

Application of SOUTHERN CALIFORNIA GAS )  
COMPANY for authority to update its gas revenue )  
requirement and base rates )  
effective January 1, 2019 (U 904-G) )

Application No. 17-10-\_\_\_

Exhibit No.: (SCG-18-WP)

WORKPAPERS TO  
PREPARED DIRECT TESTIMONY  
OF GWEN R. MARELLI  
ON BEHALF OF SOUTHERN CALIFORNIA GAS COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA

OCTOBER 2017



**2019 General Rate Case - APP  
INDEX OF WORKPAPERS**

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**Overall Summary For Exhibit No. SCG-18-WP**

<b>Area:</b>	<b>CS - FIELD &amp; METER READING</b>
<b>Witness:</b>	<b>Gwen R. Marelli</b>

Description	In 2016 \$ (000) Incurred Costs			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
<b>Non-Shared Services</b>	166,007	163,570	162,695	168,507
<b>Shared Services</b>	1,194	1,514	1,514	1,514
<b>Total</b>	<b>167,201</b>	<b>165,084</b>	<b>164,209</b>	<b>170,021</b>

*Note: Totals may include rounding differences.*

Southern California Gas Company  
 2019 GRC - APP  
 Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli

**Summary of Non-Shared Services Workpapers:**

Description	In 2016 \$ (000) Incurred Costs			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
A. Customer Service Field	155,943	158,184	161,845	165,480
B. Meter Reading	10,064	5,386	850	3,027
<b>Total</b>	<b>166,007</b>	<b>163,570</b>	<b>162,695</b>	<b>168,507</b>

*Note: Totals may include rounding differences.*



Southern California Gas Company  
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Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Workpaper: VARIOUS

**Summary for Category: A. Customer Service Field**

	In 2016\$ (000) Incurred Costs			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	143,446	148,289	150,837	153,862
Non-Labor	12,497	9,895	11,008	11,618
NSE	0	0	0	0
<b>Total</b>	<b>155,943</b>	<b>158,184</b>	<b>161,845</b>	<b>165,480</b>
FTE	1,716.6	1,799.7	1,824.6	1,864.6

**Workpapers belonging to this Category:**

**2FC001.000 Customer Services Field - Operations**

Labor	103,615	101,010	104,186	105,018
Non-Labor	8,820	6,102	6,765	6,558
NSE	0	0	0	0
<b>Total</b>	<b>112,435</b>	<b>107,112</b>	<b>110,951</b>	<b>111,576</b>
FTE	1,258.7	1,207.5	1,247.7	1,252.1

**2FC002.000 Customer Services Field - Supervision**

Labor	10,744	9,389	10,212	10,402
Non-Labor	656	605	640	668
NSE	0	0	0	0
<b>Total</b>	<b>11,400</b>	<b>9,994</b>	<b>10,852</b>	<b>11,070</b>
FTE	111.2	98.9	107.7	109.4

**2FC003.000 Customer Services Field - Dispatch**

Labor	9,661	8,838	8,437	8,399
Non-Labor	145	224	289	290
NSE	0	0	0	0
<b>Total</b>	<b>9,806</b>	<b>9,062</b>	<b>8,726</b>	<b>8,689</b>
FTE	103.8	98.9	94.4	93.0

**2FC004.000 Customer Services Field - Support**

Labor	14,924	14,121	14,053	13,944
Non-Labor	1,511	2,381	2,715	3,499
NSE	0	0	0	0
<b>Total</b>	<b>16,435</b>	<b>16,502</b>	<b>16,768</b>	<b>17,443</b>
FTE	159.3	151.6	150.7	149.8

**2FC005.000 MSA Inspection Program**

Labor	4,502	14,931	13,949	16,099
Non-Labor	1,365	583	599	603
NSE	0	0	0	0
<b>Total</b>	<b>5,867</b>	<b>15,514</b>	<b>14,548</b>	<b>16,702</b>
FTE	83.6	242.8	224.1	260.3

Note: Totals may include rounding differences.

**Beginning of Workpaper**  
**2FC001.000 - Customer Services Field - Operations**

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Category-Sub: 1. Customer Services Field  
Workpaper: 2FC001.000 - Customer Services Field - Operations

**Activity Description:**

CS - Field Operations consists of labor and non-labor expenses for field technicians to provide service at customer premises, including both customer and company-generated work orders. Examples of customer-generated work orders include requests to establish/remove gas service, light gas pilots, check gas appliances, shut off and restore gas service for fumigation, investigate the potential causes of high gas bills, respond to emergency incidents, investigate potential gas leaks, and other field services to customers. Examples of company-generated work include meter and regulator changes and other meter work necessary to maintain company assets, and collecting customer payments for delinquent bills

**Forecast Explanations:**

**Labor - Zero-Based**

CS - Field Operations costs are primarily driven by work order volumes. AMI meter implementation was 98% complete by end of 2016 so using the BY 2016 reflected the effects of AMI implementation on work order volume. Br 2016 order volume per active meter by order type and forecasted meter growth for 2017 through 2019 is the methodology applied to most order types (37 of the 50 order types). For the remaining thirteen order types impacted by internal policies or other variables, such as collections related orders and meter work, different assumptions other than BY 2016 were used. Costs are also driven by the length of time it takes to travel to customer premises (drive time); the length of time it takes to complete each type of work order (on premises time); the amount of non-job time (e.g. for start of day and end of day non-order work, breaks, one-on-one discussions with supervisors, and other non-order activities); training time; and vacation and sick time. Each order has an associated average drive time per order and based on a five year average from 2012 to 2016, the forecasted 2017-2019 average drive times per order assumes a 4% increase per year due to increased traffic congestion. Each order type has an associated on premise average order completion time, and BY 2016 average on premises time per order type were applied to the order volume to determine full time equivalent (FTE) workforce requirements. BY 2016 non-job time, meetings/training and vacation and sick loaders were also applied to determine total FTE requirements. Incremental funding requests, which are forecasted using the zero-based methodology, are then added to determine total funding requirements. Refer to SCG-18-WP-2FC001 CS - Field Operations, Supplemental Workpaper 1, for calculations.

**Non-Labor - Zero-Based**

Non-labor costs include items such as company uniforms and laundry expenses, tool and miscellaneous supplies used on the job. The zero-based non-labor forecast is based on the BY 2016 average non-labor expense per FTE which is applied to total FTE workforce requirement. Refer to SCG-18-WP-2FC001 CS - Field Operations, Supplemental Workpaper 1, for calculations.

**NSE - Zero-Based**

NSE is not applicable to this workgroup

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC001.000 - Customer Services Field - Operations

**Summary of Results:**

		<b>In 2016\$ (000) Incurred Costs</b>								
		<b>Adjusted-Recorded</b>					<b>Adjusted-Forecast</b>			
<b>Years</b>		<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	
Labor		105,023	105,818	101,351	101,580	103,615	101,010	104,186	105,018	
Non-Labor		5,945	5,824	6,937	9,873	8,820	6,102	6,765	6,558	
NSE		0	0	0	0	0	0	0	0	
<b>Total</b>		<b>110,968</b>	<b>111,641</b>	<b>108,288</b>	<b>111,453</b>	<b>112,435</b>	<b>107,112</b>	<b>110,951</b>	<b>111,576</b>	
FTE		1,268.3	1,256.2	1,196.8	1,239.8	1,258.8	1,207.5	1,247.7	1,252.1	

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC001.000 - Customer Services Field - Operations

**Summary of Adjustments to Forecast:**

In 2016 \$(000) Incurred Costs										
Forecast Method		Base Forecast			Forecast Adjustments			Adjusted-Forecast		
Years		2017	2018	2019	2017	2018	2019	2017	2018	2019
Labor	Zero-Based	0	0	0	101,010	104,186	105,018	101,010	104,186	105,018
Non-Labor	Zero-Based	0	0	0	6,102	6,765	6,558	6,102	6,765	6,558
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>107,112</b>	<b>110,951</b>	<b>111,576</b>	<b>107,112</b>	<b>110,951</b>	<b>111,576</b>
FTE	Zero-Based	0.0	0.0	0.0	1,207.5	1,247.7	1,252.1	1,207.5	1,247.7	1,252.1

**Forecast Adjustment Details:**

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>	
2017	Other	66,504	3,309	0	69,813	784.9	1-Sided Adj	TPHT20170310174800603	
<b>Explanation:</b>		CS - Field Operations labor and non-labor costs associated with order volume based cost model forecast. Refer to Ex. SCG-18-WP - 2FC001 CS - Field Operations, Supplemental Workpaper 1, for calculations.							
2017	RAMP Base	33,765	2,539	0	36,304	410.3	1-Sided Adj	TPHT20170310175004370	
<b>Explanation:</b>		RAMP SCG-2 Employee Contractor Customer & Public Safety and SCG-7 Workforce Planning: CS - Field Operations base forecast for employee skills training, employee refresher training, PPE and safety equipment, gas facility and pipeline inspections, and safety-related field orders (leaks, appliance checks and unusual use, etc.). Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to SCG-18-WP-2FC001 CS - Field Operations, Supplemental Workpaper 3, for calculations.							
2017	RAMP Incremental	933	84	0	1,017	12.0	1-Sided Adj	TPHT20170310175121950	
<b>Explanation:</b>		RAMP SCG-2 Employee Contractor Customer & Public Safety and SCG-7 Workforce Planning: CS - Field Operations incremental forecast for employee skills training, employee refresher training, PPE and safety equipment, gas facility and pipeline inspections, and safety-related field orders (leaks, appliance checks and unusual use, etc.). Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to SCG-18-WP-2FC001 CS - Field Operations, Supplemental Workpaper 3, for calculations.							
2017	FOF-Ongoing	-569	0	0	-569	-5.3	1-Sided Adj	TPHT20170310175246463	
<b>Explanation:</b>		CS - Field Operations net savings associated with Fueling our Future initiative.							
2017	Other	377	170	0	547	5.6	1-Sided Adj	TPHT20170310230836073	
<b>Explanation:</b>		CS - Field Operations labor and non-labor costs for performing curb meter replacement work as part of planned meter changes associated with AMI implementation. This was not included in the the CS - Field Operations order volume based cost model forecast.							

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC001.000 - Customer Services Field - Operations

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>	<u>Adj_Type</u>	<u>RefID</u>
<b>2017 Total</b>		<b>101,010</b>	<b>6,102</b>	<b>0</b>	<b>107,112</b>	<b>,207.5</b>		

2018 Other 71,324 3,549 0 74,873 841.7 1-Sided Adj TPTHT20170310174825383

**Explanation:** CS - Field Operations labor and non-labor costs associated with order volume based cost model forecast. Refer to Ex. SCG-18-WP - 2FC001 CS - Field Operations, Supplemental Workpaper 1, for calculations.

2018 RAMP Base 33,765 2,539 0 36,304 410.3 1-Sided Adj TPTHT20170310175024480

**Explanation:** RAMP SCG-2 Employee Contractor Customer & Public Safety and SCG-7 Workforce Planning: CS - Field Operations base forecast for employee skills training, employee refresher training, PPE and safety equipment, gas facility and pipeline inspections, and safety-related field orders (leaks, appliance checks and unusual use, etc.). Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to SCG-18-WP-2FC001 CS - Field Operations, Supplemental Workpaper 3, for calculations.

2018 RAMP Incremental 1,889 217 0 2,106 23.7 1-Sided Adj TPTHT20170310175140177

**Explanation:** RAMP SCG-2 Employee Contractor Customer & Public Safety and SCG-7 Workforce Planning: CS - Field Operations incremental forecast for employee skills training, employee refresher training, PPE and safety equipment, gas facility and pipeline inspections, and safety-related field orders (leaks, appliance checks and unusual use, etc.). Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to SCG-18-WP-2FC001 CS - Field Operations, Supplemental Workpaper 3, for calculations.

2018 FOF-Ongoing -4,068 72 0 -3,996 -47.0 1-Sided Adj TPTHT20170310175311760

**Explanation:** CS - Field Operations net savings and costs associated with Fueling our Future initiative.

2018 Other 1,276 388 0 1,664 19.0 1-Sided Adj TPTHT20170511180914083

**Explanation:** CS - Field Operations labor and non-labor costs for performing curb meter replacement work as part of planned meter changes associated with AMI implementation. This was not included in the the CS - Field Operations order volume based cost model forecast.

<b>2018 Total</b>		<b>104,186</b>	<b>6,765</b>	<b>0</b>	<b>110,951</b>	<b>,247.7</b>		
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2019 Other 75,063 3,736 0 78,799 885.9 1-Sided Adj TPTHT20170310174921573

**Explanation:** CS - Field Operations labor and non-labor costs associated with order volume based cost model forecast. Refer to Ex. SCG-18-WP - 2FC001 CS - Field Operations, Supplemental Workpaper 1, for calculations.

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC001.000 - Customer Services Field - Operations

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>	<u>Adj_Type</u>	<u>RefID</u>
2019	RAMP Base	33,765	2,539	0	36,304	410.3	1-Sided Adj	TPTHT20170310175043987
<b>Explanation:</b>		RAMP SCG-2 Employee Contractor Customer & Public Safety and SCG-7 Workforce Planning: CS - Field Operations base forecast for employee skills training, employee refresher training, PPE and safety equipment, gas facility and pipeline inspections, and safety-related field orders (leaks, appliance checks and unusual use, etc.). Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to SCG-18-WP-2FC001 CS - Field Operations, Supplemental Workpaper 3, for calculations.						
2019	RAMP Incremental	2,763	299	0	3,062	34.6	1-Sided Adj	TPTHT20170310175200573
<b>Explanation:</b>		RAMP SCG-2 Employee Contractor Customer & Public Safety and SCG-7 Workforce Planning: CS - Field Operations incremental forecast for employee skills training, employee refresher training, PPE and safety equipment, gas facility and pipeline inspections, and safety-related field orders (leaks, appliance checks and unusual use, etc.). Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to SCG-18-WP-2FC001 CS - Field Operations, Supplemental Workpaper 3, for calculations.						
2019	FOF-Ongoing	-6,607	-16	0	-6,623	-79.1	1-Sided Adj	TPTHT20170310175336200
<b>Explanation:</b>		CS - Field Operations net savings associated with Fueling our Future initiative.						
2019	FOF-Implementation	34	0	0	34	0.4	1-Sided Adj	TPTHT20170310175414450
<b>Explanation:</b>		CS - Field Operations one time implementation costs associated with Fueling our Future Initiative.						
<b>2019 Total</b>		<b>105,018</b>	<b>6,558</b>	<b>0</b>	<b>111,576</b>	<b>,252.1</b>		

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Category-Sub: 1. Customer Services Field  
Workpaper: 2FC001.000 - Customer Services Field - Operations

**Determination of Adjusted-Recorded (Incurred Costs):**

	2012 (\$000)	2013 (\$000)	2014 (\$000)	2015 (\$000)	2016 (\$000)
<b>Recorded (Nominal \$)*</b>					
Labor	87,429	88,297	83,778	83,865	88,808
Non-Labor	6,114	5,822	6,806	7,813	7,174
NSE	0	0	0	0	0
<b>Total</b>	<b>93,543</b>	<b>94,119</b>	<b>90,583</b>	<b>91,678</b>	<b>95,983</b>
FTE	1,142.5	1,111.6	1,032.2	1,032.7	1,074.1
<b>Adjustments (Nominal \$) **</b>					
Labor	-4,993	-3,675	-689	1,478	154
Non-Labor	-336	-70	154	2,034	1,645
NSE	0	0	0	0	0
<b>Total</b>	<b>-5,329</b>	<b>-3,745</b>	<b>-535</b>	<b>3,513</b>	<b>1,800</b>
FTE	-54.6	-37.0	-7.4	28.8	2.5
<b>Recorded-Adjusted (Nominal \$)</b>					
Labor	82,436	84,621	83,089	85,344	88,963
Non-Labor	5,778	5,752	6,960	9,847	8,820
NSE	0	0	0	0	0
<b>Total</b>	<b>88,214</b>	<b>90,374</b>	<b>90,048</b>	<b>95,191</b>	<b>97,782</b>
FTE	1,087.9	1,074.6	1,024.8	1,061.5	1,076.6
<b>Vacation &amp; Sick (Nominal \$)</b>					
Labor	13,198	14,064	13,560	13,809	14,652
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>13,198</b>	<b>14,064</b>	<b>13,560</b>	<b>13,809</b>	<b>14,652</b>
FTE	180.5	181.6	172.0	178.3	182.1
<b>Escalation to 2016\$</b>					
Labor	9,389	7,132	4,703	2,428	0
Non-Labor	167	72	-23	26	0
NSE	0	0	0	0	0
<b>Total</b>	<b>9,556</b>	<b>7,204</b>	<b>4,680</b>	<b>2,453</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Constant 2016\$)</b>					
Labor	105,023	105,818	101,351	101,580	103,615
Non-Labor	5,945	5,824	6,937	9,873	8,820
NSE	0	0	0	0	0
<b>Total</b>	<b>110,968</b>	<b>111,641</b>	<b>108,288</b>	<b>111,453</b>	<b>112,435</b>
FTE	1,268.4	1,256.2	1,196.8	1,239.8	1,258.7

\* 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.



Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC001.000 - Customer Services Field - Operations

**Summary of Adjustments to Recorded:**

In Nominal \$ (000) Incurred Costs					
Years	2012	2013	2014	2015	2016
Labor	-4,993	-3,675	-689	1,478	154
Non-Labor	-336	-70	154	2,034	1,645
NSE	0	0	0	0	0
<b>Total</b>	<b>-5,329</b>	<b>-3,745</b>	<b>-535</b>	<b>3,513</b>	<b>1,800</b>
FTE	-54.6	-37.0	-7.4	28.8	2.5

**Detail of Adjustments to Recorded:**

Year	Adj Group	Labor	NLbr	NSE	FTE	Adj Type	RefID
2012	Other	-4,014	-268	0	45.0	1-Sided Adj	CTRINH20170227041005167
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Supervisors from 2FC001 to 2FC002 in order to align historical expenses with the workgroup in which the activity will be forecasted							
2012	Other	-979	-68	0	-9.6	1-Sided Adj	CTRINH20170227041124357
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field DOCs and DOMs from 2FC001 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted							
<b>2012 Total</b>		<b>-4,993</b>	<b>-336</b>	<b>0</b>	<b>54.6</b>		
2013	Other	-1	0	0	0.0	1-Sided Adj	CTRINH20161006134957197
<b>Explanation:</b> Pursuant to CPUC decision 12-12-037 Compression Service Tariff activities are excluded from base rates.							
2013	Other	-3,656	-144	0	40.2	1-Sided Adj	CTRINH20170227041541827
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Supervisors from 2FC001 to 2FC002 in order to align historical expenses with the workgroup in which the activity will be forecasted							
2013	Other	-681	-29	0	-6.4	1-Sided Adj	CTRINH20170227041732377
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Support DOCs and DOMs from 2FC001 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted							
2013	Other	-22	-1	0	0.0	1-Sided Adj	CTRINH20170227091956100
<b>Explanation:</b> Transfer of CS - Meter Reading labor and non-labor expenses from 2FC001 to 2FC006 in order to align historical expenses with the workgroup in which the activity will be forecasted							
2013	Other	685	104	0	9.6	1-Sided Adj	CTRINH20170512114021123
<b>Explanation:</b> Adjustment to correct erroneous mapping allocation for IO 300736959							

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC001.000 - Customer Services Field - Operations

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>
<b>2013 Total</b>		<b>-3,675</b>	<b>-70</b>	<b>0</b>	<b>37.0</b>		
2014	Other	-992	-134	0	10.7	1-Sided Adj	CTRINH20170227042420740
<b>Explanation:</b>		Transfer labor and non-labor expenses for CS - Field Supervisors from 2FC001 to 2FC002 in order to align historical expenses with the workgroup in which the activity will be forecasted					
2014	Other	-211	-28	0	2.0	1-Sided Adj	CTRINH20170227042513067
<b>Explanation:</b>		Transfer labor and non-labor expenses for CS - Field Support DOCs and DOMs from 2FC001 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted					
2014	Other	-338	-4	0	8.1	1-Sided Adj	CTRINH20170227092059193
<b>Explanation:</b>		Transfer of CS - Meter Reading labor and non-labor expenses from 2FC001 to 2FC006 in order to align historical expenses with the workgroup in which the activity will be forecasted					
2014	Other	853	320	0	13.4	1-Sided Adj	CTRINH20170512114114050
<b>Explanation:</b>		Adjustment to correct erroneous mapping allocation for IO 300736959					
<b>2014 Total</b>		<b>-689</b>	<b>154</b>	<b>0</b>	<b>7.4</b>		
2015	Aliso	-10	0	0	0.1	1-Sided Adj	CTRINH20161116093606787
<b>Explanation:</b>		Aliso leak mitigation exclude costs captured in IO 300775156					
2015	Other	-196	-182	0	2.1	1-Sided Adj	CTRINH20170227042833617
<b>Explanation:</b>		Transfer labor and non-labor expenses for CS - Field Supervisors from 2FC001 to 2FC002 in order to align historical expenses with the workgroup in which the activity will be forecasted					
2015	Other	-88	-12	0	1.1	1-Sided Adj	CTRINH20170227052031507
<b>Explanation:</b>		Transfer labor and non-labor expenses for CS - Field Support DOCs from 2FC001 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted					
2015	Other	-797	-9	0	19.2	1-Sided Adj	CTRINH20170227092215413
<b>Explanation:</b>		Transfer of CS - Meter Reading labor and non-labor expenses from 2FC001 to 2FC006 in order to align historical expenses with the workgroup in which the activity will be forecasted					
2015	Other	2,569	2,237	0	51.3	1-Sided Adj	CTRINH20170512114249607
<b>Explanation:</b>		Adjustment to correct erroneous mapping allocation for IO 300736959					
<b>2015 Total</b>		<b>1,478</b>	<b>2,034</b>	<b>0</b>	<b>28.8</b>		

Note: Totals may include rounding differences.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC001.000 - Customer Services Field - Operations

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>
2016	Aliso	-18	0	0	-0.2	1-Sided Adj	CTRINH20161116094830433
<b>Explanation:</b> Aliso leak mitigation exclude costs captured in IO 300775156							
2016	Other	-193	-138	0	-2.1	1-Sided Adj	CTRINH20170227044419047
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Supervisors from 2FC001 to 2FC002 in order to align historical expenses with the workgroup in which the activity will be forecasted							
2016	Other	-188	-50	0	-2.2	1-Sided Adj	CTRINH20170227044527017
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Support DOCs and DOMs from 2FC001 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted							
2016	Other	-1,328	-37	0	30.6	1-Sided Adj	CTRINH20170227092315507
<b>Explanation:</b> Transfer of CS - Meter Reading labor and non-labor expenses from 2FC001 to 2FC006 in order to align historical expenses with the workgroup in which the activity will be forecasted							
2016	Other	1,881	1,871	0	37.6	1-Sided Adj	CTRINH20170512114415473
<b>Explanation:</b> Adjustment to correct erroneous mapping allocation for IO 300736959							
<b>2016 Total</b>		<b>154</b>	<b>1,645</b>	<b>0</b>	<b>2.5</b>		

Note: Totals may include rounding differences.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC001.000 - Customer Services Field - Operations

**RAMP Item # 1**

Ref ID: TPTHT20170310175004370

RAMP Chapter: SCG-2

Program Name: Various - See attached

Program Description: Various See attached

**Risk/Mitigation:**

Risk: Employee, Contractor, Customer and Public Safety

Mitigation: Various - See attached

**Forecast CPUC Cost Estimates (\$000)**

	<u>2017</u>	<u>2018</u>	<u>2019</u>
Low	27,096	26,708	26,270
High	33,597	33,095	32,854

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Mandated

Work Type Citation: Combination of Mandated and Non-Mandated

**Historical Embedded Cost Estimates (\$000)**

Embedded Costs: 36304

Explanation: CSF Operations base forecast for employee skills training, employee refresher Training, PPE and safety equipment, gas facility and pipeline inspections, and safety-Related Field Orders

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Category-Sub: 1. Customer Services Field  
Workpaper: 2FC001.000 - Customer Services Field - Operations

**RAMP Item # 2**

Ref ID: TPTHT20170310175121950

RAMP Chapter: SCG-2

Program Name: Various - See attached

Program Description: Various - See attached

**Risk/Mitigation:**

Risk: Employee, Contractors, Customer and PUBlic Safety

Mitigation: Various - See attached

**Forecast CPUC Cost Estimates (\$000)**

	<u>2017</u>	<u>2018</u>	<u>2019</u>
Low	27,096	26,708	26,270
High	33,597	33,095	32,854

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Mandated

Work Type Citation: Combination of Mandated and Non-Mandated

**Historical Embedded Cost Estimates (\$000)**

Embedded Costs: 0

Explanation:

**Supplemental Workpapers for Workpaper 2FC001.000**

SCG-18-WP - 2FC001 CS - Field Operations  
Supplemental Workpaper 1  
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**CS - Field Operations Order Volume Based Cost Model**

This model estimates labor and non labor costs associated with the 2017 - 2019 estimated order volume by order type.

**NOTES:**

- 1)** Adjustments made to remove on-prem time associated with 3 order types under Meter Work (Capital): Met Set Turn On, Meter Set Left Off, and Meter Set PSI. The on-prem time for these orders are contained in the testimony of SoCalGas witness Gina Orozco-Mejia, Ex. SCG-04.
- 2)** BY 2016 refers to actual recorded data. 2016 Estimated refers to data that is not tracked at the individual order types level shown in the table, therefore, costs are estimated.
- 3)** All costs shown are in BY 2016 dollars.

CS - Field Operations Order Volume Based Cost Model		Order Volume			
		BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated
Calculation Steps --->>>		A			
Line #	Order Types	BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	Change of Account - Turn On (Not Entered)	118,375	43,217	15,895	5,893
2	Change of Account - Close (Soft)	305,457	307,112	309,396	311,853
3	Credit/Collections - 48 Hour (1st Call)	59,466	56,353	56,772	57,223
4	Credit/Collections - Collect/Close (2nd Call)	316,491	299,862	302,091	304,490
5	Credit/Collections - Returned Check	712	679	684	689
6	Credit/Collections - Tenant Notification	15,079	14,435	14,542	14,658
7	Credit/Collections - Other	72	69	70	70
8	Customer Service Order ("CSO")	199,468	200,549	202,040	203,645
9	CSO - Carbon Monoxide Test	6,590	6,626	6,675	6,728
10	CSO - No Gas	18,369	18,469	18,606	18,754
11	CSO - Seasonal Off	5,762	5,793	5,836	5,883
12	CSO - Seasonal On	54,652	54,948	55,357	55,796
13	Gas Leak - CSO Leak	269,460	270,920	272,934	275,102
14	Gas Leak - Pilot Out Only	19,800	19,907	20,055	20,215
15	Gas Leak - Leak Investigation (Step2)	13,256	13,328	13,427	13,534
16	Fumigation - Turn On	72,083	72,474	73,012	73,592
17	Fumigation - Close	77,602	78,023	78,603	79,227
18	HBI - Entered	4,349	4,373	4,405	4,440
19	HBI - Not Entered	6,704	6,740	6,790	6,844
20	Meter Work (Capital) - Meter Set - Turn On	21,362	22,870	27,570	29,524
21	Meter Work (Capital) - Meter Set - Left Off	2,814	2,620	3,159	3,382
22	Meter Work (Capital) - Meter Set (PSI)	2,666	4,554	5,490	5,880
23	Meter Work (O&M) - Meter Reset - Turn On	945	950	957	965
24	Meter Work (O&M) - Meter Reset - Left Off	538	541	545	549
25	Meter Work (O&M) - Meter Change (Entered)	3,935	3,225	7,372	5,598
26	Meter Work (O&M) - Meter Change (Not Entered)	45,444	42,110	96,274	73,102
27	Meter Work (O&M) - Meter Change (Size)	5,970	6,002	6,047	6,095
28	Meter Work (O&M) - Meter Remove	7,705	7,747	7,804	7,866
29	NonPay Turn On - Turn On	106,637	105,187	103,187	101,034
30	Read/Verify - Verify	90,026	90,514	91,187	91,911
31	Read/Verify - Verify - Soft Close	31,330	31,500	31,734	31,986
32	Read/Verify - Verify - Soft Close - 180 Days	18,374	18,474	18,611	18,759
33	Read/Verify - Load Survey - Residential	6,069	6,102	6,147	6,196



<b>CS - Field Operations Order Volume Based Cost Model</b>		<b>Order Volume</b>			
Calculation Steps ---->>>		A			
Line #	Order Types	BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	90,150	90,639	91,312	92,038
35	TurnOn/ShutOff - Turn On Entered (Gas On)	18,600	18,701	18,840	18,989
36	TurnOn/ShutOff - Turn On (Back On/Restore)	48,388	48,650	49,012	49,401
37	TurnOn/ShutOff - Turn On (PSI)	1,501	1,509	1,520	1,532
38	TurnOn/ShutOff - Close (Hard)	49,404	49,672	50,041	50,439
39	Miscellaneous - Service Order (MSO)	50,438	42,407	42,722	43,061
40	Miscellaneous - Meter & Reg (MMR)	73,100	66,818	67,315	67,850
41	Miscellaneous - Assist	25,482	25,620	25,811	26,016
42	Food Industry - Turn On (Entered)	2,744	2,759	2,779	2,801
43	Food Industry - CSO	66,134	66,492	66,987	67,519
44	Food Industry - CSO Leak	9,427	9,478	9,549	9,624
45	Commercial/Industrial - ISO	25,048	25,184	25,371	25,572
46	Commercial/Industrial - Load Survey- I/C	4,529	4,554	4,587	4,624
47	Commercial/Industrial - CSO	33,324	33,505	33,754	34,022
48	Commercial/Industrial - Turn On (Entered)	31,081	31,249	31,482	31,732
49	Cust/Comp Work - Other	583	586	591	595
50	Incomplete	237,326	227,250	232,201	230,482
51	MTU Remediation Due To Failures				40,447
52	MTU Remediation Due To Failures Incomplete				3,938
53	Hot Water Leak Investigation				7,044
54	Hot Water Leak Investigation Incomplete				686
55	Undersert Regulators - Install Slam Shut Regulator				8,342
56	Undersert Regulators - Relocate Regulator Outside				9,534
57	Undersert Regulators - Vent Through Existing Screens				1,986
58	Undersert Regulators - Incomplete				1,934
59	Restore (Due To Street Cut For Access Issues)		-	364	709
60	Low Flow Test (increase in on-prem time)		109,892	110,709	111,589
61	Clock Test (increase in on-prem time)		47,097	47,447	47,824
62	<b>TOTAL</b>	2,674,821	2,718,332	2,775,667	2,831,814

