Pressure Mains - Steel based on the pressure of the cathodic protection area.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00173.0
Category:	H. Cathodic Protection Capital
Category-Sub:	1. Cathodic Protection Capital
Workpaper Group:	001730 - Cathodic Protection (CP) Capital
Workpaper Detail:	001730.002 - [RAMP] Installation and replacement of Remote Monitoring Units (RMU) for Cathodic Protection
In-Service Date:	Not Applicable

Description:

SoCalGas utilizes RMUs to monitor the level of cathodic protection provided by rectifier units to steel pipelines. These units allow employees to complete mandated bi-monthly inspections to verify that the level of current from the rectifiers is protecting steel pipelines adequately. Similar to electronic pressure monitoring units, RMUs send alarm notifications to the department monitoring these devices when the current levels are below or above a pre-set tolerance. This allows SoCalGas to send personnel to determine what triggered the alarm and address the issue. Currently, RMUs rely on cellular connections to communicate with software and was built with a 3G technology. SoCalGas will replace these units with new access technology to maintain communication with these devices and continue monitoring rectifiers.

Forecast In 2021 $(000)

Years	2022	2023	2024
Labor	0	0	0
Non-Labor	466	0	0
NSE	0	0	0
Total	**466**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00173.0
Category:	H. Cathodic Protection Capital
Category-Sub:	1. Cathodic Protection Capital
Workpaper Group:	001730 - Cathodic Protection (CP) Capital
Workpaper Detail:	001730.002 - [RAMP] Installation and replacement of Remote Monitoring Units (RMU) for Cathodic Protection

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-3 Incident Related to the Medium Pressure System (Excluding Dig-in)

RAMP Line Item ID: C14

RAMP Line Item Name: Cathodic Protection- Install / Replace Impressed Current Systems

Tranche(s): Tranche1: High Pressure Supply Lines; Tranche2: Medium Pressure Mains - Steel

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	0	37	0	0	37	17,693	23,399
Tranche 2 Cost Estimate	0	429	0	0	429	17,693	23,399

Cost Estimate Changes from RAMP:
None

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of installations or replacements	4.00	4.00	4.00	4.00	12.00	129.00	172.00
Tranche 2 # of installations or replacements	37.00	44.00	44.00	44.00	132.00	129.00	172.00

Work Unit Changes from RAMP:
In addition to the deep-well anode installations and replacements, SoCalGas is including rectifier installations and replacements, as well as any enhancement to the impressed current areas, under this RAMP mitigation, as both the anodes and the rectifiers are required to effectively protect the steel pipes from corrosion .

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	2.300	28.000
Tranche 2	2.000	28.000

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00173.0
Category:	H. Cathodic Protection Capital
Category-Sub:	1. Cathodic Protection Capital
Workpaper Group:	001730 - Cathodic Protection (CP) Capital
Workpaper Detail:	001730.002 - [RAMP] Installation and replacement of Remote Monitoring Units (RMU) for Cathodic Protection

RSE Changes from RAMP:
General changes to risks scores or RSE values are primarily due to changes in the MAVF and RSE methodology , as discussed in the RAMP to GRC Integration testimony of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Chapter 2). In addition, SoCalGas tranched this RAMP mitigation by High Pressure Supply Lines and Medium Pressure Mains - Steel based on the pressure of the cathodic protection area.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: I. Pipeline Relocations – Freeway
Workpaper: 002610

Summary for Category: I. Pipeline Relocations – Freeway

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	49	36	36	36
Non-Labor	3,327	1,868	1,868	1,868
NSE	0	0	0	0
Total	**3,376**	**1,904**	**1,904**	**1,904**
FTE	0.5	0.3	0.3	0.3

002610 Pipeline Relocations – Freeway

Labor	49	36	36	36
Non-Labor	3,327	1,868	1,868	1,868
NSE	0	0	0	0
Total	**3,376**	**1,904**	**1,904**	**1,904**
FTE	0.5	0.3	0.3	0.3

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002610 - Pipeline Relocations – Freeway

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00261.0
Category: I. Pipeline Relocations – Freeway
Category-Sub: 1. Pipeline Relocations – Freeway
Workpaper Group: 002610 - Pipeline Relocations – Freeway

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	5-YR Average	20	45	42	25	49	36	36	36
Non-Labor	5-YR Average	1,926	897	919	2,271	3,327	1,868	1,868	1,868
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**1,946**	**943**	**961**	**2,295**	**3,376**	**1,904**	**1,904**	**1,904**
FTE	5-YR Average	0.1	0.3	0.4	0.1	0.5	0.3	0.3	0.3

Business Purpose:

Budget Codes: 261, 268

Freeway work in SoCalGas is driven by external agencies, Such as the California Department of Transportation (CalTrans). These agencies submit requests for SoCalGas to relocate pipe that would, in its current location, interfere with planned construction or reconstruction of freeways. The work in this category includes expenditures associated with relocating or altering SoCalGas facilities in response to these external requests, as specified under the provisions of agency agreements, including SoCalGas's Caltrans Master Agreement.

Physical Description:

Gas pipeline relocation projects are performed to establish adequate clearance to accommodate freeway construction improvements and/or expansions. These pipeline relocation projects include all sizes of distribution main and associated service lines, meter set assemblies and related gas facilities. Freeway relocation projects include altering:

• Pipeline crossing over and under a freeway bridge span.
• Any gas facility interfering with construction and located within CalTrans ' right-of-way.
• Any gas facility outside of CalTrans' right-of-way deemed to interfere with freeway construction.

Project Justification:

The exact timing and number of freeway pipeline projects are driven by outside agencies, thus expenditures in this category are dependent on the number, extent and timing of these requests and are outside of SoCalGas's control. However, when projects do occur, SoCalGas must complete its portion of the work in a timely manner in an effort to not cause construction schedule delays for the agency.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00261.0
Category:	I. Pipeline Relocations – Freeway
Category-Sub:	1. Pipeline Relocations – Freeway
Workpaper Group:	002610 - Pipeline Relocations – Freeway

Forecast Methodology:

Labor - 5-YR Average

SoCalGas forecasted expenditures for this work category using the five-year (2017 through 2021) average. This average is most representative of future work requirements and expected expenditures, as it captures typical fluctuations in project costs from year to year and provides for special projects taking place during the forecast period. The labor is a small portion of this workgroup. A separate workpaper sub was created to capture the forecasted collectible portion of this work category.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-006 for calculation details.

Non-Labor - 5-YR Average

SoCalGas forecasted expenditures for this work category using the five-year (2017 through 2021) average. This average is most representative of future work requirements and expected expenditures, as it captures typical fluctuations in project costs from year to year and provides for special projects taking place during the forecast period. A separate workpaper sub was created to capture the forecasted collectible portion of this work category .

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-006 for calculation details.

NSE - 5-YR Average

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00261.0
Category: I. Pipeline Relocations – Freeway
Category-Sub: 1. Pipeline Relocations – Freeway
Workpaper Group: 002610 - Pipeline Relocations – Freeway

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	5-YR Average	36	36	36	0	0	0	36	36	36
Non-Labor	5-YR Average	1,868	1,868	1,868	0	0	0	1,868	1,868	1,868
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**1,904**	**1,904**	**1,904**	**0**	**0**	**0**	**1,904**	**1,904**	**1,904**
FTE	5-YR Average	0.3	0.3	0.3	0.0	0.0	0.0	0.3	0.3	0.3

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00261.0
Category: I. Pipeline Relocations – Freeway
Category-Sub: 1. Pipeline Relocations – Freeway
Workpaper Group: 002610 - Pipeline Relocations – Freeway

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	13	31	29	18	42
Non-Labor	1,437	709	761	1,974	3,327
NSE	0	0	0	0	0
Total	**1,450**	**740**	**790**	**1,992**	**3,369**
FTE	0.1	0.3	0.3	0.1	0.4
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	13	31	29	18	42
Non-Labor	1,437	709	761	1,974	3,327
NSE	0	0	0	0	0
Total	**1,450**	**740**	**790**	**1,992**	**3,369**
FTE	0.1	0.3	0.3	0.1	0.4
Vacation & Sick (Nominal $)					
Labor	2	5	6	3	7
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**2**	**5**	**6**	**3**	**7**
FTE	0.0	0.0	0.1	0.0	0.1
Escalation to 2021$					
Labor	5	10	7	3	0
Non-Labor	489	188	158	297	0
NSE	0	0	0	0	0
Total	**494**	**198**	**165**	**300**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	20	45	42	25	49
Non-Labor	1,926	897	919	2,271	3,327
NSE	0	0	0	0	0
Total	**1,946**	**943**	**961**	**2,295**	**3,376**
FTE	0.1	0.3	0.4	0.1	0.5

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00261.0
Category: I. Pipeline Relocations – Freeway
Category-Sub: 1. Pipeline Relocations – Freeway
Workpaper Group: 002610 - Pipeline Relocations – Freeway

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Year	Labor	NLbr	NSE	Total	FTE

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002610

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00261.0
Category:	I. Pipeline Relocations – Freeway
Category-Sub:	1. Pipeline Relocations – Freeway
Workpaper Group:	002610 - Pipeline Relocations – Freeway
Workpaper Detail:	002610.001 - Freeway work in SoCalGas driven by external agencies such as California DOT -Collectible
In-Service Date:	Not Applicable

Description:

Freeway work in SoCalGas is driven by external agencies such as the California Department of Transportation . These agencies submit requests for SoCalGas to relocate pipe that would, in its current location, interfere with planned construction or reconstruction of freeways. The work in this category includes expenditures associated with relocating or altering SoCalGas facilities in response. This workpaper contains the collectible portion of this forecast.

Forecast In 2021 $(000)

Years	2022	2023	2024
Labor	25	25	25
Non-Labor	1,281	1,281	1,281
NSE	0	0	0
Total	**1,306**	**1,306**	**1,306**
FTE	0.2	0.2	0.2

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00261.0
Category:	I. Pipeline Relocations – Freeway
Category-Sub:	1. Pipeline Relocations – Freeway
Workpaper Group:	002610 - Pipeline Relocations – Freeway
Workpaper Detail:	002610.002 - Freeway work in SoCalGas driven by external agencies such as California DOT -Non-Collectible
In-Service Date:	Not Applicable

Description:

Freeway work in SoCalGas is driven by external agencies such as the California Department of Transportation . These agencies submit requests for SoCalGas to relocate pipe that would, in its current location, interfere with planned construction or reconstruction of freeways. The work in this category includes expenditures associated with relocating or altering SoCalGas facilities in response. This workpaper contains the non-collectible portion of this forecast.

Forecast In 2021 $(000)

Years	2022	2023	2024
Labor	11	11	11
Non-Labor	587	587	587
NSE	0	0	0
Total	**598**	**598**	**598**
FTE	0.1	0.1	0.1

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 002610

SCG-04-MAA-CAP-SUP-006
Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre
Supplemental Workpaper Calculations for Collectible Cost Related to Freeway Pipeline Replacements - Freeway Workpaper

Assumptions:

* Direct Cash Credits were excluded from historical data, but are shown here to calculate the collectible portion of capital.

** The forecasted ratio of cash to total direct cost is the five-year (2017-2021) average ratio. This ratio is applied to the forecasted amount to calculate the collectible and non-collectible portions.

Amounts are shown in thousands of 2021 dollars and include vacation and sick.

		Adjusted Recorded History					2017-2021 Total	Forecast (5 Year Average)		
		2017	2018	2019	2020	2021		2022	2023	2024
Total Capital										
[A]	Labor	$ 20	$ 45	$ 42	$ 25	$ 49		$ 36	$ 36	$ 36
[B]	Non-Labor	$ 1,926	$ 897	$ 919	$ 2,271	$ 3,327		$ 1,868	$ 1,868	$ 1,868
[C]	**Total**	**$ 1,946**	**$ 942**	**$ 961**	**$ 2,296**	**$ 3,376**	**$ 9,521**	**$ 1,904**	**$ 1,904**	**$ 1,904**
[D]	FTEs	0.1	0.3	0.4	0.1	0.5		0.3	0.3	0.3
Collectible Ratio Calculations										
[E]	Historical Direct Cash Credits*	$ (3,407)	$ (2,413)	$ (126)	$ (253)	$ (329)	$ (6,528)			
[F] (-[E]/[C])	Ratio Cash to Total Direct Cost**	175%	256%	13%	11%	10%	69%	69%	69%	69%
Collectible Portion of Forecast										
[G] ([A]x[F])	Labor							$ 25	$ 25	$ 25
[H] ([B]x[F])	Non-Labor							$ 1,281	$ 1,281	$ 1,281
([G]+[H])	**Total**							**$ 1,306**	**$ 1,306**	**$ 1,306**
[I] ([D]x[F])	FTEs							0.2	0.2	0.2
Non-Collectible Portion of Forecast										
[J] ([A]-[G])	Labor							$ 11	$ 11	$ 11
[K] ([B]-[H])	Non-Labor							$ 587	$ 587	$ 587
([J]+[K])	**Total**							**$ 599**	**$ 599**	**$ 599**
([D]-[I])	FTEs							0.1	0.1	0.1

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: J. Pipeline Relocations – Franchise
Workpaper: 002620

Summary for Category: J. Pipeline Relocations – Franchise

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	990	1,012	1,012	1,012
Non-Labor	17,061	19,277	19,277	19,277
NSE	0	0	0	0
Total	**18,051**	**20,289**	**20,289**	**20,289**
FTE	9.4	7.7	7.7	7.7

002620 Pipeline Relocations – Franchise

Labor	990	1,012	1,012	1,012
Non-Labor	17,061	19,277	19,277	19,277
NSE	0	0	0	0
Total	**18,051**	**20,289**	**20,289**	**20,289**
FTE	9.4	7.7	7.7	7.7

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002620 - Pipeline Relocations – Franchise

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00262.0
Category: J. Pipeline Relocations – Franchise
Category-Sub: 1. Pipeline Relocations – Franchise
Workpaper Group: 002620 - Pipeline Relocations – Franchise

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	5-YR Average	968	1,103	849	1,149	990	1,012	1,012	1,012
Non-Labor	5-YR Average	17,485	15,148	14,895	31,796	17,061	19,277	19,277	19,277
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**18,453**	**16,251**	**15,743**	**32,946**	**18,051**	**20,289**	**20,289**	**20,289**
FTE	5-YR Average	8.0	9.7	6.4	5.1	9.4	7.7	7.7	7.7

Business Purpose:

Budget Codes: 262, 269, 271, 272

Franchise work in SoCalGas is driven by external agencies such as the cities, counties, or state. These agencies submit requests for SoCalGas to relocate pipe that would, in its current location, interfere with the construction or reconstruction of streets and other public works projects. The work in this category includes expenditures associated with relocating or altering SoCalGas facilities in response to these external requests, as specified under the provisions of SoCalGas's franchise agreements with city, county, or state agencies.

Physical Description:

Franchise related pipeline relocation projects are performed to establish adequate clearance to accommodate public works construction improvements and/or expansions. These pipeline relocation projects include all sizes of distribution main and associated service lines and related pipeline facilities including meter set assemblies. Some examples of the type of municipality work that drives franchise pipe relocations include:

• Street widening, resurfacing, or repairs.
• Storm drain work.
• Municipal water work.
• Sewer work.

Project Justification:

The exact timing and number of franchise pipeline projects are driven by outside agencies. Therefore, expenditures in this category are dependent on the number, extent, and timing of these requests and are outside of SoCalGas's control. However, when projects do occur, SoCalGas must complete its portion of the work in a timely manner in an effort to not cause construction schedule delays for the municipality or agency. SoCalGas expects to see requests from municipalities for pipe relocations and alterations at the same rate is has been seeing over the five-year period (2017 through 2021). Some of the factors that are expected to continue in the amount of municipality work include the following:

• Continued positive economic conditions.
• Availability of funding to municipalities.
• Population growth and density.
• Aging public infrastructure.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00262.0
Category:	J. Pipeline Relocations – Franchise
Category-Sub:	1. Pipeline Relocations – Franchise
Workpaper Group:	002620 - Pipeline Relocations – Franchise

Forecast Methodology:

Labor - 5-YR Average

As economic conditions continue in a positive direction, municipalities will continue to improve their infrastructure. The labor is a small portion of this workgroup. Thus, to reflect the anticipated rate of pipeline replacements related to franchise work and to account for the historical fluctuations in project costs from year to year, SoCalGas projects expenses for this workgroup will be using the five-year (2017 through 2021) average. A separate workpaper sub was created to capture the forecasted collectible portion of this work category.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-007 for calculation details.

Non-Labor - 5-YR Average

As economic conditions continue in a positive direction, municipalities will continue to improve their infrastructure. Thus, to reflect the anticipated rate of pipeline replacements related to franchise work and to account for the historical fluctuations in project costs from year to year, SoCalGas projects expenses for this workgroup will be using the five-year (2017 through 2021) average. A separate workpaper sub was created to capture the forecasted collectible portion of this work category.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-007 for calculation details.