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CS - Field Operations Order Volume Based Cost Model		On-Premises Time (On-Prem) (Hours)				
Calculation Steps ---->>>		C = A x B / 60				
Line #	Order Types	BY 2016 On-Prem Per Order (Minutes)	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	Change of Account - Turn On (Not Entered)	7.2	14,221	5,192	1,910	708
2	Change of Account - Close (Soft)	6.0	30,349	30,513	30,740	30,984
3	Credit/Collections - 48 Hour (1st Call)	5.7	5,613	5,319	5,359	5,401
4	Credit/Collections - Collect/Close (2nd Call)	9.1	48,180	45,649	45,988	46,354
5	Credit/Collections - Returned Check	12.4	147	141	142	143
6	Credit/Collections - Tenant Notification	8.3	2,084	1,995	2,010	2,026
7	Credit/Collections - Other	22.0	26	25	25	26
8	Customer Service Order ("CSO")	27.3	90,868	91,360	92,039	92,770
9	CSO - Carbon Monoxide Test	43.7	4,797	4,823	4,859	4,897
10	CSO - No Gas	33.0	10,089	10,144	10,219	10,300
11	CSO - Seasonal Off	19.0	1,820	1,830	1,844	1,859
12	CSO - Seasonal On	25.4	23,139	23,264	23,437	23,623
13	Gas Leak - CSO Leak	33.5	150,480	151,296	152,421	153,631
14	Gas Leak - Pilot Out Only	25.8	8,506	8,552	8,615	8,684
15	Gas Leak - Leak Investigation (Step2)	64.8	14,308	14,385	14,492	14,608
16	Fumigation - Turn On	47.5	57,016	57,325	57,751	58,210
17	Fumigation - Close	23.7	30,686	30,852	31,081	31,328
18	HBI - Entered	58.0	4,203	4,226	4,258	4,291
19	HBI - Not Entered	25.3	2,830	2,846	2,867	2,889
20	Meter Work (Capital) - Meter Set - Turn On	82.7	29,453	31,532	38,012	40,706
21	Meter Work (Capital) - Meter Set - Left Off	73.3	3,439	3,202	3,860	4,134
22	Meter Work (Capital) - Meter Set (PSI)	70.0	3,109	5,311	6,402	6,856
23	Meter Work (O&M) - Meter Reset - Turn On	100.4	1,581	1,590	1,601	1,614
24	Meter Work (O&M) - Meter Reset - Left Off	87.1	781	785	791	797
25	Meter Work (O&M) - Meter Change (Entered)	77.9	5,108	4,186	9,570	7,267
26	Meter Work (O&M) - Meter Change (Not Entered)	53.6	40,578	37,601	85,965	65,274
27	Meter Work (O&M) - Meter Change (Size)	90.9	9,047	9,096	9,164	9,236
28	Meter Work (O&M) - Meter Remove	19.9	2,550	2,564	2,583	2,603
29	NonPay Turn On - Turn On	41.9	74,433	73,421	72,025	70,522
30	Read/Verify - Verify	12.1	18,181	18,280	18,415	18,562
31	Read/Verify - Verify - Soft Close	9.5	4,944	4,971	5,008	5,048
32	Read/Verify - Verify - Soft Close - 180 Days	9.3	2,841	2,856	2,878	2,900
33	Read/Verify - Load Survey - Residential	42.1	4,262	4,285	4,316	4,351

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CS - Field Operations Order Volume Based Cost Model		On-Premises Time (On-Prem) (Hours)				
Calculation Steps ---->>>		C = A x B / 60				
Line #	Order Types	BY 2016 On-Prem Per Order (Minutes)	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	55.9	84,057	84,513	85,141	85,817
35	TurnOn/ShutOff - Turn On Entered (Gas On)	36.9	11,447	11,509	11,595	11,687
36	TurnOn/ShutOff - Turn On (Back On/Restore)	46.2	37,243	37,445	37,723	38,023
37	TurnOn/ShutOff - Turn On (PSI)	54.8	1,370	1,378	1,388	1,399
38	TurnOn/ShutOff - Close (Hard)	5.9	4,819	4,845	4,881	4,920
39	Miscellaneous - Service Order (MSO)	29.7	24,965	20,990	21,146	21,314
40	Miscellaneous - Meter & Reg (MMR)	34.1	41,518	37,951	38,233	38,536
41	Miscellaneous - Assist	47.9	20,352	20,463	20,615	20,779
42	Food Industry - Turn On (Entered)	90.2	4,124	4,146	4,177	4,210
43	Food Industry - CSO	62.7	69,078	69,452	69,969	70,525
44	Food Industry - CSO Leak	50.6	7,957	8,000	8,060	8,124
45	Commercial/Industrial - ISO	81.2	33,885	34,069	34,322	34,595
46	Commercial/Industrial - Load Survey- I/C	65.8	4,968	4,995	5,032	5,072
47	Commercial/Industrial - CSO	32.6	18,117	18,215	18,350	18,496
48	Commercial/Industrial - Turn On (Entered)	52.9	27,377	27,526	27,731	27,951
49	Cust/Comp Work - Other	32.0	311	313	315	317
50	Incomplete	10.8	42,532	40,726	41,613	41,305
51	MTU Remediation Due To Failures	24.8	-	-	-	16,703
52	MTU Remediation Due To Failures Incomplete	10.8	-	-	-	706
53	Hot Water Leak Investigation	29.3	-	-	-	3,439
54	Hot Water Leak Investigation Incomplete	10.8	-	-	-	123
55	Underset Regulators - Install Slam Shut Regulator	127.2	-	-	-	17,686
56	Underset Regulators - Relocate Regulator Outside	97.2	-	-	-	15,445
57	Underset Regulators - Vent Through Existing Screens	40.0	-	-	-	1,324
58	Underset Regulators - Incomplete	10.8	-	-	-	347
59	Restore (Due To Street Cut For Access Issues)	46.2	-	-	280	546
60	Low Flow Test (increase in on-prem time)	2.7	-	4,945	4,982	5,021
61	Clock Test (increase in on-prem time)	3.0	-	2,355	2,372	2,391
62	<b>TOTAL</b>		1,133,791	1,123,250	1,188,572	1,229,403

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CS - Field Operations Order Volume Based Cost Model		Average Drive Time Per Order (Minutes)			
Calculation Steps ---->>>		D = 4% Increase From Previous Year			
Line #	Order Types	BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	Change of Account - Turn On (Not Entered)	13.1	13.6	14.2	14.7
2	Change of Account - Close (Soft)	13.1	13.6	14.2	14.7
3	Credit/Collections - 48 Hour (1st Call)	13.1	13.6	14.2	14.7
4	Credit/Collections - Collect/Close (2nd Call)	13.1	13.6	14.2	14.7
5	Credit/Collections - Returned Check	13.1	13.6	14.2	14.7
6	Credit/Collections - Tenant Notification	13.1	13.6	14.2	14.7
7	Credit/Collections - Other	13.1	13.6	14.2	14.7
8	Customer Service Order ("CSO")	13.1	13.6	14.2	14.7
9	CSO - Carbon Monoxide Test	13.1	13.6	14.2	14.7
10	CSO - No Gas	13.1	13.6	14.2	14.7
11	CSO - Seasonal Off	13.1	13.6	14.2	14.7
12	CSO - Seasonal On	13.1	13.6	14.2	14.7
13	Gas Leak - CSO Leak	13.1	13.6	14.2	14.7
14	Gas Leak - Pilot Out Only	13.1	13.6	14.2	14.7
15	Gas Leak - Leak Investigation (Step2)	13.1	13.6	14.2	14.7
16	Fumigation - Turn On	13.1	13.6	14.2	14.7
17	Fumigation - Close	13.1	13.6	14.2	14.7
18	HBI - Entered	13.1	13.6	14.2	14.7
19	HBI - Not Entered	13.1	13.6	14.2	14.7
20	Meter Work (Capital) - Meter Set - Turn On	13.1	13.6	14.2	14.7
21	Meter Work (Capital) - Meter Set - Left Off	13.1	13.6	14.2	14.7
22	Meter Work (Capital) - Meter Set (PSI)	13.1	13.6	14.2	14.7
23	Meter Work (O&M) - Meter Reset - Turn On	13.1	13.6	14.2	14.7
24	Meter Work (O&M) - Meter Reset - Left Off	13.1	13.6	14.2	14.7
25	Meter Work (O&M) - Meter Change (Entered)	13.1	13.6	14.2	14.7
26	Meter Work (O&M) - Meter Change (Not Entered)	13.1	13.6	14.2	14.7
27	Meter Work (O&M) - Meter Change (Size)	13.1	13.6	14.2	14.7
28	Meter Work (O&M) - Meter Remove	13.1	13.6	14.2	14.7
29	NonPay Turn On - Turn On	13.1	13.6	14.2	14.7
30	Read/Verify - Verify	13.1	13.6	14.2	14.7
31	Read/Verify - Verify - Soft Close	13.1	13.6	14.2	14.7
32	Read/Verify - Verify - Soft Close - 180 Days	13.1	13.6	14.2	14.7
33	Read/Verify - Load Survey - Residential	13.1	13.6	14.2	14.7

CS - Field Operations Order Volume Based Cost Model		Average Drive Time Per Order (Minutes)			
Calculation Steps ---->>>		D = 4% Increase From Previous Year			
Line #	Order Types	BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	13.1	13.6	14.2	14.7
35	TurnOn/ShutOff - Turn On Entered (Gas On)	13.1	13.6	14.2	14.7
36	TurnOn/ShutOff - Turn On (Back On/Restore)	13.1	13.6	14.2	14.7
37	TurnOn/ShutOff - Turn On (PSI)	13.1	13.6	14.2	14.7
38	TurnOn/ShutOff - Close (Hard)	13.1	13.6	14.2	14.7
39	Miscellaneous - Service Order (MSO)	13.1	13.6	14.2	14.7
40	Miscellaneous - Meter & Reg (MMR)	13.1	13.6	14.2	14.7
41	Miscellaneous - Assist	13.1	13.6	14.2	14.7
42	Food Industry - Turn On (Entered)	13.1	13.6	14.2	14.7
43	Food Industry - CSO	13.1	13.6	14.2	14.7
44	Food Industry - CSO Leak	13.1	13.6	14.2	14.7
45	Commercial/Industrial - ISO	13.1	13.6	14.2	14.7
46	Commercial/Industrial - Load Survey- I/C	13.1	13.6	14.2	14.7
47	Commercial/Industrial - CSO	13.1	13.6	14.2	14.7
48	Commercial/Industrial - Turn On (Entered)	13.1	13.6	14.2	14.7
49	Cust/Comp Work - Other	13.1	13.6	14.2	14.7
50	Incomplete	13.1	13.6	14.2	14.7
51	MTU Remediation Due To Failures	13.1	13.6	14.2	14.7
52	MTU Remediation Due To Failures Incomplete	13.1	13.6	14.2	14.7
53	Hot Water Leak Investigation	13.1	13.6	14.2	14.7
54	Hot Water Leak Investigation Incomplete	13.1	13.6	14.2	14.7
55	Underset Regulators - Install Slam Shut Regulator	13.1	13.6	14.2	14.7
56	Underset Regulators - Relocate Regulator Outside	13.1	13.6	14.2	14.7
57	Underset Regulators - Vent Through Existing Screens	13.1	13.6	14.2	14.7
58	Underset Regulators - Incomplete	13.1	13.6	14.2	14.7
59	Restore (Due To Street Cut For Access Issues)	13.1	13.6	14.2	14.7
60	Low Flow Test (increase in on-prem time)	-	-	-	-
61	Clock Test (increase in on-prem time)	-	-	-	-
62	<b>TOTAL</b>				

CS - Field Operations Order Volume Based Cost Model		Drive Time (Hours)			
		2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
Calculation Steps ---->>>		E = A x D / 60			
Line #	Order Types	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	Change of Account - Turn On (Not Entered)	25,831	9,808	3,752	1,446
2	Change of Account - Close (Soft)	66,654	69,696	73,023	76,547
3	Credit/Collections - 48 Hour (1st Call)	12,976	12,789	13,399	14,046
4	Credit/Collections - Collect/Close (2nd Call)	69,062	68,051	71,299	74,740
5	Credit/Collections - Returned Check	155	154	161	169
6	Credit/Collections - Tenant Notification	3,290	3,276	3,432	3,598
7	Credit/Collections - Other	16	16	16	17
8	Customer Service Order ("CSO")	43,526	45,513	47,685	49,986
9	CSO - Carbon Monoxide Test	1,438	1,504	1,575	1,651
10	CSO - No Gas	4,008	4,191	4,391	4,603
11	CSO - Seasonal Off	1,257	1,315	1,377	1,444
12	CSO - Seasonal On	11,926	12,470	13,065	13,696
13	Gas Leak - CSO Leak	58,799	61,483	64,418	67,526
14	Gas Leak - Pilot Out Only	4,321	4,518	4,733	4,962
15	Gas Leak - Leak Investigation (Step2)	2,893	3,025	3,169	3,322
16	Fumigation - Turn On	15,729	16,447	17,232	18,064
17	Fumigation - Close	16,934	17,706	18,552	19,447
18	HBI - Entered	949	992	1,040	1,090
19	HBI - Not Entered	1,463	1,530	1,603	1,680
20	Meter Work (Capital) - Meter Set - Turn On	4,661	5,190	6,507	7,247
21	Meter Work (Capital) - Meter Set - Left Off	614	595	745	830
22	Meter Work (Capital) - Meter Set (PSI)	582	1,034	1,296	1,443
23	Meter Work (O&M) - Meter Reset - Turn On	206	216	226	237
24	Meter Work (O&M) - Meter Reset - Left Off	117	123	129	135
25	Meter Work (O&M) - Meter Change (Entered)	859	732	1,740	1,374
26	Meter Work (O&M) - Meter Change (Not Entered)	9,916	9,556	22,722	17,944
27	Meter Work (O&M) - Meter Change (Size)	1,303	1,362	1,427	1,496
28	Meter Work (O&M) - Meter Remove	1,681	1,758	1,842	1,931
29	NonPay Turn On - Turn On	23,269	23,871	24,354	24,800
30	Read/Verify - Verify	19,645	20,541	21,522	22,560
31	Read/Verify - Verify - Soft Close	6,837	7,149	7,490	7,851
32	Read/Verify - Verify - Soft Close - 180 Days	4,009	4,192	4,393	4,605
33	Read/Verify - Load Survey - Residential	1,324	1,385	1,451	1,521

<b>CS - Field Operations Order Volume Based Cost Model</b>		<b>Drive Time (Hours)</b>			
<b>Calculation Steps ----&gt;&gt;&gt;</b>		<b>E = A x D / 60</b>			
<b>Line #</b>	<b>Order Types</b>	<b>2016 Estimated</b>	<b>2017 Estimated</b>	<b>2018 Estimated</b>	<b>TY 2019 Estimated</b>
34	TurnOn/ShutOff - Turn On (Entered)	19,672	20,570	21,551	22,591
35	TurnOn/ShutOff - Turn On Entered (Gas On)	4,059	4,244	4,447	4,661
36	TurnOn/ShutOff - Turn On (Back On/Restore)	10,559	11,041	11,568	12,126
37	TurnOn/ShutOff - Turn On (PSI)	328	342	359	376
38	TurnOn/ShutOff - Close (Hard)	10,781	11,273	11,811	12,381
39	Miscellaneous - Service Order (MSO)	11,006	9,624	10,083	10,570
40	Miscellaneous - Meter & Reg (MMR)	15,951	15,164	15,888	16,654
41	Miscellaneous - Assist	5,560	5,814	6,092	6,386
42	Food Industry - Turn On (Entered)	599	626	656	688
43	Food Industry - CSO	14,431	15,090	15,810	16,573
44	Food Industry - CSO Leak	2,057	2,151	2,254	2,362
45	Commercial/Industrial - ISO	5,466	5,715	5,988	6,277
46	Commercial/Industrial - Load Survey- I/C	988	1,033	1,083	1,135
47	Commercial/Industrial - CSO	7,272	7,604	7,966	8,351
48	Commercial/Industrial - Turn On (Entered)	6,782	7,092	7,430	7,789
49	Cust/Comp Work - Other	127	133	139	146
50	Incomplete	51,787	51,572	54,804	56,574
51	MTU Remediation Due To Failures	-	-	-	9,928
52	MTU Remediation Due To Failures Incomplete	-	-	-	967
53	Hot Water Leak Investigation	-	-	-	1,729
54	Hot Water Leak Investigation Incomplete	-	-	-	168
55	Underset Regulators - Install Slam Shut Regulator	-	-	-	2,048
56	Underset Regulators - Relocate Regulator Outside	-	-	-	2,340
57	Underset Regulators - Vent Through Existing Screens	-	-	-	488
58	Underset Regulators - Incomplete	-	-	-	475
59	Restore (Due To Street Cut For Access Issues)	-	-	86	174
60	Low Flow Test (increase in on-prem time)	-	-	-	-
61	Clock Test (increase in on-prem time)	-	-	-	-
62	<b>TOTAL</b>	583,679	581,273	617,780	655,965

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CS - Field Operations Order Volume Based Cost Model		Productive Time = On-Prem Time + Drive Time (Hours)			
Calculation Steps ---->>>		F = C + E			
Line #	Order Types	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	Change of Account - Turn On (Not Entered)	40,052	15,000	5,661	2,154
2	Change of Account - Close (Soft)	97,003	100,210	103,763	107,532
3	Credit/Collections - 48 Hour (1st Call)	18,589	18,108	18,758	19,447
4	Credit/Collections - Collect/Close (2nd Call)	117,243	113,700	117,287	121,093
5	Credit/Collections - Returned Check	303	295	303	312
6	Credit/Collections - Tenant Notification	5,375	5,271	5,442	5,624
7	Credit/Collections - Other	42	41	42	43
8	Customer Service Order ("CSO")	134,394	136,873	139,724	142,757
9	CSO - Carbon Monoxide Test	6,235	6,326	6,434	6,549
10	CSO - No Gas	14,098	14,335	14,611	14,904
11	CSO - Seasonal Off	3,078	3,145	3,221	3,302
12	CSO - Seasonal On	35,064	35,734	36,502	37,319
13	Gas Leak - CSO Leak	209,280	212,779	216,838	221,158
14	Gas Leak - Pilot Out Only	12,826	13,070	13,349	13,646
15	Gas Leak - Leak Investigation (Step2)	17,201	17,410	17,661	17,929
16	Fumigation - Turn On	72,746	73,772	74,984	76,274
17	Fumigation - Close	47,619	48,559	49,633	50,775
18	HBI - Entered	5,152	5,219	5,297	5,381
19	HBI - Not Entered	4,293	4,375	4,469	4,569
20	Meter Work (Capital) - Meter Set - Turn On	34,114	36,722	44,519	47,952
21	Meter Work (Capital) - Meter Set - Left Off	4,053	3,797	4,605	4,964
22	Meter Work (Capital) - Meter Set (PSI)	3,691	6,344	7,698	8,299
23	Meter Work (O&M) - Meter Reset - Turn On	1,787	1,805	1,827	1,851
24	Meter Work (O&M) - Meter Reset - Left Off	898	908	919	932
25	Meter Work (O&M) - Meter Change (Entered)	5,967	4,918	11,310	8,641
26	Meter Work (O&M) - Meter Change (Not Entered)	50,494	47,157	108,687	83,218
27	Meter Work (O&M) - Meter Change (Size)	10,350	10,458	10,591	10,732
28	Meter Work (O&M) - Meter Remove	4,231	4,322	4,425	4,534
29	NonPay Turn On - Turn On	97,703	97,292	96,379	95,322
30	Read/Verify - Verify	37,826	38,821	39,937	41,122
31	Read/Verify - Verify - Soft Close	11,781	12,119	12,498	12,899
32	Read/Verify - Verify - Soft Close - 180 Days	6,850	7,049	7,270	7,505
33	Read/Verify - Load Survey - Residential	5,586	5,669	5,767	5,872



CS - Field Operations Order Volume Based Cost Model		Productive Time = On-Prem Time + Drive Time (Hours)			
Calculation Steps ---->>>		F = C + E			
Line #	Order Types	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	103,729	105,082	106,692	108,409
35	TurnOn/ShutOff - Turn On Entered (Gas On)	15,506	15,753	16,042	16,348
36	TurnOn/ShutOff - Turn On (Back On/Restore)	47,802	48,485	49,291	50,149
37	TurnOn/ShutOff - Turn On (PSI)	1,698	1,720	1,747	1,775
38	TurnOn/ShutOff - Close (Hard)	15,600	16,118	16,692	17,301
39	Miscellaneous - Service Order (MSO)	35,972	30,614	31,229	31,884
40	Miscellaneous - Meter & Reg (MMR)	57,470	53,114	54,120	55,191
41	Miscellaneous - Assist	25,913	26,277	26,707	27,164
42	Food Industry - Turn On (Entered)	4,722	4,772	4,833	4,897
43	Food Industry - CSO	83,509	84,542	85,779	87,098
44	Food Industry - CSO Leak	10,014	10,151	10,313	10,486
45	Commercial/Industrial - ISO	39,351	39,784	40,310	40,872
46	Commercial/Industrial - Load Survey- I/C	5,956	6,028	6,115	6,207
47	Commercial/Industrial - CSO	25,389	25,819	26,317	26,847
48	Commercial/Industrial - Turn On (Entered)	34,160	34,618	35,161	35,740
49	Cust/Comp Work - Other	438	446	454	464
50	Incomplete	94,319	92,298	96,417	97,879
51	MTU Remediation Due To Failures	-	-	-	26,631
52	MTU Remediation Due To Failures Incomplete	-	-	-	1,672
53	Hot Water Leak Investigation	-	-	-	5,168
54	Hot Water Leak Investigation Incomplete	-	-	-	291
55	Underset Regulators - Install Slam Shut Regulator	-	-	-	19,734
56	Underset Regulators - Relocate Regulator Outside	-	-	-	17,786
57	Underset Regulators - Vent Through Existing Screens	-	-	-	1,812
58	Underset Regulators - Incomplete	-	-	-	821
59	Restore (Due To Street Cut For Access Issues)	-	-	366	720
60	Low Flow Test (increase in on-prem time)	-	4,945	4,982	5,021
61	Clock Test (increase in on-prem time)	-	2,355	2,372	2,391
62	<b>TOTAL</b>	<b>1,717,470</b>	<b>1,704,523</b>	<b>1,806,352</b>	<b>1,885,368</b>

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CS - Field Operations Order Volume Based Cost Model		Productive Time + Non Job Time (NJT) (Hours)				
Calculation Steps ---->>>		H = F x ( 1 + G )				
Line #	Order Types	BY 2016 NJT Factor	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	Change of Account - Turn On (Not Entered)	19.76%	47,965	17,963	6,780	2,580
2	Change of Account - Close (Soft)	19.76%	116,169	120,009	124,265	128,778
3	Credit/Collections - 48 Hour (1st Call)	19.76%	22,262	21,686	22,464	23,290
4	Credit/Collections - Collect/Close (2nd Call)	19.76%	140,407	136,164	140,461	145,019
5	Credit/Collections - Returned Check	19.76%	363	353	363	373
6	Credit/Collections - Tenant Notification	19.76%	6,437	6,313	6,518	6,735
7	Credit/Collections - Other	19.76%	50	49	50	51
8	Customer Service Order ("CSO")	19.76%	160,948	163,916	167,331	170,963
9	CSO - Carbon Monoxide Test	19.76%	7,467	7,576	7,705	7,843
10	CSO - No Gas	19.76%	16,883	17,167	17,497	17,848
11	CSO - Seasonal Off	19.76%	3,686	3,766	3,858	3,955
12	CSO - Seasonal On	19.76%	41,992	42,794	43,714	44,692
13	Gas Leak - CSO Leak	19.76%	250,629	254,820	259,681	264,854
14	Gas Leak - Pilot Out Only	19.76%	15,361	15,652	15,986	16,342
15	Gas Leak - Leak Investigation (Step2)	19.76%	20,599	20,850	21,151	21,472
16	Fumigation - Turn On	19.76%	87,119	88,348	89,799	91,344
17	Fumigation - Close	19.76%	57,028	58,153	59,440	60,807
18	HBI - Entered	19.76%	6,170	6,250	6,344	6,445
19	HBI - Not Entered	19.76%	5,141	5,240	5,352	5,472
20	Meter Work (Capital) - Meter Set - Turn On	19.76%	40,855	43,977	53,315	57,427
21	Meter Work (Capital) - Meter Set - Left Off	19.76%	4,854	4,547	5,515	5,945
22	Meter Work (Capital) - Meter Set (PSI)	19.76%	4,420	7,598	9,219	9,939
23	Meter Work (O&M) - Meter Reset - Turn On	19.76%	2,140	2,162	2,188	2,217
24	Meter Work (O&M) - Meter Reset - Left Off	19.76%	1,075	1,087	1,101	1,116
25	Meter Work (O&M) - Meter Change (Entered)	19.76%	7,146	5,889	13,545	10,348
26	Meter Work (O&M) - Meter Change (Not Entered)	19.76%	60,471	56,475	130,161	99,660
27	Meter Work (O&M) - Meter Change (Size)	19.76%	12,394	12,524	12,683	12,853
28	Meter Work (O&M) - Meter Remove	19.76%	5,067	5,176	5,299	5,430
29	NonPay Turn On - Turn On	19.76%	117,007	116,515	115,421	114,156
30	Read/Verify - Verify	19.76%	45,299	46,491	47,828	49,247
31	Read/Verify - Verify - Soft Close	19.76%	14,108	14,514	14,967	15,447
32	Read/Verify - Verify - Soft Close - 180 Days	19.76%	8,204	8,441	8,706	8,988
33	Read/Verify - Load Survey - Residential	19.76%	6,689	6,790	6,907	7,032

CS - Field Operations Order Volume Based Cost Model		Productive Time + Non Job Time (NJT) (Hours)				
Calculation Steps ---->>>		H = F x ( 1 + G )				
Line #	Order Types	BY 2016 NJT Factor	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	19.76%	124,224	125,844	127,773	129,828
35	TurnOn/ShutOff - Turn On Entered (Gas On)	19.76%	18,570	18,866	19,211	19,578
36	TurnOn/ShutOff - Turn On (Back On/Restore)	19.76%	57,246	58,065	59,029	60,057
37	TurnOn/ShutOff - Turn On (PSI)	19.76%	2,033	2,060	2,092	2,126
38	TurnOn/ShutOff - Close (Hard)	19.76%	18,682	19,303	19,990	20,719
39	Miscellaneous - Service Order (MSO)	19.76%	43,079	36,663	37,400	38,183
40	Miscellaneous - Meter & Reg (MMR)	19.76%	68,825	63,609	64,813	66,095
41	Miscellaneous - Assist	19.76%	31,033	31,469	31,983	32,531
42	Food Industry - Turn On (Entered)	19.76%	5,655	5,715	5,788	5,865
43	Food Industry - CSO	19.76%	100,009	101,246	102,727	104,306
44	Food Industry - CSO Leak	19.76%	11,993	12,157	12,351	12,558
45	Commercial/Industrial - ISO	19.76%	47,126	47,645	48,275	48,947
46	Commercial/Industrial - Load Survey- I/C	19.76%	7,133	7,219	7,323	7,433
47	Commercial/Industrial - CSO	19.76%	30,405	30,920	31,517	32,152
48	Commercial/Industrial - Turn On (Entered)	19.76%	40,909	41,457	42,108	42,801
49	Cust/Comp Work - Other	19.76%	525	534	544	555
50	Incomplete	19.76%	112,955	110,534	115,467	117,218
51	MTU Remediation Due To Failures	19.76%	-	-	-	31,893
52	MTU Remediation Due To Failures Incomplete	19.76%	-	-	-	2,003
53	Hot Water Leak Investigation	19.76%	-	-	-	6,189
54	Hot Water Leak Investigation Incomplete	19.76%	-	-	-	349
55	Underset Regulators - Install Slam Shut Regulator	19.76%	-	-	-	23,633
56	Underset Regulators - Relocate Regulator Outside	19.76%	-	-	-	21,300
57	Underset Regulators - Vent Through Existing Screens	19.76%	-	-	-	2,170
58	Underset Regulators - Incomplete	19.76%	-	-	-	984
59	Restore (Due To Street Cut For Access Issues)	19.76%	-	-	438	862
60	Low Flow Test (increase in on-prem time)	19.76%	-	5,922	5,966	6,014
61	Clock Test (increase in on-prem time)	19.76%	-	2,820	2,841	2,864
62	<b>TOTAL</b>		2,056,808	2,041,303	2,163,252	2,257,880