NSE - 5-YR Average

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00262.0
Category: J. Pipeline Relocations – Franchise
Category-Sub: 1. Pipeline Relocations – Franchise
Workpaper Group: 002620 - Pipeline Relocations – Franchise

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	5-YR Average	1,012	1,012	1,012	0	0	0	1,012	1,012	1,012
Non-Labor	5-YR Average	19,277	19,277	19,277	0	0	0	19,277	19,277	19,277
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**20,289**	**20,289**	**20,289**	**0**	**0**	**0**	**20,289**	**20,289**	**20,289**
FTE	5-YR Average	7.7	7.7	7.7	0.0	0.0	0.0	7.7	7.7	7.7

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00262.0
Category: J. Pipeline Relocations – Franchise
Category-Sub: 1. Pipeline Relocations – Franchise
Workpaper Group: 002620 - Pipeline Relocations – Franchise

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	582	718	563	463	841
Non-Labor	12,997	11,887	12,193	15,215	16,982
NSE	0	0	0	0	0
Total	**13,579**	**12,606**	**12,756**	**15,679**	**17,823**
FTE	6.7	8.1	5.3	4.2	7.9
Adjustments (Nominal $) **					
Labor	35	25	27	386	0
Non-Labor	51	84	140	12,425	79
NSE	0	0	0	0	0
Total	**86**	**109**	**168**	**12,811**	**79**
FTE	0.1	0.1	0.1	0.1	0.0
Recorded-Adjusted (Nominal $)					
Labor	618	744	591	849	841
Non-Labor	13,047	11,971	12,333	27,641	17,061
NSE	0	0	0	0	0
Total	**13,665**	**12,715**	**12,923**	**28,490**	**17,903**
FTE	6.8	8.2	5.4	4.3	7.9
Vacation & Sick (Nominal $)					
Labor	105	128	112	150	148
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**105**	**128**	**112**	**150**	**148**
FTE	1.2	1.5	1.0	0.8	1.5
Escalation to 2021$					
Labor	246	231	146	150	0
Non-Labor	4,438	3,176	2,562	4,156	0
NSE	0	0	0	0	0
Total	**4,683**	**3,408**	**2,708**	**4,306**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	968	1,103	849	1,149	990
Non-Labor	17,485	15,148	14,895	31,796	17,061
NSE	0	0	0	0	0
Total	**18,453**	**16,251**	**15,743**	**32,946**	**18,051**
FTE	8.0	9.7	6.4	5.1	9.4

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00262.0
Category: J. Pipeline Relocations – Franchise
Category-Sub: 1. Pipeline Relocations – Franchise
Workpaper Group: 002620 - Pipeline Relocations – Franchise

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	35	25	27	386	0
Non-Labor	51	84	140	12,425	79
NSE	0	0	0	0	0
Total	**86**	**109**	**168**	**12,811**	**79**
FTE	0.1	0.1	0.1	0.1	0.0

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017	35	51	0	86	0.1
Explanation:	Transferred historical recorded cost of SL-42-46 Relocation Project (Work Order 91648) out of SoCalGas Gas Transmission witness area under Workpaper 003040 and into SoCalGas Gas Distribution witness area under Workpaper 002620 where costs are forecasted.				
2017 Total	35	51	0	86	0.1
2018	25	84	0	109	0.1
Explanation:	Transferred historical recorded cost of SL-42-46 Relocation Project (Work Order 91648) out of SoCalGas Gas Transmission witness area under Workpaper 003040 and into SoCalGas Gas Distribution witness area under Workpaper 002620 where costs are forecasted.				
2018 Total	25	84	0	109	0.1
2019	27	140	0	168	0.1
Explanation:	Transferred historical recorded cost of SL-42-46 Relocation Project (Work Order 91648) out of SoCalGas Gas Transmission witness area under Workpaper 003040 and into SoCalGas Gas Distribution witness area under Workpaper 002620 where costs are forecasted.				
2019 Total	27	140	0	168	0.1
2020	386	12,425	0	12,811	0.1
Explanation:	Transferred historical recorded cost of SL-42-46 Relocation Project (Work Order 91648) out of SoCalGas Gas Transmission witness area under Workpaper 003040 and into SoCalGas Gas Distribution witness area under Workpaper 002620 where costs are forecasted.				
2020 Total	386	12,425	0	12,811	0.1
2021	0	79	0	79	0.0
Explanation:	To add material costs (cost elements 6215567 and 6215568) that were initially misclassified as indirect costs.				
2021 Total	0	79	0	79	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002620

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00262.0
Category:	J. Pipeline Relocations – Franchise
Category-Sub:	1. Pipeline Relocations – Franchise
Workpaper Group:	002620 - Pipeline Relocations – Franchise
Workpaper Detail:	002620.001 - Work in SoCalGas driven by external agencies such as the cities, counties, or state -Collectible
In-Service Date:	Not Applicable

Description:

Franchise work in SoCalGas is driven by external agencies such as the cities, counties, or state. These agencies submit requests for SoCalGas to relocate pipe that would, in its current location, interfere with the construction or reconstruction of streets and other public works projects. The work in this category includes expenditures associated with relocating or altering SoCalGas facilities in response to these external requests, as specified under the provisions of SoCalGas's franchise agreements with city, county, or state agencies. This workpaper contains the collectible portion of this forecast.

Forecast In 2021 $(000)

Years	2022	2023	2024
Labor	438	438	438
Non-Labor	8,343	8,343	8,343
NSE	0	0	0
Total	**8,781**	**8,781**	**8,781**
FTE	3.3	3.3	3.3

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00262.0
Category:	J. Pipeline Relocations – Franchise
Category-Sub:	1. Pipeline Relocations – Franchise
Workpaper Group:	002620 - Pipeline Relocations – Franchise
Workpaper Detail:	002620.002 - Work in SoCalGas driven by external agencies such as the cities, counties, or state -Non-Collectible
In-Service Date:	Not Applicable

Description:

Franchise work in SoCalGas is driven by external agencies such as the cities, counties, or state. These agencies submit requests for SoCalGas to relocate pipe that would, in its current location, interfere with the construction or reconstruction of streets and other public works projects. The work in this category includes expenditures associated with relocating or altering SoCalGas facilities in response to these external requests, as specified under the provisions of SoCalGas's franchise agreements with city, county, or state agencies. This workpaper contains the non-collectible portion of this forecast.

Forecast In 2021 $(000)

Years	2022	2023	2024
Labor	574	574	574
Non-Labor	10,934	10,934	10,934
NSE	0	0	0
Total	**11,508**	**11,508**	**11,508**
FTE	4.4	4.4	4.4

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 002620

SCG-04-MAA-CAP-SUP-007
Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre
Supplemental Workpaper Calculations for Collectible Cost Related to Franchise
Pipeline Replacements - Franchise Workpaper

Assumptions:

* Direct Cash Credits were excluded from historical data, but are shown here to calculate the collectible portion of capital.

** The forecasted ratio of cash to total direct cost is the five-year (2017-2021) average ratio. This ratio is applied to the forecasted amount to calculate the collectible and non-collectible portions.

Amounts are shown in thousands of 2021 dollars and include vacation and sick.

		Adjusted Recorded History					2017-2021 Total	Forecast (5 Year Average)		
		2017	2018	2019	2020	2021		2022	2023	2024
Total Capital										
[A]	Labor	$ 968	$ 1,103	$ 849	$ 1,149	$ 990		$ 1,012	$ 1,012	$ 1,012
[B]	Non-Labor	$ 17,485	$ 15,148	$ 14,895	$ 31,796	$ 17,061		$ 19,277	$ 19,277	$ 19,277
[C]	**Total**	**$ 18,453**	**$ 16,251**	**$ 15,744**	**$ 32,945**	**$ 18,051**	**$ 101,444**	**$ 20,289**	**$ 20,289**	**$ 20,289**
[D]	FTEs	8.0	9.7	6.4	5.1	9.4		7.7	7.7	7.7
Collectible Ratio Calculations										
[E]	Hist. Direct Cash Credits*	$ (8,889)	$ (8,580)	$ (12,084)	$ (6,359)	$ (7,991)	$ (43,903)			
[F] (-[E]/[C])	Ratio Cash to Total Direct Cost**	48%	53%	77%	19%	44%	43%	43%	43%	43%
Collectible Portion of Forecast										
[G] ([A]x[F])	Labor							$ 438	$ 438	$ 438
[H] ([B]x[F])	Non-Labor							$ 8,343	$ 8,343	$ 8,343
([G]+[H])	**Total**							**$ 8,781**	**$ 8,781**	**$ 8,781**
[I] ([D]x[F])	FTEs							3.3	3.3	3.3
Non-Collectible Portion of Forecast										
[J] ([A]-[G])	Labor							$ 574	$ 574	$ 574
[K] ([B]-[H])	Non-Labor							$ 10,934	$ 10,934	$ 10,934
([J]+[K])	**Total**							**$ 11,508**	**$ 11,508**	**$ 11,508**
([D]-[I])	FTEs							4.4	4.4	4.4

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: K. Meter Protection
Workpaper: 002640

Summary for Category: K. Meter Protection

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	1,265	2,353	2,823	3,294
Non-Labor	5,780	5,897	7,077	8,256
NSE	0	0	0	0
Total	**7,045**	**8,250**	**9,900**	**11,550**
FTE	12.8	21.6	25.9	30.3

002640 Meter Protection

Labor	1,265	2,353	2,823	3,294
Non-Labor	5,780	5,897	7,077	8,256
NSE	0	0	0	0
Total	**7,045**	**8,250**	**9,900**	**11,550**
FTE	12.8	21.6	25.9	30.3

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002640 - Meter Protection

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00264.0
Category: K. Meter Protection
Category-Sub: 1. Meter Protection
Workpaper Group: 002640 - Meter Protection

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	Zero-Based	438	447	1,067	1,265	1,265	2,353	2,823	3,294
Non-Labor	Zero-Based	314	251	923	3,967	5,780	5,897	7,077	8,256
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**752**	**697**	**1,990**	**5,233**	**7,046**	**8,250**	**9,900**	**11,550**
FTE	Zero-Based	4.0	3.9	9.3	11.2	12.8	21.6	25.9	30.3

Business Purpose:

Budget Code: 264

Meter guards are installed to protect the meter set assemblies at existing customer locations from vehicular traffic in accordance with CPUC General Order 112-F and 49 CFR 192.353(a). The meter guards are installed at targeted sites, where meter set assembly location and/or design warrants consideration of traffic patterns and exposure to other potential sources of impact damage.

Physical Description:

Meter guards consist of pipeline compatible materials with sufficient structural integrity to guard against damage to meter set assemblies. Posts installed into the ground with welded cross braces, usually made of steel pipe, are fabricated and installed by SoCalGas field crews and contractors.

Project Justification:

Meter guard installations support public safety and system integrity in a growing service territory. They serve as a first line of defense against vehicular impact in a service territory, where in many areas parking is a premium and space for meter set assembly installations is limited.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00264.0
Category:	K. Meter Protection
Category-Sub:	1. Meter Protection
Workpaper Group:	002640 - Meter Protection

Forecast Methodology:

Labor - Zero-Based

Given the significant increase in meter guard orders and the anticipated increase in the next few years due to the continued increase in MSA inspections, SoCalGas forecasted the labor work in this category using a zero-based approach. SoCalGas will continue to address the installation of the incremental meter guards. SoCalGas forecasts installing meter guards at approximately 10,000, 12,000, and 14,000 MSA locations in 2022, 2023, and 2024, respectively.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-008 for calculation details.

Non-Labor - Zero-Based

Given the significant increase in meter guard orders and the anticipated increase in the next few years due to the continued increase in MSA inspections, SoCalGas forecasted the non-labor work in this category using a zero-based approach. SoCalGas will continue to address the installation of the incremental meter guards. SoCalGas forecasts installing meter guards at approximately 10,000, 12,000, and 14,000 MSA locations in 2022, 2023, and 2024, respectively.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-008 for calculation details.

NSE - Zero-Based

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00264.0
Category: K. Meter Protection
Category-Sub: 1. Meter Protection
Workpaper Group: 002640 - Meter Protection

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	Zero-Based	2,353	2,823	3,294	0	0	0	2,353	2,823	3,294
Non-Labor	Zero-Based	5,897	7,077	8,256	0	0	0	5,897	7,077	8,256
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**8,250**	**9,900**	**11,550**	**0**	**0**	**0**	**8,250**	**9,900**	**11,550**
FTE	Zero-Based	21.6	25.9	30.3	0.0	0.0	0.0	21.6	25.9	30.3

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00264.0
Category: K. Meter Protection
Category-Sub: 1. Meter Protection
Workpaper Group: 002640 - Meter Protection

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	279	301	743	935	1,076
Non-Labor	234	198	764	3,449	5,780
NSE	0	0	0	0	0
Total	**514**	**499**	**1,507**	**4,384**	**6,856**
FTE	3.4	3.3	7.8	9.4	10.8
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	279	301	743	935	1,076
Non-Labor	234	198	764	3,449	5,780
NSE	0	0	0	0	0
Total	**514**	**499**	**1,507**	**4,384**	**6,856**
FTE	3.4	3.3	7.8	9.4	10.8
Vacation & Sick (Nominal $)					
Labor	47	52	141	165	190
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**47**	**52**	**141**	**165**	**190**
FTE	0.6	0.6	1.5	1.8	2.0
Escalation to 2021$					
Labor	111	94	184	165	0
Non-Labor	80	53	159	519	0
NSE	0	0	0	0	0
Total	**191**	**146**	**342**	**684**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	438	447	1,067	1,265	1,265
Non-Labor	314	251	923	3,967	5,780
NSE	0	0	0	0	0
Total	**752**	**697**	**1,990**	**5,233**	**7,046**
FTE	4.0	3.9	9.3	11.2	12.8

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00264.0
Category: K. Meter Protection
Category-Sub: 1. Meter Protection
Workpaper Group: 002640 - Meter Protection

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Year	Labor	NLbr	NSE	Total	FTE

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002640

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00264.0
Category:	K. Meter Protection
Category-Sub:	1. Meter Protection
Workpaper Group:	002640 - Meter Protection
Workpaper Detail:	002640.001 - [RAMP] Meter guards installed to protect the meter set assemblies at existing customer locations
In-Service Date:	Not Applicable

Description:

Meter guards are installed to protect the meter set assemblies at existing customer locations from vehicular traffic in accordance with CPUC General Order 112-F and 49 CFR 192.353(a). The meter guards are installed at targeted sites, where meter set assembly location and/or design warrants consideration of traffic patterns and exposure to other potential sources of impact damage.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	2,353	2,823	3,294
Non-Labor	5,897	7,077	8,256
NSE	0	0	0
Total	**8,250**	**9,900**	**11,550**
FTE	21.6	25.9	30.3

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00264.0
Category: K. Meter Protection
Category-Sub: 1. Meter Protection
Workpaper Group: 002640 - Meter Protection
Workpaper Detail: 002640.001 - [RAMP] Meter guards installed to protect the meter set assemblies at existing customer locations

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-3 Incident Related to the Medium Pressure System (Excluding Dig-in)

RAMP Line Item ID: C18

RAMP Line Item Name: Residential Meter Protection Program

Tranche(s): Tranche1: Meter and Beyond the Meter

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	7,045	8,250	9,900	11,550	29,700	23,745	31,405

Cost Estimate Changes from RAMP:
None

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of repairs - meter protection sites mitigated	8,844.00	10,000.00	12,000.00	14,000.00	36,000.00	47,491.00	62,807.00

Work Unit Changes from RAMP:
None

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	30.000	91.000

RSE Changes from RAMP:
General changes to risks scores or RSE values are primarily due to changes in the MAVF and RSE methodology , as discussed in the RAMP to GRC Integration testimony of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Chapter 2).

Supplemental Workpapers for Workpaper Group 002640

SCG-04-MAA-CAP-SUP-008
Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre
Supplemental Workpaper for Zero Based Calculations Related to Meter Guard Installations
Meter Protection Workpaper

Assumptions: Amounts are shown in thousands of 2021 dollars and include vacation and sick.