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CS - Field Operations Order Volume Based Cost Model		Meter Work Capital On-Prem Adjustment (Hours) <sup>1</sup>			
Calculation Steps --->>>		I = H - Meter Work Capital On-Premises Time			
Line #	Order Types	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	Change of Account - Turn On (Not Entered)	47,965	17,963	6,780	2,580
2	Change of Account - Close (Soft)	116,169	120,009	124,265	128,778
3	Credit/Collections - 48 Hour (1st Call)	22,262	21,686	22,464	23,290
4	Credit/Collections - Collect/Close (2nd Call)	140,407	136,164	140,461	145,019
5	Credit/Collections - Returned Check	363	353	363	373
6	Credit/Collections - Tenant Notification	6,437	6,313	6,518	6,735
7	Credit/Collections - Other	50	49	50	51
8	Customer Service Order ("CSO")	160,948	163,916	167,331	170,963
9	CSO - Carbon Monoxide Test	7,467	7,576	7,705	7,843
10	CSO - No Gas	16,883	17,167	17,497	17,848
11	CSO - Seasonal Off	3,686	3,766	3,858	3,955
12	CSO - Seasonal On	41,992	42,794	43,714	44,692
13	Gas Leak - CSO Leak	250,629	254,820	259,681	264,854
14	Gas Leak - Pilot Out Only	15,361	15,652	15,986	16,342
15	Gas Leak - Leak Investigation (Step2)	20,599	20,850	21,151	21,472
16	Fumigation - Turn On	87,119	88,348	89,799	91,344
17	Fumigation - Close	57,028	58,153	59,440	60,807
18	HBI - Entered	6,170	6,250	6,344	6,445
19	HBI - Not Entered	5,141	5,240	5,352	5,472
20	Meter Work (Capital) - Meter Set - Turn On	11,402	12,446	15,303	16,721
21	Meter Work (Capital) - Meter Set - Left Off	1,415	1,345	1,655	1,811
22	Meter Work (Capital) - Meter Set (PSI)	1,311	2,287	2,817	3,083
23	Meter Work (O&M) - Meter Reset - Turn On	2,140	2,162	2,188	2,217
24	Meter Work (O&M) - Meter Reset - Left Off	1,075	1,087	1,101	1,116
25	Meter Work (O&M) - Meter Change (Entered)	7,146	5,889	13,545	10,348
26	Meter Work (O&M) - Meter Change (Not Entered)	60,471	56,475	130,161	99,660
27	Meter Work (O&M) - Meter Change (Size)	12,394	12,524	12,683	12,853
28	Meter Work (O&M) - Meter Remove	5,067	5,176	5,299	5,430
29	NonPay Turn On - Turn On	117,007	116,515	115,421	114,156
30	Read/Verify - Verify	45,299	46,491	47,828	49,247
31	Read/Verify - Verify - Soft Close	14,108	14,514	14,967	15,447
32	Read/Verify - Verify - Soft Close - 180 Days	8,204	8,441	8,706	8,988
33	Read/Verify - Load Survey - Residential	6,689	6,790	6,907	7,032

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<b>CS - Field Operations Order Volume Based Cost Model</b>		<b>Meter Work Capital On-Prem Adjustment (Hours) <sup>1</sup></b>			
<b>Calculation Steps ----&gt;&gt;&gt;</b>		<b>I = H - Meter Work Capital On-Premises Time</b>			
<b>Line #</b>	<b>Order Types</b>	<b>2016 Estimated</b>	<b>2017 Estimated</b>	<b>2018 Estimated</b>	<b>TY 2019 Estimated</b>
34	TurnOn/ShutOff - Turn On (Entered)	124,224	125,844	127,773	129,828
35	TurnOn/ShutOff - Turn On Entered (Gas On)	18,570	18,866	19,211	19,578
36	TurnOn/ShutOff - Turn On (Back On/Restore)	57,246	58,065	59,029	60,057
37	TurnOn/ShutOff - Turn On (PSI)	2,033	2,060	2,092	2,126
38	TurnOn/ShutOff - Close (Hard)	18,682	19,303	19,990	20,719
39	Miscellaneous - Service Order (MSO)	43,079	36,663	37,400	38,183
40	Miscellaneous - Meter & Reg (MIMR)	68,825	63,609	64,813	66,095
41	Miscellaneous - Assist	31,033	31,469	31,983	32,531
42	Food Industry - Turn On (Entered)	5,655	5,715	5,788	5,865
43	Food Industry - CSO	100,009	101,246	102,727	104,306
44	Food Industry - CSO Leak	11,993	12,157	12,351	12,558
45	Commercial/Industrial - ISO	47,126	47,645	48,275	48,947
46	Commercial/Industrial - Load Survey- I/C	7,133	7,219	7,323	7,433
47	Commercial/Industrial - CSO	30,405	30,920	31,517	32,152
48	Commercial/Industrial - Turn On (Entered)	40,909	41,457	42,108	42,801
49	Cust/Comp Work - Other	525	534	544	555
50	Incomplete	112,955	110,534	115,467	117,218
51	MTU Remediation Due To Failures	-	-	-	31,893
52	MTU Remediation Due To Failures Incomplete	-	-	-	2,003
53	Hot Water Leak Investigation	-	-	-	6,189
54	Hot Water Leak Investigation Incomplete	-	-	-	349
55	Underset Regulators - Install Slam Shut Regulator	-	-	-	23,633
56	Underset Regulators - Relocate Regulator Outside	-	-	-	21,300
57	Underset Regulators - Vent Through Existing Screens	-	-	-	2,170
58	Underset Regulators - Incomplete	-	-	-	984
59	Restore (Due To Street Cut For Access Issues)	-	-	438	862
60	Low Flow Test (increase in on-prem time)	-	5,922	5,966	6,014
61	Clock Test (increase in on-prem time)	-	2,820	2,841	2,864
62	<b>TOTAL</b>	<b>2,020,807</b>	<b>2,001,259</b>	<b>2,114,978</b>	<b>2,206,185</b>

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CS - Field Operations Order Volume Based Cost Model		Productive Time + NJT + Vacation & Sick (V&S) (Hours)				
Calculation Steps ---->>>		K = I x ( 1 + J )				
Line #	Order Types	BY 2016 V&S Factor	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	Change of Account - Turn On (Not Entered)	16.92%	56,081	21,003	7,927	3,017
2	Change of Account - Close (Soft)	16.92%	135,825	140,315	145,291	150,567
3	Credit/Collections - 48 Hour (1st Call)	16.92%	26,029	25,355	26,265	27,230
4	Credit/Collections - Collect/Close (2nd Call)	16.92%	164,164	159,204	164,227	169,556
5	Credit/Collections - Returned Check	16.92%	424	412	424	437
6	Credit/Collections - Tenant Notification	16.92%	7,526	7,381	7,621	7,875
7	Credit/Collections - Other	16.92%	59	57	59	60
8	Customer Service Order ("CSO")	16.92%	188,180	191,651	195,644	199,890
9	CSO - Carbon Monoxide Test	16.92%	8,730	8,858	9,009	9,170
10	CSO - No Gas	16.92%	19,739	20,072	20,458	20,868
11	CSO - Seasonal Off	16.92%	4,309	4,404	4,511	4,624
12	CSO - Seasonal On	16.92%	49,098	50,035	51,111	52,254
13	Gas Leak - CSO Leak	16.92%	293,036	297,935	303,619	309,667
14	Gas Leak - Pilot Out Only	16.92%	17,960	18,300	18,691	19,107
15	Gas Leak - Leak Investigation (Step2)	16.92%	24,084	24,378	24,730	25,105
16	Fumigation - Turn On	16.92%	101,859	103,297	104,993	106,800
17	Fumigation - Close	16.92%	66,677	67,992	69,497	71,096
18	HBI - Entered	16.92%	7,215	7,307	7,417	7,535
19	HBI - Not Entered	16.92%	6,011	6,126	6,258	6,398
20	Meter Work (Capital) - Meter Set - Turn On	16.92%	13,331	14,551	17,892	19,551
21	Meter Work (Capital) - Meter Set - Left Off	16.92%	1,654	1,572	1,936	2,117
22	Meter Work (Capital) - Meter Set (PSI)	16.92%	1,533	2,674	3,293	3,605
23	Meter Work (O&M) - Meter Reset - Turn On	16.92%	2,503	2,528	2,559	2,592
24	Meter Work (O&M) - Meter Reset - Left Off	16.92%	1,257	1,271	1,287	1,305
25	Meter Work (O&M) - Meter Change (Entered)	16.92%	8,355	6,886	15,837	12,099
26	Meter Work (O&M) - Meter Change (Not Entered)	16.92%	70,702	66,030	152,185	116,522
27	Meter Work (O&M) - Meter Change (Size)	16.92%	14,492	14,643	14,829	15,028
28	Meter Work (O&M) - Meter Remove	16.92%	5,924	6,051	6,195	6,349
29	NonPay Turn On - Turn On	16.92%	136,804	136,229	134,951	133,471
30	Read/Verify - Verify	16.92%	52,964	54,357	55,920	57,580
31	Read/Verify - Verify - Soft Close	16.92%	16,495	16,970	17,499	18,061
32	Read/Verify - Verify - Soft Close - 180 Days	16.92%	9,592	9,870	10,180	10,508
33	Read/Verify - Load Survey - Residential	16.92%	7,821	7,938	8,075	8,222

CS - Field Operations Order Volume Based Cost Model		Productive Time + NJT + Vacation & Sick (V&S) (Hours)				
Calculation Steps ---->>>		K = I x ( 1 + J )				
Line #	Order Types	BY 2016 V&S Factor	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	16.92%	145,242	147,137	149,392	151,795
35	TurnOn/ShutOff - Turn On Entered (Gas On)	16.92%	21,712	22,058	22,462	22,891
36	TurnOn/ShutOff - Turn On (Back On/Restore)	16.92%	66,932	67,890	69,017	70,219
37	TurnOn/ShutOff - Turn On (PSI)	16.92%	2,377	2,409	2,446	2,486
38	TurnOn/ShutOff - Close (Hard)	16.92%	21,843	22,569	23,372	24,225
39	Miscellaneous - Service Order (MSO)	16.92%	50,368	42,866	43,728	44,644
40	Miscellaneous - Meter & Reg (MMR)	16.92%	80,470	74,371	75,780	77,279
41	Miscellaneous - Assist	16.92%	36,283	36,793	37,395	38,036
42	Food Industry - Turn On (Entered)	16.92%	6,612	6,682	6,767	6,858
43	Food Industry - CSO	16.92%	116,931	118,377	120,109	121,955
44	Food Industry - CSO Leak	16.92%	14,022	14,214	14,441	14,683
45	Commercial/Industrial - ISO	16.92%	55,100	55,706	56,443	57,229
46	Commercial/Industrial - Load Survey- I/C	16.92%	8,340	8,441	8,562	8,691
47	Commercial/Industrial - CSO	16.92%	35,549	36,151	36,849	37,592
48	Commercial/Industrial - Turn On (Entered)	16.92%	47,831	48,472	49,233	50,043
49	Cust/Comp Work - Other	16.92%	614	624	636	649
50	Incomplete	16.92%	132,066	129,237	135,004	137,051
51	MTU Remediation Due To Failures	16.92%	-	-	-	37,289
52	MTU Remediation Due To Failures Incomplete	16.92%	-	-	-	2,342
53	Hot Water Leak Investigation	16.92%	-	-	-	7,236
54	Hot Water Leak Investigation Incomplete	16.92%	-	-	-	408
55	Underset Regulators - Install Slam Shut Regulator	16.92%	-	-	-	27,631
56	Underset Regulators - Relocate Regulator Outside	16.92%	-	-	-	24,904
57	Underset Regulators - Vent Through Existing Screens	16.92%	-	-	-	2,537
58	Underset Regulators - Incomplete	16.92%	-	-	-	1,150
59	Restore (Due To Street Cut For Access Issues)	16.92%	-	-	513	1,008
60	Low Flow Test (increase in on-prem time)	16.92%	-	6,924	6,976	7,031
61	Clock Test (increase in on-prem time)	16.92%	-	3,297	3,322	3,348
62	<b>TOTAL</b>		2,362,728	2,339,872	2,472,832	2,579,472

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CS - Field Operations Order Volume Based Cost Model		Productive Time + NJT + V&S Labor Cost				
Calculation Steps ---->>>		M = K x L				
Line #	Order Types	BY 2016 Blended Wage Rate	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	Change of Account - Turn On (Not Entered)	\$ 40.64	\$ 2,279,194	\$ 853,570	\$ 322,155	\$ 122,596
2	Change of Account - Close (Soft)	\$ 40.64	\$ 5,520,073	\$ 5,702,533	\$ 5,904,753	\$ 6,119,193
3	Credit/Collections - 48 Hour (1st Call)	\$ 40.64	\$ 1,057,852	\$ 1,030,458	\$ 1,067,446	\$ 1,106,666
4	Credit/Collections - Collect/Close (2nd Call)	\$ 40.64	\$ 6,671,809	\$ 6,470,192	\$ 6,674,345	\$ 6,890,942
5	Credit/Collections - Returned Check	\$ 40.64	\$ 17,229	\$ 16,762	\$ 17,240	\$ 17,748
6	Credit/Collections - Tenant Notification	\$ 40.64	\$ 305,864	\$ 299,966	\$ 309,708	\$ 320,042
7	Credit/Collections - Other	\$ 40.64	\$ 2,394	\$ 2,328	\$ 2,382	\$ 2,438
8	Customer Service Order ("CSO")	\$ 40.64	\$ 7,647,820	\$ 7,788,882	\$ 7,951,155	\$ 8,123,716
9	CSO - Carbon Monoxide Test	\$ 40.64	\$ 354,799	\$ 360,012	\$ 366,137	\$ 372,660
10	CSO - No Gas	\$ 40.64	\$ 802,232	\$ 815,753	\$ 831,429	\$ 848,108
11	CSO - Seasonal Off	\$ 40.64	\$ 175,142	\$ 178,968	\$ 183,314	\$ 187,930
12	CSO - Seasonal On	\$ 40.64	\$ 1,995,376	\$ 2,033,483	\$ 2,077,197	\$ 2,123,672
13	Gas Leak - CSO Leak	\$ 40.64	\$ 11,909,272	\$ 12,108,383	\$ 12,339,391	\$ 12,585,197
14	Gas Leak - Pilot Out Only	\$ 40.64	\$ 729,898	\$ 743,742	\$ 759,632	\$ 776,525
15	Gas Leak - Leak Investigation (Step2)	\$ 40.64	\$ 978,814	\$ 990,739	\$ 1,005,040	\$ 1,020,294
16	Fumigation - Turn On	\$ 40.64	\$ 4,139,660	\$ 4,198,093	\$ 4,267,019	\$ 4,340,449
17	Fumigation - Close	\$ 40.64	\$ 2,709,832	\$ 2,763,272	\$ 2,824,419	\$ 2,889,417
18	HBI - Entered	\$ 40.64	\$ 293,205	\$ 296,966	\$ 301,449	\$ 306,229
19	HBI - Not Entered	\$ 40.64	\$ 244,303	\$ 248,975	\$ 254,333	\$ 260,031
20	Meter Work (Capital) - Meter Set - Turn On	\$ 40.64	\$ 541,783	\$ 591,384	\$ 727,158	\$ 794,553
21	Meter Work (Capital) - Meter Set - Left Off	\$ 40.64	\$ 67,229	\$ 63,899	\$ 78,663	\$ 86,055
22	Meter Work (Capital) - Meter Set (PSI)	\$ 40.64	\$ 62,292	\$ 108,679	\$ 133,850	\$ 146,494
23	Meter Work (O&M) - Meter Reset - Turn On	\$ 40.64	\$ 101,705	\$ 102,728	\$ 103,987	\$ 105,331
24	Meter Work (O&M) - Meter Reset - Left Off	\$ 40.64	\$ 51,104	\$ 51,650	\$ 52,315	\$ 53,026
25	Meter Work (O&M) - Meter Change (Entered)	\$ 40.64	\$ 339,548	\$ 279,851	\$ 643,615	\$ 491,714
26	Meter Work (O&M) - Meter Change (Not Entered)	\$ 40.64	\$ 2,873,420	\$ 2,683,530	\$ 6,184,935	\$ 4,735,588
27	Meter Work (O&M) - Meter Change (Size)	\$ 40.64	\$ 588,953	\$ 595,126	\$ 602,674	\$ 610,736
28	Meter Work (O&M) - Meter Remove	\$ 40.64	\$ 240,774	\$ 245,927	\$ 251,787	\$ 258,013
29	NonPay Turn On - Turn On	\$ 40.64	\$ 5,559,863	\$ 5,536,499	\$ 5,484,530	\$ 5,424,384
30	Read/Verify - Verify	\$ 40.64	\$ 2,152,512	\$ 2,209,137	\$ 2,272,665	\$ 2,340,094
31	Read/Verify - Verify - Soft Close	\$ 40.64	\$ 670,390	\$ 689,670	\$ 711,190	\$ 734,023
32	Read/Verify - Verify - Soft Close - 180 Days	\$ 40.64	\$ 389,825	\$ 401,113	\$ 413,709	\$ 427,073
33	Read/Verify - Load Survey - Residential	\$ 40.64	\$ 317,867	\$ 322,621	\$ 328,195	\$ 334,130



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CS - Field Operations Order Volume Based Cost Model		Productive Time + NJT + V&S Labor Cost				
Calculation Steps ---->>>		M = K x L				
Line #	Order Types	BY 2016 Blended Wage Rate	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	\$ 40.64	\$ 5,902,799	\$ 5,979,810	\$ 6,071,436	\$ 6,169,107
35	TurnOn/ShutOff - Turn On Entered (Gas On)	\$ 40.64	\$ 882,395	\$ 896,466	\$ 912,863	\$ 930,316
36	TurnOn/ShutOff - Turn On (Back On/Restore)	\$ 40.64	\$ 2,720,195	\$ 2,759,102	\$ 2,804,932	\$ 2,853,752
37	TurnOn/ShutOff - Turn On (PSI)	\$ 40.64	\$ 96,617	\$ 97,890	\$ 99,403	\$ 101,016
38	TurnOn/ShutOff - Close (Hard)	\$ 40.64	\$ 887,725	\$ 917,208	\$ 949,877	\$ 984,519
39	Miscellaneous - Service Order (MSO)	\$ 40.64	\$ 2,047,000	\$ 1,742,113	\$ 1,777,133	\$ 1,814,383
40	Miscellaneous - Meter & Reg (MMR)	\$ 40.64	\$ 3,270,374	\$ 3,022,524	\$ 3,079,768	\$ 3,140,681
41	Miscellaneous - Assist	\$ 40.64	\$ 1,474,595	\$ 1,495,313	\$ 1,519,762	\$ 1,545,810
42	Food Industry - Turn On (Entered)	\$ 40.64	\$ 268,726	\$ 271,553	\$ 275,007	\$ 278,697
43	Food Industry - CSO	\$ 40.64	\$ 4,752,181	\$ 4,810,963	\$ 4,881,333	\$ 4,956,379
44	Food Industry - CSO Leak	\$ 40.64	\$ 569,871	\$ 577,668	\$ 586,895	\$ 596,727
45	Commercial/Industrial - ISO	\$ 40.64	\$ 2,239,302	\$ 2,263,947	\$ 2,293,883	\$ 2,325,842
46	Commercial/Industrial - Load Survey- I/C	\$ 40.64	\$ 338,943	\$ 343,042	\$ 347,962	\$ 353,210
47	Commercial/Industrial - CSO	\$ 40.64	\$ 1,444,758	\$ 1,469,230	\$ 1,497,589	\$ 1,527,762
48	Commercial/Industrial - Turn On (Entered)	\$ 40.64	\$ 1,943,894	\$ 1,969,951	\$ 2,000,859	\$ 2,033,799
49	Cust/Comp Work - Other	\$ 40.64	\$ 24,935	\$ 25,362	\$ 25,855	\$ 26,380
50	Incomplete	\$ 40.64	\$ 5,367,315	\$ 5,252,304	\$ 5,486,684	\$ 5,569,907
51	MTU Remediation Due To Failures	\$ 40.64	\$ -	\$ -	\$ -	\$ 1,515,464
52	MTU Remediation Due To Failures Incomplete	\$ 40.64	\$ -	\$ -	\$ -	\$ 95,168
53	Hot Water Leak Investigation	\$ 40.64	\$ -	\$ -	\$ -	\$ 294,071
54	Hot Water Leak Investigation Incomplete	\$ 40.64	\$ -	\$ -	\$ -	\$ 16,574
55	Underset Regulators - Install Slam Shut Regulator	\$ 40.64	\$ -	\$ -	\$ -	\$ 1,122,968
56	Underset Regulators - Relocate Regulator Outside	\$ 40.64	\$ -	\$ -	\$ -	\$ 1,012,115
57	Underset Regulators - Vent Through Existing Screens	\$ 40.64	\$ -	\$ -	\$ -	\$ 103,100
58	Underset Regulators - Incomplete	\$ 40.64	\$ -	\$ -	\$ -	\$ 46,737
59	Restore (Due To Street Cut For Access Issues)	\$ 40.64	\$ -	\$ -	\$ 20,832	\$ 40,957
60	Low Flow Test (increase in on-prem time)	\$ 40.64	\$ -	\$ 281,409	\$ 283,501	\$ 285,753
61	Clock Test (increase in on-prem time)	\$ 40.64	\$ -	\$ 134,004	\$ 135,001	\$ 136,073
62	<b>TOTAL</b>		\$ 96,023,656	\$ 95,094,755	\$ 100,498,392	\$ 104,832,335

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CS - Field Operations Order Volume Based Cost Model		Productive Time + NJT + V&S Labor FTE			
		N = K / Annual Paid Hours			
Line #	Order Types	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
	Calculation Steps ---->>>				
1	Change of Account - Turn On (Not Entered)	26.9	10.1	3.8	1.4
2	Change of Account - Close (Soft)	65.1	67.2	69.6	72.1
3	Credit/Collections - 48 Hour (1st Call)	12.5	12.1	12.6	13.0
4	Credit/Collections - Collect/Close (2nd Call)	78.6	76.2	78.7	81.2
5	Credit/Collections - Returned Check	0.2	0.2	0.2	0.2
6	Credit/Collections - Tenant Notification	3.6	3.5	3.6	3.8
7	Credit/Collections - Other	0.0	0.0	0.0	0.0
8	Customer Service Order ("CSO")	90.1	91.8	93.7	95.7
9	CSO - Carbon Monoxide Test	4.2	4.2	4.3	4.4
10	CSO - No Gas	9.5	9.6	9.8	10.0
11	CSO - Seasonal Off	2.1	2.1	2.2	2.2
12	CSO - Seasonal On	23.5	24.0	24.5	25.0
13	Gas Leak - CSO Leak	140.3	142.7	145.4	148.3
14	Gas Leak - Pilot Out Only	8.6	8.8	9.0	9.2
15	Gas Leak - Leak Investigation (Step2)	11.5	11.7	11.8	12.0
16	Fumigation - Turn On	48.8	49.5	50.3	51.1
17	Fumigation - Close	31.9	32.6	33.3	34.0
18	HBI - Entered	3.5	3.5	3.6	3.6
19	HBI - Not Entered	2.9	2.9	3.0	3.1
20	Meter Work (Capital) - Meter Set - Turn On	6.4	7.0	8.6	9.4
21	Meter Work (Capital) - Meter Set - Left Off	0.8	0.8	0.9	1.0
22	Meter Work (Capital) - Meter Set (PSI)	0.7	1.3	1.6	1.7
23	Meter Work (O&M) - Meter Reset - Turn On	1.2	1.2	1.2	1.2
24	Meter Work (O&M) - Meter Reset - Left Off	0.6	0.6	0.6	0.6
25	Meter Work (O&M) - Meter Change (Entered)	4.0	3.3	7.6	5.8
26	Meter Work (O&M) - Meter Change (Not Entered)	33.9	31.6	72.9	55.8
27	Meter Work (O&M) - Meter Change (Size)	6.9	7.0	7.1	7.2
28	Meter Work (O&M) - Meter Remove	2.8	2.9	3.0	3.0
29	NonPay Turn On - Turn On	65.5	65.2	64.6	63.9
30	Read/Verify - Verify	25.4	26.0	26.8	27.6
31	Read/Verify - Verify - Soft Close	7.9	8.1	8.4	8.6
32	Read/Verify - Verify - Soft Close - 180 Days	4.6	4.7	4.9	5.0
33	Read/Verify - Load Survey - Residential	3.7	3.8	3.9	3.9

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CS - Field Operations Order Volume Based Cost Model		Productive Time + NJT + V&S Labor FTE			
		N = K / Annual Paid Hours			
Line #	Order Types	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	69.6	70.5	71.5	72.7
35	TurnOn/ShutOff - Turn On Entered (Gas On)	10.4	10.6	10.8	11.0
36	TurnOn/ShutOff - Turn On (Back On/Restore)	32.1	32.5	33.1	33.6
37	TurnOn/ShutOff - Turn On (PSI)	1.1	1.2	1.2	1.2
38	TurnOn/ShutOff - Close (Hard)	10.5	10.8	11.2	11.6
39	Miscellaneous - Service Order (MSO)	24.1	20.5	20.9	21.4
40	Miscellaneous - Meter & Reg (MMR)	38.5	35.6	36.3	37.0
41	Miscellaneous - Assist	17.4	17.6	17.9	18.2
42	Food Industry - Turn On (Entered)	3.2	3.2	3.2	3.3
43	Food Industry - CSO	56.0	56.7	57.5	58.4
44	Food Industry - CSO Leak	6.7	6.8	6.9	7.0
45	Commercial/Industrial - ISO	26.4	26.7	27.0	27.4
46	Commercial/Industrial - Load Survey- I/C	4.0	4.0	4.1	4.2
47	Commercial/Industrial - CSO	17.0	17.3	17.6	18.0
48	Commercial/Industrial - Turn On (Entered)	22.9	23.2	23.6	24.0
49	Cust/Comp Work - Other	0.3	0.3	0.3	0.3
50	Incomplete	63.3	61.9	64.7	65.6
51	MTU Remediation Due To Failures	-	-	-	17.9
52	MTU Remediation Due To Failures Incomplete	-	-	-	1.1
53	Hot Water Leak Investigation	-	-	-	3.5
54	Hot Water Leak Investigation Incomplete	-	-	-	0.2
55	Underset Regulators - Install Slam Shut Regulator	-	-	-	13.2
56	Underset Regulators - Relocate Regulator Outside	-	-	-	11.9
57	Underset Regulators - Vent Through Existing Screens	-	-	-	1.2
58	Underset Regulators - Incomplete	-	-	-	0.6
59	Restore (Due To Street Cut For Access Issues)	-	-	0.2	0.5
60	Low Flow Test (increase in on-prem time)	-	3.3	3.3	3.4
61	Clock Test (increase in on-prem time)	-	1.6	1.6	1.6
62	<b>TOTAL</b>	1,131.6	1,120.6	1,184.3	1,235.4

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CS - Field Operations Order Volume Based Cost Model		Productive Time + NJT + V&S Non-Labor Cost				
Calculation Steps ---->>>		P = O x N				
Line #	Order Types	BY 2016 Non Labor Per FTE	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	Change of Account - Turn On (Not Entered)	\$ 4,887	\$ 131,250	\$ 49,154	\$ 18,552	\$ 7,060
2	Change of Account - Close (Soft)	\$ 4,887	\$ 317,880	\$ 328,387	\$ 340,032	\$ 352,381
3	Credit/Collections - 48 Hour (1st Call)	\$ 4,887	\$ 60,918	\$ 59,340	\$ 61,470	\$ 63,729
4	Credit/Collections - Collect/Close (2nd Call)	\$ 4,887	\$ 384,204	\$ 372,594	\$ 384,350	\$ 396,823
5	Credit/Collections - Returned Check	\$ 4,887	\$ 992	\$ 965	\$ 993	\$ 1,022
6	Credit/Collections - Tenant Notification	\$ 4,887	\$ 17,614	\$ 17,274	\$ 17,835	\$ 18,430
7	Credit/Collections - Other	\$ 4,887	\$ 138	\$ 134	\$ 137	\$ 140
8	Customer Service Order ("CSO")	\$ 4,887	\$ 440,409	\$ 448,532	\$ 457,877	\$ 467,814
9	CSO - Carbon Monoxide Test	\$ 4,887	\$ 20,432	\$ 20,732	\$ 21,084	\$ 21,460
10	CSO - No Gas	\$ 4,887	\$ 46,198	\$ 46,976	\$ 47,879	\$ 48,839
11	CSO - Seasonal Off	\$ 4,887	\$ 10,086	\$ 10,306	\$ 10,556	\$ 10,822
12	CSO - Seasonal On	\$ 4,887	\$ 114,906	\$ 117,101	\$ 119,618	\$ 122,294
13	Gas Leak - CSO Leak	\$ 4,887	\$ 685,810	\$ 697,276	\$ 710,579	\$ 724,734
14	Gas Leak - Pilot Out Only	\$ 4,887	\$ 42,032	\$ 42,829	\$ 43,744	\$ 44,717
15	Gas Leak - Leak Investigation (Step2)	\$ 4,887	\$ 56,366	\$ 57,053	\$ 57,876	\$ 58,755
16	Fumigation - Turn On	\$ 4,887	\$ 238,387	\$ 241,752	\$ 245,721	\$ 249,950
17	Fumigation - Close	\$ 4,887	\$ 156,049	\$ 159,126	\$ 162,648	\$ 166,391
18	HBI - Entered	\$ 4,887	\$ 16,885	\$ 17,101	\$ 17,359	\$ 17,635
19	HBI - Not Entered	\$ 4,887	\$ 14,068	\$ 14,338	\$ 14,646	\$ 14,974
20	Meter Work (Capital) - Meter Set - Turn On	\$ 4,887	\$ 31,199	\$ 34,056	\$ 41,874	\$ 45,755
21	Meter Work (Capital) - Meter Set - Left Off	\$ 4,887	\$ 3,871	\$ 3,680	\$ 4,530	\$ 4,956
22	Meter Work (Capital) - Meter Set (PSI)	\$ 4,887	\$ 3,587	\$ 6,258	\$ 7,708	\$ 8,436
23	Meter Work (O&M) - Meter Reset - Turn On	\$ 4,887	\$ 5,857	\$ 5,916	\$ 5,988	\$ 6,066
24	Meter Work (O&M) - Meter Reset - Left Off	\$ 4,887	\$ 2,943	\$ 2,974	\$ 3,013	\$ 3,054
25	Meter Work (O&M) - Meter Change (Entered)	\$ 4,887	\$ 19,553	\$ 16,116	\$ 37,063	\$ 28,316
26	Meter Work (O&M) - Meter Change (Not Entered)	\$ 4,887	\$ 165,469	\$ 154,534	\$ 356,167	\$ 272,705
27	Meter Work (O&M) - Meter Change (Size)	\$ 4,887	\$ 33,916	\$ 34,271	\$ 34,706	\$ 35,170
28	Meter Work (O&M) - Meter Remove	\$ 4,887	\$ 13,865	\$ 14,162	\$ 14,499	\$ 14,858
29	NonPay Turn On - Turn On	\$ 4,887	\$ 320,171	\$ 318,826	\$ 315,833	\$ 312,370
30	Read/Verify - Verify	\$ 4,887	\$ 123,955	\$ 127,216	\$ 130,874	\$ 134,757
31	Read/Verify - Verify - Soft Close	\$ 4,887	\$ 38,605	\$ 39,715	\$ 40,955	\$ 42,270
32	Read/Verify - Verify - Soft Close - 180 Days	\$ 4,887	\$ 22,449	\$ 23,099	\$ 23,824	\$ 24,594
33	Read/Verify - Load Survey - Residential	\$ 4,887	\$ 18,305	\$ 18,579	\$ 18,899	\$ 19,241