Table 1: Historical Labor and Non Labor Cost for Meter Protection:

	Labor **[A]**	Non-Labor **[B]**	FTE **[C]**	Total **[D]** ([A]+[B])
2017	$ 437,861	$ 314,101	4	$ 751,962
2018	$ 446,859	$ 250,577	3.9	$ 697,436
2019	$ 1,067,166	$ 923,207	9.3	$ 1,990,373
2020	$ 1,265,270	$ 3,967,416	11.2	$ 5,232,686
2021	$ 1,265,335	$ 5,780,437	12.8	$ 7,045,772

Labor % ([A]/[D])	Non-Labor % ([B]/[D])	FTE/Labor ([A]/[C])
58%	42%	$ 109,465
64%	36%	$ 114,579
54%	46%	$ 114,749
24%	76%	$ 112,971
18%	82%	$ 98,854

Average Cost per Site Mitigation **[E]**
$ 825

Average Labor % **[F]** (Sum of [A] / Sum of [D])	2021 Average Non-Labor % **[G]** (Sum of [B] / Sum of [D])	2021 Average FTE/Labor **[H]** (Sum of [C] / Sum of [A])
29%	71%	0.0000092

Table 2: Forecasted Meter Protection Cost:

	Mitigation Site Qty **[I]**	Labor **[J]** ([I]x[E]X[F])	Non-Labor **[K]** ([I]x[E]X[G])	FTE **[L]** ([J]X[H])	**Total [M]** [J]+[K]
2022	10,000	$ 2,352,717.39	$ 5,897,282.61	22	$ 8,250,000.00
2023	12,000	$ 2,823,261	$ 7,076,739	25.9	$ 9,900,000
2024	14,000	$ 3,293,804	$ 8,256,196	30.3	$ 11,550,000

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: L. Other Distribution Capital Projects
Workpaper: 002700

Summary for Category: L. Other Distribution Capital Projects

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	1,372	815	1,040	616
Non-Labor	9,047	12,552	25,273	8,429
NSE	0	0	0	0
Total	**10,419**	**13,367**	**26,313**	**9,045**
FTE	13.3	6.7	8.5	5.1

002700 Other Distribution Capital Projects

Labor	1,372	815	1,040	616
Non-Labor	9,047	12,552	25,273	8,429
NSE	0	0	0	0
Total	**10,419**	**13,367**	**26,313**	**9,045**
FTE	13.3	6.7	8.5	5.1

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002700 - Other Distribution Capital Projects

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00270.0
Category: L. Other Distribution Capital Projects
Category-Sub: 1. Other Distribution Capital Projects
Workpaper Group: 002700 - Other Distribution Capital Projects

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	5-YR Average	562	600	835	1,750	1,372	815	1,040	616
Non-Labor	5-YR Average	6,904	7,722	13,588	18,652	9,047	12,552	25,273	8,429
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**7,466**	**8,322**	**14,424**	**20,403**	**10,420**	**13,367**	**26,313**	**9,045**
FTE	5-YR Average	4.0	4.8	6.6	13.5	13.3	6.7	8.5	5.1

Business Purpose:

Budget Codes: 270, 274, 275, 290, 901, 906

This work category covers the expenditures for capital relocations of SoCalGas facilities not specifically included in any of the other capital categories of work. It covers collectible and non-collectible construction projects not covered under the franchise agreements, and not related to freeway work, and not covered in other capital budget categories.

Physical Description:

These facility relocation projects include all sizes of distribution main and associated service lines, meter set assemblies and related gas facilities. Examples of these projects include, but are not limited to:

• Replacement or alteration and abandonment of appurtenance to mains such as valves and vaults, drips, traps, roads, and fences due to condition in order to maintain the reliable operation of the distribution system.
• Raising, lowering or relocating main due to interference with external party construction.
• Changes to Company facilities at customer request. This could include items such as alteration or relocation of main or meter set assemblies; installation of customer exclusively used mains, or moving or relocating regulator stations.
• Changes to SoCalGas facilities in accordance with right-of-way agreements, encroachment permits, and railroad crossing lease agreements.

Project Justification:

The activities contained in Other Distribution Projects are necessary to provide a safe and reliable gas distribution system. The majority of the workload is driven by external parties requesting SoCalGas to move its facilities to accommodate others' construction. Advance payment is collected for projects that qualify as collectible. A ruling of collectability is issued for each project to qualify as collectible or non-collectible.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00270.0
Category:	L. Other Distribution Capital Projects
Category-Sub:	1. Other Distribution Capital Projects
Workpaper Group:	002700 - Other Distribution Capital Projects

Forecast Methodology:

Labor - 5-YR Average

The level of spending in this work category is highly driven by the volume of external construction activity. Given the generally unpredictable nature of this activity, SoCalGas used the five-year (2017 through 2021) average to forecast labor expenditures. This forecast methodology best represents the cyclical volume of work completed on an annual basis and captures the various challenges encountered during construction, which tend to require a higher level of coordination with external parties. Projects in this work category are heavily dependent on the schedules and permitting constraints of third parties. The parties that generate this type of work for SoCalGas range in size from small clients to large corporations, which trigger a varying degree of scope of work for each construction job.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-009 for calculation details.

Non-Labor - 5-YR Average

The level of spending in this work category is highly driven by the volume of external construction activity. Given the generally unpredictable nature of this activity, SoCalGas used the five-year (2017 through 2021) average to forecast non-labor expenditures. This forecast methodology best represents the cyclical volume of work completed on an annual basis and captures the various challenges encountered during construction, which tend to require a higher level of coordination with external parties. Projects in this work category are heavily dependent on the schedules and permitting constraints of third parties. The parties that generate this type of work for SoCalGas range in size from small clients to large corporations, which trigger a varying degree of scope of work for each construction job.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-009 for calculation details.

NSE - 5-YR Average

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00270.0
Category: L. Other Distribution Capital Projects
Category-Sub: 1. Other Distribution Capital Projects
Workpaper Group: 002700 - Other Distribution Capital Projects

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	5-YR Average	1,024	1,024	1,024	-209	16	-408	815	1,040	616
Non-Labor	5-YR Average	11,183	11,183	11,183	1,369	14,090	-2,754	12,552	25,273	8,429
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**12,207**	**12,207**	**12,207**	**1,160**	**14,106**	**-3,162**	**13,367**	**26,313**	**9,045**
FTE	5-YR Average	8.4	8.4	8.4	-1.7	0.1	-3.3	6.7	8.5	5.1

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022	-209	1,369	0	1,160	-1.7
Explanation:	California High-Speed Railroad (CHSR) Project - Relocation of gas distribution pipelines to support the California High-Speed Railroad Project. SoCalGas anticipates relocating distribution mains in 2022 and 2023, and less activity in 2024. SoCalGas is requesting incremental funding of $1,160,129 and $14,105,790 in 2022 and 2023, respectively, but reduce funding by $3,162,634 in 2024.				
2022 Total	-209	1,369	0	1,160	-1.7
2023	16	14,090	0	14,106	0.1
Explanation:	California High-Speed Railroad (CHSR) Project - Relocation of gas distribution pipelines to support the California High-Speed Railroad Project. SoCalGas anticipates relocating distribution mains in 2022 and 2023, and less activity in 2024. SoCalGas is requesting incremental funding of $1,160,129 and $14,105,790 in 2022 and 2023, respectively, but reduce funding by $3,162,634 in 2024.				
2023 Total	16	14,090	0	14,106	0.1
2024	-408	-2,754	0	-3,162	-3.3
Explanation:	California High-Speed Railroad (CHSR) Project - Relocation of gas distribution pipelines to support the California High-Speed Railroad Project. SoCalGas anticipates relocating distribution mains in 2022 and 2023, and less activity in 2024. SoCalGas is requesting incremental funding of $1,160,129 and $14,105,790 in 2022 and 2023, respectively, but reduce funding by $3,162,634 in 2024.				
2024 Total	-408	-2,754	0	-3,162	-3.3

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00270.0
Category: L. Other Distribution Capital Projects
Category-Sub: 1. Other Distribution Capital Projects
Workpaper Group: 002700 - Other Distribution Capital Projects

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	359	405	581	1,518	600
Non-Labor	5,151	6,102	11,252	19,397	5,712
NSE	0	0	0	0	0
Total	**5,510**	**6,507**	**11,834**	**20,914**	**6,312**
FTE	3.4	4.1	5.5	13.5	5.9
Adjustments (Nominal $) **					
Labor	0	0	0	-224	567
Non-Labor	0	0	-1	-3,182	3,335
NSE	0	0	0	0	0
Total	**0**	**0**	**-1**	**-3,406**	**3,901**
FTE	0.0	0.0	0.0	-2.2	5.2
Recorded-Adjusted (Nominal $)					
Labor	359	405	581	1,294	1,166
Non-Labor	5,151	6,102	11,251	16,215	9,047
NSE	0	0	0	0	0
Total	**5,510**	**6,507**	**11,833**	**17,508**	**10,214**
FTE	3.4	4.1	5.5	11.3	11.1
Vacation & Sick (Nominal $)					
Labor	61	70	110	228	206
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**61**	**70**	**110**	**228**	**206**
FTE	0.6	0.7	1.1	2.2	2.2
Escalation to 2021$					
Labor	143	126	144	229	0
Non-Labor	1,752	1,619	2,337	2,438	0
NSE	0	0	0	0	0
Total	**1,895**	**1,745**	**2,481**	**2,667**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	562	600	835	1,750	1,372
Non-Labor	6,904	7,722	13,588	18,652	9,047
NSE	0	0	0	0	0
Total	**7,466**	**8,322**	**14,424**	**20,403**	**10,420**
FTE	4.0	4.8	6.6	13.5	13.3

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00270.0
Category: L. Other Distribution Capital Projects
Category-Sub: 1. Other Distribution Capital Projects
Workpaper Group: 002700 - Other Distribution Capital Projects

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	-224	567
Non-Labor	0	0	-1	-3,182	3,335
NSE	0	0	0	0	0
Total	**0**	**0**	**-1**	**-3,406**	**3,901**
FTE	0.0	0.0	0.0	-2.2	5.2

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017 Total	0	0	0	0	0.0
2018 Total	0	0	0	0	0.0
2019	0	-0.956	0	-0.956	0.0
Explanation:	Removed historical cost of Excess Flow Valves Installation; project completed with no additional activity anticipated. $1 (2019), $3,455 (2020), $3,954 (2021)				
2019 Total	0	-0.956	0	-0.956	0.0
2020	-224	-3,231	0	-3,455	-2.2
Explanation:	Removed historical cost of Excess Flow Valves Installation; project completed with no additional activity anticipated. $1 (2019), $3,455 (2020), $3,954 (2021)				
2020	0	49	0	49	0.0
Explanation:	To add material costs (cost elements 6215567 and 6215568) that were initially misclassified as indirect costs.				
2020 Total	-224	-3,182	0	-3,406	-2.2
2021	2,005	11,877	0	13,883	17.3
Explanation:	Historical cost of budget code 275 forecasted within workpaper 002700				
2021	-76	-3,878	0	-3,954	-0.7
Explanation:	Removed historical cost of Excess Flow Valves Installation; project completed with no additional activity anticipated. $1 (2019), $3,455 (2020), $3,954 (2021)				
2021	-1,363	-4,680	0	-6,043	-11.4
Explanation:	Transferred historical recorded cost of Gas Operations PMO/Engineering/Field and Gas Operations Control Center Technology out of workpaper 002700 and into workpaper 002500 where costs are forecasted.				
2021	0	15	0	15	0.0
Explanation:	To add material costs (cost elements 6215567 and 6215568) that were initially misclassified as indirect costs.				
2021 Total	567	3,335	0	3,901	5.2

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002700

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00270.0
Category: L. Other Distribution Capital Projects
Category-Sub: 1. Other Distribution Capital Projects
Workpaper Group: 002700 - Other Distribution Capital Projects
Workpaper Detail: 002700.001 - [RAMP] Valve Installation & Replacement Capital Project

In-Service Date: Not Applicable

Description:

Each critical valve, the use of which may be necessary for the safe operation of a distribution system, must be inspected, serviced, lubricated and/or flushed (when required) and partially operated at intervals not exceeding 15 months, but at least once each calendar year. Each operator must take prompt remedial action to correct any “critical” valve found inoperable unless the operator designates an alternate valve. This work category covers the expenditures for the capital installation and replacement of these valves.

Forecast In 2021 $(000)

Years	2022	2023	2024
Labor	128	128	128
Non-Labor	1,412	1,412	1,412
NSE	0	0	0
Total	**1,540**	**1,540**	**1,540**
FTE	1.1	1.1	1.1

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00270.0
Category:	L. Other Distribution Capital Projects
Category-Sub:	1. Other Distribution Capital Projects
Workpaper Group:	002700 - Other Distribution Capital Projects
Workpaper Detail:	002700.001 - [RAMP] Valve Installation & Replacement Capital Project

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-3 Incident Related to the Medium Pressure System (Excluding Dig-in)

RAMP Line Item ID: C13

RAMP Line Item Name: Valve Installs and Replacements

Tranche(s): Tranche1: High Pressure Supply Lines; Tranche2: Medium Pressure Mains - Plastic & Steel

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	347	893	893	893	2,679	2,439	2,979
Tranche 2 Cost Estimate	682	647	647	647	1,941	2,439	2,979

Cost Estimate Changes from RAMP:
The historical cost per valve installation or replacement is greater than the estimated unit cost in the RAMP report.

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of installations or replacements	9.00	7.00	7.00	7.00	21.00	51.00	60.00
Tranche 2 # of installations or replacements	13.00	9.00	9.00	9.00	27.00	51.00	60.00

Work Unit Changes from RAMP:
None

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	2.600	3.400
Tranche 2	2.300	3.400

RSE Changes from RAMP:

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00270.0
Category:	L. Other Distribution Capital Projects
Category-Sub:	1. Other Distribution Capital Projects
Workpaper Group:	002700 - Other Distribution Capital Projects
Workpaper Detail:	002700.001 - [RAMP] Valve Installation & Replacement Capital Project

General changes to risks scores or RSE values are primarily due to changes in the MAVF and RSE methodology , as discussed in the RAMP to GRC Integration testimony of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Chapter 2). In addition, SoCalGas tranched this RAMP mitigation by High Pressure Supply Lines and Medium Pressure Mains - Plastic & Steel based on the operating pressure of the valves.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00270.0
Category:	L. Other Distribution Capital Projects
Category-Sub:	1. Other Distribution Capital Projects
Workpaper Group:	002700 - Other Distribution Capital Projects
Workpaper Detail:	002700.002 - Expenditures for capital relocations of facilities not included in other capital work -Collectible
In-Service Date:	Not Applicable

Description:

This work category covers the expenditures for capital relocations of SoCalGas facilities not specifically included in any of the other capital categories of work. This workpaper contains the collectible portion of this forecast.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	444	669	245
Non-Labor	5,762	21,221	4,377
NSE	0	0	0
Total	**6,206**	**21,890**	**4,622**
FTE	3.7	5.5	2.0

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00270.0
Category:	L. Other Distribution Capital Projects
Category-Sub:	1. Other Distribution Capital Projects
Workpaper Group:	002700 - Other Distribution Capital Projects
Workpaper Detail:	002700.003 - Expenditures for capital relocations of facilities not included in other capital work -Non-Collectib
In-Service Date:	Not Applicable

Description:

This work category covers the expenditures for capital relocations of SoCalGas facilities not specifically included in any of the other capital categories of work. This workpaper contains the non-collectible portion of this forecast.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	243	243	243
Non-Labor	5,378	2,640	2,640
NSE	0	0	0
Total	**5,621**	**2,883**	**2,883**
FTE	1.9	1.9	2.0

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 002700

SCG-04-MAA-CAP-SUP-009
Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre
Supplemental Workpaper Calculations for Collectible Cost Related to Other Distribution Capital Projects
Other Distribution Capital Projects Workpaper

Assumptions:

* Direct Cash Credits were excluded from historical data, but are shown here to calculate the collectible portion of capital.

** The forecasted ratio of cash to total direct cost is the five-year (2017-2021) average ratio. This ratio is applied to the forecasted amount to calculate the collectible and non-collectible portions.

Amounts are shown in thousands of 2021 dollars and include vacation and sick.