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CS - Field Operations Order Volume Based Cost Model		Productive Time + NJT + V&S Non-Labor Cost				
Calculation Steps ---->>>		P = O x N				
Line #	Order Types	BY 2016 Non Labor Per FTE	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	\$ 4,887	\$ 339,920	\$ 344,355	\$ 349,631	\$ 355,255
35	TurnOn/ShutOff - Turn On Entered (Gas On)	\$ 4,887	\$ 50,814	\$ 51,624	\$ 52,568	\$ 53,573
36	TurnOn/ShutOff - Turn On (Back On/Restore)	\$ 4,887	\$ 156,646	\$ 158,886	\$ 161,525	\$ 164,337
37	TurnOn/ShutOff - Turn On (PSI)	\$ 4,887	\$ 5,564	\$ 5,637	\$ 5,724	\$ 5,817
38	TurnOn/ShutOff - Close (Hard)	\$ 4,887	\$ 51,121	\$ 52,819	\$ 54,700	\$ 56,695
39	Miscellaneous - Service Order (MSO)	\$ 4,887	\$ 117,879	\$ 100,322	\$ 102,338	\$ 104,483
40	Miscellaneous - Meter & Reg (MMR)	\$ 4,887	\$ 188,328	\$ 174,056	\$ 177,352	\$ 180,860
41	Miscellaneous - Assist	\$ 4,887	\$ 84,916	\$ 86,109	\$ 87,517	\$ 89,017
42	Food Industry - Turn On (Entered)	\$ 4,887	\$ 15,475	\$ 15,638	\$ 15,837	\$ 16,049
43	Food Industry - CSO	\$ 4,887	\$ 273,660	\$ 277,045	\$ 281,097	\$ 285,419
44	Food Industry - CSO Leak	\$ 4,887	\$ 32,817	\$ 33,266	\$ 33,797	\$ 34,363
45	Commercial/Industrial - ISO	\$ 4,887	\$ 128,953	\$ 130,372	\$ 132,096	\$ 133,936
46	Commercial/Industrial - Load Survey- I/C	\$ 4,887	\$ 19,518	\$ 19,754	\$ 20,038	\$ 20,340
47	Commercial/Industrial - CSO	\$ 4,887	\$ 83,198	\$ 84,607	\$ 86,240	\$ 87,978
48	Commercial/Industrial - Turn On (Entered)	\$ 4,887	\$ 111,942	\$ 113,442	\$ 115,222	\$ 117,119
49	Cust/Comp Work - Other	\$ 4,887	\$ 1,436	\$ 1,460	\$ 1,489	\$ 1,519
50	Incomplete	\$ 4,887	\$ 309,083	\$ 302,460	\$ 315,957	\$ 320,750
51	MTU Remediation Due To Failures	\$ 4,887	\$ -	\$ -	\$ -	\$ 87,270
52	MTU Remediation Due To Failures Incomplete	\$ 4,887	\$ -	\$ -	\$ -	\$ 5,480
53	Hot Water Leak Investigation	\$ 4,887	\$ -	\$ -	\$ -	\$ 16,934
54	Hot Water Leak Investigation Incomplete	\$ 4,887	\$ -	\$ -	\$ -	\$ 954
55	Underset Regulators - Install Slam Shut Regulator	\$ 4,887	\$ -	\$ -	\$ -	\$ 64,667
56	Underset Regulators - Relocate Regulator Outside	\$ 4,887	\$ -	\$ -	\$ -	\$ 58,284
57	Underset Regulators - Vent Through Existing Screens	\$ 4,887	\$ -	\$ -	\$ -	\$ 5,937
58	Underset Regulators - Incomplete	\$ 4,887	\$ -	\$ -	\$ -	\$ 2,691
59	Restore (Due To Street Cut For Access Issues)	\$ 4,887	\$ -	\$ -	\$ 1,200	\$ 2,359
60	Low Flow Test (increase in on-prem time)	\$ 4,887	\$ -	\$ 16,205	\$ 16,326	\$ 16,455
61	Clock Test (increase in on-prem time)	\$ 4,887	\$ -	\$ 7,717	\$ 7,774	\$ 7,836
62	<b>TOTAL</b>		\$ 5,529,638	\$ 5,476,146	\$ 5,787,321	\$ 6,036,897

CS - Field Operations Order Volume Based Cost Model		Training Labor FTE				
Calculation Steps ---->>>		R = N x Q				
Line #	Order Types	BY 2016 Training Factor	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	Change of Account - Turn On (Not Entered)	7.62%	2.0	0.8	0.3	0.1
2	Change of Account - Close (Soft)	7.62%	5.0	5.1	5.3	5.5
3	Credit/Collections - 48 Hour (1st Call)	7.62%	0.9	0.9	1.0	1.0
4	Credit/Collections - Collect/Close (2nd Call)	7.62%	6.0	5.8	6.0	6.2
5	Credit/Collections - Returned Check	7.62%	0.0	0.0	0.0	0.0
6	Credit/Collections - Tenant Notification	7.62%	0.3	0.3	0.3	0.3
7	Credit/Collections - Other	7.62%	0.0	0.0	0.0	0.0
8	Customer Service Order ("CSO")	7.62%	6.9	7.0	7.1	7.3
9	CSO - Carbon Monoxide Test	7.62%	0.3	0.3	0.3	0.3
10	CSO - No Gas	7.62%	0.7	0.7	0.7	0.8
11	CSO - Seasonal Off	7.62%	0.2	0.2	0.2	0.2
12	CSO - Seasonal On	7.62%	1.8	1.8	1.9	1.9
13	Gas Leak - CSO Leak	7.62%	10.7	10.9	11.1	11.3
14	Gas Leak - Pilot Out Only	7.62%	0.7	0.7	0.7	0.7
15	Gas Leak - Leak Investigation (Step2)	7.62%	0.9	0.9	0.9	0.9
16	Fumigation - Turn On	7.62%	3.7	3.8	3.8	3.9
17	Fumigation - Close	7.62%	2.4	2.5	2.5	2.6
18	HBI - Entered	7.62%	0.3	0.3	0.3	0.3
19	HBI - Not Entered	7.62%	0.2	0.2	0.2	0.2
20	Meter Work (Capital) - Meter Set - Turn On	7.62%	0.5	0.5	0.7	0.7
21	Meter Work (Capital) - Meter Set - Left Off	7.62%	0.1	0.1	0.1	0.1
22	Meter Work (Capital) - Meter Set (PSI)	7.62%	0.1	0.1	0.1	0.1
23	Meter Work (O&M) - Meter Reset - Turn On	7.62%	0.1	0.1	0.1	0.1
24	Meter Work (O&M) - Meter Reset - Left Off	7.62%	0.0	0.0	0.0	0.0
25	Meter Work (O&M) - Meter Change (Entered)	7.62%	0.3	0.3	0.6	0.4
26	Meter Work (O&M) - Meter Change (Not Entered)	7.62%	2.6	2.4	5.6	4.3
27	Meter Work (O&M) - Meter Change (Size)	7.62%	0.5	0.5	0.5	0.5
28	Meter Work (O&M) - Meter Remove	7.62%	0.2	0.2	0.2	0.2
29	NonPay Turn On - Turn On	7.62%	5.0	5.0	4.9	4.9
30	Read/Verify - Verify	7.62%	1.9	2.0	2.0	2.1
31	Read/Verify - Verify - Soft Close	7.62%	0.6	0.6	0.6	0.7
32	Read/Verify - Verify - Soft Close - 180 Days	7.62%	0.4	0.4	0.4	0.4
33	Read/Verify - Load Survey - Residential	7.62%	0.3	0.3	0.3	0.3

CS - Field Operations Order Volume Based Cost Model		Training Labor FTE				
Calculation Steps ---->>>		R = N x Q				
Line #	Order Types	BY 2016 Training Factor	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	7.62%	5.3	5.4	5.5	5.5
35	TurnOn/ShutOff - Turn On Entered (Gas On)	7.62%	0.8	0.8	0.8	0.8
36	TurnOn/ShutOff - Turn On (Back On/Restore)	7.62%	2.4	2.5	2.5	2.6
37	TurnOn/ShutOff - Turn On (PSI)	7.62%	0.1	0.1	0.1	0.1
38	TurnOn/ShutOff - Close (Hard)	7.62%	0.8	0.8	0.9	0.9
39	Miscellaneous - Service Order (MSO)	7.62%	1.8	1.6	1.6	1.6
40	Miscellaneous - Meter & Reg (MMR)	7.62%	2.9	2.7	2.8	2.8
41	Miscellaneous - Assist	7.62%	1.3	1.3	1.4	1.4
42	Food Industry - Turn On (Entered)	7.62%	0.2	0.2	0.2	0.3
43	Food Industry - CSO	7.62%	4.3	4.3	4.4	4.5
44	Food Industry - CSO Leak	7.62%	0.5	0.5	0.5	0.5
45	Commercial/Industrial - ISO	7.62%	2.0	2.0	2.1	2.1
46	Commercial/Industrial - Load Survey- I/C	7.62%	0.3	0.3	0.3	0.3
47	Commercial/Industrial - CSO	7.62%	1.3	1.3	1.3	1.4
48	Commercial/Industrial - Turn On (Entered)	7.62%	1.7	1.8	1.8	1.8
49	Cust/Comp Work - Other	7.62%	0.0	0.0	0.0	0.0
50	Incomplete	7.62%	4.8	4.7	4.9	5.0
51	MTU Remediation Due To Failures	7.62%	-	-	-	1.4
52	MTU Remediation Due To Failures Incomplete	7.62%	-	-	-	0.1
53	Hot Water Leak Investigation	7.62%	-	-	-	0.3
54	Hot Water Leak Investigation Incomplete	7.62%	-	-	-	0.0
55	Underset Regulators - Install Slam Shut Regulator	7.62%	-	-	-	1.0
56	Underset Regulators - Relocate Regulator Outside	7.62%	-	-	-	0.9
57	Underset Regulators - Vent Through Existing Screens	7.62%	-	-	-	0.1
58	Underset Regulators - Incomplete	7.62%	-	-	-	0.0
59	Restore (Due To Street Cut For Access Issues)	7.62%	-	-	0.0	0.0
60	Low Flow Test (increase in on-prem time)	7.62%	-	0.3	0.3	0.3
61	Clock Test (increase in on-prem time)	7.62%	-	0.1	0.1	0.1
62	<b>TOTAL</b>		86.2	85.4	90.2	94.1

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CS - Field Operations Order Volume Based Cost Model		Training Labor Cost				
Calculation Steps ---->>>		T = R x S x Annual Paid Hours				
Line #	Order Types	S	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
		By 2016 Training Wage Rate				
1	Change of Account - Turn On (Not Entered)	\$ 34.39	\$ 146,386	\$ 54,822	\$ 20,771	\$ 7,904
2	Change of Account - Close (Soft)	\$ 34.39	\$ 354,538	\$ 366,257	\$ 380,704	\$ 394,530
3	Credit/Collections - 48 Hour (1st Call)	\$ 34.39	\$ 67,943	\$ 66,183	\$ 68,823	\$ 71,351
4	Credit/Collections - Collect/Close (2nd Call)	\$ 34.39	\$ 428,511	\$ 415,562	\$ 430,323	\$ 444,288
5	Credit/Collections - Returned Check	\$ 34.39	\$ 1,107	\$ 1,077	\$ 1,112	\$ 1,144
6	Credit/Collections - Tenant Notification	\$ 34.39	\$ 19,645	\$ 19,266	\$ 19,968	\$ 20,634
7	Credit/Collections - Other	\$ 34.39	\$ 154	\$ 150	\$ 154	\$ 157
8	Customer Service Order ("CSO")	\$ 34.39	\$ 491,197	\$ 500,257	\$ 512,644	\$ 523,770
9	CSO - Carbon Monoxide Test	\$ 34.39	\$ 22,788	\$ 23,123	\$ 23,606	\$ 24,027
10	CSO - No Gas	\$ 34.39	\$ 51,525	\$ 52,393	\$ 53,606	\$ 54,681
11	CSO - Seasonal Off	\$ 34.39	\$ 11,249	\$ 11,495	\$ 11,819	\$ 12,117
12	CSO - Seasonal On	\$ 34.39	\$ 128,157	\$ 130,605	\$ 133,925	\$ 136,922
13	Gas Leak - CSO Leak	\$ 34.39	\$ 764,898	\$ 777,686	\$ 795,572	\$ 811,420
14	Gas Leak - Pilot Out Only	\$ 34.39	\$ 46,879	\$ 47,768	\$ 48,977	\$ 50,066
15	Gas Leak - Leak Investigation (Step2)	\$ 34.39	\$ 62,866	\$ 63,632	\$ 64,799	\$ 65,783
16	Fumigation - Turn On	\$ 34.39	\$ 265,878	\$ 269,631	\$ 275,112	\$ 279,847
17	Fumigation - Close	\$ 34.39	\$ 174,045	\$ 177,477	\$ 182,102	\$ 186,293
18	HBI - Entered	\$ 34.39	\$ 18,832	\$ 19,073	\$ 19,436	\$ 19,744
19	HBI - Not Entered	\$ 34.39	\$ 15,691	\$ 15,991	\$ 16,398	\$ 16,765
20	Meter Work (Capital) - Meter Set - Turn On	\$ 34.39	\$ 34,797	\$ 37,983	\$ 46,883	\$ 51,228
21	Meter Work (Capital) - Meter Set - Left Off	\$ 34.39	\$ 4,318	\$ 4,104	\$ 5,072	\$ 5,548
22	Meter Work (Capital) - Meter Set (PSI)	\$ 34.39	\$ 4,001	\$ 6,980	\$ 8,630	\$ 9,445
23	Meter Work (O&M) - Meter Reset - Turn On	\$ 34.39	\$ 6,532	\$ 6,598	\$ 6,704	\$ 6,791
24	Meter Work (O&M) - Meter Reset - Left Off	\$ 34.39	\$ 3,282	\$ 3,317	\$ 3,373	\$ 3,419
25	Meter Work (O&M) - Meter Change (Entered)	\$ 34.39	\$ 21,808	\$ 17,974	\$ 41,497	\$ 31,703
26	Meter Work (O&M) - Meter Change (Not Entered)	\$ 34.39	\$ 184,551	\$ 172,355	\$ 398,768	\$ 305,323
27	Meter Work (O&M) - Meter Change (Size)	\$ 34.39	\$ 37,827	\$ 38,223	\$ 38,857	\$ 39,377
28	Meter Work (O&M) - Meter Remove	\$ 34.39	\$ 15,464	\$ 15,795	\$ 16,234	\$ 16,635
29	NonPay Turn On - Turn On	\$ 34.39	\$ 357,094	\$ 355,593	\$ 353,610	\$ 349,732
30	Read/Verify - Verify	\$ 34.39	\$ 138,250	\$ 141,886	\$ 146,528	\$ 150,876
31	Read/Verify - Verify - Soft Close	\$ 34.39	\$ 43,057	\$ 44,295	\$ 45,853	\$ 47,325
32	Read/Verify - Verify - Soft Close - 180 Days	\$ 34.39	\$ 25,037	\$ 25,762	\$ 26,674	\$ 27,535
33	Read/Verify - Load Survey - Residential	\$ 34.39	\$ 20,416	\$ 20,721	\$ 21,160	\$ 21,543



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CS - Field Operations Order Volume Based Cost Model		Training Labor Cost				
		S	T = R x S x Annual Paid Hours			
Line #	Order Types	By 2016 Training Wage Rate	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	\$ 34.39	\$ 379,120	\$ 384,066	\$ 391,451	\$ 397,748
35	TurnOn/ShutOff - Turn On Entered (Gas On)	\$ 34.39	\$ 56,674	\$ 57,577	\$ 58,856	\$ 59,981
36	TurnOn/ShutOff - Turn On (Back On/Restore)	\$ 34.39	\$ 174,710	\$ 177,209	\$ 180,846	\$ 183,993
37	TurnOn/ShutOff - Turn On (PSI)	\$ 34.39	\$ 6,205	\$ 6,287	\$ 6,409	\$ 6,513
38	TurnOn/ShutOff - Close (Hard)	\$ 34.39	\$ 57,016	\$ 58,910	\$ 61,242	\$ 63,476
39	Miscellaneous - Service Order (MSO)	\$ 34.39	\$ 131,473	\$ 111,891	\$ 114,579	\$ 116,981
40	Miscellaneous - Meter & Reg (MMR)	\$ 34.39	\$ 210,047	\$ 194,128	\$ 198,565	\$ 202,493
41	Miscellaneous - Assist	\$ 34.39	\$ 94,709	\$ 96,040	\$ 97,985	\$ 99,665
42	Food Industry - Turn On (Entered)	\$ 34.39	\$ 17,260	\$ 17,441	\$ 17,731	\$ 17,969
43	Food Industry - CSO	\$ 34.39	\$ 305,219	\$ 308,994	\$ 314,720	\$ 319,558
44	Food Industry - CSO Leak	\$ 34.39	\$ 36,601	\$ 37,102	\$ 37,840	\$ 38,473
45	Commercial/Industrial - ISO	\$ 34.39	\$ 143,824	\$ 145,407	\$ 147,896	\$ 149,957
46	Commercial/Industrial - Load Survey- I/C	\$ 34.39	\$ 21,769	\$ 22,033	\$ 22,435	\$ 22,773
47	Commercial/Industrial - CSO	\$ 34.39	\$ 92,793	\$ 94,364	\$ 96,556	\$ 98,501
48	Commercial/Industrial - Turn On (Entered)	\$ 34.39	\$ 124,851	\$ 126,524	\$ 129,004	\$ 131,127
49	Cust/Comp Work - Other	\$ 34.39	\$ 1,602	\$ 1,629	\$ 1,667	\$ 1,701
50	Incomplete	\$ 34.39	\$ 344,727	\$ 337,340	\$ 353,749	\$ 359,115
51	MTU Remediation Due To Failures	\$ 34.39	\$ -	\$ -	\$ -	\$ 97,708
52	MTU Remediation Due To Failures Incomplete	\$ 34.39	\$ -	\$ -	\$ -	\$ 6,136
53	Hot Water Leak Investigation	\$ 34.39	\$ -	\$ -	\$ -	\$ 18,960
54	Hot Water Leak Investigation Incomplete	\$ 34.39	\$ -	\$ -	\$ -	\$ 1,069
55	Underset Regulators - Install Slam Shut Regulator	\$ 34.39	\$ -	\$ -	\$ -	\$ 72,402
56	Underset Regulators - Relocate Regulator Outside	\$ 34.39	\$ -	\$ -	\$ -	\$ 65,255
57	Underset Regulators - Vent Through Existing Screens	\$ 34.39	\$ -	\$ -	\$ -	\$ 6,647
58	Underset Regulators - Incomplete	\$ 34.39	\$ -	\$ -	\$ -	\$ 3,013
59	Restore (Due To Street Cut For Access Issues)	\$ 34.39	\$ -	\$ -	\$ 1,343	\$ 2,641
60	Low Flow Test (increase in on-prem time)	\$ 34.39	\$ -	\$ 18,074	\$ 18,279	\$ 18,424
61	Clock Test (increase in on-prem time)	\$ 34.39	\$ -	\$ 8,607	\$ 8,704	\$ 8,773
62	<b>TOTAL</b>		\$ 6,167,322	\$ 6,107,662	\$ 6,479,547	\$ 6,758,975

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CS - Field Operations Order Volume Based Cost Model		Training Non-Labor Cost				
Calculation Steps ---->>>		V = U x R				
Line #	Order Types	BY 2016 Non Labor Per FTE	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	Change of Account - Turn On (Not Entered)	\$ 4,887	\$ 10,001	\$ 3,746	\$ 1,414	\$ 538
2	Change of Account - Close (Soft)	\$ 4,887	\$ 24,223	\$ 25,023	\$ 25,911	\$ 26,852
3	Credit/Collections - 48 Hour (1st Call)	\$ 4,887	\$ 4,642	\$ 4,522	\$ 4,684	\$ 4,856
4	Credit/Collections - Collect/Close (2nd Call)	\$ 4,887	\$ 29,277	\$ 28,392	\$ 29,288	\$ 30,238
5	Credit/Collections - Returned Check	\$ 4,887	\$ 76	\$ 74	\$ 76	\$ 78
6	Credit/Collections - Tenant Notification	\$ 4,887	\$ 1,342	\$ 1,316	\$ 1,359	\$ 1,404
7	Credit/Collections - Other	\$ 4,887	\$ 11	\$ 10	\$ 10	\$ 11
8	Customer Service Order ("CSO")	\$ 4,887	\$ 33,560	\$ 34,179	\$ 34,891	\$ 35,648
9	CSO - Carbon Monoxide Test	\$ 4,887	\$ 1,557	\$ 1,580	\$ 1,607	\$ 1,635
10	CSO - No Gas	\$ 4,887	\$ 3,520	\$ 3,580	\$ 3,648	\$ 3,722
11	CSO - Seasonal Off	\$ 4,887	\$ 769	\$ 785	\$ 804	\$ 825
12	CSO - Seasonal On	\$ 4,887	\$ 8,756	\$ 8,923	\$ 9,115	\$ 9,319
13	Gas Leak - CSO Leak	\$ 4,887	\$ 52,259	\$ 53,133	\$ 54,147	\$ 55,225
14	Gas Leak - Pilot Out Only	\$ 4,887	\$ 3,203	\$ 3,264	\$ 3,333	\$ 3,407
15	Gas Leak - Leak Investigation (Step2)	\$ 4,887	\$ 4,295	\$ 4,347	\$ 4,410	\$ 4,477
16	Fumigation - Turn On	\$ 4,887	\$ 18,165	\$ 18,422	\$ 18,724	\$ 19,046
17	Fumigation - Close	\$ 4,887	\$ 11,891	\$ 12,126	\$ 12,394	\$ 12,679
18	HBI - Entered	\$ 4,887	\$ 1,287	\$ 1,303	\$ 1,323	\$ 1,344
19	HBI - Not Entered	\$ 4,887	\$ 1,072	\$ 1,093	\$ 1,116	\$ 1,141
20	Meter Work (Capital) - Meter Set - Turn On	\$ 4,887	\$ 2,377	\$ 2,595	\$ 3,191	\$ 3,487
21	Meter Work (Capital) - Meter Set - Left Off	\$ 4,887	\$ 295	\$ 280	\$ 345	\$ 378
22	Meter Work (Capital) - Meter Set (PSI)	\$ 4,887	\$ 273	\$ 477	\$ 587	\$ 643
23	Meter Work (O&M) - Meter Reset - Turn On	\$ 4,887	\$ 446	\$ 451	\$ 456	\$ 462
24	Meter Work (O&M) - Meter Reset - Left Off	\$ 4,887	\$ 224	\$ 227	\$ 230	\$ 233
25	Meter Work (O&M) - Meter Change (Entered)	\$ 4,887	\$ 1,490	\$ 1,228	\$ 2,824	\$ 2,158
26	Meter Work (O&M) - Meter Change (Not Entered)	\$ 4,887	\$ 12,609	\$ 11,776	\$ 27,140	\$ 20,780
27	Meter Work (O&M) - Meter Change (Size)	\$ 4,887	\$ 2,584	\$ 2,611	\$ 2,645	\$ 2,680
28	Meter Work (O&M) - Meter Remove	\$ 4,887	\$ 1,057	\$ 1,079	\$ 1,105	\$ 1,132
29	NonPay Turn On - Turn On	\$ 4,887	\$ 24,397	\$ 24,295	\$ 24,067	\$ 23,803
30	Read/Verify - Verify	\$ 4,887	\$ 9,446	\$ 9,694	\$ 9,973	\$ 10,269
31	Read/Verify - Verify - Soft Close	\$ 4,887	\$ 2,942	\$ 3,026	\$ 3,121	\$ 3,221
32	Read/Verify - Verify - Soft Close - 180 Days	\$ 4,887	\$ 1,711	\$ 1,760	\$ 1,815	\$ 1,874
33	Read/Verify - Load Survey - Residential	\$ 4,887	\$ 1,395	\$ 1,416	\$ 1,440	\$ 1,466

CS - Field Operations Order Volume Based Cost Model		Training Non-Labor Cost				
		V = U x R				
Line #	Order Types	U				
		BY 2016 Non Labor Per FTE	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	\$ 4,887	\$ 25,902	\$ 26,240	\$ 26,642	\$ 27,071
35	TurnOn/ShutOff - Turn On Entered (Gas On)	\$ 4,887	\$ 3,872	\$ 3,934	\$ 4,006	\$ 4,082
36	TurnOn/ShutOff - Turn On (Back On/Restore)	\$ 4,887	\$ 11,937	\$ 12,107	\$ 12,308	\$ 12,523
37	TurnOn/ShutOff - Turn On (PSI)	\$ 4,887	\$ 424	\$ 430	\$ 436	\$ 443
38	TurnOn/ShutOff - Close (Hard)	\$ 4,887	\$ 3,895	\$ 4,025	\$ 4,168	\$ 4,320
39	Miscellaneous - Service Order (MSO)	\$ 4,887	\$ 8,983	\$ 7,645	\$ 7,798	\$ 7,962
40	Miscellaneous - Meter & Reg (MMR)	\$ 4,887	\$ 14,351	\$ 13,263	\$ 13,514	\$ 13,782
41	Miscellaneous - Assist	\$ 4,887	\$ 6,471	\$ 6,562	\$ 6,669	\$ 6,783
42	Food Industry - Turn On (Entered)	\$ 4,887	\$ 1,179	\$ 1,192	\$ 1,207	\$ 1,223
43	Food Industry - CSO	\$ 4,887	\$ 20,853	\$ 21,111	\$ 21,420	\$ 21,749
44	Food Industry - CSO Leak	\$ 4,887	\$ 2,501	\$ 2,535	\$ 2,575	\$ 2,619
45	Commercial/Industrial - ISO	\$ 4,887	\$ 9,826	\$ 9,934	\$ 10,066	\$ 10,206
46	Commercial/Industrial - Load Survey- I/C	\$ 4,887	\$ 1,487	\$ 1,505	\$ 1,527	\$ 1,550
47	Commercial/Industrial - CSO	\$ 4,887	\$ 6,340	\$ 6,447	\$ 6,572	\$ 6,704
48	Commercial/Industrial - Turn On (Entered)	\$ 4,887	\$ 8,530	\$ 8,644	\$ 8,780	\$ 8,925
49	Cust/Comp Work - Other	\$ 4,887	\$ 109	\$ 111	\$ 113	\$ 116
50	Incomplete	\$ 4,887	\$ 23,552	\$ 23,048	\$ 24,076	\$ 24,441
51	MTU Remediation Due To Failures	\$ 4,887	\$ -	\$ -	\$ -	\$ 6,650
52	MTU Remediation Due To Failures Incomplete	\$ 4,887	\$ -	\$ -	\$ -	\$ 418
53	Hot Water Leak Investigation	\$ 4,887	\$ -	\$ -	\$ -	\$ 1,290
54	Hot Water Leak Investigation Incomplete	\$ 4,887	\$ -	\$ -	\$ -	\$ 73
55	Underset Regulators - Install Slam Shut Regulator	\$ 4,887	\$ -	\$ -	\$ -	\$ 4,928
56	Underset Regulators - Relocate Regulator Outside	\$ 4,887	\$ -	\$ -	\$ -	\$ 4,441
57	Underset Regulators - Vent Through Existing Screens	\$ 4,887	\$ -	\$ -	\$ -	\$ 452
58	Underset Regulators - Incomplete	\$ 4,887	\$ -	\$ -	\$ -	\$ 205
59	Restore (Due To Street Cut For Access Issues)	\$ 4,887	\$ -	\$ -	\$ 91	\$ 180
60	Low Flow Test (increase in on-prem time)	\$ 4,887	\$ -	\$ 1,235	\$ 1,244	\$ 1,254
61	Clock Test (increase in on-prem time)	\$ 4,887	\$ -	\$ 588	\$ 592	\$ 597
62	<b>TOTAL</b>		\$ 421,364	\$ 417,288	\$ 441,000	\$ 460,018

CS - Field Operations Order Volume Based Cost Model		Total Labor Cost			
		W = M + T			
Line #	Order Types	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
	Calculation Steps ---->>>				
1	Change of Account - Turn On (Not Entered)	\$ 2,425,580	\$ 908,393	\$ 342,926	\$ 130,500
2	Change of Account - Close (Soft)	\$ 5,874,611	\$ 6,068,791	\$ 6,285,457	\$ 6,513,722
3	Credit/Collections - 48 Hour (1st Call)	\$ 1,125,795	\$ 1,096,642	\$ 1,136,268	\$ 1,178,018
4	Credit/Collections - Collect/Close (2nd Call)	\$ 7,100,320	\$ 6,885,754	\$ 7,104,668	\$ 7,335,230
5	Credit/Collections - Returned Check	\$ 18,335	\$ 17,839	\$ 18,352	\$ 18,892
6	Credit/Collections - Tenant Notification	\$ 325,508	\$ 319,231	\$ 329,676	\$ 340,677
7	Credit/Collections - Other	\$ 2,547	\$ 2,478	\$ 2,535	\$ 2,595
8	Customer Service Order ("CSO")	\$ 8,139,017	\$ 8,289,139	\$ 8,463,799	\$ 8,647,486
9	CSO - Carbon Monoxide Test	\$ 377,586	\$ 383,135	\$ 389,743	\$ 396,687
10	CSO - No Gas	\$ 853,757	\$ 868,147	\$ 885,035	\$ 902,790
11	CSO - Seasonal Off	\$ 186,391	\$ 190,463	\$ 195,133	\$ 200,047
12	CSO - Seasonal On	\$ 2,123,534	\$ 2,164,088	\$ 2,211,122	\$ 2,260,594
13	Gas Leak - CSO Leak	\$ 12,674,170	\$ 12,886,069	\$ 13,134,962	\$ 13,396,617
14	Gas Leak - Pilot Out Only	\$ 776,778	\$ 791,511	\$ 808,608	\$ 826,591
15	Gas Leak - Leak Investigation (Step2)	\$ 1,041,681	\$ 1,054,371	\$ 1,069,840	\$ 1,086,077
16	Fumigation - Turn On	\$ 4,405,538	\$ 4,467,725	\$ 4,542,132	\$ 4,620,295
17	Fumigation - Close	\$ 2,883,876	\$ 2,940,749	\$ 3,006,521	\$ 3,075,710
18	HBI - Entered	\$ 312,036	\$ 316,039	\$ 320,884	\$ 325,972
19	HBI - Not Entered	\$ 259,994	\$ 264,966	\$ 270,731	\$ 276,796
20	Meter Work (Capital) - Meter Set - Turn On	\$ 576,580	\$ 629,367	\$ 774,041	\$ 845,781
21	Meter Work (Capital) - Meter Set - Left Off	\$ 71,547	\$ 68,004	\$ 83,734	\$ 91,603
22	Meter Work (Capital) - Meter Set (PSI)	\$ 66,293	\$ 115,660	\$ 142,480	\$ 155,939
23	Meter Work (O&M) - Meter Reset - Turn On	\$ 108,238	\$ 109,326	\$ 110,691	\$ 112,122
24	Meter Work (O&M) - Meter Reset - Left Off	\$ 54,387	\$ 54,967	\$ 55,688	\$ 56,445
25	Meter Work (O&M) - Meter Change (Entered)	\$ 361,356	\$ 297,825	\$ 685,112	\$ 523,417
26	Meter Work (O&M) - Meter Change (Not Entered)	\$ 3,057,972	\$ 2,855,886	\$ 6,583,703	\$ 5,040,911
27	Meter Work (O&M) - Meter Change (Size)	\$ 626,780	\$ 633,349	\$ 641,531	\$ 650,112
28	Meter Work (O&M) - Meter Remove	\$ 256,238	\$ 261,722	\$ 268,020	\$ 274,648
29	NonPay Turn On - Turn On	\$ 5,916,957	\$ 5,892,093	\$ 5,838,140	\$ 5,774,116
30	Read/Verify - Verify	\$ 2,290,762	\$ 2,351,023	\$ 2,419,193	\$ 2,490,970
31	Read/Verify - Verify - Soft Close	\$ 713,447	\$ 733,965	\$ 757,043	\$ 781,348
32	Read/Verify - Verify - Soft Close - 180 Days	\$ 414,862	\$ 426,876	\$ 440,383	\$ 454,608
33	Read/Verify - Load Survey - Residential	\$ 338,283	\$ 343,342	\$ 349,355	\$ 355,673

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CS - Field Operations Order Volume Based Cost Model		Total Labor Cost			
		W = M + T			
Line #	Order Types	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	\$ 6,281,918	\$ 6,363,876	\$ 6,462,886	\$ 6,566,855
35	TurnOn/ShutOff - Turn On Entered (Gas On)	\$ 939,069	\$ 954,044	\$ 971,719	\$ 990,297
36	TurnOn/ShutOff - Turn On (Back On/Restore)	\$ 2,894,905	\$ 2,936,311	\$ 2,985,778	\$ 3,037,745
37	TurnOn/ShutOff - Turn On (PSI)	\$ 102,822	\$ 104,177	\$ 105,812	\$ 107,529
38	TurnOn/ShutOff - Close (Hard)	\$ 944,741	\$ 976,118	\$ 1,011,119	\$ 1,047,995
39	Miscellaneous - Service Order (MSO)	\$ 2,178,473	\$ 1,854,004	\$ 1,891,712	\$ 1,931,364
40	Miscellaneous - Meter & Reg (MMR)	\$ 3,480,420	\$ 3,216,652	\$ 3,278,333	\$ 3,343,174
41	Miscellaneous - Assist	\$ 1,569,304	\$ 1,591,352	\$ 1,617,748	\$ 1,645,475
42	Food Industry - Turn On (Entered)	\$ 285,986	\$ 288,994	\$ 292,738	\$ 296,666
43	Food Industry - CSO	\$ 5,057,400	\$ 5,119,958	\$ 5,196,053	\$ 5,275,937
44	Food Industry - CSO Leak	\$ 606,472	\$ 614,770	\$ 624,734	\$ 635,200
45	Commercial/Industrial - ISO	\$ 2,383,125	\$ 2,409,353	\$ 2,441,780	\$ 2,475,799
46	Commercial/Industrial - Load Survey- I/C	\$ 360,712	\$ 365,074	\$ 370,396	\$ 375,983
47	Commercial/Industrial - CSO	\$ 1,537,550	\$ 1,563,594	\$ 1,594,144	\$ 1,626,263
48	Commercial/Industrial - Turn On (Entered)	\$ 2,068,745	\$ 2,096,476	\$ 2,129,863	\$ 2,164,927
49	Cust/Comp Work - Other	\$ 26,537	\$ 26,991	\$ 27,522	\$ 28,081
50	Incomplete	\$ 5,712,042	\$ 5,589,645	\$ 5,840,433	\$ 5,929,022
51	MTU Remediation Due To Failures	\$ -	\$ -	\$ -	\$ 1,613,172
52	MTU Remediation Due To Failures Incomplete	\$ -	\$ -	\$ -	\$ 101,304
53	Hot Water Leak Investigation	\$ -	\$ -	\$ -	\$ 313,031
54	Hot Water Leak Investigation Incomplete	\$ -	\$ -	\$ -	\$ 17,643
55	Underset Regulators - Install Slam Shut Regulator	\$ -	\$ -	\$ -	\$ 1,195,371
56	Underset Regulators - Relocate Regulator Outside	\$ -	\$ -	\$ -	\$ 1,077,370
57	Underset Regulators - Vent Through Existing Screens	\$ -	\$ -	\$ -	\$ 109,747
58	Underset Regulators - Incomplete	\$ -	\$ -	\$ -	\$ 49,750
59	Restore (Due To Street Cut For Access Issues)	\$ -	\$ -	\$ 22,175	\$ 43,597
60	Low Flow Test (increase in on-prem time)	\$ -	\$ 299,483	\$ 301,780	\$ 304,177
61	Clock Test (increase in on-prem time)	\$ -	\$ 142,611	\$ 143,705	\$ 144,846
62	<b>TOTAL</b>	\$ 102,190,978	\$ 101,202,417	\$ 106,977,939	\$ 111,591,309

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

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CS - Field Operations Order Volume Based Cost Model		Total Non-Labor Cost			
Calculation Steps ---->>>		X = P + V			
Line #	Order Types	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	Change of Account - Turn On (Not Entered)	\$ 141,252	\$ 52,899	\$ 19,965	\$ 7,598
2	Change of Account - Close (Soft)	\$ 342,103	\$ 353,411	\$ 365,943	\$ 379,233
3	Credit/Collections - 48 Hour (1st Call)	\$ 65,560	\$ 63,862	\$ 66,154	\$ 68,585
4	Credit/Collections - Collect/Close (2nd Call)	\$ 413,481	\$ 400,986	\$ 413,638	\$ 427,062
5	Credit/Collections - Returned Check	\$ 1,068	\$ 1,039	\$ 1,068	\$ 1,100
6	Credit/Collections - Tenant Notification	\$ 18,956	\$ 18,590	\$ 19,194	\$ 19,834
7	Credit/Collections - Other	\$ 148	\$ 144	\$ 148	\$ 151
8	Customer Service Order ("CSO")	\$ 473,969	\$ 482,711	\$ 492,768	\$ 503,462
9	CSO - Carbon Monoxide Test	\$ 21,988	\$ 22,312	\$ 22,691	\$ 23,095
10	CSO - No Gas	\$ 49,718	\$ 50,556	\$ 51,527	\$ 52,561
11	CSO - Seasonal Off	\$ 10,854	\$ 11,091	\$ 11,361	\$ 11,647
12	CSO - Seasonal On	\$ 123,662	\$ 126,024	\$ 128,733	\$ 131,613
13	Gas Leak - CSO Leak	\$ 738,069	\$ 750,409	\$ 764,726	\$ 779,959
14	Gas Leak - Pilot Out Only	\$ 45,235	\$ 46,093	\$ 47,078	\$ 48,125
15	Gas Leak - Leak Investigation (Step2)	\$ 60,661	\$ 61,400	\$ 62,287	\$ 63,232
16	Fumigation - Turn On	\$ 256,553	\$ 260,174	\$ 264,446	\$ 268,996
17	Fumigation - Close	\$ 167,940	\$ 171,252	\$ 175,042	\$ 179,070
18	HBI - Entered	\$ 18,171	\$ 18,404	\$ 18,682	\$ 18,978
19	HBI - Not Entered	\$ 15,141	\$ 15,430	\$ 15,762	\$ 16,115
20	Meter Work (Capital) - Meter Set - Turn On	\$ 33,577	\$ 36,651	\$ 45,065	\$ 49,242
21	Meter Work (Capital) - Meter Set - Left Off	\$ 4,166	\$ 3,960	\$ 4,875	\$ 5,333
22	Meter Work (Capital) - Meter Set (PSI)	\$ 3,861	\$ 6,735	\$ 8,295	\$ 9,079
23	Meter Work (O&M) - Meter Reset - Turn On	\$ 6,303	\$ 6,367	\$ 6,444	\$ 6,528
24	Meter Work (O&M) - Meter Reset - Left Off	\$ 3,167	\$ 3,201	\$ 3,242	\$ 3,286
25	Meter Work (O&M) - Meter Change (Entered)	\$ 21,043	\$ 17,344	\$ 39,888	\$ 30,474
26	Meter Work (O&M) - Meter Change (Not Entered)	\$ 178,078	\$ 166,310	\$ 383,307	\$ 293,485
27	Meter Work (O&M) - Meter Change (Size)	\$ 36,500	\$ 36,883	\$ 37,350	\$ 37,850
28	Meter Work (O&M) - Meter Remove	\$ 14,922	\$ 15,241	\$ 15,604	\$ 15,990
29	NonPay Turn On - Turn On	\$ 344,569	\$ 343,121	\$ 339,900	\$ 336,173
30	Read/Verify - Verify	\$ 133,401	\$ 136,910	\$ 140,847	\$ 145,026
31	Read/Verify - Verify - Soft Close	\$ 41,547	\$ 42,742	\$ 44,076	\$ 45,491
32	Read/Verify - Verify - Soft Close - 180 Days	\$ 24,159	\$ 24,859	\$ 25,639	\$ 26,468
33	Read/Verify - Load Survey - Residential	\$ 19,700	\$ 19,994	\$ 20,340	\$ 20,708

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CS - Field Operations Order Volume Based Cost Model		Total Non-Labor Cost			
Calculation Steps ---->>>		X = P + V			
Line #	Order Types	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	\$ 365,822	\$ 370,595	\$ 376,273	\$ 382,326
35	TurnOn/ShutOff - Turn On Entered (Gas On)	\$ 54,686	\$ 55,558	\$ 56,574	\$ 57,656
36	TurnOn/ShutOff - Turn On (Back On/Restore)	\$ 168,582	\$ 170,994	\$ 173,834	\$ 176,859
37	TurnOn/ShutOff - Turn On (PSI)	\$ 5,988	\$ 6,067	\$ 6,160	\$ 6,260
38	TurnOn/ShutOff - Close (Hard)	\$ 55,016	\$ 56,843	\$ 58,868	\$ 61,015
39	Miscellaneous - Service Order (MSO)	\$ 126,861	\$ 107,966	\$ 110,137	\$ 112,445
40	Miscellaneous - Meter & Reg (MMR)	\$ 202,679	\$ 187,319	\$ 190,867	\$ 194,642
41	Miscellaneous - Assist	\$ 91,387	\$ 92,671	\$ 94,186	\$ 95,801
42	Food Industry - Turn On (Entered)	\$ 16,654	\$ 16,829	\$ 17,043	\$ 17,272
43	Food Industry - CSO	\$ 294,513	\$ 298,156	\$ 302,517	\$ 307,168
44	Food Industry - CSO Leak	\$ 35,317	\$ 35,801	\$ 36,372	\$ 36,982
45	Commercial/Industrial - ISO	\$ 138,779	\$ 140,307	\$ 142,162	\$ 144,143
46	Commercial/Industrial - Load Survey- I/C	\$ 21,006	\$ 21,260	\$ 21,565	\$ 21,890
47	Commercial/Industrial - CSO	\$ 89,538	\$ 91,055	\$ 92,812	\$ 94,682
48	Commercial/Industrial - Turn On (Entered)	\$ 120,472	\$ 122,086	\$ 124,002	\$ 126,043
49	Cust/Comp Work - Other	\$ 1,545	\$ 1,572	\$ 1,602	\$ 1,635
50	Incomplete	\$ 332,636	\$ 325,508	\$ 340,034	\$ 345,191
51	MTU Remediation Due To Failures	\$ -	\$ -	\$ -	\$ 93,920
52	MTU Remediation Due To Failures Incomplete	\$ -	\$ -	\$ -	\$ 5,898
53	Hot Water Leak Investigation	\$ -	\$ -	\$ -	\$ 18,225
54	Hot Water Leak Investigation Incomplete	\$ -	\$ -	\$ -	\$ 1,027
55	Underset Regulators - Install Slam Shut Regulator	\$ -	\$ -	\$ -	\$ 69,595
56	Underset Regulators - Relocate Regulator Outside	\$ -	\$ -	\$ -	\$ 62,725
57	Underset Regulators - Vent Through Existing Screens	\$ -	\$ -	\$ -	\$ 6,390
58	Underset Regulators - Incomplete	\$ -	\$ -	\$ -	\$ 2,896
59	Restore (Due To Street Cut For Access Issues)	\$ -	\$ -	\$ 1,291	\$ 2,538
60	Low Flow Test (increase in on-prem time)	\$ -	\$ 17,440	\$ 17,570	\$ 17,709
61	Clock Test (increase in on-prem time)	\$ -	\$ 8,305	\$ 8,367	\$ 8,433
62	<b>TOTAL</b>	\$ 5,951,003	\$ 5,893,435	\$ 6,228,322	\$ 6,496,915

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CS - Field Operations Order Volume Based Cost Model		Total Cost			
		Y = W + X			
Line #	Order Types	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
	Calculation Steps ---->>>				
1	Change of Account - Turn On (Not Entered)	\$ 2,566,832	\$ 961,292	\$ 362,891	\$ 138,098
2	Change of Account - Close (Soft)	\$ 6,216,714	\$ 6,422,201	\$ 6,651,400	\$ 6,892,955
3	Credit/Collections - 48 Hour (1st Call)	\$ 1,191,354	\$ 1,160,504	\$ 1,202,423	\$ 1,246,603
4	Credit/Collections - Collect/Close (2nd Call)	\$ 7,513,801	\$ 7,286,740	\$ 7,518,306	\$ 7,762,292
5	Credit/Collections - Returned Check	\$ 19,403	\$ 18,878	\$ 19,420	\$ 19,992
6	Credit/Collections - Tenant Notification	\$ 344,464	\$ 337,822	\$ 348,870	\$ 360,511
7	Credit/Collections - Other	\$ 2,696	\$ 2,622	\$ 2,683	\$ 2,747
8	Customer Service Order ("CSO")	\$ 8,612,986	\$ 8,771,850	\$ 8,956,566	\$ 9,150,947
9	CSO - Carbon Monoxide Test	\$ 399,575	\$ 405,447	\$ 412,434	\$ 419,782
10	CSO - No Gas	\$ 903,475	\$ 918,703	\$ 936,562	\$ 955,350
11	CSO - Seasonal Off	\$ 197,245	\$ 201,555	\$ 206,494	\$ 211,694
12	CSO - Seasonal On	\$ 2,247,196	\$ 2,290,112	\$ 2,339,855	\$ 2,392,207
13	Gas Leak - CSO Leak	\$ 13,412,239	\$ 13,636,478	\$ 13,899,688	\$ 14,176,576
14	Gas Leak - Pilot Out Only	\$ 822,013	\$ 837,604	\$ 855,686	\$ 874,716
15	Gas Leak - Leak Investigation (Step2)	\$ 1,102,342	\$ 1,115,772	\$ 1,132,126	\$ 1,149,309
16	Fumigation - Turn On	\$ 4,662,091	\$ 4,727,899	\$ 4,806,577	\$ 4,889,292
17	Fumigation - Close	\$ 3,051,817	\$ 3,112,001	\$ 3,181,563	\$ 3,254,779
18	HBI - Entered	\$ 330,207	\$ 334,443	\$ 339,567	\$ 344,951
19	HBI - Not Entered	\$ 275,134	\$ 280,396	\$ 286,494	\$ 292,911
20	Meter Work (Capital) - Meter Set - Turn On	\$ 610,156	\$ 666,018	\$ 819,106	\$ 895,023
21	Meter Work (Capital) - Meter Set - Left Off	\$ 75,713	\$ 71,964	\$ 88,610	\$ 96,936
22	Meter Work (Capital) - Meter Set (PSI)	\$ 70,153	\$ 122,395	\$ 150,775	\$ 165,018
23	Meter Work (O&M) - Meter Reset - Turn On	\$ 114,541	\$ 115,693	\$ 117,136	\$ 118,650
24	Meter Work (O&M) - Meter Reset - Left Off	\$ 57,554	\$ 58,168	\$ 58,931	\$ 59,731
25	Meter Work (O&M) - Meter Change (Entered)	\$ 382,399	\$ 315,168	\$ 725,000	\$ 553,891
26	Meter Work (O&M) - Meter Change (Not Entered)	\$ 3,236,050	\$ 3,022,196	\$ 6,967,011	\$ 5,334,395
27	Meter Work (O&M) - Meter Change (Size)	\$ 663,279	\$ 670,232	\$ 678,881	\$ 687,962
28	Meter Work (O&M) - Meter Remove	\$ 271,160	\$ 276,963	\$ 283,625	\$ 290,638
29	NonPay Turn On - Turn On	\$ 6,261,526	\$ 6,235,214	\$ 6,178,040	\$ 6,110,289
30	Read/Verify - Verify	\$ 2,424,163	\$ 2,487,933	\$ 2,560,040	\$ 2,635,996
31	Read/Verify - Verify - Soft Close	\$ 754,994	\$ 776,707	\$ 801,118	\$ 826,839
32	Read/Verify - Verify - Soft Close - 180 Days	\$ 439,021	\$ 451,734	\$ 466,022	\$ 481,076
33	Read/Verify - Load Survey - Residential	\$ 357,983	\$ 363,336	\$ 369,695	\$ 376,381



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CS - Field Operations Order Volume Based Cost Model		Total Cost			
		Y = W + X			
Line #	Order Types	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	\$ 6,647,740	\$ 6,734,471	\$ 6,839,159	\$ 6,949,181
35	TurnOn/ShutOff - Turn On Entered (Gas On)	\$ 993,755	\$ 1,009,602	\$ 1,028,293	\$ 1,047,953
36	TurnOn/ShutOff - Turn On (Back On/Restore)	\$ 3,063,487	\$ 3,107,305	\$ 3,159,612	\$ 3,214,605
37	TurnOn/ShutOff - Turn On (PSI)	\$ 108,810	\$ 110,244	\$ 111,973	\$ 113,790
38	TurnOn/ShutOff - Close (Hard)	\$ 999,757	\$ 1,032,961	\$ 1,069,987	\$ 1,109,010
39	Miscellaneous - Service Order (MSO)	\$ 2,305,334	\$ 1,961,970	\$ 2,001,849	\$ 2,043,809
40	Miscellaneous - Meter & Reg (MMR)	\$ 3,683,099	\$ 3,403,971	\$ 3,469,199	\$ 3,537,816
41	Miscellaneous - Assist	\$ 1,660,691	\$ 1,684,023	\$ 1,711,934	\$ 1,741,276
42	Food Industry - Turn On (Entered)	\$ 302,640	\$ 305,823	\$ 309,782	\$ 313,938
43	Food Industry - CSO	\$ 5,351,913	\$ 5,418,114	\$ 5,498,570	\$ 5,583,106
44	Food Industry - CSO Leak	\$ 641,790	\$ 650,570	\$ 661,107	\$ 672,182
45	Commercial/Industrial - ISO	\$ 2,521,905	\$ 2,549,660	\$ 2,583,942	\$ 2,619,941
46	Commercial/Industrial - Load Survey- I/C	\$ 381,718	\$ 386,334	\$ 391,961	\$ 397,873
47	Commercial/Industrial - CSO	\$ 1,627,088	\$ 1,654,649	\$ 1,686,956	\$ 1,720,945
48	Commercial/Industrial - Turn On (Entered)	\$ 2,189,217	\$ 2,218,562	\$ 2,253,865	\$ 2,290,970
49	Cust/Comp Work - Other	\$ 28,082	\$ 28,562	\$ 29,125	\$ 29,716
50	Incomplete	\$ 6,044,678	\$ 5,915,153	\$ 6,180,466	\$ 6,274,214
51	MTU Remediation Due To Failures	\$ -	\$ -	\$ -	\$ 1,707,092
52	MTU Remediation Due To Failures Incomplete	\$ -	\$ -	\$ -	\$ 107,202
53	Hot Water Leak Investigation	\$ -	\$ -	\$ -	\$ 331,256
54	Hot Water Leak Investigation Incomplete	\$ -	\$ -	\$ -	\$ 18,670
55	Underset Regulators - Install Slam Shut Regulator	\$ -	\$ -	\$ -	\$ 1,264,966
56	Underset Regulators - Relocate Regulator Outside	\$ -	\$ -	\$ -	\$ 1,140,095
57	Underset Regulators - Vent Through Existing Screens	\$ -	\$ -	\$ -	\$ 116,137
58	Underset Regulators - Incomplete	\$ -	\$ -	\$ -	\$ 52,646
59	Restore (Due To Street Cut For Access Issues)	\$ -	\$ -	\$ 23,466	\$ 46,136
60	Low Flow Test (increase in on-prem time)	\$ -	\$ 316,924	\$ 319,350	\$ 321,886
61	Clock Test (increase in on-prem time)	\$ -	\$ 150,916	\$ 152,071	\$ 153,279
62	<b>TOTAL</b>	\$ 108,141,981	\$ 107,095,852	\$ 113,206,261	\$ 118,088,224

CS - Field Operations Order Volume Based Cost Model		Total Labor FTE			
Calculation Steps ---->>>		Z = N + R			
Line #	Order Types	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	Change of Account - Turn On (Not Entered)	28.9	10.8	4.1	1.6
2	Change of Account - Close (Soft)	70.0	72.3	74.9	77.6
3	Credit/Collections - 48 Hour (1st Call)	13.4	13.1	13.5	14.0
4	Credit/Collections - Collect/Close (2nd Call)	84.6	82.1	84.6	87.4
5	Credit/Collections - Returned Check	0.2	0.2	0.2	0.2
6	Credit/Collections - Tenant Notification	3.9	3.8	3.9	4.1
7	Credit/Collections - Other	0.0	0.0	0.0	0.0
8	Customer Service Order ("CSO")	97.0	98.8	100.8	103.0
9	CSO - Carbon Monoxide Test	4.5	4.6	4.6	4.7
10	CSO - No Gas	10.2	10.3	10.5	10.8
11	CSO - Seasonal Off	2.2	2.3	2.3	2.4
12	CSO - Seasonal On	25.3	25.8	26.3	26.9
13	Gas Leak - CSO Leak	151.0	153.6	156.5	159.6
14	Gas Leak - Pilot Out Only	9.3	9.4	9.6	9.8
15	Gas Leak - Leak Investigation (Step2)	12.4	12.6	12.7	12.9
16	Fumigation - Turn On	52.5	53.2	54.1	55.0
17	Fumigation - Close	34.4	35.0	35.8	36.6
18	HBI - Entered	3.7	3.8	3.8	3.9
19	HBI - Not Entered	3.1	3.2	3.2	3.3
20	Meter Work (Capital) - Meter Set - Turn On	6.9	7.5	9.2	10.1
21	Meter Work (Capital) - Meter Set - Left Off	0.9	0.8	1.0	1.1
22	Meter Work (Capital) - Meter Set (PSI)	0.8	1.4	1.7	1.9
23	Meter Work (O&M) - Meter Reset - Turn On	1.3	1.3	1.3	1.3
24	Meter Work (O&M) - Meter Reset - Left Off	0.6	0.7	0.7	0.7
25	Meter Work (O&M) - Meter Change (Entered)	4.3	3.5	8.2	6.2
26	Meter Work (O&M) - Meter Change (Not Entered)	36.4	34.0	78.4	60.1
27	Meter Work (O&M) - Meter Change (Size)	7.5	7.5	7.6	7.7
28	Meter Work (O&M) - Meter Remove	3.1	3.1	3.2	3.3
29	NonPay Turn On - Turn On	70.5	70.2	69.6	68.8
30	Read/Verify - Verify	27.3	28.0	28.8	29.7
31	Read/Verify - Verify - Soft Close	8.5	8.7	9.0	9.3
32	Read/Verify - Verify - Soft Close - 180 Days	4.9	5.1	5.2	5.4
33	Read/Verify - Load Survey - Residential	4.0	4.1	4.2	4.2

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CS - Field Operations Order Volume Based Cost Model		Total Labor FTE			
Calculation Steps ---->>>		Z = N + R			
Line #	Order Types	2016 Estimated	2017 Estimated	2018 Estimated	TY 2019 Estimated
34	TurnOn/ShutOff - Turn On (Entered)	74.9	75.8	77.0	78.2
35	TurnOn/ShutOff - Turn On Entered (Gas On)	11.2	11.4	11.6	11.8
36	TurnOn/ShutOff - Turn On (Back On/Restore)	34.5	35.0	35.6	36.2
37	TurnOn/ShutOff - Turn On (PSI)	1.2	1.2	1.3	1.3
38	TurnOn/ShutOff - Close (Hard)	11.3	11.6	12.0	12.5
39	Miscellaneous - Service Order (MSO)	26.0	22.1	22.5	23.0
40	Miscellaneous - Meter & Reg (MMR)	41.5	38.3	39.1	39.8
41	Miscellaneous - Assist	18.7	19.0	19.3	19.6
42	Food Industry - Turn On (Entered)	3.4	3.4	3.5	3.5
43	Food Industry - CSO	60.3	61.0	61.9	62.9
44	Food Industry - CSO Leak	7.2	7.3	7.4	7.6
45	Commercial/Industrial - ISO	28.4	28.7	29.1	29.5
46	Commercial/Industrial - Load Survey- I/C	4.3	4.4	4.4	4.5
47	Commercial/Industrial - CSO	18.3	18.6	19.0	19.4
48	Commercial/Industrial - Turn On (Entered)	24.7	25.0	25.4	25.8
49	Cust/Comp Work - Other	0.3	0.3	0.3	0.3
50	Incomplete	68.1	66.6	69.6	70.6
51	MTU Remediation Due To Failures	-	-	-	19.2
52	MTU Remediation Due To Failures Incomplete	-	-	-	1.2
53	Hot Water Leak Investigation	-	-	-	3.7
54	Hot Water Leak Investigation Incomplete	-	-	-	0.2
55	Underset Regulators - Install Slam Shut Regulator	-	-	-	14.2
56	Underset Regulators - Relocate Regulator Outside	-	-	-	12.8
57	Underset Regulators - Vent Through Existing Screens	-	-	-	1.3
58	Underset Regulators - Incomplete	-	-	-	0.6
59	Restore (Due To Street Cut For Access Issues)	-	-	0.3	0.5
60	Low Flow Test (increase in on-prem time)	-	3.6	3.6	3.6
61	Clock Test (increase in on-prem time)	-	1.7	1.7	1.7
62	<b>TOTAL</b>	<b>1,217.8</b>	<b>1,206.0</b>	<b>1,274.6</b>	<b>1,329.5</b>

**Comparison of TY 2019 CS - Field Operations Estimated Costs: Pre AMI vs Post AMI**

Line #	Order Type	TY 2019 Estimated Costs Pre AMI			FTE	Calculations
		Labor	Non-Labor	Total		
1	Change Of Account	\$ 33,299,895	\$ 1,938,740	\$ 35,238,636	396.7	sum line# 1 thru 2, page 7, calculation step W thru Z
2	HBI	\$ 1,056,290	\$ 61,498	\$ 1,117,787	12.6	sum line# 3 thru 4, page 7, calculation step W thru Z
3	Read & Verify	\$ 5,661,356	\$ 329,608	\$ 5,990,963	67.5	sum line# 5 thru 8, page 7, calculation step W thru Z
4	Meter Work (O&M)	\$ 9,410,570	\$ 547,889	\$ 9,958,460	112.1	sum line# 9 thru 11, page 7, calculation step W thru Z
5	<b>Total</b>	\$ 49,428,111	\$ 2,877,735	\$ 52,305,846	588.9	
Line #	Order Type	TY 2019 Estimated Costs Post AMI			FTE	Calculations
		Labor	Non-Labor	Total		
6	Change Of Account	\$ 6,644,223	\$ 386,831	\$ 7,031,054	79.2	sum line# 12 thru 13, page 7, calculation step W thru Z
7	HBI	\$ 602,768	\$ 35,094	\$ 637,862	7.2	sum line# 14 thru 15, page 7, calculation step W thru Z
8	Read & Verify	\$ 4,082,600	\$ 237,691	\$ 4,320,291	48.6	sum line# 16 thru 19, page 7, calculation step W thru Z
9	<b>Total</b>	\$ 11,329,591	\$ 659,616	\$ 11,989,207	135.0	
Line #	TY 2019 Estimated CS - Field Operations AMI Benefit				FTE	Calculations
	Labor	Non-Labor	Total	Total		
10	<b>Total</b>	\$ 38,098,520	\$ 2,218,119	\$ 40,316,639	453.9	line 5 - line 9
Line #	TY 2019 Estimated CS - Field Operations Post AMI Costs				FTE	Calculations
	Labor	Non-Labor	Total	Total		
11	MTU Remediation Due to Failure	\$ 1,714,477	\$ 99,818	\$ 1,814,294	20.4	sum line# 51 thru 52, SCG-18-WP-2FC001 CS-Field Operations, Supplemental Workpaper 1, page (31, 33, 35, 37), calculation step W thru Z
Line #	TY 2019 Estimated CS - Field Operations AMI Net Benefit (C = A - B)				FTE	Calculations
	Labor	Non-Labor	Total	Total		
12	<b>Total</b>	\$ 36,384,044	\$ 2,118,301	\$ 38,502,345	433.5	line 10 - line 11