		Adjusted Recorded History					2017-2021 Total	Forecast (5 Year Average)		
		2017	2018	2019	2020	2021		2022	2023	2024
Total Capital										
[A]	Labor	$ 562	$ 600	$ 835	$ 1,750	$ 1,372		$ 1,024	$ 1,024	$ 1,024
[B]	Non-Labor	$ 6,904	$ 7,722	$ 13,588	$ 18,652	$ 9,047		$ 11,183	$ 11,183	$ 11,183
[C]	**Total**	**$ 7,466**	**$ 8,322**	**$ 14,423**	**$ 20,402**	**$ 10,419**	**$ 61,032**	**$ 12,206**	**$ 12,206**	**$ 12,206**
[D]	FTEs	4.0	4.8	6.6	13.5	13.3		8.4	8.4	8.4
Collectible Ratio Calculations										
[E]	Historical Direct Cash Credits*	$ (4,408)	$ (4,370)	$ (12,423)	$ (14,857)	$ (2,863)	$ (38,921)			
[F] (-[E]/[C])	Ratio Cash to Total Direct Cost**	59%	53%	86%	73%	27%	64%	64%	64%	64%
Collectible Portion of Forecast										
[G] ([A]x[F])	Labor							$ 653	$ 653	$ 653
[H] ([B]x[F])	Non-Labor							$ 7,131	$ 7,131	$ 7,131
([G]+[H])	**Total**							**$ 7,784**	**$ 7,784**	**$ 7,784**
[I] ([D]x[F])	FTEs							5.4	5.4	5.4
Non-Collectible Portion of Forecast										
[J] ([A]-[G])	Labor							$ 371	$ 371	$ 371
[K] ([B]-[H])	Non-Labor							$ 4,052	$ 4,052	$ 4,052
([J]+[K])	**Total**							**$ 4,422**	**$ 4,422**	**$ 4,422**
([D]-[I])	FTEs							3.1	3.1	3.1

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: M. Measurement and Regulation Devices
Workpaper: VARIOUS

Summary for Category: M. Measurement and Regulation Devices

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	1,548	1,664	1,800	1,826
Non-Labor	25,931	40,560	41,091	44,600
NSE	0	0	0	0
Total	**27,479**	**42,224**	**42,891**	**46,426**
FTE	16.0	17.0	18.4	18.7
001630 Meters				
Labor	1,316	1,372	1,505	1,507
Non-Labor	19,389	32,131	32,270	34,677
NSE	0	0	0	0
Total	**20,705**	**33,503**	**33,775**	**36,184**
FTE	14.1	14.7	16.1	16.2
001640 Regulators				
Labor	48	43	46	46
Non-Labor	5,786	6,880	7,268	8,172
NSE	0	0	0	0
Total	**5,834**	**6,923**	**7,314**	**8,218**
FTE	0.1	0.1	0.1	0.1
001810 Electronic Pressure Monitors (EPM)				
Labor	49	159	159	159
Non-Labor	223	519	519	519
NSE	0	0	0	0
Total	**272**	**678**	**678**	**678**
FTE	0.5	1.3	1.3	1.3
002800 Gas Energy Measurement Systems (GEMS)				
Labor	135	90	90	114
Non-Labor	533	1,030	1,034	1,232
NSE	0	0	0	0
Total	**668**	**1,120**	**1,124**	**1,346**
FTE	1.3	0.9	0.9	1.1

Note: Totals may include rounding differences.

Beginning of Workpaper Group
001630 - Meters

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00163.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 001630 - Meters

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	Zero-Based	961	1,436	1,607	1,643	1,316	1,372	1,505	1,507
Non-Labor	Zero-Based	17,868	22,091	29,979	22,627	19,389	32,131	32,270	34,677
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**18,829**	**23,527**	**31,587**	**24,269**	**20,705**	**33,503**	**33,775**	**36,184**
FTE	Zero-Based	8.9	13.4	14.9	15.7	14.1	14.7	16.1	16.2

Business Purpose:

Budget Code: 163

Meters are purchased for two primary purposes: new business installations and meter replacements. These purchases and the subsequent installations enable accurate billing, reliability, and continued safe and reliable service to customers. The expenditures included here are for materials, warehouse handling, technical evaluations, and quality assurance. The associated installation expenses are covered in other applicable work categories (e.g., New Business Capital, Field O&M - Measurement and Regulation).

Physical Description:

A meter is the device that measures the customer's gas consumption. Meter types purchased within this budget code include diaphragm, rotary, turbine, and ultrasonic. Meters are grouped into two sizing groups, where the small and medium size meters are referred to as "size 1 through 3" meters, and the other being the large size meters referred to as "size 4 and above" meters. Size 1 through 3 meters are typical of residential and small commercial customers. The size 4 and above are typical of large commercial and industrial customers.

Project Justification:

Meters are purchased for:

• Installation at new customers' premises.
• Replacements due to meter accuracy, age, or operation.
• Replacements due to a pre-determined replacement cycle based on meter capacity, size, and performance.

It is necessary to install new and replacement meters to obtain accurate measurement of customers' gas consumption for billing purposes.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00163.0
Category:	M. Measurement and Regulation Devices
Category-Sub:	1. Measurement and Regulation Devices
Workpaper Group:	001630 - Meters

Forecast Methodology:

Labor - Zero-Based

A zero-based forecasting methodology was used to forecast the labor expenditures. This methodology was chosen for the same reasons that influence the non-labor forecast.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-010 for calculation details.

Non-Labor - Zero-Based

A zero-based forecasting methodology was used to forecast the non-labor expenditures. This methodology was chosen because it allowed the forecasting calculations to consider the projected number of new meter sets based on SoCalGas's 12-County area total housing completions from IHS/Global Insight's November 2021 Regional Forecast. This methodology also allowed for the calculation to consider the cost per meter from the manufacturers, factoring in the quantities purchased of each type of meter. Since the zero-based calculation incorporates these factors, it yields the most accurate forecast which is consistent with the projected customer growth while at the same time taking into account the historical proportional cost per meter type.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-010 for calculation details.

NSE - Zero-Based

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00163.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 001630 - Meters

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	Zero-Based	1,372	1,505	1,507	0	0	0	1,372	1,505	1,507
Non-Labor	Zero-Based	29,231	31,520	33,927	2,900	750	750	32,131	32,270	34,677
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**30,603**	**33,025**	**35,434**	**2,900**	**750**	**750**	**33,503**	**33,775**	**36,184**
FTE	Zero-Based	14.7	16.1	16.2	0.0	0.0	0.0	14.7	16.1	16.2

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022	0	2,900	0	2,900	0.0
Explanation:	Residential Ultrasonic Meters - Installation of Ultrasonic Meters to enhance customer safety, increase measurement accuracy, and reduce emission by deploying solid state metering technology. The ultrasonic meters include various concepts, including shut-off for excess flow, remote shut-off, pressure sensor, and reduction in emissions. Additional information regarding the program can be found in the Gas Engineering testimony of Maria Martinez (Ex. SCG-07). SoCalGas is requesting incremental funding of $2,900,000, $750,000, and $750,000 in 2022, 2023, and 2024, respectively.				
2022 Total	0	2,900	0	2,900	0.0
2023	0	750	0	750	0.0
Explanation:	Residential Ultrasonic Meters - Installation of Ultrasonic Meters to enhance customer safety, increase measurement accuracy, and reduce emission by deploying solid state metering technology. The ultrasonic meters include various concepts, including shut-off for excess flow, remote shut-off, pressure sensor, and reduction in emissions. Additional information regarding the program can be found in the Gas Engineering testimony of Maria Martinez (Ex. SCG-07). SoCalGas is requesting incremental funding of $2,900,000, $750,000, and $750,000 in 2022, 2023, and 2024, respectively.				
2023 Total	0	750	0	750	0.0
2024	0	750	0	750	0.0
Explanation:	Residential Ultrasonic Meters - Installation of Ultrasonic Meters to enhance customer safety, increase measurement accuracy, and reduce emission by deploying solid state metering technology. The ultrasonic meters include various concepts, including shut-off for excess flow, remote shut-off, pressure sensor, and reduction in emissions. Additional information regarding the program can be found in the Gas Engineering testimony of Maria Martinez (Ex. SCG-07). SoCalGas is requesting incremental funding of $2,900,000, $750,000, and $750,000 in 2022, 2023, and 2024, respectively.				
2024 Total	0	750	0	750	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00163.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 001630 - Meters

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	613	968	1,119	1,214	1,118
Non-Labor	13,333	17,459	24,823	19,669	19,389
NSE	0	0	0	0	0
Total	**13,946**	**18,427**	**25,942**	**20,883**	**20,508**
FTE	7.6	11.4	12.5	13.1	11.9
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	613	968	1,119	1,214	1,118
Non-Labor	13,333	17,459	24,823	19,669	19,389
NSE	0	0	0	0	0
Total	**13,946**	**18,427**	**25,942**	**20,883**	**20,508**
FTE	7.6	11.4	12.5	13.1	11.9
Vacation & Sick (Nominal $)					
Labor	104	167	212	214	197
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**104**	**167**	**212**	**214**	**197**
FTE	1.3	2.0	2.4	2.6	2.2
Escalation to 2021$					
Labor	244	301	276	215	0
Non-Labor	4,535	4,633	5,156	2,957	0
NSE	0	0	0	0	0
Total	**4,779**	**4,934**	**5,433**	**3,172**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	961	1,436	1,607	1,643	1,316
Non-Labor	17,868	22,091	29,979	22,627	19,389
NSE	0	0	0	0	0
Total	**18,829**	**23,527**	**31,587**	**24,269**	**20,705**
FTE	8.9	13.4	14.9	15.7	14.1

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00163.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 001630 - Meters

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Year	Labor	NLbr	NSE	Total	FTE

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 001630

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00163.0
Category:	M. Measurement and Regulation Devices
Category-Sub:	1. Measurement and Regulation Devices
Workpaper Group:	001630 - Meters
Workpaper Detail:	001630.001 - Meter purchases for two primary purposes: new businss installations and meter replacements
In-Service Date:	Not Applicable

Description:

Meters are purchased for two primary purposes: new business installations and meter replacements. These purchases and subsequent installations enable accurate billing, reliability, and continued safe and reliable service to customers. The expenditures included here are for materials, warehouse handling, technical evaluations, and quality assurance. The associated installation expenses are covered in other applicable work categories (e.g., New Business, Field O&M - Measurement and Regulation).

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	1,372	1,505	1,507
Non-Labor	29,231	31,520	33,927
NSE	0	0	0
Total	**30,603**	**33,025**	**35,434**
FTE	14.7	16.1	16.2

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00163.0
Category:	M. Measurement and Regulation Devices
Category-Sub:	1. Measurement and Regulation Devices
Workpaper Group:	001630 - Meters
Workpaper Detail:	001630.002 - Ultrasonic Meter Replacement Project
In-Service Date:	12/31/2024

Description:

SoCalGas is seeking to deploy Ultrasonic Meters into our residential Customer Segment. This pilot seeks to enhance customer safety, enhance measurement accuracy, and reduce emission by deploying solid state metering technology. The pilot will require Network and IT enhancements in conjunction with meter technology to effectively test various concepts, including shut-off for excess flow, remote shut-off, pressure sensor, and reduction in emissions. Further, this pilot will provide insight for future replacement of our battery powered AMI Meter Transmission Units (MTU). Additional information regarding the program can be found in the Gas Engineering testimony of Maria Martinez (Ex. SCG-07).

Forecast In 2021 $(000)

Years	2022	2023	2024
Labor	0	0	0
Non-Labor	2,900	750	750
NSE	0	0	0
Total	**2,900**	**750**	**750**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 001630

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Assumptions: [A], [H]: Refer to Table MA-40 in my testimony for the new meter set forecast methodology.
[D], [E], [L], [M], [N]: Routine Meter Change-Outs (RMCs) and Planned Meter Change-Outs (PMCs).

Table 1: Historical Units and Dollars, 2021 Dollars with Vacation & Sick

	Historical New Business (NB) Meters			Historical Replacement Meters			Total
	[A]	[B]	[C] ([A]-[B])	[D]	[E]	[F] ([D]+[E])	[G] ([A]+[F])
	Total Historical NB Meter Sets	Historical Size 4+ NB Meters	Historical Size 1-3 NB Meters	Historical PMCs & Size 1-3 RMCs	Historical Size 4+ RMCs & Meter Resets	Total Historical Replacement Meters	Total Historical Meters
2017	39,915	3,610	36,305	63,154	15,094	78,248	118,163
2018	40,715	4,491	36,224	56,553	15,953	72,506	113,221
2019	40,151	4,408	35,743	37,501	17,620	55,121	95,272
2020	38,732	3,882	34,850	32,342	14,904	47,246	85,978
2021	39,651	3,856	35,795	42,449	8,444	50,893	90,544

Table 2: Forecasted Meters

	New Business (NB) Meter Forecast				Replacement Meter Forecast				Total
	[H]	[I] (% Growth in Each Year for [H])	[J] (1+[I])x (Previous Year [J])	[K] ([H]-[J])	[L]	[M]	[N]	[O] ([L]+[M]+[N])	[P] [H]+[O]
	Total NB Meter Set Forecast	NB Forecast Growth Factor	Size 4+ NB Forecast	Size 1-3 NB Forecast	Size 1-3 RMCs & PMCs Forecast	Size 4+ PMCs Forecast	Size 4+ RMCs Forecast	Total Replacement Meter Forecast	Total Meter Forecast
2021 (Table 1)	39,651	NA	3,856	35,795		42,449	8,444	50,893	90,544
2022	41,259	4%	4,012	37,247	41,613	7,038	4,499	53,150	94,409
2023	45,261	10%	4,402	40,859	46,505	7,334	4,444	58,283	103,544
2024	46,506	3%	4,523	41,983	41,706	10,806	4,695	57,207	103,713

Table 3: 2021 Historical Meter Costs (2021$ with Vacation & Sick)

	[Q]	[R]	[S]	[T] ([R]+[S])
	Historical FTEs	Historical Labor $	Historical Non-Labor $	Historical Total $
2021	14.1	1,315,873	19,389,454	20,705,327

Table 4: 2021 Unit Costs and FTEs/Meter Installation (2021$ with Vacation & Sick)

	[U] ([Q]/([G] for 2021))	[V] ([R]/([G] for 2021))	[W]	[X]
	2021 FTEs per Meter	2021 Labor per Meter	2021 Estimated Non-Labor Cost per Size 1-3 Meter with MTU	2021 Estimated Non-Labor Cost per Size 4 Meter with MTU
2021	0.000156	$ 14.53	$208.00	$825.00

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Meters Workpaper

Table 5: Forecasted FTEs and Dollars (Thousands of 2021$ with Vacation & Sick)

	[Y] ([P]x[U])	**[Z]** ([P]x[V]]/1000	**[AA]** ([K]+[L])x[W]/1000	**[BB]** ([J]+[M]+[N])x[X]	**[CC]** ([AA]+[BB])	**[DD]**	**[EE]** ([Z]+[CC]+[DD])
	FTEs	Labor Forecast ($000)	Non-Labor for Size 1-3 Meters ($000)	Non-Labor for Size 4+ Meters ($000)	Total Non-Labor Forecast ($000)	Incremental Cost Ultrasonic Meter Project ($000)	Total Forecast ($000)
2022	14.7	$ 1,372	$ 16,403	$ 12,828	$ 29,231	$ 2,900	**$ 33,503**
2023	16.1	$ 1,505	$ 18,172	$ 13,348	$ 31,520	$ 750	**$ 33,775**
2024	16.2	$ 1,507	$ 17,407	$ 16,520	$ 33,927	$ 750	**$ 36,184**

Beginning of Workpaper Group
001640 - Regulators

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00164.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 001640 - Regulators

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	Zero-Based	21	51	19	47	48	43	46	46
Non-Labor	Zero-Based	4,363	4,059	9,218	6,211	5,786	6,880	7,268	8,172
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**4,384**	**4,109**	**9,237**	**6,258**	**5,834**	**6,923**	**7,314**	**8,218**
FTE	Zero-Based	0.1	0.4	0.1	0.4	0.1	0.1	0.1	0.1

Business Purpose:

Budget Code: 164

Gas regulators are used by SoCalGas to reduce the pressure of gas entering the distribution system from high-pressure pipelines to provide the lower pressures used on the distribution pipeline network and further reduce pressure at the customer's meter set. As such, they are the principal protective devices to secure employee and public safety and to protect physical assets in alignment with CPUC/DOT regulations. They also support accurate billing for most customers, where delivery pressure is employed to compute corrected gas volumes delivered to customers. The expenditures included here are for the purchase of the regulators, warehouse handling, technical evaluations, and quality assurance. The associated installation expenses are covered in other applicable work categories (e.g., New Business, Field O&M - Measurement and Regulation).

Physical Description:

Gas regulators are purchased for two primary purposes, new business installations and replacements. When choosing a pressure regulator many factors are considered before selecting a model. Important considerations include: material choice, inlet operating pressure, outlet delivery pressure, flow capacity, temperature, and size constraints.

Project Justification:

While new installations are driven by new meter set activities, replacement needs are driven by customer or company identified problems, age, and obsolescence of equipment. Regulators are purchased for:

• Installation at new customers' premises.
• Replacements due to regulator age or operation.
• Replacements due to a pre-determined replacement cycle based on meter set assembly capacity, size, and performance.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00164.0
Category:	M. Measurement and Regulation Devices
Category-Sub:	1. Measurement and Regulation Devices
Workpaper Group:	001640 - Regulators

Forecast Methodology:

Labor - Zero-Based

A zero-based forecasting methodology was used to forecast the labor expenditures. This methodology was chosen for the same reasons that influence the non-labor forecast.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-011 for calculation details.

Non-Labor - Zero-Based

A zero-based forecasting methodology was used to forecast the non-labor expenditures. This methodology was chosen because it allowed the forecasting calculations to consider the number of regulators based on the projected number of meter sets. The determined five-year ratio represented the regulator factor used to forecast the number of regulators to be purchased. By multiplying the regulator to meter ratio from the historical period with the projected number of forecasted meter purchases, it yielded the projected number of regulators for each of the forecast years. The labor expenditure was then calculated by taking the projected number of regulators multiplied by the historical 2021 average labor cost per regulator. This methodology also allowed for the calculation to consider the cost per regulator from the manufacturers, factoring in the quantities purchased of each type of regulator. Since the zero-based calculation incorporates these factors, it yields the most accurate forecast.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-011 for calculation details.

NSE - Zero-Based

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00164.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 001640 - Regulators

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	Zero-Based	43	46	46	0	0	0	43	46	46
Non-Labor	Zero-Based	6,880	7,268	8,172	0	0	0	6,880	7,268	8,172
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**6,923**	**7,314**	**8,218**	**0**	**0**	**0**	**6,923**	**7,314**	**8,218**
FTE	Zero-Based	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00164.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 001640 - Regulators

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	13	34	13	35	40
Non-Labor	3,256	3,208	7,632	5,399	5,786
NSE	0	0	0	0	0
Total	**3,269**	**3,242**	**7,645**	**5,434**	**5,827**
FTE	0.1	0.3	0.1	0.3	-0.8
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.9
Recorded-Adjusted (Nominal $)					
Labor	13	34	13	35	40
Non-Labor	3,256	3,208	7,632	5,399	5,786
NSE	0	0	0	0	0
Total	**3,269**	**3,242**	**7,645**	**5,434**	**5,827**
FTE	0.1	0.3	0.1	0.3	0.1
Vacation & Sick (Nominal $)					
Labor	2	6	2	6	7
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**2**	**6**	**2**	**6**	**7**
FTE	0.0	0.1	0.0	0.1	0.0
Escalation to 2021$					
Labor	5	11	3	6	0
Non-Labor	1,107	851	1,585	812	0
NSE	0	0	0	0	0
Total	**1,113**	**862**	**1,589**	**818**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	21	51	19	47	48
Non-Labor	4,363	4,059	9,218	6,211	5,786
NSE	0	0	0	0	0
Total	**4,384**	**4,109**	**9,237**	**6,258**	**5,834**
FTE	0.1	0.4	0.1	0.4	0.1

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00164.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 001640 - Regulators

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.9

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017 Total	0	0	0	0	0.0
2018 Total	0	0	0	0	0.0
2019 Total	0	0	0	0	0.0
2020 Total	0	0	0	0	0.0
2021	0.001	0	0	0.001	0.9
Explanation:	Historical labor adjustment correction.				
2021 Total	0.001	0	0	0.001	0.9

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 001640

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00164.0
Category:	M. Measurement and Regulation Devices
Category-Sub:	1. Measurement and Regulation Devices
Workpaper Group:	001640 - Regulators
Workpaper Detail:	001640.001 - Gas regulators purchased for new business installations and replacements
In-Service Date:	Not Applicable

Description:

Gas regulators are used by SoCalGas to reduce the pressure of gas entering the distribution system from high pressure pipelines to provide the lower pressures used on the distribution pipeline system and further reduce pressure at the customer's meter set assemblies. They are the principal protective device at the meter set assembly that secures employee and public safety, and protects physical assets in alignment with CPUC/ DOT regulations. They also support accurate billing for most customers, where delivery pressure is employed to compute corrected gas volumes delivered to customers. The expenditures included here are for the purchase of the regulators, warehouse handling, technical evaluations, and quality assurance. The associated installation expenses are covered in other applicable work categories (e.g., New Business, Field O&M - Measurement and Regulation).

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	43	46	46
Non-Labor	6,880	7,268	8,172
NSE	0	0	0
Total	**6,923**	**7,314**	**8,218**
FTE	0.1	0.1	0.1

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 001640

SCG-04-MAA-CAP-SUP-011

Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre

Supplemental Workpaper for Zero Based Calculations Related to Regulators

Regulators Workpaper

Table 1: Historical Units:

	[A]	[B]	[C] ([B]/[A])
	Total Meters Purchased	Total Regulators Purchased	Regulator Factor
2017	118,163	47,681	40%
2018	113,221	27,065	24%
2019	95,272	154,953	163%
2020	85,978	59,820	70%
2021	90,544	90,661	100%

[D] (Sum of [B] / Sum of [A])
5-Year Average Regulator Factor
75.6%

Table 2: Forecasted Meters (Taken from Table 2, in supplemental workpaper SCG-04-MAA-CAP-SUP-007):

	New Business (NB) Meter Forecast			Replacement Meter Forecast				Total
	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
	Total NB Meter Set Forecast	Size 4+ NB Forecast	Size 1-3 NB Forecast	Size 1-3 RMCs & PMCs Forecast	Size 4+ PMCs Forecast	Size 4+ RMCs Forecast	Total Replacement Meter Forecast	Total Meter Forecast
2022	41,259	4,012	37,247	41,613	7,038	4,499	53,150	94,409
2023	45,261	4,402	40,859	46,505	7,334	4,444	58,283	103,544
2024	46,506	4,523	41,983	41,706	10,806	4,695	57,207	103,713

Table 3: Forecasted Regulators

	New Business (NB) Regulators Forecast			Replacement Regulator Forecast					Total
	[M] ([N]+[O])	[N] ([F]x[D])	[O] ([G]x[D])	[P] ([H]x[D])	[Q] ([I]x[D])	[R] ([J]x[D])	[S]	[T] ([P]+[Q]+[R]+[S])	[U] ([M]+[T])
	Total NB Regulators	Commercial & Industrial NB Regulators	Residential NB Regulators	Residential Replacement Regulators	Commercial & Industrial PMC Regulators	Commercial & Industrial RMC Regulators	Proactive Slam Shut Regulator Replacements	Total Replacement Regulators	Total Regulator Forecast
2022	31,174	3,032	28,142	31,441	5,318	3,399	10,000	50,158	81,332
2023	34,198	3,326	30,872	35,137	5,541	3,358	10,000	54,036	88,234
2024	35,138	3,417	31,721	31,511	8,165	3,547	10,000	53,223	88,361

Table 4: 2021 Historical Regulator Costs (2021$ with Vacation & Sick)

	[V]	[W]	[X]	[Y] ([W]+[X])
	Historical FTEs	Historical Labor $	Historical Non-Labor $	Historical Total $
2021	0.10	47,587	5,786,294	5,833,881

Table 5: 2021 Unit Costs and FTEs/Regulator Installation (2021$ with Vacation & Sick)

	[Z] ([V]/[B])	[AA] ([W]/[B])	[BB]	[CC]	[DD]
	2021 FTEs per Regulator	2021 Labor per Regulator	2021 Estimated Non-Labor Cost per Residential Regulator	2021 Estimated Non-Labor Cost per Commercial & Industrial Regulator	2021 Estimated Non-Labor Cost per Slam Shut Regulator
2021	0.000001103	0.5249	$34.88	$344.82	$75.00

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Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre

Supplemental Workpaper for Zero Based Calculations Related to Regulators

Regulators Workpaper

Table 6: Forecasted FTEs and Dollars (Thousands of 2021$ with Vacation & Sick)

	[EE] ([U]x[Z])	**[FF]** ([U]x[AA]]/1000	**[GG]** ([O]+[P])x[BB]/1000	**[HH]** ([N]+[Q]+[R])x[CC]/1000	**[II]** [S]x[DD]/1000	**[JJ]** ([GG]+[HH]+[II])	**[KK]** ([FF]+[JJ])
	FTEs	Labor Forecast ($000)	Non-Labor for Residential Regulators ($000)	Non-Labor for Commercial & Industrial Regulators ($000)	Non-Labor for Curb Regulators ($000)	Total Non-Labor Forecast ($000)	Total Forecast ($000)
2022	0.1	$ 43	$ 2,078	$ 4,051	$ 750	$ 6,880	**$ 6,922**
2023	0.1	$ 46	$ 2,302	$ 4,215	$ 750	$ 7,268	**$ 7,314**
2024	0.1	$ 46	$ 2,206	$ 5,217	$ 750	$ 8,172	**$ 8,219**

Beginning of Workpaper Group
001810 - Electronic Pressure Monitors (EPM)

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00181.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 001810 - Electronic Pressure Monitors (EPM)

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	5-YR Average	216	177	90	263	49	159	159	159
Non-Labor	5-YR Average	816	386	790	381	223	519	519	519
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**1,032**	**563**	**880**	**644**	**272**	**678**	**678**	**678**
FTE	5-YR Average	1.8	1.5	0.7	1.9	0.5	1.3	1.3	1.3

Business Purpose:

Budget Codes: 181, 281

Electronic Pressure Monitors (EPM) are devices used by SoCalGas to remotely monitor distribution pipeline pressures in support of gas system capacity analysis; and for alarming of over or under-pressure events. Costs discussed here are for the materials purchased, labor cost for warehouse handling, equipment configuration, and associated cost for the field installation and replacement work.

Physical Description:

An Electronic Pressure Monitors (EPM) is a unit made for the purpose of measuring and recording gas pressure within a gas pipe via a connected gas transducer sensor. The unit has a box shaped shell cover that protects the internal circuitry from environmental hazards. After initial installation, this device is placed on an annual maintenance plan which includes inspection of the battery pack serving as the source of power for most EPMs. These devices operate using the Advance Metering Infrastructure (AMI) network. The line of communication is what allows the EPM device to send pressure data logs to a calling computer, at which point, the pressure data can be electronically reviewed, analyzed, stored, and archived. These EPM units are commonly affixed to wall-mount and pole-mount configurations.

Project Justification:

The primary purpose of the electronic pressure monitor network is system safety as well as compliance with 49 CFR 192.741 (Pressure limiting and regulating stations: Telemetering or recording gauges).

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00181.0
Category:	M. Measurement and Regulation Devices
Category-Sub:	1. Measurement and Regulation Devices
Workpaper Group:	001810 - Electronic Pressure Monitors (EPM)

Forecast Methodology:

Labor - 5-YR Average

The forecast method developed for EPMs expenditures is a five-year (2017 to 2021) average to mitigate potential risks associated with pipeline integrity, system reliability, and public safety. This method is most appropriate because the historical costs and the associated EPM units installed and replaced have been relatively fixed. Furthermore, the five-year average of the units installed and replaced represents the anticipated activities during the forecasted years. The number of new electronic pressure monitor (EPM) installations includes the installation and replacement of approximately 200 units. SoCalGas will continue to install new electronic pressure monitors in zones where system pressure is under-monitored.

Non-Labor - 5-YR Average

The forecast method developed for EPMs expenditures is a five-year (2017 to 2021) average to mitigate potential risks associated with pipeline integrity, system reliability, and public safety. This method is most appropriate because the historical costs and the associated EPM units installed and replaced have been relatively fixed. Furthermore, the five-year average of the units installed and replaced represents the anticipated activities during the forecasted years. The number of new electronic pressure monitor (EPM) installations includes the installation and replacement of approximately 200 units. SoCalGas will continue to install new electronic pressure monitors in zones where system pressure is under-monitored.

NSE - 5-YR Average

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00181.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 001810 - Electronic Pressure Monitors (EPM)

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	5-YR Average	159	159	159	0	0	0	159	159	159
Non-Labor	5-YR Average	519	519	519	0	0	0	519	519	519
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**678**	**678**	**678**	**0**	**0**	**0**	**678**	**678**	**678**
FTE	5-YR Average	1.3	1.3	1.3	0.0	0.0	0.0	1.3	1.3	1.3

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00181.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 001810 - Electronic Pressure Monitors (EPM)

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	138	120	62	194	42
Non-Labor	609	305	654	331	223
NSE	0	0	0	0	0
Total	**747**	**424**	**717**	**526**	**264**
FTE	1.5	1.3	0.6	1.6	0.4
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	138	120	62	194	42
Non-Labor	609	305	654	331	223
NSE	0	0	0	0	0
Total	**747**	**424**	**717**	**526**	**264**
FTE	1.5	1.3	0.6	1.6	0.4
Vacation & Sick (Nominal $)					
Labor	23	21	12	34	7
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**23**	**21**	**12**	**34**	**7**
FTE	0.3	0.2	0.1	0.3	0.1
Escalation to 2021$					
Labor	55	37	15	34	0
Non-Labor	207	81	136	50	0
NSE	0	0	0	0	0
Total	**262**	**118**	**151**	**84**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	216	177	90	263	49
Non-Labor	816	386	790	381	223
NSE	0	0	0	0	0
Total	**1,032**	**563**	**880**	**644**	**272**
FTE	1.8	1.5	0.7	1.9	0.5

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00181.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 001810 - Electronic Pressure Monitors (EPM)

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Year	Labor	NLbr	NSE	Total	FTE

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 001810

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00181.0
Category:	M. Measurement and Regulation Devices
Category-Sub:	1. Measurement and Regulation Devices
Workpaper Group:	001810 - Electronic Pressure Monitors (EPM)
Workpaper Detail:	001810.001 - [RAMP] Electronic Pressure Monitors (EPMs) used by SoCalGas to remotely monitor distribution pipes
In-Service Date:	Not Applicable

Description:

Electronic Pressure Monitors (EPM) are devices used by SoCalGas to remotely monitor distribution pipeline pressures in support of gas system capacity analysis; and for alarming of over or under-pressure events. Costs discussed here are for the materials purchased, labor cost for warehouse handling, equipment configuration, and associated cost for the field installation and replacement work.

Forecast In 2021 $(000)

Years	2022	2023	2024
Labor	159	159	159
Non-Labor	519	519	519
NSE	0	0	0
Total	**678**	**678**	**678**
FTE	1.3	1.3	1.3

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00181.0
Category:	M. Measurement and Regulation Devices
Category-Sub:	1. Measurement and Regulation Devices
Workpaper Group:	001810 - Electronic Pressure Monitors (EPM)
Workpaper Detail:	001810.001 - [RAMP] Electronic Pressure Monitors (EPMs) used by SoCalGas to remotely monitor distribution pi

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-3 Incident Related to the Medium Pressure System (Excluding Dig-in)

RAMP Line Item ID: C07

RAMP Line Item Name: EPM Installations & Replacements

Tranche(s): Tranche1: High Pressure Supply Lines; Tranche2: Medium Pressure Mains - Plastic & Steel

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	128	260	260	260	780	1,271	1,682
Tranche 2 Cost Estimate	142	418	418	418	1,254	1,271	1,682

Cost Estimate Changes from RAMP:
SoCalGas is planning to install additional EPM units in distribution systems for reliability and accurate monitoring.

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of installations or replacements	59.00	77.00	77.00	77.00	231.00	412.00	547.00
Tranche 2 # of installations or replacements	65.00	123.00	123.00	123.00	369.00	412.00	547.00

Work Unit Changes from RAMP:
SoCalGas is planning to install additional EPM units in distribution systems for reliability and accurate monitoring.

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	234.000	107.000
Tranche 2	16.000	107.000

RSE Changes from RAMP:

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00181.0
Category:	M. Measurement and Regulation Devices
Category-Sub:	1. Measurement and Regulation Devices
Workpaper Group:	001810 - Electronic Pressure Monitors (EPM)
Workpaper Detail:	001810.001 - [RAMP] Electronic Pressure Monitors (EPMs) used by SoCalGas to remotely monitor distribution pi

General changes to risks scores or RSE values are primarily due to changes in the MAVF and RSE methodology , as discussed in the RAMP to GRC Integration testimony of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Chapter 2). In addition, SoCalGas tranched this RAMP mitigation by High Pressure Supply Lines and Medium Pressure Mains - Plastic & Steel based on the pressure of the distribution system that the EPM is monitoring.

Beginning of Workpaper Group
002800 - Gas Energy Measurement Systems (GEMS)

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00280.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 002800 - Gas Energy Measurement Systems (GEMS)

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	Zero-Based	381	226	246	152	135	90	90	114
Non-Labor	Zero-Based	884	489	2,429	95	533	1,030	1,034	1,232
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**1,265**	**715**	**2,675**	**247**	**668**	**1,120**	**1,124**	**1,346**
FTE	Zero-Based	2.7	1.7	2.0	1.3	1.3	0.9	0.9	1.1

Business Purpose:

Budget Codes: 180, 280

Gas Energy Measurement Systems (GEMS) are used by SoCalGas to facilitate accurate billing and gas volume measurement of each customer meter set operating at non-standard metering pressures and temperatures. The expenditures included here are for the purchase of the GEMS device, other associated material, warehouse handling technical evaluations, and quality assurance. Cost for the initial installation of a GEMS device is also included.

Physical Description:

Gas Energy Measurement Systems (GEMS) provide the electronic means to compute and accumulate corrected volumetric measurements. They also have the ability to provide gas volume corrections based on "live" temperature measurement, provide audit trail capabilities, and some models provide remote communication capabilities. These devices are configured to fit the requirements of each GEMS field site. Proper pressure and temperature transducers need to be considered, as well as casing size and mounting configuration. The types of GEMS included in this category are: Electronic Correctors, little GEMS, big GEMS, and new generation GEMS.