**Comparison of TY 2019 CS - Field Operations Estimated Costs: Pre AMI vs Post AMI**

<u>TY 2019 Estimated CS - Field Operations Cost Pre AMI</u>		Order Volume	On-Premises Time (On-Prem) (Hours)	
Line #	Order Types	A	B	C = A x B / 60
Calculation Steps --->>>		TY 2019 Estimated	BY 2016 On-Prem Per Order (Minutes)	TY 2019 Estimated
1	Change Of Account - Turn On Not Entered	999,227	7.2	120,043
2	Change Of Account - Soft Close	534,833	6.0	53,139
3	HBI - Entered	8,889	58.0	8,591
4	HBI - Not Entered	9,983	25.3	4,214
5	Read/Verify - Verify	92,947	12.1	18,771
6	Read/Verify - Verify - Soft Close	72,649	9.5	11,464
7	Read/Verify - Verify - Soft Close - 180 Days	40,736	9.3	6,298
8	Read/Verify - Load Survey - Res	6,628	42.1	4,654
9	Meter Work (O&M) - Meter Change (Entered)	8,813	77.9	11,441
10	Meter Work (O&M) - Meter Change (Not Entered)	115,092	53.6	102,767
11	Meter Work (O&M) - Meter Change Size	6,095	90.9	9,236
<b>Total</b>		<b>1,895,891</b>		<b>350,619</b>
<u>TY 2019 Estimated CS - Field Operations Cost Post AMI</u>		Order Volume	On-Premises Time (On-Prem) (Hours)	
Line #	Order Types	A	B	C = A x B / 60
Calculation Steps --->>>		TY 2019 Estimated	BY 2016 On-Prem Per Order (Minutes)	TY 2019 Estimated
12	Change Of Account - Turn On Not Entered	5,893	7.2	708
13	Change Of Account - Soft Close	311,853	6.0	30,984
14	HBI - Entered	4,440	58.0	4,291
15	HBI - Not Entered	6,844	25.3	2,889
16	Read/Verify - Verify	91,911	12.1	18,562
17	Read/Verify - Verify - Soft Close	31,986	9.5	5,048
18	Read/Verify - Verify - Soft Close - 180 Days	18,759	9.3	2,900
19	Read/Verify - Load Survey - Res	6,196	42.1	4,351
<b>Total</b>		<b>477,882</b>		<b>69,734</b>

**Comparison of TY 2019 CS - Field Operations Estimated Costs: Pre AMI vs Post AMI**

<u>TY 2019 Estimated CS - Field Operations Cost Pre AMI</u>		Average Drive Time Per Order (Minutes)	Drive Time (Hours)	Productive Time = On-Prem Time + Drive Time (Hours)
Calculation Steps ---->>>		D	E = A x D / 60	F = C + E
Line #	Order Types	TY 2019 Estimated	TY 2019 Estimated	TY 2019 Estimated
1	Change Of Account - Turn On Not Entered	14.7	245,269	365,312
2	Change Of Account - Soft Close	14.7	131,279	184,418
3	HBI - Entered	14.7	2,182	10,773
4	HBI - Not Entered	14.7	2,450	6,665
5	Read/Verify - Verify	14.7	22,815	41,585
6	Read/Verify - Verify - Soft Close	14.7	17,832	29,297
7	Read/Verify - Verify - Soft Close - 180 Days	14.7	9,999	16,297
8	Read/Verify - Load Survey - Res	14.7	1,627	6,281
9	Meter Work (O&M) - Meter Change (Entered)	14.7	2,163	13,604
10	Meter Work (O&M) - Meter Change (Not Entered)	14.7	28,250	131,018
11	Meter Work (O&M) - Meter Change Size	14.7	1,496	10,732
<b>Total</b>			465,364	815,983
<u>TY 2019 Estimated CS - Field Operations Cost Post AMI</u>		Average Drive Time Per Order (Minutes)	Drive Time (Hours)	Productive Time = On-Prem Time + Drive Time (Hours)
Calculation Steps ---->>>		D	E = A x D / 60	F = C + E
Line #	Order Types	TY 2019 Estimated	TY 2019 Estimated	TY 2019 Estimated
12	Change Of Account - Turn On Not Entered	14.7	1,446	2,154
13	Change Of Account - Soft Close	14.7	76,547	107,532
14	HBI - Entered	14.7	1,090	5,381
15	HBI - Not Entered	14.7	1,680	4,569
16	Read/Verify - Verify	14.7	22,560	41,122
17	Read/Verify - Verify - Soft Close	14.7	7,851	12,899
18	Read/Verify - Verify - Soft Close - 180 Days	14.7	4,605	7,505
19	Read/Verify - Load Survey - Res	14.7	1,521	5,872
<b>Total</b>			117,301	187,034

### Comparison of TY 2019 CS - Field Operations Estimated Costs: Pre AMI vs Post AMI

<u>TY 2019 Estimated CS - Field Operations Cost Pre AMI</u>		<u>TY 2019 Estimated CS - Field Operations Cost Post AMI</u>	
Calculation Steps --->>>		Calculation Steps --->>>	
Line #	Order Types	Line #	Order Types
1	Change Of Account - Turn On Not Entered	12	Change Of Account - Turn On Not Entered
2	Change Of Account - Soft Close	13	Change Of Account - Soft Close
3	HBI - Entered	14	HBI - Entered
4	HBI - Not Entered	15	HBI - Not Entered
5	Read/Verify - Verify	16	Read/Verify - Verify
6	Read/Verify - Verify - Soft Close	17	Read/Verify - Verify - Soft Close
7	Read/Verify - Verify - Soft Close - 180 Days	18	Read/Verify - Verify - Soft Close - 180 Days
8	Read/Verify - Load Survey - Res	19	Read/Verify - Load Survey - Res
9	Meter Work (O&M) - Meter Change (Entered)		
10	Meter Work (O&M) - Meter Change (Not Entered)		
11	Meter Work (O&M) - Meter Change Size		
	<b>Total</b>		<b>Total</b>

  

Productive Time + Non Job Time (NJT) (Hours)		Productive Time + Non Job Time (NJT) (Hours)	
G	H = F x ( 1 + G )	G	H = F x ( 1 + G )
BY 2016 NJT Factor	TY 2019 Estimated	BY 2016 NJT Factor	TY 2019 Estimated
19.76%	437,491	19.76%	2,580
19.76%	220,856	19.76%	128,778
19.76%	12,902	19.76%	6,445
19.76%	7,982	19.76%	5,472
19.76%	49,802	19.76%	49,247
19.76%	35,085	19.76%	15,447
19.76%	19,518	19.76%	8,988
19.76%	7,522	19.76%	7,032
19.76%	16,292		
19.76%	156,904		
19.76%	12,853		
	<b>977,205</b>		<b>223,989</b>

  

Productive Time + NJT + Vacation & Sick (V&S) (Hours)		Productive Time + NJT + Vacation & Sick (V&S) (Hours)	
J	K = I x ( 1 + J )	J	K = I x ( 1 + J )
BY 2016 V&S Factor	TY 2019 Estimated	BY 2016 V&S Factor	TY 2019 Estimated
16.92%	511,514	16.92%	3,017
16.92%	258,224	16.92%	150,567
16.92%	15,084	16.92%	7,535
16.92%	9,332	16.92%	6,398
16.92%	58,228	16.92%	57,580
16.92%	41,022	16.92%	18,061
16.92%	22,820	16.92%	10,508
16.92%	8,794	16.92%	8,222
16.92%	19,049		
16.92%	183,452		
16.92%	15,028		
	<b>1,142,548</b>		<b>261,887</b>

**Comparison of TY 2019 CS - Field Operations Estimated Costs: Pre AMI vs Post AMI**

<u>TY 2019 Estimated CS - Field Operations Cost Pre AMI</u>		<u>Productive Time + NJT + V&amp;S Labor Cost</u>		<u>Productive Time + NJT + V&amp;S Time Labor FTE</u>		<u>Productive Time + NJT + V&amp;S Non-Labor Cost</u>	
Line #	Order Types	L	M = K x L	N = K / Annual Paid Hours	O	P = O x N	
		BY 2016 Blended Wage Rate	TY 2019 Estimated	TY 2019 Estimated	Non Labor Per FTE	TY 2019 Estimated	
1	Change Of Account - Turn On Not Entered	\$ 40.64	\$ 20,788,453	245.0	\$ 4,887	\$ 1,197,128	
2	Change Of Account - Soft Close	\$ 40.64	\$ 10,494,501	123.7	\$ 4,887	\$ 604,339	
3	HBI - Entered	\$ 40.64	\$ 613,047	7.2	\$ 4,887	\$ 35,303	
4	HBI - Not Entered	\$ 40.64	\$ 379,264	4.5	\$ 4,887	\$ 21,840	
5	Read/Verify - Verify	\$ 40.64	\$ 2,366,461	27.9	\$ 4,887	\$ 136,276	
6	Read/Verify - Verify - Soft Close	\$ 40.64	\$ 1,667,161	19.6	\$ 4,887	\$ 96,006	
7	Read/Verify - Verify - Soft Close - 180 Days	\$ 40.64	\$ 927,422	10.9	\$ 4,887	\$ 53,407	
8	Read/Verify - Load Survey - Res	\$ 40.64	\$ 357,408	4.2	\$ 4,887	\$ 20,582	
9	Meter Work (O&M) - Meter Change (Entered)	\$ 40.64	\$ 774,153	9.1	\$ 4,887	\$ 44,581	
10	Meter Work (O&M) - Meter Change (Not Entered)	\$ 40.64	\$ 7,455,693	87.9	\$ 4,887	\$ 429,345	
11	Meter Work (O&M) - Meter Change Size	\$ 40.64	\$ 610,736	7.2	\$ 4,887	\$ 35,170	
	<b>Total</b>		\$ 46,434,299	547.2		\$ 2,673,975	
<u>TY 2019 Estimated CS - Field Operations Cost Post AMI</u>		<u>Productive Time + NJT + V&amp;S Labor Cost</u>		<u>Productive Time + NJT + V&amp;S Time Labor FTE</u>		<u>Productive Time + NJT + V&amp;S Non-Labor Cost</u>	
Line #	Order Types	L	M = K x L	N = K / Annual Paid Hours	O	P = O x N	
		BY 2016 Blended Wage Rate	TY 2019 Estimated	TY 2019 Estimated	Non Labor Per FTE	TY 2019 Estimated	
12	Change Of Account - Turn On Not Entered	\$ 40.64	\$ 122,596	1.4	\$ 4,887	\$ 7,060	
13	Change Of Account - Soft Close	\$ 40.64	\$ 6,119,193	72.1	\$ 4,887	\$ 352,381	
14	HBI - Entered	\$ 40.64	\$ 306,229	3.6	\$ 4,887	\$ 17,635	
15	HBI - Not Entered	\$ 40.64	\$ 260,031	3.1	\$ 4,887	\$ 14,974	
16	Read/Verify - Verify	\$ 40.64	\$ 2,340,094	27.6	\$ 4,887	\$ 134,757	
17	Read/Verify - Verify - Soft Close	\$ 40.64	\$ 734,023	8.6	\$ 4,887	\$ 42,270	
18	Read/Verify - Verify - Soft Close - 180 Days	\$ 40.64	\$ 427,073	5.0	\$ 4,887	\$ 24,594	
19	Read/Verify - Load Survey - Res	\$ 40.64	\$ 334,130	3.9	\$ 4,887	\$ 19,241	
	<b>Total</b>		\$ 10,643,369	125.4		\$ 612,911	



**Comparison of TY 2019 CS - Field Operations Estimated Costs: Pre AMI vs Post AMI**

<u>TY 2019 Estimated CS - Field Operations Cost Pre AMI</u>		<u>Training Labor FTE</u>		<u>Training Labor Cost</u>		<u>Training Non-Labor Cost</u>	
Line #	Order Types	Q	R = N x Q	S	T = R x S x 2088 Hours	U	V = U x R
	Calculation Steps --->>>	BY 2016 Training Factor	TY 2019 Estimated	BY 2016 Training Wage Rate	TY 2019 Estimated	BY 2016 Non Labor Per FTE	TY 2019 Estimated
1	Change Of Account - Turn On Not Entered	7.62%	18.7	\$ 34.39	\$ 1,340,318	\$ 4,887	\$ 91,222
2	Change Of Account - Soft Close	7.62%	9.4	\$ 34.39	\$ 676,624	\$ 4,887	\$ 46,051
3	HBI - Entered	7.62%	0.6	\$ 34.39	\$ 39,526	\$ 4,887	\$ 2,690
4	HBI - Not Entered	7.62%	0.3	\$ 34.39	\$ 24,453	\$ 4,887	\$ 1,664
5	Read/Verify - Verify	7.62%	2.1	\$ 34.39	\$ 152,576	\$ 4,887	\$ 10,384
6	Read/Verify - Verify - Soft Close	7.62%	1.5	\$ 34.39	\$ 107,489	\$ 4,887	\$ 7,316
7	Read/Verify - Verify - Soft Close - 180 Days	7.62%	0.8	\$ 34.39	\$ 59,795	\$ 4,887	\$ 4,070
8	Read/Verify - Load Survey - Res	7.62%	0.3	\$ 34.39	\$ 23,044	\$ 4,887	\$ 1,568
9	Meter Work (O&M) - Meter Change (Entered)	7.62%	0.7	\$ 34.39	\$ 49,913	\$ 4,887	\$ 3,397
10	Meter Work (O&M) - Meter Change (Not Entered)	7.62%	6.7	\$ 34.39	\$ 480,699	\$ 4,887	\$ 32,717
11	Meter Work (O&M) - Meter Change Size	7.62%	0.5	\$ 34.39	\$ 39,377	\$ 4,887	\$ 2,680
	<b>Total</b>		41.7		\$ 2,993,811		\$ 203,760
<u>TY 2019 Estimated CS - Field Operations Cost Post AMI</u>		<u>Training Labor FTE</u>		<u>Training Labor Cost</u>		<u>Training Non-Labor Cost</u>	
Line #	Order Types	Q	R = N x Q	S	T = R x S x 2088 Hours	U	V = U x R
	Calculation Steps --->>>	BY 2016 Training Factor	TY 2019 Estimated	BY 2016 Training Wage Rate	TY 2019 Estimated	BY 2016 Non Labor Per FTE	TY 2019 Estimated
12	Change Of Account - Turn On Not Entered	7.62%	0.1	\$ 34.39	\$ 7,904	\$ 4,887	\$ 538
13	Change Of Account - Soft Close	7.62%	5.5	\$ 34.39	\$ 394,530	\$ 4,887	\$ 26,852
14	HBI - Entered	7.62%	0.3	\$ 34.39	\$ 19,744	\$ 4,887	\$ 1,344
15	HBI - Not Entered	7.62%	0.2	\$ 34.39	\$ 16,765	\$ 4,887	\$ 1,141
16	Read/Verify - Verify	7.62%	2.1	\$ 34.39	\$ 150,876	\$ 4,887	\$ 10,269
17	Read/Verify - Verify - Soft Close	7.62%	0.7	\$ 34.39	\$ 47,325	\$ 4,887	\$ 3,221
18	Read/Verify - Verify - Soft Close - 180 Days	7.62%	0.4	\$ 34.39	\$ 27,535	\$ 4,887	\$ 1,874
19	Read/Verify - Load Survey - Res	7.62%	0.3	\$ 34.39	\$ 21,543	\$ 4,887	\$ 1,466
	<b>Total</b>		9.6		\$ 686,222		\$ 46,704

**Comparison of TY 2019 CS - Field Operations Estimated Costs: Pre AMI vs Post AMI**

<u>TY 2019 Estimated CS - Field Operations Cost Pre AMI</u>		<b>Total Labor Cost</b>	<b>Total Non-Labor Cost</b>	<b>Total Cost</b>	<b>Total FTE</b>
Calculation Steps --->>>		<b>W = M + T</b>	<b>X = P + V</b>	<b>Y = W + X</b>	<b>Z = N + R</b>
<b>Line #</b>	<b>Order Types</b>	<b>TY 2019 Estimated</b>	<b>TY 2019 Estimated</b>	<b>TY 2019 Estimated</b>	<b>TY 2019 Estimated</b>
1	Change Of Account - Turn On Not Entered	\$ 22,128,771	\$ 1,288,351	\$ 23,417,121	263.6
2	Change Of Account - Soft Close	\$ 11,171,124	\$ 650,390	\$ 11,821,514	133.1
3	HBI - Entered	\$ 652,573	\$ 37,993	\$ 690,566	7.8
4	HBI - Not Entered	\$ 403,717	\$ 23,505	\$ 427,221	4.8
5	Read/Verify - Verify	\$ 2,519,036	\$ 146,660	\$ 2,665,696	30.0
6	Read/Verify - Verify - Soft Close	\$ 1,774,650	\$ 103,321	\$ 1,877,971	21.1
7	Read/Verify - Verify - Soft Close - 180 Days	\$ 987,217	\$ 57,476	\$ 1,044,693	11.8
8	Read/Verify - Load Survey - Res	\$ 380,452	\$ 22,150	\$ 402,602	4.5
9	Meter Work (O&M) - Meter Change (Entered)	\$ 824,066	\$ 47,978	\$ 872,044	9.8
10	Meter Work (O&M) - Meter Change (Not Entered)	\$ 7,936,392	\$ 462,062	\$ 8,398,454	94.6
11	Meter Work (O&M) - Meter Change Size	\$ 650,112	\$ 37,850	\$ 687,962	7.7
<b>Total</b>		\$ 49,428,111	\$ 2,877,735	\$ 52,305,846	588.9
<u>TY 2019 Estimated CS - Field Operations Cost Post AMI</u>		<b>Total Labor Cost</b>	<b>Total Non-Labor Cost</b>	<b>Total Cost</b>	<b>Total FTE</b>
Calculation Steps --->>>		<b>W = M + T</b>	<b>X = P + V</b>	<b>Y = W + X</b>	<b>Z = N + R</b>
<b>Line #</b>	<b>Order Types</b>	<b>TY 2019 Estimated</b>	<b>TY 2019 Estimated</b>	<b>TY 2019 Estimated</b>	<b>TY 2019 Estimated</b>
12	Change Of Account - Turn On Not Entered	\$ 130,500	\$ 7,598	\$ 138,098	1.6
13	Change Of Account - Soft Close	\$ 6,513,722	\$ 379,233	\$ 6,892,955	77.6
14	HBI - Entered	\$ 325,972	\$ 18,978	\$ 344,951	3.9
15	HBI - Not Entered	\$ 276,796	\$ 16,115	\$ 292,911	3.3
16	Read/Verify - Verify	\$ 2,490,970	\$ 145,026	\$ 2,635,996	29.7
17	Read/Verify - Verify - Soft Close	\$ 781,348	\$ 45,491	\$ 826,839	9.3
18	Read/Verify - Verify - Soft Close - 180 Days	\$ 454,608	\$ 26,468	\$ 481,076	5.4
19	Read/Verify - Load Survey - Res	\$ 355,673	\$ 20,708	\$ 376,381	4.2
<b>Total</b>		\$ 11,329,591	\$ 659,616	\$ 11,989,207	135.0

SCG-18-WP - 2FC001 CS - Field Operations  
Supplemental Workpaper 3 (Page 1 of 9)

**CS - Field Operations TY 2019 Estimated RAMP Costs**

**NOTES:**

- 1)** Cost can be found in SCG-18-WP - 2FC001 CS - Field Operations Supplemental Workpaper 1, pages 30 & 31, calculation step W for each corresponding order type
- 2)** Cost can be found in SCG-18-WP - 2FC001 CS - Field Operations Supplemental Workpaper 1, pages 36 & 37, calculation step Z for each corresponding order type
- 3)** Average Non-Labor used is calculated from BY 2016 Average Non-Labor per FTE of \$4,887 - \$85 annual boot allowance - \$592 average PPE per FTE.

SCG-18-WP - 2FC001 CS - Field Operations  
Supplemental Workpaper 3 (Page 2 of 9)

### CS - Field Operations TY 2019 Estimated RAMP Costs

Line#	Calculation Steps	CS - Field Operations PPE & Boot Allowance Estimated RAMP Cost	BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	A	CS - Field Operations FTE		1,206	1,275	1,330
2	B	FTE To Head Count Rate		89.65%	89.65%	89.65%
3	C = A x B	CS - Field Operations Headcount		1,081	1,143	1,192
4	D	Annual Boot Allowance Per Employee		\$ 85	\$ 85	\$ 85
5	E = C x D	Estimated Boot Allowance Cost	\$ 92,573	\$ 91,904	\$ 97,126	\$ 101,315
6		Incremental Boot Allowance Cost vs BY 2016		\$ (669)	\$ 4,553	\$ 8,742
7	F	BY 2016 Average PPE Per FTE	\$ 592	\$ 592	\$ 592	\$ 592
8	G = F x A	Estimated PPE Cost	\$ 719,013	\$ 713,818	\$ 754,379	\$ 786,912
9		Incremental PPE Cost vs BY 2016		\$ (5,196)	\$ 35,366	\$ 67,898
10	H = E + G	Estimated Total Boot Allowance & PPE Cost	\$ 811,586	\$ 805,722	\$ 851,506	\$ 888,226
11		Total Incremental Boot Allowance & PPE Cost vs BY 2016		\$ (5,865)	\$ 39,919	\$ 76,640
Line#	Calculation Steps	CS - Field Operations Employee Skills And Refresher Training Estimated RAMP Cost	BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated
12	I	CS - Field Operations Average Non-Labor Per FTE		\$ 4,887	\$ 4,887	\$ 4,887
13	J = I - D - F	Non - Labor Per FTE Less Boot Allowance & PPE		\$ 4,210	\$ 4,210	\$ 4,210
14	K	Estimated CS - Field Operations Training FTE	79.2	85.4	90.2	94.1
15	L	Estimated CS - Field Operations Training Labor	\$ 5,662,776	\$ 6,107,662	\$ 6,479,547	\$ 6,758,975
16	M = J * K	Estimated CS - Field Operations Training Non-Labor	\$ 333,302	\$ 359,488	\$ 379,915	\$ 396,299
17	N = L + M	Estimated Total Training Cost	\$ 5,996,078	\$ 6,467,149	\$ 6,859,462	\$ 7,155,273
18		Incremental Training FTE vs BY 2016		6.2	11.1	15.0
19		Incremental Training Labor vs By 2016		\$ 444,886	\$ 816,771	\$ 1,096,199
20		Incremental Training Non-Labor vs BY 2016		\$ 26,185	\$ 46,613	\$ 62,996
21		Total Incremental Training Cost vs BY 2016		\$ 471,071	\$ 863,384	\$ 1,159,195

SCG-18-WP - 2FC001 CS - Field Operations  
Supplemental Workpaper 3 (Page 3 of 9)

### CS - Field Operations TY 2019 Estimated RAMP Costs

Line#	Calculation Steps	CS - Field Operations Safety Related Orders Estimated RAMP Cost	BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated
22	O	CS - Field Operations Workload RAMP Labor	\$ 28,102,009	\$ 28,590,060	\$ 29,174,629	\$ 29,769,068
23	P	CS - Field Operations Workload RAMP Non-Labor	\$ 1,394,131	\$ 1,418,343	\$ 1,447,343	\$ 1,476,833
24	Q = O + P	Total CS - Field Operations Workload RAMP Cost	\$ 29,496,140	\$ 30,008,403	\$ 30,621,973	\$ 31,245,901
25	R	CS - Field Operations Workload RAMP FTE	331.2	336.9	343.8	350.8
26		Incremental Workload RAMP Labor vs BY 2016		\$ 488,051	\$ 1,072,620	\$ 1,667,059
27		Incremental Workload RAMP Non-Labor vs BY 2016		\$ 24,212	\$ 53,212	\$ 82,702
28		Total Incremental Workload RAMP Cost vs BY 2016		\$ 512,263	\$ 1,125,833	\$ 1,749,761
29		Incremental Workload RAMP FTE vs BY 2016		5.8	12.6	19.6
<b>CS - Field Operations Total Estimated RAMP Cost</b>						
Line#	Calculation Steps	BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated	
30	S = L + O	\$ 33,764,785	\$ 34,697,721	\$ 35,654,177	\$ 36,528,043	
31	T = H + M + P	\$ 2,539,020	\$ 2,583,552	\$ 2,678,764	\$ 2,761,358	
32	U = S + T	\$ 36,303,805	\$ 37,281,274	\$ 38,332,941	\$ 39,289,401	
33	V = K + R	410.3	422.3	434.0	444.9	
34			\$ 932,936	\$ 1,889,392	\$ 2,763,258	
35			\$ 44,532	\$ 139,744	\$ 222,339	
36			\$ 977,469	\$ 2,029,136	\$ 2,985,596	
37			12.0	23.7	34.6	

SCG-18-WP - 2FC001 CS - Field Operations  
Supplemental Workpaper 3 (Page 4 of 9)

### CS - Field Operations Safety Related Orders Estimated RAMP Cost

Line #	Order Types	CS-Field Operations Labor Cost			
		BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated
Calculation Steps --->>>		A <sup>1</sup>			
1	Customer Service Order ("CSO")	\$ 7,647,820	\$ 7,788,882	\$ 7,951,155	\$ 8,123,716
2	CSO - Carbon Monoxide Test	\$ 354,799	\$ 360,012	\$ 366,137	\$ 372,660
3	CSO - No Gas	\$ 802,232	\$ 815,753	\$ 831,429	\$ 848,108
4	Fumigation - Turn On	\$ 4,139,660	\$ 4,198,093	\$ 4,267,019	\$ 4,340,449
5	Fumigation - Close	\$ 2,709,832	\$ 2,763,272	\$ 2,824,419	\$ 2,889,417
6	Read/Verify - Verify	\$ 2,152,512	\$ 2,209,137	\$ 2,272,665	\$ 2,340,094
7	Read/Verify - Verify - Soft Close	\$ 670,390	\$ 689,670	\$ 711,190	\$ 734,023
8	Read/Verify - Verify - Soft Close - 180 Days	\$ 389,825	\$ 401,113	\$ 413,709	\$ 427,073
9	Incomplete	\$ 5,367,315	\$ 5,252,304	\$ 5,486,684	\$ 5,569,907
10	Low Flow Test (increase in on-prem time)	\$ -	\$ 281,409	\$ 283,501	\$ 285,753
11	Clock Test (increase in on-prem time)	\$ -	\$ 134,004	\$ 135,001	\$ 136,073
12	Gas Leak - CSO Leak	\$ 11,909,272	\$ 12,108,383	\$ 12,339,391	\$ 12,585,197
13	Gas Leak - Pilot Out Only	\$ 729,898	\$ 743,742	\$ 759,632	\$ 776,525
14	Gas Leak - Leak Investigation (Step2)	\$ 978,814	\$ 990,739	\$ 1,005,040	\$ 1,020,294
15	Food Industry - CSO Leak	\$ 569,871	\$ 577,668	\$ 586,895	\$ 596,727
<b>TOTAL</b>		<b>\$ 38,422,240</b>	<b>\$ 39,314,182</b>	<b>\$ 40,233,866</b>	<b>\$ 41,046,017</b>

SCG-18-WP - 2FC001 CS - Field Operations  
Supplemental Worksheet 3 (Page5 of 9)

### CS - Field Operations Safety Related Orders Estimated RAMP Cost

Line #	Order Types	CS-Field Operations Labor FTE			
		BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated
Calculation Steps --->>>		B <sup>2</sup>			
1	Customer Service Order ("CSO")	90.1	91.8	93.7	95.7
2	CSO - Carbon Monoxide Test	4.2	4.2	4.3	4.4
3	CSO - No Gas	9.5	9.6	9.8	10.0
4	Fumigation - Turn On	48.8	49.5	50.3	51.1
5	Fumigation - Close	31.9	32.6	33.3	34.0
6	Read/Verify - Verify	25.4	26.0	26.8	27.6
7	Read/Verify - Verify - Soft Close	7.9	8.1	8.4	8.6
8	Read/Verify - Verify - Soft Close - 180 Days	4.6	4.7	4.9	5.0
9	Incomplete	63.3	61.9	64.7	65.6
10	Low Flow Test (increase in on-prem time)	-	3.3	3.3	3.4
11	Clock Test (increase in on-prem time)	-	1.6	1.6	1.6
12	Gas Leak - CSO Leak	140.3	142.7	145.4	148.3
13	Gas Leak - Pilot Out Only	8.6	8.8	9.0	9.2
14	Gas Leak - Leak Investigation (Step2)	11.5	11.7	11.8	12.0
15	Food Industry - CSO Leak	7	6.8	6.9	7.0
<b>TOTAL</b>		452.8	463.3	474.1	483.7

SCG-18-WP - 2FC001 CS - Field Operations  
 Supplemental Workpaper 3 (Page6 of 9)

**CS - Field Operations Safety Related Orders Estimated RAMP Cost**

Line #	Order Types	C Percentage Of Activity Included In RAMP	RAMP Labor Cost D = A x C			
			BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated
1	Customer Service Order ("CSO")	50%	\$ 3,823,910	\$ 3,894,441	\$ 3,975,577	\$ 4,061,858
2	CSO - Carbon Monoxide Test	100%	\$ 354,799	\$ 360,012	\$ 366,137	\$ 372,660
3	CSO - No Gas	50%	\$ 401,116	\$ 407,877	\$ 415,715	\$ 424,054
4	Fumigation - Turn On	100%	\$ 4,139,660	\$ 4,198,093	\$ 4,267,019	\$ 4,340,449
5	Fumigation - Close	100%	\$ 2,709,832	\$ 2,763,272	\$ 2,824,419	\$ 2,889,417
6	Read/Verify - Verify	25%	\$ 538,128	\$ 552,284	\$ 568,166	\$ 585,024
7	Read/Verify - Verify - Soft Close	100%	\$ 670,390	\$ 689,670	\$ 711,190	\$ 734,023
8	Read/Verify - Verify - Soft Close - 180 Days	100%	\$ 389,825	\$ 401,113	\$ 413,709	\$ 427,073
9	Incomplete	17%	\$ 886,494	\$ 867,499	\$ 906,210	\$ 919,956
10	Low Flow Test (increase in on-prem time)	8%	\$ -	\$ 23,891	\$ 24,068	\$ 24,259
11	Clock Test (increase in on-prem time)	8%	\$ -	\$ 11,377	\$ 11,461	\$ 11,552
12	Gas Leak - CSO Leak	100%	\$ 11,909,272	\$ 12,108,383	\$ 12,339,391	\$ 12,585,197
13	Gas Leak - Pilot Out Only	100%	\$ 729,898	\$ 743,742	\$ 759,632	\$ 776,525
14	Gas Leak - Leak Investigation (Step2)	100%	\$ 978,814	\$ 990,739	\$ 1,005,040	\$ 1,020,294
15	Food Industry - CSO Leak	100%	\$ 569,871	\$ 577,668	\$ 586,895	\$ 596,727
	<b>TOTAL</b>		\$ 28,102,009	\$ 28,590,060	\$ 29,174,629	\$ 29,769,068



SCG-18-WP - 2FC001 CS - Field Operations  
 Supplemental Worksheet 3 (Page 7 of 9)

**CS - Field Operations Safety Related Orders Estimated RAMP Cost**

Line #	Order Types	RAMP Non-Labor Cost				
		F	G = E x F			
		Average Non-Labor Per FTE <sup>3</sup>	BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated
Calculation Steps ---->>>						
1	Customer Service Order ("CSO")	\$ 4,210	\$ 189,703	\$ 193,202	\$ 197,227	\$ 201,507
2	CSO - Carbon Monoxide Test	\$ 4,210	\$ 17,601	\$ 17,860	\$ 18,164	\$ 18,488
3	CSO - No Gas	\$ 4,210	\$ 19,899	\$ 20,235	\$ 20,623	\$ 21,037
4	Fumigation - Turn On	\$ 4,210	\$ 205,367	\$ 208,266	\$ 211,685	\$ 215,328
5	Fumigation - Close	\$ 4,210	\$ 134,434	\$ 137,085	\$ 140,118	\$ 143,343
6	Read/Verify - Verify	\$ 4,210	\$ 26,696	\$ 27,399	\$ 28,187	\$ 29,023
7	Read/Verify - Verify - Soft Close	\$ 4,210	\$ 33,258	\$ 34,214	\$ 35,282	\$ 36,415
8	Read/Verify - Verify - Soft Close - 180 Days	\$ 4,210	\$ 19,339	\$ 19,899	\$ 20,524	\$ 21,187
9	Incomplete	\$ 4,210	\$ 43,979	\$ 43,036	\$ 44,957	\$ 45,639
10	Low Flow Test (increase in on-prem time)	\$ 4,210	\$ -	\$ 1,185	\$ 1,194	\$ 1,204
11	Clock Test (increase in on-prem time)	\$ 4,210	\$ -	\$ 564	\$ 569	\$ 573
12	Gas Leak - CSO Leak	\$ 4,210	\$ 590,815	\$ 600,693	\$ 612,153	\$ 624,347
13	Gas Leak - Pilot Out Only	\$ 4,210	\$ 36,210	\$ 36,897	\$ 37,685	\$ 38,523
14	Gas Leak - Leak Investigation (Step2)	\$ 4,210	\$ 48,559	\$ 49,150	\$ 49,860	\$ 50,616
15	Food Industry - CSO Leak	\$ 4,210	\$ 28,271	\$ 28,658	\$ 29,116	\$ 29,603
	<b>TOTAL</b>		\$ 1,394,131	\$ 1,418,343	\$ 1,447,343	\$ 1,476,833

SCG-18-WP - 2FC001 CS - Field Operations  
 Supplemental Workpaper 3 (Page8 of 9)

**CS - Field Operations Safety Related Orders Estimated RAMP Cost**

Line #	Order Types	Total RAMP Cost			
		BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated
Calculation Steps ---->>>		H = D + G			
1	Customer Service Order ("CSO")	\$ 3,828,120	\$ 4,087,643	\$ 4,172,804	\$ 4,263,365
2	CSO - Carbon Monoxide Test	\$ 359,008	\$ 377,873	\$ 384,301	\$ 391,147
3	CSO - No Gas	\$ 405,326	\$ 428,111	\$ 436,338	\$ 445,091
4	Fumigation - Turn On	\$ 4,143,870	\$ 4,406,359	\$ 4,478,705	\$ 4,555,777
5	Fumigation - Close	\$ 2,714,042	\$ 2,900,357	\$ 2,964,538	\$ 3,032,760
6	Read/Verify - Verify	\$ 542,338	\$ 579,683	\$ 596,353	\$ 614,046
7	Read/Verify - Verify - Soft Close	\$ 674,600	\$ 723,884	\$ 746,472	\$ 770,437
8	Read/Verify - Verify - Soft Close - 180 Days	\$ 394,035	\$ 421,013	\$ 434,233	\$ 448,260
9	Incomplete	\$ 890,704	\$ 910,535	\$ 951,167	\$ 965,594
10	Low Flow Test (increase in on-prem time)	\$ 4,210	\$ 25,076	\$ 25,262	\$ 25,463
11	Clock Test (increase in on-prem time)	\$ 4,210	\$ 11,941	\$ 12,030	\$ 12,125
12	Gas Leak - CSO Leak	\$ 11,913,481	\$ 12,709,075	\$ 12,951,544	\$ 13,209,544
13	Gas Leak - Pilot Out Only	\$ 734,108	\$ 780,639	\$ 797,317	\$ 815,048
14	Gas Leak - Leak Investigation (Step2)	\$ 983,024	\$ 1,039,889	\$ 1,054,900	\$ 1,070,911
15	Food Industry - CSO Leak	\$ 574,081	\$ 606,325	\$ 616,010	\$ 626,330
<b>TOTAL</b>		\$ 28,165,156	\$ 30,008,403	\$ 30,621,973	\$ 31,245,901

SCG-18-WP - 2FC001 CS - Field Operations  
Supplemental Workpaper 3 (Page9 of 9)

### CS - Field Operations Safety Related Orders Estimated RAMP Cost

Line #	Order Types	RAMP Labor FTE			
		BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated
Calculation Steps --->>>		E = B x E			
1	Customer Service Order ("CSO")	45.1	45.9	46.8	47.9
2	CSO - Carbon Monoxide Test	4.2	4.2	4.3	4.4
3	CSO - No Gas	4.7	4.8	4.9	5.0
4	Fumigation - Turn On	48.8	49.5	50.3	51.1
5	Fumigation - Close	31.9	32.6	33.3	34.0
6	Read/Verify - Verify	6.3	6.5	6.7	6.9
7	Read/Verify - Verify - Soft Close	7.9	8.1	8.4	8.6
8	Read/Verify - Verify - Soft Close - 180 Days	4.6	4.7	4.9	5.0
9	Incomplete	10.4	10.2	10.7	10.8
10	Low Flow Test (increase in on-prem time)	-	0.3	0.3	0.3
11	Clock Test (increase in on-prem time)	-	0.1	0.1	0.1
12	Gas Leak - CSO Leak	140.3	142.7	145.4	148.3
13	Gas Leak - Pilot Out Only	8.6	8.8	9.0	9.2
14	Gas Leak - Leak Investigation (Step2)	11.5	11.7	11.8	12.0
15	Food Industry - CSO Leak	7	6.8	6.9	7.0
<b>TOTAL</b>		331	336.9	343.8	350.8

**Beginning of Workpaper**  
**2FC002.000 - Customer Services Field - Supervision**

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Category-Sub: 1. Customer Services Field  
Workpaper: 2FC002.000 - Customer Services Field - Supervision

**Activity Description:**

Labor and non-labor costs for front-line supervisors who provide direct supervision for CS - Field Operations technicians and collectors who work from 51 operating bases and cover all of SoCalGas' service territory. CS - Field supervisors hire and coach employees, conduct safety and job observations and coordinate with the dispatch office and others to address and resolve issues, respond to emergency incidents to provide on-site leadership, and manage the overall performance of the CS -Field Operations employees.

**Forecast Explanations:**

**Labor - Zero-Based**

The CS- Field Supervisor forecast is based on maintaining the current employee-to-supervisor ratio of 12:1. A ratio of 12:1 is appropriate given the geographic area covered by each operating base; the variety of work performed and conditions encountered at customer premises; and the expectation that supervisors spend as much time as possible in the field performing safety and job observations, coaching employees, and managing performance. A zero based forecast of expenses was used in lieu of other forecasting methodologies because a zero based forecast is the only method that appropriately maintains the desired ratio of employees to supervisors. The forecasted supervisor full-time equivalents (FTEs) are calculated by applying the 12:1 ratio to the forecasted FTE workforce in work group 2FC001.000. Incremental funding requests, which are forecasted using the zero based methodology, are then added to determine total funding requirements. Refer to SCG-18-WP-2FC002 CS - Field Supervision, Supplemental Workpaper 1, for calculations.

An explanation of the forecast methodology for the CS-Field Operations workforce can be found in work group 2FC001.000.

**Non-Labor - Zero-Based**

Non-labor expenses such as cell phones, office supplies and other miscellaneous expenses are driven by the forecasted number of supervisor FTEs. The non-labor forecast is based on the BY 2016 average non-labor expense per supervisor FTE multiplied by the forecasted number of supervisor FTEs. Because non-labor costs are driven by the number of supervisors, historical averaging or trending of expenses alone would not be appropriate because expenses would not be aligned with the forecasted number of supervisors. Incremental funding requests, which are forecasted using the zero based methodology, are then added to determine total funding requirements. Refer to SCG-18-WP-2FC002 CS - Field Supervision, Supplemental Workpaper 1, for calculations.

**NSE - Zero-Based**

NSE is not applicable to this workgroup.

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC002.000 - Customer Services Field - Supervision

**Summary of Results:**

		<b>In 2016\$ (000) Incurred Costs</b>								
		<b>Adjusted-Recorded</b>					<b>Adjusted-Forecast</b>			
<b>Years</b>		<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	
Labor		12,178	11,793	9,842	10,741	10,744	9,389	10,212	10,402	
Non-Labor		1,493	1,247	954	799	656	605	640	668	
NSE		0	0	0	0	0	0	0	0	
<b>Total</b>		<b>13,672</b>	<b>13,040</b>	<b>10,796</b>	<b>11,539</b>	<b>11,400</b>	<b>9,994</b>	<b>10,852</b>	<b>11,070</b>	
FTE		125.2	121.7	101.0	110.4	111.3	98.9	107.7	109.4	

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Category-Sub: 1. Customer Services Field  
Workpaper: 2FC002.000 - Customer Services Field - Supervision

**Summary of Adjustments to Forecast:**

In 2016 \$(000) Incurred Costs										
Forecast Method		Base Forecast			Forecast Adjustments			Adjusted-Forecast		
Years		2017	2018	2019	2017	2018	2019	2017	2018	2019
Labor	Zero-Based	0	0	0	9,389	10,212	10,402	9,389	10,212	10,402
Non-Labor	Zero-Based	0	0	0	605	640	668	605	640	668
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>9,994</b>	<b>10,852</b>	<b>11,070</b>	<b>9,994</b>	<b>10,852</b>	<b>11,070</b>
FTE	Zero-Based	0.0	0.0	0.0	98.9	107.7	109.4	98.9	107.7	109.4

**Forecast Adjustment Details:**

Year	Adj Group	Labor	NLbr	NSE	Total	FTE	Adj Type	RefID	
2017	Other	8,486	605	0	9,091	89.1	1-Sided Adj	TPHT20170310175644020	
<b>Explanation:</b>		Labor and non-labor costs for front-line CS - Field Supervisors who provide direct supervision for CS - Field operations technicians and collectors to maintain historical employee to supervisor ratio of 12:1. Refer to Ex. SCG-18-WP-2FC002 CS - Field Supervision, Supplemental Workpaper 1, for calculations.							
2017	RAMP Base	798	0	0	798	8.4	1-Sided Adj	TPHT20170310175750600	
<b>Explanation:</b>		RAMP SCG-2 Employee Contractor Customer & Public Safety: CS - Field Supervision base forecast for job Observations field rides, and job monitoring. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to SCG-18-WP-2FC002 CS - Field Supervision, Supplemental Workpaper 1, for calculations.							
2017	RAMP Incremental	-6	0	0	-6	-0.1	1-Sided Adj	TPHT20170310175855723	
<b>Explanation:</b>		RAMP SCG-2 Employee Contractor Customer & Public Safety: CS - Field Supervision incremental forecast for job observations, field rides, and job monitoring. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to SCG-18-WP-2FC002 CS - Field Supervision, Supplemental Workpaper 1, for calculations.							
2017	FOF-Ongoing	26	0	0	26	0.5	1-Sided Adj	TPHT20170310180235283	
<b>Explanation:</b>		CS - Field Supervision net costs associated with Fueling our Future initiative.							
2017	Other	85	0	0	85	1.0	1-Sided Adj	TPHT20170310231035573	
<b>Explanation:</b>		CS - Field Supervision labor and non-labor costs for supervisors who provide direction to CS - Field Operations technicians who perform curb meter replacement work.							
<b>2017 Total</b>		<b>9,389</b>	<b>605</b>	<b>0</b>	<b>9,994</b>	<b>98.9</b>			

2018 Other 9,006 640 0 9,646 94.1 1-Sided Adj TPHT20170310175704580

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC002.000 - Customer Services Field - Supervision

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>
<b>Explanation:</b> Labor and non-labor costs for front-line CS - Field Supervisors who provide direct supervision for CS - Field operations technicians and collectors to maintain historical employee to supervisor ratio of 12:1. Refer to Ex. SCG-18-WP-2FC002 CS - Field Supervision, Supplemental Workpaper 1, for calculations.								
2018	RAMP Base	798	0	0	798	8.4	1-Sided Adj	TPTHT20170310175806170
<b>Explanation:</b> RAMP SCG-2 Employee Contractor Customer & Public Safety: CS - Field Supervision base forecast for job Observations field rides, and job monitoring. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to SCG-18-WP-2FC002 CS - Field Supervision, Supplemental Workpaper 1, for calculations.								
2018	RAMP Incremental	39	0	0	39	0.4	1-Sided Adj	TPTHT20170310175943487
<b>Explanation:</b> RAMP SCG-2 Employee Contractor Customer & Public Safety: CS - Field Supervision incremental forecast for job observations, field rides, and job monitoring. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to SCG-18-WP-2FC002 CS - Field Supervision, Supplemental Workpaper 1, for calculations.								
2018	FOF-Ongoing	114	0	0	114	1.8	1-Sided Adj	TPTHT20170310180304210
<b>Explanation:</b> CS - Field Supervision net costs associated with Fueling our Future initiative.								
2018	Other	255	0	0	255	3.0	1-Sided Adj	TPTHT20170511173511690
<b>Explanation:</b> CS - Field Supervision labor and non-labor costs for supervisors who provide direction to CS - Field Operations technicians who perform curb meter replacement work.								
<b>2018 Total</b>		<b>10,212</b>	<b>640</b>	<b>0</b>	<b>10,852</b>	<b>107.7</b>		
2019	Other	9,394	668	0	10,062	98.2	1-Sided Adj	TPTHT20170310175724997
<b>Explanation:</b> Labor and non-labor costs for front-line CS - Field Supervisors who provide direct supervision for CS - Field operations technicians and collectors to maintain historical employee to supervisor ratio of 12:1. Refer to Ex. SCG-18-WP-2FC002 CS - Field Supervision, Supplemental Workpaper 1, for calculations.								
2019	RAMP Base	798	0	0	798	8.4	1-Sided Adj	TPTHT20170310175818890
<b>Explanation:</b> RAMP SCG-2 Employee Contractor Customer & Public Safety: CS - Field Supervision base forecast for job Observations field rides, and job monitoring. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to SCG-18-WP-2FC002 CS - Field Supervision, Supplemental Workpaper 1, for calculations.								
2019	RAMP Incremental	75	0	0	75	0.8	1-Sided Adj	TPTHT20170310180057580
<b>Explanation:</b> RAMP SCG-2 Employee Contractor Customer & Public Safety: CS - Field Supervision incremental forecast for job observations, field rides, and job monitoring. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to SCG-18-WP-2FC002 CS - Field Supervision, Supplemental Workpaper 1, for calculations.								

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli



Southern California Gas Company  
 2019 GRC - APP  
 Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC002.000 - Customer Services Field - Supervision

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>	<u>Adj_Type</u>	<u>RefID</u>
2019	FOF-Ongoing	135	0	0	135	2.0	1-Sided Adj	TPHT20170310180327353

**Explanation:** CS - Field Supervision net costs associated with Fueling our Future initiative.

<b>2019 Total</b>		<b>10,402</b>	<b>668</b>	<b>0</b>	<b>11,070</b>	<b>109.4</b>		
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*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Category-Sub: 1. Customer Services Field  
Workpaper: 2FC002.000 - Customer Services Field - Supervision

**Determination of Adjusted-Recorded (Incurred Costs):**

	2012 (\$000)	2013 (\$000)	2014 (\$000)	2015 (\$000)	2016 (\$000)
<b>Recorded (Nominal \$)*</b>					
Labor	9,291	9,065	10,433	12,138	12,436
Non-Labor	1,188	1,095	833	624	524
NSE	0	0	0	0	0
<b>Total</b>	<b>10,480</b>	<b>10,159</b>	<b>11,265</b>	<b>12,762</b>	<b>12,961</b>
FTE	109.2	103.9	115.5	129.7	130.0
<b>Adjustments (Nominal \$) **</b>					
Labor	268	366	-2,364	-3,114	-3,212
Non-Labor	263	137	124	173	132
NSE	0	0	0	0	0
<b>Total</b>	<b>531</b>	<b>503</b>	<b>-2,240</b>	<b>-2,942</b>	<b>-3,080</b>
FTE	-1.7	0.2	-29.0	-35.1	-34.9
<b>Recorded-Adjusted (Nominal \$)</b>					
Labor	9,559	9,430	8,068	9,024	9,224
Non-Labor	1,452	1,232	957	797	656
NSE	0	0	0	0	0
<b>Total</b>	<b>11,011</b>	<b>10,662</b>	<b>9,026</b>	<b>9,821</b>	<b>9,881</b>
FTE	107.5	104.1	86.5	94.6	95.1
<b>Vacation &amp; Sick (Nominal \$)</b>					
Labor	1,530	1,567	1,317	1,460	1,519
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>1,530</b>	<b>1,567</b>	<b>1,317</b>	<b>1,460</b>	<b>1,519</b>
FTE	17.8	17.6	14.5	15.9	16.1
<b>Escalation to 2016\$</b>					
Labor	1,089	795	457	257	0
Non-Labor	42	15	-3	2	0
NSE	0	0	0	0	0
<b>Total</b>	<b>1,131</b>	<b>810</b>	<b>454</b>	<b>259</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Constant 2016\$)</b>					
Labor	12,178	11,793	9,842	10,741	10,744
Non-Labor	1,493	1,247	954	799	656
NSE	0	0	0	0	0
<b>Total</b>	<b>13,672</b>	<b>13,040</b>	<b>10,796</b>	<b>11,539</b>	<b>11,400</b>
FTE	125.3	121.7	101.0	110.5	111.2

\* 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.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC002.000 - Customer Services Field - Supervision

**Summary of Adjustments to Recorded:**

		In Nominal \$ (000) Incurred Costs				
Years		2012	2013	2014	2015	2016
Labor		268	366	-2,364	-3,114	-3,212
Non-Labor		263	137	124	173	132
NSE		0	0	0	0	0
	<b>Total</b>	<b>531</b>	<b>503</b>	<b>-2,240</b>	<b>-2,942</b>	<b>-3,080</b>
FTE		-1.7	0.2	-29.0	-35.1	-34.9

**Detail of Adjustments to Recorded:**

Year	Adj Group	Labor	NLbr	NSE	FTE	Adj Type	RefID
2012	Other	-3,746	-4	0	46.7	1-Sided Adj	CTRINH20170227032659373
<b>Explanation:</b>		Transfer labor and non-labor expenses for CS - Field DOCs DOMS and FI from 2FC002 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted					
2012	Other	4,014	268	0	45.0	1-Sided Adj	CTRINH20170227041029060
<b>Explanation:</b>		Transfer labor and non-labor expenses for CS - Field Supervisors from 2FC001 to 2FC002 in order to align historical expenses with the workgroup in which the activity will be forecasted					
<b>2012 Total</b>		<b>268</b>	<b>263</b>	<b>0</b>	<b>-1.7</b>		
2013	Other	-3,291	-7	0	40.0	1-Sided Adj	CTRINH20170227032539257
<b>Explanation:</b>		Transfer labor and non-labor expenses for CS - Field Support DOCs DOMS and FI from 2FC002 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted					
2013	Other	3,656	144	0	40.2	1-Sided Adj	CTRINH20170227041624453
<b>Explanation:</b>		Transfer labor and non-labor expenses for CS - Field Supervisors from 2FC001 to 2FC002 in order to align historical expenses with the workgroup in which the activity will be forecasted					
<b>2013 Total</b>		<b>366</b>	<b>137</b>	<b>0</b>	<b>0.2</b>		
2014	Other	-3,477	-9	0	41.1	1-Sided Adj	CTRINH20170227032417283
<b>Explanation:</b>		Transfer labor and non-labor expenses for CS - Field Support DOCs, DOMS, and FI from 2FC002 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted					
2014	Other	992	134	0	10.7	1-Sided Adj	CTRINH20170227042445647
<b>Explanation:</b>		Transfer labor and non-labor expenses for CS - Field Supervisors from 2FC001 to 2FC002 in order to align historical expenses with the workgroup in which the activity will be forecasted					

Note: Totals may include rounding differences.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC002.000 - Customer Services Field - Supervision

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>
2014	Other	121	0	0	1.4	1-Sided Adj	CTRINH20170512114204840
<b>Explanation:</b> Adjustment to correct erroneous mapping allocation for IO 300736959							
<b>2014 Total</b>		<b>-2,364</b>	<b>124</b>	<b>0</b>	<b>29.0</b>		
2015	Other	-3,866	-9	0	43.8	1-Sided Adj	CTRINH20170227032206847
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Support DOCs, DOMS, and FI from 2FC002 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted							
2015	Other	196	182	0	2.1	1-Sided Adj	CTRINH20170227042928333
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Supervisors from 2FC001 to 2FC002 in order to align historical expenses with the workgroup in which the activity will be forecasted							
2015	Other	556	0	0	6.6	1-Sided Adj	CTRINH20170512114316330
<b>Explanation:</b> Adjustment to correct erroneous mapping allocation for IO 300736959							
<b>2015 Total</b>		<b>-3,114</b>	<b>173</b>	<b>0</b>	<b>35.1</b>		
2016	Aliso	-87	0	0	-1.0	1-Sided Adj	CTRINH20170215105434717
<b>Explanation:</b> Aliso leak mitigation exclude costs captured in IO							
2016	Other	-3,908	-6	0	42.8	1-Sided Adj	CTRINH20170227031927000
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Support DOCs, DOMS, and FI from 2FC002 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted							
2016	Other	193	138	0	2.1	1-Sided Adj	CTRINH20170227044500127
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Supervisors from 2FC001 to 2FC002 in order to align historical expenses with the workgroup in which the activity will be forecasted							
2016	Other	589	0	0	6.8	1-Sided Adj	CTRINH20170512114440000
<b>Explanation:</b> Adjustment to correct erroneous mapping allocation for IO 300736959							
<b>2016 Total</b>		<b>-3,212</b>	<b>132</b>	<b>0</b>	<b>34.9</b>		

Note: Totals may include rounding differences.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC002.000 - Customer Services Field - Supervision

**RAMP Item # 1**

Ref ID: TPTHT20170310175750600

RAMP Chapter: SCG-2

Program Name: Job Observations, Field Rides and Job Monitoring

Program Description: Job Observations, Field Rides and Job Monitoring

**Risk/Mitigation:**

Risk: Employee, Contractor, Customer and Public Safety

Mitigation: JOB Observations, Field Rides and Job Monitoring

**Forecast CPUC Cost Estimates (\$000)**

	<u>2017</u>	<u>2018</u>	<u>2019</u>
Low	937	918	900
High	1,145	1,122	1,100

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: Non-Mandated

**Historical Embedded Cost Estimates (\$000)**

Embedded Costs: 798

Explanation: CSF Supervision base forecast for Job Observations, Field Rides, and Job Monitoring

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Category-Sub: 1. Customer Services Field  
Workpaper: 2FC002.000 - Customer Services Field - Supervision

**RAMP Item # 2**

Ref ID: TPTHT20170310175855723

RAMP Chapter: SCG-2

Program Name: Job Observations, Field Rides, and Job Monitoring

Program Description: Job Observations, Field Rides, and Job Monitoring

**Risk/Mitigation:**

Risk: Employee, Contractor, Customer and Public Safety

Mitigation: Job Observations, Field Rides, and Job Monitoring

**Forecast CPUC Cost Estimates (\$000)**

	<u>2017</u>	<u>2018</u>	<u>2019</u>
Low	937	918	900
High	1,145	1,122	1,100

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: Non-Mandated

**Historical Embedded Cost Estimates (\$000)**

Embedded Costs: 0

Explanation: Costs are already shown in the RAMP Base Detail screen

**Supplemental Workpapers for Workpaper 2FC002.000**

SCG-18-WP - 2FC002 CS - Field Supervision  
Supplemental Workpaper 1 (Page 1 of 1)

**Calculation of CS - Field Supervision Costs**

Line #	Calculation Factors	BY 2016	2017 Estimated	2018 Estimated	TY 2019 Estimated	Calculation Steps
1	CS - Field Operations FTE <sup>1</sup>	1,307.4	1,206.0	1,274.6	1,329.5	A
2	2016 BY CS - Field Operations FTE Per Supervisor FTE	12.4	12.4	12.4	12.4	B
3	2016 BY Average Supervisor Wage Rate	\$ 45.79	\$ 45.79	\$ 45.79	\$ 45.79	C
4	2016 BY Average Supervisor Non-Labor Per FTE	\$ 6,216	\$ 6,216	\$ 6,216	\$ 6,216	D
5	Total Annual Paid Hours	2,080	2,080	2,088	2,088	E
<b>Line #</b>	<b>CS - Field Supervision Costs</b>	<b>BY 2016</b>	<b>2017 Estimated</b>	<b>2018 Estimated</b>	<b>TY 2019 Estimated</b>	<b>Calculation Steps</b>
6	Total Supervisor Labor FTE	105.6	97.4	102.9	107.4	F = A / B
7	Supervisor Labor Costs	\$ 10,057,648	\$ 9,277,975	\$ 9,842,897	\$ 10,267,367	G = F x E x C
8	Supervisor Non-Labor Costs	\$ 656,378	\$ 605,495	\$ 639,902	\$ 667,497	H = F x D
9	Total Costs	\$ 10,714,026	\$ 9,883,471	\$ 10,482,798	\$ 10,934,864	I = G + H
<b>Line #</b>	<b>CS - Field Supervision RAMP Costs</b>	<b>BY 2016</b>	<b>2017 Estimated</b>	<b>2018 Estimated</b>	<b>TY 2019 Estimated</b>	<b>Calculation Steps</b>
10	Annual In Person Observations Per CS - Field Operations Employee (Hours) <sup>2</sup>	16	16	16	16	J
11	CS - Field Operations FTE to Employee (i.e. Headcount) Conversion Rate	89.65%	89.65%	89.65%	89.65%	K
12	Estimated CS - Field Operations Employee	1,089	1,081	1,143	1,192	L = K x J
13	Total Observation Time Needed (Hours)	17,426	17,300	18,283	19,071	M = L x J
14	Estimated Supervisor Labor Expense For In Person Observations (\$\$\$)	\$ 797,911	\$ 792,145	\$ 837,158	\$ 873,260	N = M x C
15	Estimated Supervisor Labor Expense For In Person Observations FTE	8.4	8.3	8.8	9.1	O = M / E

**Notes:**

- 1) For detailed calculations of CS - Field Operations FTE refer to SCG-18-WP - 2FC001 CS - Field Operations, Supplemental Workpaper 1. Total estimated FTE for 2017 thru 2019 is on page 37, line# 62.
- 2) On an annual basis every CS - Field Operations employee gets two 4hr Job Evaluation, two 2hr Smith Driving Observation, and two 2hr Job Safety Observation for a total of 16 hours of in Person observation by their supervisor.