Project Justification:

In accordance with CPUC General Order 58-A and to obtain accurate accounting and billing, GEMS instruments are used by SoCalGas as electronic pressure and temperature correctors to compute and accumulate corrected volume from the mechanical output of positive displacement and turbine gas meters. These units are necessary for larger, industrial customers that require non-standard delivery pressures and require compensation for varying gas temperature effect on measurement.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00280.0
Category:	M. Measurement and Regulation Devices
Category-Sub:	1. Measurement and Regulation Devices
Workpaper Group:	002800 - Gas Energy Measurement Systems (GEMS)

Forecast Methodology:

Labor - Zero-Based

SoCalGas used a zero-based forecast to determine the level of labor funding needed for this workbook. This methodology is most appropriate because the number of GEMS required depends on the project number of meter sets. The forecasted labor expenditures for the GEMS category used the projected number of new GEMS installations plus the projected replacement units for each of the forecast years (2022 through 2024) as the basis. The projected total count of new GEMS installations was obtained using the recorded number of GEMS purchased towards new installations from year 2021, plus the new business growth factor. The projected total count of GEMS replacements was determined using the recorded number of GEMS purchased towards replacements from the year 2021.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-012 for calculation details.

Non-Labor - Zero-Based

SoCalGas used a zero-based forecast to determine the level of non-labor funding needed for this work category. Taking the same projected number of GEMS count used in the labor calculations , the non-labor expenditures were determined by multiplying the projected number of units by the historical 2021 average non-labor cost per unit,

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-012 for calculation details.

NSE - Zero-Based

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00280.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 002800 - Gas Energy Measurement Systems (GEMS)

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	Zero-Based	90	90	114	0	0	0	90	90	114
Non-Labor	Zero-Based	1,030	1,034	1,232	0	0	0	1,030	1,034	1,232
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**1,120**	**1,124**	**1,346**	**0**	**0**	**0**	**1,120**	**1,124**	**1,346**
FTE	Zero-Based	0.9	0.9	1.1	0.0	0.0	0.0	0.9	0.9	1.1

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00280.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 002800 - Gas Energy Measurement Systems (GEMS)

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	243	152	171	112	115
Non-Labor	660	386	2,012	82	533
NSE	0	0	0	0	0
Total	**903**	**539**	**2,183**	**195**	**648**
FTE	2.3	1.4	1.7	1.1	1.1
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	243	152	171	112	115
Non-Labor	660	386	2,012	82	533
NSE	0	0	0	0	0
Total	**903**	**539**	**2,183**	**195**	**648**
FTE	2.3	1.4	1.7	1.1	1.1
Vacation & Sick (Nominal $)					
Labor	41	26	32	20	20
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**41**	**26**	**32**	**20**	**20**
FTE	0.4	0.3	0.3	0.2	0.2
Escalation to 2021$					
Labor	97	47	42	20	0
Non-Labor	224	102	418	12	0
NSE	0	0	0	0	0
Total	**321**	**150**	**460**	**32**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	381	226	246	152	135
Non-Labor	884	489	2,429	95	533
NSE	0	0	0	0	0
Total	**1,265**	**715**	**2,675**	**247**	**668**
FTE	2.7	1.7	2.0	1.3	1.3

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00280.0
Category: M. Measurement and Regulation Devices
Category-Sub: 1. Measurement and Regulation Devices
Workpaper Group: 002800 - Gas Energy Measurement Systems (GEMS)

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Year	Labor	NLbr	NSE	Total	FTE

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002800

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00280.0
Category:	M. Measurement and Regulation Devices
Category-Sub:	1. Measurement and Regulation Devices
Workpaper Group:	002800 - Gas Energy Measurement Systems (GEMS)
Workpaper Detail:	002800.001 - The purchase of Gas Energy Measurement System (GEMS) devices
In-Service Date:	Not Applicable

Description:

Gas Energy Measurement Systems (GEMS) are used by SoCalGas to facilitate accurate billing and gas volume measurement of each customer meter set operating at non-standard metering pressures and temperatures. The expenditures included here are for the purchase of the GEMS device, other associated material, warehouse handling, technical evaluations, and quality assurance. Cost for the initial installation of a GEMS device is also included.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	90	90	114
Non-Labor	1,030	1,034	1,232
NSE	0	0	0
Total	**1,120**	**1,124**	**1,346**
FTE	0.9	0.9	1.1

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 002800

SCG-04-MAA-CAP-SUP-012
Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre
Supplemental Workpaper for Zero Based Calculations Related to Gas Energy Measurement Systems
Gas Energy Measurement Systems (GEMS) Workpaper

Table 1: Forecasted GEMS

	Growth	New Installations		Replacement Installations			Total
	[I] (SCG-04-MAA-CAP-SUP-007, Table 2, [I])	**[A]** ([I]x[A] for Previous Year)	**[B]** ([I]x[B] for Previous Year)	**[C]** (2021 Base)	**[D]** (2021 Base)	**[E]** (2021 Base)	**[G]** (Sum [A] Thru [E])
	NB Forecast Growth Factor	Electronic Correctors	Little GEMS	Electronic Corrector	Little GEMS	Big GEMS	Total GEMS
2021 Historical **[1]**	N/A	163	13	385	134	2	697
2022 **[2]**	4%	170	14	154	130	20	487
2023 **[3]**	10%	186	15	132	130	21	484
2024 **[4]**	3%	191	15	247	137	21	611

Table 2: 2021 Historical GEMS Unit

	New Installations		Replacement Installations			Total
	Electronic Correctors	Little GEMS	Electronic Corrector	Little GEMS	Big GEMS	Total
2021 Non-Labor **[5]**	59,115	42,683	155,995	171,340	104,176	533,309
2021 Labor **[6]**		46,276			88,719	134,995
2021 FTEs **[7]**		0.4			0.9	1.3
2021 Average Weighted Non-Labor Unit Cost **[8]**	$ 1,497	$ 2,754	$ 1,497	$ 2,754	$ 7,050	$ 15,552
Labor Unit Cost **[9]** ([6]/[1])		262.93			170	433
FTEs per Unit **[10]** ([7]/[1])		0.0023			0.0017	0.0040

Table 3: Non-Labor Forecast (2021$ with Vacation & Sick)

	New Installations		Replacement Installations			**[H] Total**
	Electronic Correctors	Little GEMS	Electronic Corrector	Little GEMS	Big GEMS	
2022 ([8]x[2])	$ 253,907	$ 37,254	$ 230,538	$ 358,020	$ 141,000	$ 1,020,718
2023 ([8]x[3])	$ 278,535	$ 40,867	$ 197,604	$ 358,020	$ 148,050	$ 1,023,076
2024 ([8]x[4])	$ 286,196	$ 41,992	$ 369,759	$ 377,298	$ 148,050	$ 1,223,295

Table 4: Labor Forecast (2021$ with Vacation & Sick)

	New Installations	Replacement Installations	**[I] Total**
2022	$ 48,153	$ 51,767	$ 99,920
2023	$ 52,823	$ 48,191	$ 101,014
2024	$ 54,276	$ 68,966	$ 123,242

Table 5: FTE Forecast (2021$ with Vacation & Sick)

	New Installations	Replacement Installations	**[J] Total**
2022 ([10]x[2])	0.4	0.5	0.9
2023 ([10]x[3])	0.5	0.5	0.9
2024 ([10]x[4])	0.5	0.7	1.2

Table 6: Total Forecast (Thousands of 2021$ with Vacation & Sick)

	([J])	([I]/1000)	([H]/1000)	([I]+[H])
	FTEs	Labor ($000)	Non-Labor ($000)	Total ($000)
2022	0.9	99.92	1,020.72	1,121
2023	0.9	101.01	1,023.08	1,124
2024	1.2	123.24	1,223.30	1,347

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: N. Capital Tools
Workpaper: 007250

Summary for Category: N. Capital Tools

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	58	68	68	68
Non-Labor	24,915	14,567	14,567	14,567
NSE	0	0	0	0
Total	**24,973**	**14,635**	**14,635**	**14,635**
FTE	0.5	0.5	0.5	0.5

007250 Capital Tools & Equipment

Labor	58	68	68	68
Non-Labor	24,915	14,567	14,567	14,567
NSE	0	0	0	0
Total	**24,973**	**14,635**	**14,635**	**14,635**
FTE	0.5	0.5	0.5	0.5

Note: Totals may include rounding differences.

Beginning of Workpaper Group
007250 - Capital Tools & Equipment

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00725.0
Category: N. Capital Tools
Category-Sub: 1. Capital Tools
Workpaper Group: 007250 - Capital Tools & Equipment

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	5-YR Average	125	23	82	50	58	68	68	68
Non-Labor	5-YR Average	13,082	3,912	8,297	22,628	24,915	14,567	14,567	14,567
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**13,207**	**3,935**	**8,380**	**22,679**	**24,972**	**14,635**	**14,635**	**14,635**
FTE	5-YR Average	0.9	0.2	0.6	0.4	0.5	0.5	0.5	0.5

Business Purpose:

Budget Codes: 713, 715, 725, 727, 729

This work category includes expenditures associated with the purchase of capital tools and equipment used by distribution field personnel for the maintenance and repair of gas pipeline systems. The main driver of this plant category is the need to replace existing tools that are broken, outdated, or have outlived their useful lives. In addition, SoCalGas invests in new tools that provide innovative ways of completing the construction, maintenance and repair of its facilities in order to lessen customer disruptions and improve construction safety. This workpaper covers routine capital tool and equipment purchases.

Physical Description:

Routine tool and equipment purchases are used by the gas distribution field, meter shop, fabrication & repair shop, measurement & controls, and other departments to efficiently and safely install and maintain the gas distribution system .

Project Justification:

In order to maintain the effectiveness and efficiency of the field personnel it is necessary to provide adequate and appropriate tools that will enable them to complete thorough system inspection, maintenance and construction functions.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00725.0
Category:	N. Capital Tools
Category-Sub:	1. Capital Tools
Workpaper Group:	007250 - Capital Tools & Equipment

Forecast Methodology:

Labor - 5-YR Average

A five-year average (2017 through 2021) was used to forecast the expenditures of routine tool purchases. SoCalGas expects routine tool purchases to continue as existing tools and equipment reach their useful life expectancies and the level of construction and maintenance activities increases, adding to the number of new employees that must be equipped with tools and equipment. In addition to new tools that provide innovative ways of completing field work, SoCalGas replaces tools regularly to maintain a safe working environment. The five-year average is most appropriate to account for both the routine replacements as well as new equipment with the latest technology.

Non-Labor - 5-YR Average

A five-year average (2017 through 2021) was used to forecast the expenditures of routine tool purchases. SoCalGas expects routine tool purchases to continue as existing tools and equipment reach their useful life expectancies and the level of construction and maintenance activities increases, adding to the number of new employees that must be equipped with tools and equipment. In addition to new tools that provide innovative ways of completing field work, SoCalGas replaces tools regularly to maintain a safe working environment. The five-year average is most appropriate to account for both the routine replacements as well as new equipment with the latest technology.

NSE - 5-YR Average

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00725.0
Category: N. Capital Tools
Category-Sub: 1. Capital Tools
Workpaper Group: 007250 - Capital Tools & Equipment

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	5-YR Average	68	68	68	0	0	0	68	68	68
Non-Labor	5-YR Average	14,567	14,567	14,567	0	0	0	14,567	14,567	14,567
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**14,635**	**14,635**	**14,635**	**0**	**0**	**0**	**14,635**	**14,635**	**14,635**
FTE	5-YR Average	0.5	0.5	0.5	0.0	0.0	0.0	0.5	0.5	0.5

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00725.0
Category: N. Capital Tools
Category-Sub: 1. Capital Tools
Workpaper Group: 007250 - Capital Tools & Equipment

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	80	15	57	37	41
Non-Labor	9,762	3,092	6,870	21,027	24,731
NSE	0	0	0	0	0
Total	**9,841**	**3,107**	**6,928**	**21,064**	**24,772**
FTE	0.8	0.2	0.5	0.3	0.3
Adjustments (Nominal $) **					
Labor	0	0	0	0	8
Non-Labor	0	0	0	-1,356	183
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**-1,356**	**192**
FTE	0.0	0.0	0.0	0.0	0.1
Recorded-Adjusted (Nominal $)					
Labor	80	15	57	37	49
Non-Labor	9,762	3,092	6,870	19,671	24,915
NSE	0	0	0	0	0
Total	**9,841**	**3,107**	**6,928**	**19,708**	**24,963**
FTE	0.8	0.2	0.5	0.3	0.4
Vacation & Sick (Nominal $)					
Labor	13	3	11	7	9
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**13**	**3**	**11**	**7**	**9**
FTE	0.1	0.0	0.1	0.1	0.1
Escalation to 2021$					
Labor	32	5	14	7	0
Non-Labor	3,320	820	1,427	2,958	0
NSE	0	0	0	0	0
Total	**3,352**	**825**	**1,441**	**2,964**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	125	23	82	50	58
Non-Labor	13,082	3,912	8,297	22,628	24,915
NSE	0	0	0	0	0
Total	**13,207**	**3,935**	**8,380**	**22,679**	**24,972**
FTE	0.9	0.2	0.6	0.4	0.5

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00725.0
Category: N. Capital Tools
Category-Sub: 1. Capital Tools
Workpaper Group: 007250 - Capital Tools & Equipment

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	8
Non-Labor	0	0	0	-1,356	183
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**-1,356**	**192**
FTE	0.0	0.0	0.0	0.0	0.1

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017 Total	0	0	0	0	0.0
2018 Total	0	0	0	0	0.0
2019 Total	0	0	0	0	0.0
2020	0	-1,356	0	-1,356	0.0
Explanation:	Incremental COVID-related costs that are anticipated to be requested for recovery through a non-GRC Catastrophic Event Memorandum Account (CEMA).				
2020 Total	0	-1,356	0	-1,356	0.0
2021	8	183	0	192	0.1
Explanation:	Included historical recorded cost of budget code 715 in workpaper 007250 where costs are forecasted.				
2021 Total	8	183	0	192	0.1

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 007250

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00725.0
Category:	N. Capital Tools
Category-Sub:	1. Capital Tools
Workpaper Group:	007250 - Capital Tools & Equipment
Workpaper Detail:	007250.001 - [RAMP] Locating Equipment (MP)
In-Service Date:	Not Applicable

Description:

Reducing the potential for damage to underground facilities that is caused by excavation activities requires correct facility markings. SoCalGas provides the locate and mark workforce with the tools and information needed to accurately locate and mark underground gas infrastructure, as mandated by Title 49 Code of Federal Regulation, section 192.614, and California Government Code, section 4216. Employees who perform locate and mark activities rely on laptops, 811 USA tickets, asset mapping, record data, software, and locating equipment. Providing standardized equipment to employees allows for consistent training and use of the equipment to improve locate accuracy.

Forecast In 2021 $(000)

Years	2022	2023	2024
Labor	0	0	0
Non-Labor	1,211	565	646
NSE	0	0	0
Total	**1,211**	**565**	**646**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00725.0
Category: N. Capital Tools
Category-Sub: 1. Capital Tools
Workpaper Group: 007250 - Capital Tools & Equipment
Workpaper Detail: 007250.001 - [RAMP] Locating Equipment (MP)

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-2 Excavation Damage (Dig-In) on the Gas System

RAMP Line Item ID: C13

RAMP Line Item Name: Locating Equipment (MP)

Tranche(s): Tranche1: Overall

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	681	1,211	565	646	2,422	16,236	19,654

Cost Estimate Changes from RAMP:
The cost within this workgroup includes the purchase of hardware and field equipment only. Additional costs included in the RAMP report include the IT cost.

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of equipment	153.00	444.00	65.00	71.00	580.00	0.00	0.00

Work Unit Changes from RAMP:
A new unit of # of Equipment has been established for this RAMP mitigation. In addition, 2022 forecast unit consists of mobile devices and locators; 2023 and 2024 forecast units consist of locators only.

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	0.240	24.000

RSE Changes from RAMP:
General changes to risks scores or RSE values are primarily due to changes in the MAVF and RSE methodology, as discussed in the RAMP to GRC Integration testimony of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Chapter 2).

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00725.0
Category: N. Capital Tools
Category-Sub: 1. Capital Tools
Workpaper Group: 007250 - Capital Tools & Equipment
Workpaper Detail: 007250.002 - [RAMP] Locating Equipment (HP)

In-Service Date: Not Applicable

Description:

Reducing the potential for damage to underground facilities that is caused by excavation activities requires correct facility markings. SoCalGas provides the locate and mark workforce with the tools and information needed to accurately locate and mark underground gas infrastructure, as mandated by Title 49 Code of Federal Regulation, section 192.614, and California Government Code, section 4216. Employees who perform locate and mark activities rely on laptops, 811 USA tickets, asset mapping, record data, software, and locating equipment. Providing standardized equipment to employees allows for consistent training and use of the equipment to improve locate accuracy.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	0	0	0
Non-Labor	289	135	154
NSE	0	0	0
Total	**289**	**135**	**154**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00725.0
Category: N. Capital Tools
Category-Sub: 1. Capital Tools
Workpaper Group: 007250 - Capital Tools & Equipment
Workpaper Detail: 007250.002 - [RAMP] Locating Equipment (HP)

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-2 Excavation Damage (Dig-In) on the Gas System

RAMP Line Item ID: C14

RAMP Line Item Name: Locating Equipment (HP)

Tranche(s): Tranche1: Overall

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	163	289	135	154	578	3,887	4,693

Cost Estimate Changes from RAMP:
The cost within this workgroup includes the purchase of hardware and field equipment only. Additional costs included in the RAMP report include the IT cost.

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of equipment	37.00	106.00	15.00	17.00	138.00	0.00	0.00

Work Unit Changes from RAMP:
A new unit of # of Equipment has been established for this RAMP mitigation. In addition, 2022 forecast unit consists of mobile devices and locators; 2023 and 2024 forecast units consist of locators only.

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	73.000	36.000

RSE Changes from RAMP:
General changes to risks scores or RSE values are primarily due to changes in the MAVF and RSE methodology, as discussed in the RAMP to GRC Integration testimony of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Chapter 2).

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00725.0
Category:	N. Capital Tools
Category-Sub:	1. Capital Tools
Workpaper Group:	007250 - Capital Tools & Equipment
Workpaper Detail:	007250.003 - Expenditures associated with the purchase of capital tools and equipment used by distribution field
In-Service Date:	Not Applicable

Description:

Routine tool and equipment purchases are used by the gas distribution field, meter shop, fabrication & repair shop, measurement & controls, and other departments. These specialized tools and equipment enable SoCalGas's personnel to efficiently and safely install and maintain the gas distribution system .

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	68	68	68
Non-Labor	13,067	13,867	13,767
NSE	0	0	0
Total	**13,135**	**13,935**	**13,835**
FTE	0.5	0.5	0.5

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: O. Field Capital Support
Workpaper: 009030

Summary for Category: O. Field Capital Support

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	90,214	85,863	92,216	85,474
Non-Labor	10,123	7,507	7,507	7,507
NSE	0	0	0	0
Total	**100,337**	**93,370**	**99,723**	**92,981**
FTE	850.1	729.1	783.0	725.8

009030 Field Capital Support

Labor	90,214	85,863	92,216	85,474
Non-Labor	10,123	7,507	7,507	7,507
NSE	0	0	0	0
Total	**100,337**	**93,370**	**99,723**	**92,981**
FTE	850.1	729.1	783.0	725.8

Note: Totals may include rounding differences.

Beginning of Workpaper Group
009030 - Field Capital Support

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00903.0
Category: O. Field Capital Support
Category-Sub: 1. Field Capital Support
Workpaper Group: 009030 - Field Capital Support

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	Zero-Based	86,495	79,545	83,209	87,606	90,214	85,863	92,216	85,474
Non-Labor	5-YR Average	4,299	4,386	8,412	10,315	10,123	7,507	7,507	7,507
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**90,794**	**83,931**	**91,620**	**97,920**	**100,337**	**93,370**	**99,723**	**92,981**
FTE	Zero-Based	683.8	656.8	691.8	743.8	850.1	729.1	783.0	725.8

Business Purpose:

Budget Code: 903

This work category provides the funding for a broad range of services to support Gas Distribution field capital asset construction.

Physical Description:

Traditional work elements recorded to this budget category include project planning , local engineering, clerical support, field dispatch, field management and supervision, and off-production time for support personnel and field crews who install the Gas Distribution capital assets.

Project Justification:

The activities contained in Field Capital Support include key support functions for the safe, reliable, and efficient construction of the gas distribution system.

Activities supported within this group include the following:

-Distribution Planning
-Distribution Engineering
-Clerical
-Scheduling and Dispatch
-Field Management and Supervision
-Off production time

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00903.0
Category:	O. Field Capital Support
Category-Sub:	1. Field Capital Support
Workpaper Group:	009030 - Field Capital Support

Forecast Methodology:

Labor - Zero-Based

The labor forecast for the category of Field Capital Support is based on the level of historical costs as a percentage of construction costs incurred. Over the past five years (2017 through 2021), the percentage has ranged from 32% to 40%, with 2021 experiencing the highest ratio and 2020 the lowest. This variation is due in part to the mix of projects in each year as some capital work requires more labor support as a percentage of the project's cost . Given this variation in work and associated labor support costs, SoCalGas chose the five-year (2017 through 2021) historical average support ratio of 36.2% to determine the base forecast for the Field Capital Support work category. SoCalGas applied this labor ratio to the overall projected capital construction cost to determine the future needs of this workgroup.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-013 for calculation details.

Non-Labor - 5-YR Average

The non-labor forecast for Field Capital Support was based on the five-year (2017 through 2021) average to complement the labor requirement. Using this method best accounts for the fluctuation non-labor and provides the funding needed to support this work category.

NSE - Zero-Based

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00903.0
Category: O. Field Capital Support
Category-Sub: 1. Field Capital Support
Workpaper Group: 009030 - Field Capital Support

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	Zero-Based	85,863	92,216	85,474	0	0	0	85,863	92,216	85,474
Non-Labor	5-YR Average	7,507	7,507	7,507	0	0	0	7,507	7,507	7,507
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**93,370**	**99,723**	**92,981**	**0**	**0**	**0**	**93,370**	**99,723**	**92,981**
FTE	Zero-Based	729.1	783.0	725.8	0.0	0.0	0.0	729.1	783.0	725.8

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00903.0
Category: O. Field Capital Support
Category-Sub: 1. Field Capital Support
Workpaper Group: 009030 - Field Capital Support

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	55,188	53,634	57,916	64,747	76,680
Non-Labor	3,208	3,467	6,964	8,967	10,122
NSE	0	0	0	0	0
Total	**58,396**	**57,100**	**64,880**	**73,714**	**86,802**
FTE	580.9	556.9	579.4	622.2	715.3
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	1	0	1
NSE	0	0	0	0	0
Total	**0**	**0**	**1**	**0**	**1**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	55,188	53,634	57,916	64,747	76,680
Non-Labor	3,208	3,467	6,965	8,967	10,123
NSE	0	0	0	0	0
Total	**58,396**	**57,100**	**64,881**	**73,714**	**86,803**
FTE	580.9	556.9	579.4	622.2	715.3
Vacation & Sick (Nominal $)					
Labor	9,354	9,230	10,981	11,408	13,534
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**9,354**	**9,230**	**10,981**	**11,408**	**13,534**
FTE	102.9	99.9	112.4	121.6	134.8
Escalation to 2021$					
Labor	21,952	16,681	14,312	11,450	0
Non-Labor	1,091	920	1,447	1,348	0
NSE	0	0	0	0	0
Total	**23,044**	**17,600**	**15,759**	**12,798**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	86,495	79,545	83,209	87,606	90,214
Non-Labor	4,299	4,386	8,412	10,315	10,123
NSE	0	0	0	0	0
Total	**90,794**	**83,931**	**91,620**	**97,920**	**100,337**
FTE	683.8	656.8	691.8	743.8	850.1

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00903.0
Category: O. Field Capital Support
Category-Sub: 1. Field Capital Support
Workpaper Group: 009030 - Field Capital Support

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	1	0	1
NSE	0	0	0	0	0
Total	**0**	**0**	**1**	**0**	**1**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017 Total	0	0	0	0	0.0
2018 Total	0	0	0	0	0.0
2019	0	0.509	0	0.509	0.0
Explanation:	To add material costs (cost elements 6215567 and 6215568) that were initially misclassified as indirect costs.				
2019 Total	0	0.509	0	0.509	0.0
2020	0	0.024	0	0.024	0.0
Explanation:	To add material costs (cost elements 6215567 and 6215568) that were initially misclassified as indirect costs.				
2020 Total	0	0.024	0	0.024	0.0
2021	0	1	0	1	0.0
Explanation:	To add material costs (cost elements 6215567 and 6215568) that were initially misclassified as indirect costs.				
2021 Total	0	1	0	1	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 009030

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00903.0
Category:	O. Field Capital Support
Category-Sub:	1. Field Capital Support
Workpaper Group:	009030 - Field Capital Support
Workpaper Detail:	009030.001 - [RAMP] Company Crew & Contractor Inspections on O&M & Capital Pipeline Jobs
In-Service Date:	Not Applicable

Description:

SoCalGas manages all aspects of gas pipeline construction projects daily and oversees contractor work at construction sites to ensure that the project is built to Company Gas Standards. Observations of Company crews and the contractors' work, tools, equipment, and materials used, employee qualifications, and procedural adherence all provide opportunity to identify, assess, and resolve potential hazards.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	1,696	1,696	1,696
Non-Labor	0	0	0
NSE	0	0	0
Total	**1,696**	**1,696**	**1,696**
FTE	15.4	15.4	15.4

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00903.0
Category: O. Field Capital Support
Category-Sub: 1. Field Capital Support
Workpaper Group: 009030 - Field Capital Support
Workpaper Detail: 009030.001 - [RAMP] Company Crew & Contractor Inspections on O&M & Capital Pipeline Jobs

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-3 Incident Related to the Medium Pressure System (Excluding Dig-in)

RAMP Line Item ID: C15

RAMP Line Item Name: Company Crew & Contractor Inspections on O&M & Capital Pipeline Jobs

Tranche(s): Tranche1: Medium Pressure Mains - Plastic & Steel

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	931	1,696	1,696	1,696	5,088	4,380	5,793

Cost Estimate Changes from RAMP:
None

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of inspections	10,000.00	18,215.00	18,215.00	18,215.00	54,645.00	47,058.00	62,235.00

Work Unit Changes from RAMP:
None

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	0.000	0.000

RSE Changes from RAMP:
RSE was not calculated for this activity in both the 2021 RAMP Report and the GRC.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00903.0
Category:	O. Field Capital Support
Category-Sub:	1. Field Capital Support
Workpaper Group:	009030 - Field Capital Support
Workpaper Detail:	009030.002 - [RAMP] Company Excavator Training (MP)
In-Service Date:	Not Applicable

Description:

Company Excavator Training includes the cost of formal training of employees to cover all operational aspects for the safe use of a particular piece of equipment, including the required personal protective equipment, manufacturers recommendations and instructions, and any guidelines and limitations.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	192	192	192
Non-Labor	0	0	0
NSE	0	0	0
Total	**192**	**192**	**192**
FTE	1.6	1.6	1.6

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00903.0
Category: O. Field Capital Support
Category-Sub: 1. Field Capital Support
Workpaper Group: 009030 - Field Capital Support
Workpaper Detail: 009030.002 - [RAMP] Company Excavator Training (MP)

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-2 Excavation Damage (Dig-In) on the Gas System

RAMP Line Item ID: C27

RAMP Line Item Name: Company Excavator Training (MP)

Tranche(s): Tranche1: N/A

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	192	192	192	192	576	0	0

Cost Estimate Changes from RAMP:
Costs for this RAMP activity are split between O&M and Capital.

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of hours - Training	3,077.00	3,077.00	3,077.00	3,077.00	9,231.00	0.00	0.00

Work Unit Changes from RAMP:
Costs for this RAMP activity are split between O&M and Capital.

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	0.000	0.000

RSE Changes from RAMP:
RSE was not calculated for this activity in both the 2021 RAMP Report and the GRC.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00903.0
Category:	O. Field Capital Support
Category-Sub:	1. Field Capital Support
Workpaper Group:	009030 - Field Capital Support
Workpaper Detail:	009030.003 - [RAMP] Company Excavator Training (HP)
In-Service Date:	Not Applicable

Description:

Company Excavator Training includes the cost of formal training of employees to cover all operational aspects for the safe use of a particular piece of equipment, including the required personal protective equipment, manufacturers recommendations and instructions, and any guidelines and limitations.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	14	14	14
Non-Labor	0	0	0
NSE	0	0	0
Total	**14**	**14**	**14**
FTE	0.1	0.1	0.1

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00903.0
Category:	O. Field Capital Support
Category-Sub:	1. Field Capital Support
Workpaper Group:	009030 - Field Capital Support
Workpaper Detail:	009030.003 - [RAMP] Company Excavator Training (HP)

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-2 Excavation Damage (Dig-In) on the Gas System

RAMP Line Item ID: C28

RAMP Line Item Name: Company Excavator Training (HP)

Tranche(s): Tranche1: N/A

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	14	14	14	14	42	0	0

Cost Estimate Changes from RAMP:
Costs for this RAMP activity are split between O&M and Capital.

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of hours - Training	412.00	412.00	412.00	412.00	1,236.00	0.00	0.00

Work Unit Changes from RAMP:
Costs for this RAMP activity are split between O&M and Capital.

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	0.000	0.000

RSE Changes from RAMP:
RSE was not calculated for this activity in both the 2021 RAMP Report and the GRC.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00903.0
Category:	O. Field Capital Support
Category-Sub:	1. Field Capital Support
Workpaper Group:	009030 - Field Capital Support
Workpaper Detail:	009030.004 - [RAMP] Locate & Mark Training (MP)
In-Service Date:	Not Applicable

Description:

Locate and mark training provides employees who perform locating tasks with the necessary knowledge and operator qualification to locate and mark underground gas facilities, an imperative task to reduce the risk of accidental damage.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	138	149	160
Non-Labor	0	0	0
NSE	0	0	0
Total	**138**	**149**	**160**
FTE	1.2	1.3	1.4

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00903.0
Category: O. Field Capital Support
Category-Sub: 1. Field Capital Support
Workpaper Group: 009030 - Field Capital Support
Workpaper Detail: 009030.004 - [RAMP] Locate & Mark Training (MP)

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-2 Excavation Damage (Dig-In) on the Gas System

RAMP Line Item ID: C01

RAMP Line Item Name: Locate & Mark Training (MP)

Tranche(s): Tranche1: N/A

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	138	138	149	160	447	0	0

Cost Estimate Changes from RAMP:
Costs for this RAMP activity are split between O&M and Capital.

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of hours - Training	2,810.00	2,885.00	3,188.00	3,491.00	9,564.00	0.00	0.00

Work Unit Changes from RAMP:
Costs for this RAMP activity are split between O&M and Capital.

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	0.000	0.000

RSE Changes from RAMP:
RSE was not calculated for this activity in both the 2021 RAMP Report and the GRC.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00903.0
Category: O. Field Capital Support
Category-Sub: 1. Field Capital Support
Workpaper Group: 009030 - Field Capital Support
Workpaper Detail: 009030.005 - [RAMP] Locate & Mark Training (HP)

In-Service Date: Not Applicable

Description:

Locate and mark training provides employees who perform locating tasks with the necessary knowledge and operator qualification to locate and mark underground gas facilities, an imperative task to reduce the risk of accidental damage.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	10	11	12
Non-Labor	0	0	0
NSE	0	0	0
Total	**10**	**11**	**12**
FTE	0.1	0.1	0.1

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00903.0
Category:	O. Field Capital Support
Category-Sub:	1. Field Capital Support
Workpaper Group:	009030 - Field Capital Support
Workpaper Detail:	009030.005 - [RAMP] Locate & Mark Training (HP)

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-2 Excavation Damage (Dig-In) on the Gas System

RAMP Line Item ID: C02

RAMP Line Item Name: Locate & Mark Training (HP)

Tranche(s): Tranche1: N/A

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	10	10	11	12	33	0	0

Cost Estimate Changes from RAMP:
Costs for this RAMP activity are split between O&M and Capital.

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of hours - Training	211.00	217.00	240.00	263.00	720.00	0.00	0.00

Work Unit Changes from RAMP:
Costs for this RAMP activity are split between O&M and Capital.

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	0.000	0.000

RSE Changes from RAMP:
RSE was not calculated for this activity in both the 2021 RAMP Report and the GRC.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00903.0
Category:	O. Field Capital Support
Category-Sub:	1. Field Capital Support
Workpaper Group:	009030 - Field Capital Support
Workpaper Detail:	009030.006 - [RAMP] Locate & Mark Annual Refresher Training and Competency Program (MP)
In-Service Date:	Not Applicable

Description:

This program consists of local supervisors reviewing SoCalGas Gas Standards with the locate and mark workforce. Employees are required to pass the annual refresher training in order to continue locate and mark activities.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	17	17	17
Non-Labor	0	0	0
NSE	0	0	0
Total	**17**	**17**	**17**
FTE	0.1	0.1	0.1

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00903.0
Category:	O. Field Capital Support
Category-Sub:	1. Field Capital Support
Workpaper Group:	009030 - Field Capital Support
Workpaper Detail:	009030.006 - [RAMP] Locate & Mark Annual Refresher Training and Competency Program (MP)

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-2 Excavation Damage (Dig-In) on the Gas System

RAMP Line Item ID: C05

RAMP Line Item Name: Locate & Mark Annual Refresher Training and Competency Program (MP)

Tranche(s): Tranche1: Overall

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	18	17	17	17	51	0	0

Cost Estimate Changes from RAMP:
Costs for this RAMP activity are split between O&M and Capital.

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of hours - Training	43.00	46.00	47.00	49.00	142.00	0.00	0.00

Work Unit Changes from RAMP:
Costs for this RAMP activity are split between O&M and Capital.

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	21.000	23.000

RSE Changes from RAMP:
General changes to risks scores or RSE values are primarily due to changes in the MAVF and RSE methodology , as discussed in the RAMP to GRC Integration testimony of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Chapter 2).

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00903.0
Category: O. Field Capital Support
Category-Sub: 1. Field Capital Support
Workpaper Group: 009030 - Field Capital Support
Workpaper Detail: 009030.007 - [RAMP] Locate & Mark Annual Refresher Training and Competency Program (HP)

In-Service Date: Not Applicable

Description:

This program consists of local supervisors reviewing SoCalGas Gas Standards with the locate and mark workforce. Employees are required to pass the annual refresher training in order to continue locate and mark activities.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	1	1	1
Non-Labor	0	0	0
NSE	0	0	0
Total	**1**	**1**	**1**
FTE	0.1	0.1	0.1

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00903.0
Category:	O. Field Capital Support
Category-Sub:	1. Field Capital Support
Workpaper Group:	009030 - Field Capital Support
Workpaper Detail:	009030.007 - [RAMP] Locate & Mark Annual Refresher Training and Competency Program (HP)

RAMP Item # 1

RAMP Activity

RAMP Chapter: SCG-Risk-2 Excavation Damage (Dig-In) on the Gas System

RAMP Line Item ID: C06

RAMP Line Item Name: Locate & Mark Annual Refresher Training and Competency Program (HP)

Tranche(s): Tranche1: Overall

GRC Forecast Cost Estimates ($000)

	2021 Historical Embedded Costs (2021 $)	2022 Forecast (2021 $)	2023 Forecast (2021 $)	2024 Forecast (2021 $)	2022 to 2024 Forecast (2021 $)	2022 to 2024 RAMP Range (2020 Incurred $) Low	High
Tranche 1 Cost Estimate	1	1	1	1	3	0	0

Cost Estimate Changes from RAMP:
Costs for this RAMP activity are split between O&M and Capital.

GRC Work Unit/Activity Level Estimates

Unit of Measure	2021 Historical Embedded Activities	2022 Forecast Activities	2023 Forecast Activities	2024 Forecast Activities	2022 to 2024 Forecast Activities	2022 to 2024 RAMP Range Activities Low	High
Tranche 1 # of hours - Training	24.00	24.00	25.00	26.00	75.00	0.00	0.00

Work Unit Changes from RAMP:
Costs for this RAMP activity are split between O&M and Capital.

Risk Spend Efficiency (RSE)

	GRC RSE	RAMP RSE
Tranche 1	53.000	121.000

RSE Changes from RAMP:
General changes to risks scores or RSE values are primarily due to changes in the MAVF and RSE methodology , as discussed in the RAMP to GRC Integration testimony of R. Scott Pearson and Gregory S. Flores (Ex. SCG-03/SDG&E-03, Chapter 2).

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00903.0
Category:	O. Field Capital Support
Category-Sub:	1. Field Capital Support
Workpaper Group:	009030 - Field Capital Support
Workpaper Detail:	009030.008 - Funding for a broad range of services to support Gas Distribution field capital asset construction
In-Service Date:	Not Applicable

Description:

This work category provides the funding for a broad range of services to support Gas Distribution field capital asset construction. Traditional work elements recorded to this budget category include project planning , local engineering, clerical support, field dispatch, field management and supervision, and off-production time for support personnel and field crews who install the Gas Distribution capital asset.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	83,795	90,136	83,382
Non-Labor	7,507	7,507	7,507
NSE	0	0	0
Total	**91,302**	**97,643**	**90,889**
FTE	710.5	764.3	707.0

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 009030

SCG-04-MAA-CAP-SUP-013
Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre
Supplemental Workpaper Calculations for Support Personnel Related To Field Capital Construction Work
Field Capital Support Workpaper

Assumptions:
Construction costs include only the work categories requiring field support.
Amounts include vacation and sick.

Capital Construction Costs and Historical Field Capital Support Labor Costs (Thousands of 2021$)

	Historical					Forecast		
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
New Business	47,918	60,889	63,860	51,930	52,302	52,903	58,895	60,759
Pressure Betterment	33,661	22,094	24,236	47,717	18,845	18,846	18,846	18,846
Main Replacement	52,011	36,013	16,791	27,435	24,768	19,839	17,626	17,626
Service Replacement	48,887	55,641	42,984	51,729	49,472	45,229	42,597	42,597
Main/Service Abandon	12,887	15,920	15,964	14,006	11,898	14,135	14,135	14,135
Regulator Stations	8,924	3,277	6,941	6,940	8,292	10,014	10,014	10,014
Cathodic Protection	8,196	6,918	5,190	7,235	5,096	6,993	6,527	6,527
Freeway Relocation	1,946	943	961	2,295	3,376	1,904	1,904	1,904
Franchise Relocation	18,453	16,251	15,743	32,946	18,051	20,289	20,289	20,289
Other Distribution Capital Projects	7,466	8,322	14,424	20,403	10,420	13,367	26,313	9,045
Remote Mtr Reading	-	-	209	598	2,159	1,877	1,252	1,252
CCM Distribution Project	-	-	339	6,623	15,047	23,506	26,403	21,534
Meter Protection	752	697	1,990	5,233	7,046	8,250	9,900	11,550
Total Construction Costs* **[A]**	241,101	226,965	209,632	275,090	226,772	237,152	254,701	236,078
Historical Field Support Labor **[B]**	86,495	79,545	83,209	87,606	90,213			
Historical Field Support Ratio **[B]/[A]**	35.9%	35.0%	39.7%	31.8%	39.8%			

Historical Calculations (2021$)

	[C] ([A]*1000) **Historical 5-Year Total Applicable Capital**	**[D]** ([B]*1000) **Historical Capital Field Support Labor**	**[E]** **Historical Field Capital Support FTEs**
2017	$ 241,101,000	$ 86,495,010	683.8
2018	$ 226,965,000	$ 79,544,794	656.8
2019	$ 209,632,000	$ 83,208,731	691.8
2020	$ 275,090,000	$ 87,605,547	743.8
2021	$ 226,772,000	$ 90,213,722	850.1
5-Year 2017-2021 Total	**$ 1,179,560,000**	**$ 427,067,804**	**3,626.3**

5-Year 2017-2021 Average Ratio of Labor to Capital Construction Total	**36.2%**	**[F]** [D/C]
5-Year 2017-2021 Average Labor Dollars per FTE	**$ 117,770**	**[G]** [D/E]

Forecast Data (Thousands of 2021$)

	[H] **Forecasted Total Applicable Capital**	**[I]** **Forecasted Labor Expenditures**	**[J]** **Forecasted FTEs**
2022	$ 237,152	$ 85,863	729.1
2023	$ 254,701	$ 92,216	783.0
2024	$ 236,078	$ 85,474	725.8

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Category: P. Remote Meter Reading
Workpaper: 001820

Summary for Category: P. Remote Meter Reading

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	677	610	524	524
Non-Labor	1,482	1,267	728	728
NSE	0	0	0	0
Total	**2,159**	**1,877**	**1,252**	**1,252**
FTE	6.1	5.1	4.4	4.4

001820 Remote Mtr Reading

Labor	677	610	524	524
Non-Labor	1,482	1,267	728	728
NSE	0	0	0	0
Total	**2,159**	**1,877**	**1,252**	**1,252**
FTE	6.1	5.1	4.4	4.4

Note: Totals may include rounding differences.

Beginning of Workpaper Group
001820 - Remote Mtr Reading

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00182.0
Category: P. Remote Meter Reading
Category-Sub: 1. Remote Meter Reading
Workpaper Group: 001820 - Remote Mtr Reading

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	Zero-Based	0	0	186	462	677	610	524	524
Non-Labor	Zero-Based	0	0	23	136	1,482	1,267	728	728
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**209**	**598**	**2,159**	**1,877**	**1,252**	**1,252**
FTE	Zero-Based	0.0	0.0	1.4	3.6	6.1	5.1	4.4	4.4

Business Purpose:

Budget Code: 168, 182

This work category includes expenditures associated with the installation and replacement of Data Collector Units (DCUs) and the necessary equipment to provide advanced metering infrastructure (AMI) network. The main driver of this category is the network reliability for accurate meter reading.

Physical Description:

As new homes and communities are constructed, the Data Collector Unit (DCU) footprint required to collect and transmit meter reading data will continue to expand. SoCalGas currently has approximately 4,600 DCUs across the service territory to provide AMI network coverage for the Company's nearly six-million meters. The installation of DCUs includes performing land acquisition, processing, and submitting ministerial and coastal commission permits in public right of way (PROW), utility easements, new pole and co-location construction, and commissioning DCUs.

Project Justification:

In order to maintain the network reliability and minimize connectivity risk for accurate reading, it is necessary to install and replace the DCUs for the AMI network.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00182.0
Category:	P. Remote Meter Reading
Category-Sub:	1. Remote Meter Reading
Workpaper Group:	001820 - Remote Mtr Reading

Forecast Methodology:

Labor - Zero-Based

A zero-based forecasting methodology was used to forecast the expenditures for this capital work category. This method is most appropriate because the costs are primarily driven by work order volumes. The forecast is based on the number of poles and DCUs that SoCalGas anticipates installing as part of AMI implementation . This unit forecast was multiplied by the weighted average cost per equipment, based on historical purchases.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-014 for calculation details.

Non-Labor - Zero-Based

A zero-based forecasting methodology was used to forecast the expenditures for this capital work category. This method is most appropriate because the costs are primarily driven by work order volumes. The forecast is based on the number of poles and DCUs that SoCalGas anticipates installing as part of AMI implementation . This unit forecast was multiplied by the weighted average cost per equipment, based on historical purchases.

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-014 for calculation details.

NSE - Zero-Based

NSE is not applicable to this workgroup.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00182.0
Category: P. Remote Meter Reading
Category-Sub: 1. Remote Meter Reading
Workpaper Group: 001820 - Remote Mtr Reading

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	Zero-Based	610	524	524	0	0	0	610	524	524
Non-Labor	Zero-Based	1,267	728	728	0	0	0	1,267	728	728
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**1,877**	**1,252**	**1,252**	**0**	**0**	**0**	**1,877**	**1,252**	**1,252**
FTE	Zero-Based	5.1	4.4	4.4	0.0	0.0	0.0	5.1	4.4	4.4

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00182.0
Category: P. Remote Meter Reading
Category-Sub: 1. Remote Meter Reading
Workpaper Group: 001820 - Remote Mtr Reading

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	414	2,093	352	298	575
Non-Labor	840	1,088	180	119	1,482
NSE	0	0	0	0	0
Total	**1,254**	**3,181**	**532**	**417**	**2,058**
FTE	4.5	36.8	4.7	2.1	5.1
Adjustments (Nominal $) **					
Labor	-414	-2,093	-223	43	0
Non-Labor	-840	-1,088	-161	0	0
NSE	0	0	0	0	0
Total	**-1,254**	**-3,181**	**-384**	**43**	**0**
FTE	-4.5	-36.8	-3.5	0.9	0.0
Recorded-Adjusted (Nominal $)					
Labor	0	0	129	342	575
Non-Labor	0	0	19	118	1,482
NSE	0	0	0	0	0
Total	**0**	**0**	**148**	**460**	**2,058**
FTE	0.0	0.0	1.2	3.0	5.1
Vacation & Sick (Nominal $)					
Labor	0	0	25	60	102
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**25**	**60**	**102**
FTE	0.0	0.0	0.2	0.6	1.0
Escalation to 2021$					
Labor	0	0	32	60	0
Non-Labor	0	0	4	18	0
NSE	0	0	0	0	0
Total	**0**	**0**	**36**	**78**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	0	0	186	462	677
Non-Labor	0	0	23	136	1,482
NSE	0	0	0	0	0
Total	**0**	**0**	**209**	**598**	**2,159**
FTE	0.0	0.0	1.4	3.6	6.1

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Mario A. Aguirre
Budget Code: 00182.0
Category: P. Remote Meter Reading
Category-Sub: 1. Remote Meter Reading
Workpaper Group: 001820 - Remote Mtr Reading

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	-414	-2,093	-223	43	0
Non-Labor	-840	-1,088	-161	0	0
NSE	0	0	0	0	0
Total	**-1,254**	**-3,181**	**-384**	**43**	**0**
FTE	-4.5	-36.8	-3.5	0.9	0.0

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017	-414	-840	0	-1,254	-4.5
Explanation:	Removed historical cost of Installation of New Meter Technology (182); project completed with no additional activity anticipated. -$1,254 (2017), -$3,181 (2018), -$384 (2019), $43 (2020), $0 (2021)				
2017 Total	-414	-840	0	-1,254	-4.5
2018	-2,093	-1,088	0	-3,181	-36.8
Explanation:	Removed historical cost of Installation of New Meter Technology (182); project completed with no additional activity anticipated. -$1,254 (2017), -$3,181 (2018), -$384 (2019), $43 (2020), $0 (2021)				
2018 Total	-2,093	-1,088	0	-3,181	-36.8
2019	-223	-161	0	-384	-3.5
Explanation:	Removed historical cost of Installation of New Meter Technology (182); project completed with no additional activity anticipated. -$1,254 (2017), -$3,181 (2018), -$384 (2019), $43 (2020), $0 (2021)				
2019 Total	-223	-161	0	-384	-3.5
2020	43	-0.122	0	43	0.9
Explanation:	Removed historical cost of Installation of New Meter Technology (182); project completed with no additional activity anticipated. -$1,254 (2017), -$3,181 (2018), -$384 (2019), $43 (2020), $0 (2021)				
2020 Total	43	-0.122	0	43	0.9
2021 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 001820

Area:	GAS DISTRIBUTION
Witness:	Mario A. Aguirre
Budget Code:	00182.0
Category:	P. Remote Meter Reading
Category-Sub:	1. Remote Meter Reading
Workpaper Group:	001820 - Remote Mtr Reading
Workpaper Detail:	001820.001 - Advanced Meter activities pertaining to Data Collector Units (DCUs) and poles
In-Service Date:	Not Applicable

Description:

This work category includes expenditures associated with the installation and replacement of Data Collector Units (DCU) and poles to support and expanding system for the Advanced Metering Infrastructure (AMI).

See Supplemental Workpaper SCG-04-MAA-CAP-SUP-014 for calculation details.

Forecast In 2021 $(000)

Years	2022	2023	2024
Labor	610	524	524
Non-Labor	1,267	728	728
NSE	0	0	0
Total	**1,877**	**1,252**	**1,252**
FTE	5.1	4.4	4.4

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 001820

SCG-04-MAA-CAP-SUP-014
Southern California Gas Company -- Gas Distribution -- Witness Mario Aguirre
Supplemental Workpaper Calculations for Advanced Metering Infrastructure Activities
Remote Meter Reading Workpaper

Assumptions: [A]: Total Units
[B]: Unit Cost
[C] Total Unit Cost
[D] Number of FTEs required
[E]: Labor Cost
[F]: Total Labor Cost

Table 1: Non-Labor Forecast (2021$ with Vacation & Sick)

	2022			2023			2024		
Description	**[A]**	**[B]**	**[C]** [A]X[B]	**[D]**	**[E]**	**[F]** [D]X[E]	**[G]**	**[H]**	**[I]** [G]X[H]
	Units	Unit Cost	Total	Units	Unit Cost	Total	Units	Unit Cost	Total
Materials - DCU	74	$ 6,149	$ 455,000	40	$ 6,700	$ 268,000	40	$ 6,700	$ 268,000
Materials - Pole	48	$ 501	$ 24,050	26	$ 870	$ 22,620	26	$ 870	$ 22,620
Materials - Solar Panels	37	$ 900	$ 33,300	20	$ 900	$ 18,000	20	$ 900	$ 18,000
Site Acquisition	74	$ 5,508	$ 407,600	40	$ 5,875	$ 235,000	40	$ 5,875	$ 235,000
Engineering and Construction	74	$ 4,694	$ 347,340	40	$ 4,613	$ 184,500	40	$ 4,613	$ 184,500
		Total	$ 1,267,290		Total	$ 728,120		Total	$ 728,120

Table 2: Labor Forecast (2021$ with Vacation & Sick)

	2022			2023			2024		
Description	**[J]**	**[K]**	**[L]** [J]X[K]	**[M]**	**[N]**	**[O]** [M]X[N]	**[P]**	**[Q]**	**[R]** [P]X[Q]
	FTEs	Labor Cost	Total	FTEs	Labor Cost	Total	FTEs	Labor Cost	Total
Engineering, Construction & Site Acquisition	3.75	$ 113,900	$ 427,125	3	$ 113,900	$ 341,700	3	$ 113,900	$ 341,700
Project Manager	1	$ 129,000	$ 129,000	1	$ 129,000	$ 129,000	1	$ 129,000	$ 129,000
Program Manager	0.35	$ 153,625	$ 53,769	0.35	$ 153,625	$ 53,769	0.35	$ 153,625	$ 53,769
		Total	$ 609,894		Total	$ 524,469		Total	$ 524,469
		Overall Total	$ 1,877,184		**Overall Total**	$ 1,252,589		**Overall Total**	$ 1,252,589