SCG-18-WP - 2FC002 CS - Field Supervision  
Supplemental Workpaper 2 (Page 1 of 1)

**Comparison of TY 2019 CS - Field Supervision Estimated Costs: Pre AMI vs Post AMI**

Line #	Calculation Steps	Calculation Factors	TY 2019 Estimated
1	A	Pre AMI - CS - Field Operations FTEs <sup>1</sup>	588.9
2	B	Post AMI - CS - Field Operations FTEs <sup>2</sup>	135.0
3	C	Post AMI Cost - CS - Field Operations FTEs <sup>3</sup>	20.4
4	D	Annual Paid Hours	2,088
Line #	Calculation Steps	Calculation Factors	BY 2016
5	E	By 2016 CS - Field Operations FTEs Per Supervisor FTE	12.4
6	F	BY 2016 Average Supervisor Wage Rate	\$ 45.79
7	G	BY 2016 Average Supervisor Non-Labor Per FTE	\$ 6,215.70
Line #	Calculation Steps	TY 2019 Estimated Costs Pre AMI	TY 2019 Estimated
8	H = A / E	FTE	47.6
9	I = H x F x D	Labor	\$ 4,547,814
10	J = H x G	Non-Labor	\$ 295,660
11	K = I + J	<b>Total</b>	\$ 4,843,474
Line #	Calculation Steps	TY 2019 Estimated Costs Post AMI	TY 2019 Estimated
12	L = B / E	FTE	10.9
13	M = L x F x D	Labor	\$ 1,042,420
14	N = L x G	Non-Labor	\$ 67,769
15	O = M + N	<b>Total</b>	\$ 1,110,190
Line #	Calculation Steps	TY 2019 Estimated CS - Field Supervision AMI Benefit	TY 2019 Estimated
16	P = H - L	FTE	36.7
17	Q = I - M	Labor	\$ 3,505,394
18	R = J - N	Non-Labor	\$ 227,891
19	S = K - O	<b>Total</b>	\$ 3,733,285
Line #	Calculation Steps	TY 2019 Estimated CS - Field Supervision Post AMI Costs	TY 2019 Estimated
20	T = C / A	FTE	1.6
21	U = T x F x D	Labor	\$ 157,747
22	V = T x G	Non-Labor	\$ 10,255
23	W = U + V	<b>Total</b>	\$ 168,002
Line #	Calculation Steps	TY 2019 Estimated CS - Field Supervision AMI Net Benefit	TY 2019 Estimated
24	X = P - T	FTE	35.0
25	Y = Q - U	Labor	\$ 3,347,647
26	Z = R - V	Non-Labor	\$ 217,636
27	AA = Y + Z	<b>Total</b>	\$ 3,565,283

**NOTES:**

- 1) SCG-18-WP-2FC001 CS - Field Operations, Supplemental Workpaper 2, page 7, Calculation step Z
- 2) SCG-18-WP-2FC001 CS - Field Operations, Supplemental Workpaper 2, page 7, Calculation step Z
- 3) SCG-18-WP-2FC001 CS - Field Operations, Supplemental Workpaper 2, page 1, Line# 11

**Beginning of Workpaper**  
**2FC003.000 - Customer Services Field - Dispatch**

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC003.000 - Customer Services Field - Dispatch

**Activity Description:**

Includes labor and non-labor costs for CS - Field Dispatch personnel who route and dispatch work orders to CS - Field Operations employees 24 hours a day, 365 days a year. Dispatchers are located at four central locations and handle all matters that come up during the day, including: 1) dispatching emergency orders real time as they are received; 2) redistributing work when CS - Field Operations employees call in sick or otherwise become unavailable; and 3) redistributing work orders when CS - Field Operations employees are not able to complete all work that has been assigned for the day.

**Forecast Explanations:**

**Labor - Zero-Based**

Dispatching costs have remained relatively flat over time. A five-year average was used to forecast labor costs to avoid the potential for artificially inflating or deflating results based on short-term anomalies. Costs are primarily driven by the number of dispatchers needed to provide 24/7, 365 days per year coverage to perform dispatching functions for all 51 operating districts and all CS - Field Operations employees, including being able to immediately dispatch all emergency orders. Unlike CS - Field Operations costs, CS - Field Dispatch costs are not driven by the order volume.

**Non-Labor - Zero-Based**

Non-labor expenses include cell phone expenses, office materials and other miscellaneous expenses. Non-labor cost remained relatively flat over time. A five-year average was used to forecast non-labor costs to avoid the potential for artificially inflating or deflating results based on short-term anomalies.

**NSE - Zero-Based**

NSE is not applicable to this workgroup.

**Summary of Results:**

		In 2016\$ (000) Incurred Costs								
		Adjusted-Recorded					Adjusted-Forecast			
Years		2012	2013	2014	2015	2016	2017	2018	2019	
Labor		9,211	8,227	8,739	9,473	9,661	8,838	8,437	8,399	
Non-Labor		173	160	177	125	145	224	289	290	
NSE		0	0	0	0	0	0	0	0	
<b>Total</b>		<b>9,384</b>	<b>8,387</b>	<b>8,916</b>	<b>9,598</b>	<b>9,806</b>	<b>9,062</b>	<b>8,726</b>	<b>8,689</b>	
FTE		106.5	92.7	96.7	103.1	103.8	98.9	94.4	93.0	

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC003.000 - Customer Services Field - Dispatch

**Summary of Adjustments to Forecast:**

In 2016 \$(000) Incurred Costs										
Forecast Method		Base Forecast			Forecast Adjustments			Adjusted-Forecast		
Years		2017	2018	2019	2017	2018	2019	2017	2018	2019
Labor	Zero-Based	0	0	0	8,838	8,437	8,399	8,838	8,437	8,399
Non-Labor	Zero-Based	0	0	0	224	289	290	224	289	290
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>9,062</b>	<b>8,726</b>	<b>8,689</b>	<b>9,062</b>	<b>8,726</b>	<b>8,689</b>
FTE	Zero-Based	0.0	0.0	0.0	98.9	94.4	93.0	98.9	94.4	93.0

**Forecast Adjustment Details:**

Year	Adj Group	Labor	NLbr	NSE	Total	FTE	Adj Type	RefID	
2017	FOF-Ongoing	-225	68	0	-157	-1.7	1-Sided Adj	TPHT20170310180548940	
<b>Explanation:</b>		CS - Field Dispatch net savings and costs associated with Fueling our Future initiative.							
2017	Other	9,063	156	0	9,219	100.6	1-Sided Adj	TPHT20170511151504390	
<b>Explanation:</b>		Labor and non-labor costs for CS - Field Dispatch personnel who route and dispatch work orders to CS - Field Operations employees.							
<b>2017 Total</b>		<b>8,838</b>	<b>224</b>	<b>0</b>	<b>9,062</b>	<b>98.9</b>			
2018	FOF-Ongoing	-626	133	0	-493	-6.2	1-Sided Adj	TPHT20170310180617957	
<b>Explanation:</b>		CS - Field Dispatch net savings and costs associated with Fueling our Future initiative.							
2018	Other	9,063	156	0	9,219	100.6	1-Sided Adj	TPHT20170511151533553	
<b>Explanation:</b>		Labor and non-labor costs for CS - Field Dispatch personnel who route and dispatch work orders to CS - Field Operations employees.							
<b>2018 Total</b>		<b>8,437</b>	<b>289</b>	<b>0</b>	<b>8,726</b>	<b>94.4</b>			
2019	FOF-Ongoing	-664	133	0	-531	-7.6	1-Sided Adj	TPHT20170310180641790	
<b>Explanation:</b>		CS - Field Dispatch net savings and costs associated with Fueling our Future initiative.							
2019	Other	9,063	157	0	9,220	100.6	1-Sided Adj	TPHT20170511151620660	
<b>Explanation:</b>		Labor and non-labor costs for CS - Field Dispatch personnel who route and dispatch work orders to CS - Field Operations employees.							

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

Southern California Gas Company  
 2019 GRC - APP  
 Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC003.000 - Customer Services Field - Dispatch

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>	<u>Adj_Type</u>	<u>RefID</u>
<b>2019 Total</b>		<b>8,399</b>	<b>290</b>	<b>0</b>	<b>8,689</b>	<b>93.0</b>		

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Category-Sub: 1. Customer Services Field  
Workpaper: 2FC003.000 - Customer Services Field - Dispatch

**Determination of Adjusted-Recorded (Incurred Costs):**

	2012 (\$000)	2013 (\$000)	2014 (\$000)	2015 (\$000)	2016 (\$000)
<b>Recorded (Nominal \$)*</b>					
Labor	7,230	6,579	7,164	7,959	8,310
Non-Labor	168	158	178	125	145
NSE	0	0	0	0	0
<b>Total</b>	<b>7,398</b>	<b>6,737</b>	<b>7,342</b>	<b>8,084</b>	<b>8,455</b>
FTE	91.3	79.4	82.8	88.3	89.0
<b>Adjustments (Nominal \$) **</b>					
Labor	0	0	0	0	-15
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-15</b>
FTE	0.0	0.0	0.0	0.0	-0.2
<b>Recorded-Adjusted (Nominal \$)</b>					
Labor	7,230	6,579	7,164	7,959	8,295
Non-Labor	168	158	178	125	145
NSE	0	0	0	0	0
<b>Total</b>	<b>7,398</b>	<b>6,737</b>	<b>7,342</b>	<b>8,084</b>	<b>8,440</b>
FTE	91.3	79.4	82.8	88.3	88.8
<b>Vacation &amp; Sick (Nominal \$)</b>					
Labor	1,158	1,093	1,169	1,288	1,366
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>1,158</b>	<b>1,093</b>	<b>1,169</b>	<b>1,288</b>	<b>1,366</b>
FTE	15.2	13.4	13.9	14.8	15.0
<b>Escalation to 2016\$</b>					
Labor	824	554	405	226	0
Non-Labor	5	2	-1	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>828</b>	<b>556</b>	<b>405</b>	<b>227</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Constant 2016\$)</b>					
Labor	9,211	8,227	8,739	9,473	9,661
Non-Labor	173	160	177	125	145
NSE	0	0	0	0	0
<b>Total</b>	<b>9,384</b>	<b>8,387</b>	<b>8,916</b>	<b>9,598</b>	<b>9,806</b>
FTE	106.5	92.8	96.7	103.1	103.8

\* 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.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC003.000 - Customer Services Field - Dispatch

**Summary of Adjustments to Recorded:**

In Nominal \$ (000) Incurred Costs					
Years	2012	2013	2014	2015	2016
Labor	0	0	0	0	-15
Non-Labor	0	0	0	0	-0.241
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-15</b>
FTE	0.0	0.0	0.0	0.0	-0.2

**Detail of Adjustments to Recorded:**

Year	Adj Group	Labor	NLbr	NSE	FTE	Adj Type	RefID
<b>2012 Total</b>		0	0	0	0.0		
<b>2013 Total</b>		0	0	0	0.0		
<b>2014 Total</b>		0	0	0	0.0		
<b>2015 Total</b>		0	0	0	0.0		
2016	Aliso	-15	0	0	-0.2	1-Sided Adj	CTRINH20170215105602517
<b>2016 Total</b>		<b>-15</b>	<b>0</b>	<b>0</b>	<b>-0.2</b>		

**Explanation:** Aliso leak mitigation - exclude costs captured in IO

*Note: Totals may include rounding differences.*

**Beginning of Workpaper**  
**2FC004.000 - Customer Services Field - Support**



Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC004.000 - Customer Services Field - Support

**Activity Description:**

The CS - Field Support cost category includes: (1) centralized training (classroom instructors, supervisors and a training manager located at SoCalGas' Pico Rivera skills training centers); (2) field instructors who accompany new residential field technicians immediately following their formal training; quality assurance (QA) inspectors and a QA supervisor who inspect the work of field technicians to ensure policy adherence and quality of the work performed; (3) field technology support personnel who maintain the field mobile data terminals, work management, routing and reporting systems used for CS - Field Operations; (4) operations clerks who are located at the field operating bases; (5) region and district management; and (6) administrative associates. Non-labor costs include cell phones, office supplies and other miscellaneous expenses.

**Forecast Explanations:**

**Labor - Zero-Based**

Forecasted TY 2019 labor expenses are based on five-year historical average costs, given the variability in CS - Field support requirements. Incremental funding requests, which are forecasted using the zero based methodology, are then added to the five year average determine total funding requirements necessary for CS - Field support functions.

**Non-Labor - Zero-Based**

Forecasted TY 2019 non-labor expenses are based on five-year historical averages given the variability in CS - Field support requirements. Incremental funding requests, which are forecasted using the zero based methodology, are then added to the five year average to determine total funding requirements.

**NSE - Zero-Based**

NSE is not applicable to this workgroup.

**Summary of Results:**

		In 2016\$ (000) Incurred Costs								
		Adjusted-Recorded					Adjusted-Forecast			
Years		2012	2013	2014	2015	2016	2017	2018	2019	
Labor		13,665	12,210	13,078	15,007	14,924	14,121	14,053	13,944	
Non-Labor		1,880	1,989	3,031	2,138	1,511	2,381	2,715	3,499	
NSE		0	0	0	0	0	0	0	0	
<b>Total</b>		<b>15,544</b>	<b>14,200</b>	<b>16,109</b>	<b>17,145</b>	<b>16,435</b>	<b>16,502</b>	<b>16,768</b>	<b>17,443</b>	
FTE		146.5	131.0	139.8	160.4	159.3	151.6	150.7	149.8	

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Category-Sub: 1. Customer Services Field  
Workpaper: 2FC004.000 - Customer Services Field - Support

**Summary of Adjustments to Forecast:**

In 2016 \$(000) Incurred Costs										
Forecast Method		Base Forecast			Forecast Adjustments			Adjusted-Forecast		
Years		2017	2018	2019	2017	2018	2019	2017	2018	2019
Labor	Zero-Based	0	0	0	14,121	14,053	13,944	14,121	14,053	13,944
Non-Labor	Zero-Based	0	0	0	2,381	2,715	3,499	2,381	2,715	3,499
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>16,502</b>	<b>16,768</b>	<b>17,443</b>	<b>16,502</b>	<b>16,768</b>	<b>17,443</b>
FTE	Zero-Based	0.0	0.0	0.0	151.6	150.7	149.8	151.6	150.7	149.8

**Forecast Adjustment Details:**

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>	
2017	Other	10,746	1,928	0	12,674	113.4	1-Sided Adj	TPTHT20170310180932200	
<b>Explanation:</b>		Labor and non-labor expenses for CS - Field Support Staff supporting CS - Field Operations.							
2017	RAMP Base	3,109	183	0	3,292	34.7	1-Sided Adj	TPTHT20170310181029563	
<b>Explanation:</b>		RAMP SCG-2 Employee Contractor Customer & Public Safety and SCG-7 Workforce Planning: CS - Field Support base forecast for employee skills training, QA inspections, and field rides with CS - Field Operations employees. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities.							
2017	FOF-Ongoing	7	-17	0	-10	1.0	1-Sided Adj	TPTHT20170310182153857	
<b>Explanation:</b>		CS - Field Support net costs and savings associated with Fueling our Future initiative.							
2017	Other	62	235	0	297	0.7	1-Sided Adj	TPTHT20170310194508193	
<b>Explanation:</b>		Incremental ongoing O&M costs associated with the implementation of SCG Customer Service Routing Upgrade project Refer to SoCalGas witness, Gwen Marelli, Ex. SCG-18, Section V, for more information on this project.							
2017	Other	194	0	0	194	1.8	1-Sided Adj	TPTHT20170310231228087	
<b>Explanation:</b>		CS - Field Support Staff labor for curb meter replacement work.							
2017	FOF-Implementation	3	52	0	55	0.0	1-Sided Adj	TPTHT20170315172118363	
<b>Explanation:</b>		CS - Field Support one time implementation costs associated with Fueling our Future initiative.							
<b>2017 Total</b>		<b>14,121</b>	<b>2,381</b>	<b>0</b>	<b>16,502</b>	<b>151.6</b>			

2018 Other                      10,746      1,928      0      12,674      113.4      1-Sided Adj      TPTHT20170310180948503

**Explanation:**      Labor and non-labor expenses for CS - Field Support Staff supporting CS - Field Operations.

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC004.000 - Customer Services Field - Support

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>	<u>Adj_Type</u>	<u>RefID</u>
2018	RAMP Base	3,109	183	0	3,292	34.7	1-Sided Adj	TPTHT20170310181049713
<b>Explanation:</b> RAMP SCG-2 Employee Contractor Customer & Public Safety and SCG-7 Workforce Planning: CS - Field Support base forecast for employee skills training, QA inspections, and field rides with CS - Field Operations employees. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities.								
2018	FOF-Ongoing	-108	-35	0	-143	-0.4	1-Sided Adj	TPTHT20170310182218813
<b>Explanation:</b> CS - Field Support net savings associated with Fueling our Future initiative.								
2018	Other	93	334	0	427	1.0	1-Sided Adj	TPTHT20170310194528260
<b>Explanation:</b> Incremental ongoing O&M costs associated with the implementation of SCG Customer Service Routing Upgrade project Refer to SoCalGas witness, Gwen Marelli, Ex. SCG-18, Section V, for more information on this project.								
2018	FOF-Implementation	0	305	0	305	0.0	1-Sided Adj	TPTHT20170315172243100
<b>Explanation:</b> CS - Field Support one time implementation costs associated with Fueling our Future initiative.								
2018	Other	213	0	0	213	2.0	1-Sided Adj	TPTHT20170511150600047
<b>Explanation:</b> CS - Field Support Staff labor for curb meter replacement work.								
<b>2018 Total</b>		<b>14,053</b>	<b>2,715</b>	<b>0</b>	<b>16,768</b>	<b>150.7</b>		
2019	Other	10,746	1,929	0	12,675	113.4	1-Sided Adj	TPTHT20170310181003533
<b>Explanation:</b> Labor and non-labor expenses for CS - Field Support Staff supporting CS - Field Operations.								
2019	RAMP Base	3,109	183	0	3,292	34.7	1-Sided Adj	TPTHT20170310181107007
<b>Explanation:</b> RAMP SCG-2 Employee Contractor Customer & Public Safety and SCG-7 Workforce Planning: CS - Field Support base forecast for employee skills training, QA inspections, and field rides with CS - Field Operations employees. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities.								
2019	RAMP Incremental	177	9	0	186	2.0	1-Sided Adj	TPTHT20170310181211710
<b>Explanation:</b> RAMP SCG-2 Employee Contractor Customer & Public Safety and SCG-7 Workforce Planning: CS - Field Support incremental forecast for QA inspections to support the CS - Field MSA Inspection Program. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities.								
2019	FOF-Ongoing	-181	969	0	788	-1.3	1-Sided Adj	TPTHT20170310182247323
<b>Explanation:</b> CS - Field Support net savings and costs associated with Fueling our Future initiative.								

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC004.000 - Customer Services Field - Support

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>	<u>Adj_Type</u>	<u>RefID</u>
2019	FOF-Implementation	0	75	0	75	0.0	1-Sided Adj	TPTHT20170628145840440
<b>Explanation:</b>		CS - Field Support one time implementation costs associated with Fueling our Future initiative.						
2019	Other	93	334	0	427	1.0	1-Sided Adj	TPTHT20170310194540353
<b>Explanation:</b>		Incremental ongoing O&M costs associated with the implementation of SCG Customer Service Routing Upgrade project Refer to SoCalGas witness, Gwen Marelli, Ex. SCG-18, Section V, for more information on this project.						
<b>2019 Total</b>		<b>13,944</b>	<b>3,499</b>	<b>0</b>	<b>17,443</b>	<b>149.8</b>		

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Category-Sub: 1. Customer Services Field  
Workpaper: 2FC004.000 - Customer Services Field - Support

**Determination of Adjusted-Recorded (Incurred Costs):**

	2012 (\$000)	2013 (\$000)	2014 (\$000)	2015 (\$000)	2016 (\$000)
<b>Recorded (Nominal \$)*</b>					
Labor	4,842	4,693	6,227	7,350	8,155
Non-Labor	1,661	1,847	2,733	2,061	6,535
NSE	0	0	0	0	0
<b>Total</b>	<b>6,503</b>	<b>6,540</b>	<b>8,960</b>	<b>9,411</b>	<b>14,690</b>
FTE	55.5	52.4	66.7	77.8	84.3
<b>Adjustments (Nominal \$) **</b>					
Labor	5,884	5,071	4,494	5,258	4,659
Non-Labor	166	118	308	72	-5,024
NSE	0	0	0	0	0
<b>Total</b>	<b>6,050</b>	<b>5,189</b>	<b>4,803</b>	<b>5,330</b>	<b>-365</b>
FTE	70.1	59.6	53.0	59.5	51.9
<b>Recorded-Adjusted (Nominal \$)</b>					
Labor	10,726	9,765	10,721	12,608	12,814
Non-Labor	1,827	1,965	3,041	2,133	1,511
NSE	0	0	0	0	0
<b>Total</b>	<b>12,553</b>	<b>11,729</b>	<b>13,763</b>	<b>14,741</b>	<b>14,325</b>
FTE	125.6	112.0	119.7	137.3	136.2
<b>Vacation &amp; Sick (Nominal \$)</b>					
Labor	1,717	1,623	1,750	2,040	2,110
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>1,717</b>	<b>1,623</b>	<b>1,750</b>	<b>2,040</b>	<b>2,110</b>
FTE	20.8	18.9	20.1	23.1	23.0
<b>Escalation to 2016\$</b>					
Labor	1,222	823	607	359	0
Non-Labor	53	24	-10	6	0
NSE	0	0	0	0	0
<b>Total</b>	<b>1,274</b>	<b>847</b>	<b>597</b>	<b>364</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Constant 2016\$)</b>					
Labor	13,665	12,210	13,078	15,007	14,924
Non-Labor	1,880	1,989	3,031	2,138	1,511
NSE	0	0	0	0	0
<b>Total</b>	<b>15,544</b>	<b>14,200</b>	<b>16,109</b>	<b>17,145</b>	<b>16,435</b>
FTE	146.4	130.9	139.8	160.4	159.2

\* 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.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Category-Sub: 1. Customer Services Field  
Workpaper: 2FC004.000 - Customer Services Field - Support

**Summary of Adjustments to Recorded:**

In Nominal \$ (000) Incurred Costs					
Years	2012	2013	2014	2015	2016
Labor	5,884	5,071	4,494	5,258	4,659
Non-Labor	166	118	308	72	-5,024
NSE	0	0	0	0	0
<b>Total</b>	<b>6,050</b>	<b>5,189</b>	<b>4,803</b>	<b>5,330</b>	<b>-365</b>
FTE	70.1	59.6	53.0	59.5	51.9

**Detail of Adjustments to Recorded:**

Year	Adj Group	Labor	NLbr	NSE	FTE	Adj Type	RefID
2012	Other	1,275	133	0	15.2	1-Sided Adj	CTRINH20161114084734673
<b>Explanation:</b> Adjustment to transfer costs from USS 2200-0345 CS - Field Training to NSS Workgroup 2FC004.000 CS - Field Support as activities in this cost center will no longer be shared							
2012	Other	251	0	0	2.8	1-Sided Adj	CTRINH20161114091507490
<b>Explanation:</b> Adjustment to transfer costs from USS 2200-2342 CS - Field Quality Assurance to NSS Workgroup 2FC004.000 CS - Field Support as activities in this cost center will no longer be shared							
2012	Other	105	10	0	0.9	1-Sided Adj	CTRINH20161116090408080
<b>Explanation:</b> Adjustment to transfer costs from USS 2100-3511 CCC Strategy And Analysis to NSS Workgroup 2FC004.000 CS - Field Support as activities in this cost center will no longer be shared							
2012	Other	-92	-1	0	-1.0	CCTR Transf To 2200-0342.000	CTRINH20161116142745447
<b>Explanation:</b> Adjustment made to reflect transfer of CS - Field Staff personnel to HR PMOS group. Transfer CS - Field Staff labor and non-labor from 2FC004.000 to 2HR003.000 in order to align historical costs with the workgroup in which the activity will be forecasted							
2012	Other	-91	-1	0	-0.9	CCTR Transf From 2200-1370.000	TNGUYEN20161204104335203
<b>Explanation:</b> Transfer workgroup from 2FC004 to 200001. Historical data for cost center 2200-0165 was transferred to the Continuous Improvement organization in 2015. A QA Supervisor position originally charged to 2200-0165 remained at the CCC. Costs for this position must be transferred back to the CCC.							
2012	Other	-132	-44	0	-1.5	CCTR Transf To 2200-2551.000	CTRINH20161122143147647
<b>Explanation:</b> Transfer labor and non-labor expense from 2FC004.000 CS - Field Support to USS 2200-2551 Pipeline Safety Oversight in order to align historical costs with the workgroup in which the activity will be forecasted							
2012	Other	3,746	4	0	46.7	1-Sided Adj	CTRINH20170227032722177
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field DOCs DOMS and FI from 2FC002 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted							

Note: Totals may include rounding differences.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC004.000 - Customer Services Field - Support

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>
2012	Other	-159	-5	0	-1.7	CCTR Transf To 2200-0331.000	CTRINH20161130211239713
<b>Explanation:</b> Adjustment due to reorg of Operational Planners to Financial Planning. Transfer labor and non-labor expenses from 2FC004.000 CS - Field Support to 2AG005.000 in order to align historical costs with the workgroup in which the activity will be forecasted							
2012	Other	979	68	0	9.6	1-Sided Adj	CTRINH20170227041154513
<b>Explanation:</b> Tranfer labor and non-labor expenses for CS - Field DOCs and DOMs from 2FC001 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted							
<b>2012 Total</b>		<b>5,884</b>	<b>166</b>	<b>0</b>	<b>70.1</b>		
2013	Other	1,309	168	0	15.4	1-Sided Adj	CTRINH20161114085946430
<b>Explanation:</b> Adjustment to transfer costs from USS 2200-0345 CSF Training to NSS Workgroup 2FC004.000 CS - Field Support as activities in this cost center will no longer be shared							
2013	Other	128	0	0	1.4	1-Sided Adj	CTRINH20161114091536483
<b>Explanation:</b> Adjustment to transfer costs from USS 2200-2342 CS - Field Quality Assurance to NSS Workgroup 2FC004.000 CS - Field Support as activities in this cost center will no longer be shared							
2013	Other	108	5	0	0.9	1-Sided Adj	CTRINH20161116090443843
<b>Explanation:</b> Adjustment to transfer costs from USS 2100-3511 CCC Strategy And Analysis to NSS Workgroup 2FC004.000 CS -Field Support as activities in this cost center will no longer be shared							
2013	Other	-98	-1	0	-1.0	CCTR Transf To 2200-0342.000	CTRINH20161116142841263
<b>Explanation:</b> Adjustment made to reflect transfer of CSF Staff personnel to HR PMOS group. Transfer CSF Staff labor and non-labor from 2FC004.000 to 2HR003.000 in order to align historical costs with the workgroup in which the activity will be forecasted.							
2013	Other	-90	0	0	-0.9	CCTR Transf From 2200-1370.000	TNGUYEN20161204104752823
<b>Explanation:</b> Transfer from workgroup 2FC004 to 2OO001. Historical data for cost center 2200-0165 was transferred to the Continous Improvement organization in 2015. A QA Supervisor postion orginally charged to 2200-0165 remained at the CCC. Costs for this position must be transferred back to the CCC.							
2013	Other	-163	-87	0	-1.7	CCTR Transf To 2200-2551.000	CTRINH20161122143411680
<b>Explanation:</b> Transfer labor and non-labor expense from 2FC004.000 CSF Support to USS 2200-2551 Pipeline Safety Oversight in order to align historical costs with the workgroup in which the activity will be forecasted							
2013	Other	-91	-1	0	-0.9	CCTR Transf To 2200-0331.000	CTRINH20161130211606583
<b>Explanation:</b> Adjustment due to reorg of Operational Planners to Financial Planning. Transfer labor and non-labor expenses from 2FC004.000 CSF Support to 2AG005.000 in order to align historical costs with the workgroup in which the activity will be forecasted							

Note: Totals may include rounding differences.

Southern California Gas Company  
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Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC004.000 - Customer Services Field - Support

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>
2013	Other	3,291	7	0	40.0	1-Sided Adj	CTRINH20170227032622037
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Support DOCs DOMS and FI from 2FC002 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted							
2013	Other	677	27	0	6.4	1-Sided Adj	CTRINH20170227041816893
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Support DOMs from 2FC001 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted							
<b>2013 Total</b>		<b>5,071</b>	<b>118</b>	<b>0</b>	<b>59.6</b>		
2014	Other	1,424	247	0	16.5	1-Sided Adj	CTRINH20161114090034190
<b>Explanation:</b> Adjustment to transfer costs from USS 2200-0345 CS - Field Training to NSS Workgroup 2FC004.000 CS - Field Support as activities in this cost center will no longer be shared							
2014	Other	0	47	0	0.0	CCTR Transf From 2200-2094.000	TNGUYEN20161202091046490
<b>Explanation:</b> Transfer \$ to cost center / workpaper group GROW Initiative - Temp agency labor -IO: 300758033 Cost element: 6220380							
2014	Other	0	49	0	0.0	CCTR Transf From 2200-2094.000	TNGUYEN20161202091322350
<b>Explanation:</b> Transfer \$ to cost center / workpaper group 2FC004.000 cost element: 6230380  "GROW Initiative - Utility Partners of America and Belshire Environmental 300758033"							
2014	Other	0	0	0	0.0	CCTR Transf From 2200-2094.000	TNGUYEN20161202091502087
<b>Explanation:</b> Transfer \$ to cost center / workpaper group 2FC004.000 cost element: 6130010  "GROW Initiative -300758033 Employee Travel and Meals"							
2014	Other	0	0	0	0.0	CCTR Transf From 2200-2094.000	TNGUYEN20161202091654710
<b>Explanation:</b> Transfer \$ to cost center / workpaper group 2FC004.000 cost element: 6220060  "GROW Initiative - 300758033 Catering Expenses"							
2014	Other	0	0	0	0.0	CCTR Transf From 2200-2094.000	TNGUYEN20161202091837367

Note: Totals may include rounding differences.



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Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC004.000 - Customer Services Field - Support

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>
<b>Explanation:</b> Transfer \$ to cost center / workpaper group 2FC004.000 cost element: 6320002 "GROW Initiative - 300758033 Cell Phone expense"							
2014	Other	0	49	0	0.0	CCTR Transf From 2200-2240.000	TNGUYEN20161202092129510
<b>Explanation:</b> Transfer \$ to cost center / workpaper group 2FC004.000 cost element: 6230380 GROW Initiative - Temp agency labor -300758033							
2014	Other	0	0	0	0.0	CCTR Transf From 2200-2094.000	TNGUYEN20161202104646323
<b>Explanation:</b> Transfer \$ to cost center / workpaper group 2FC004.000 cost element 6340000 "GROW Initiative - 300758033 Discount Adjmt"							
2014	Other	-96	-1	0	-0.9	CCTR Transf From 2200-1370.000	TNGUYEN20161204104906610
<b>Explanation:</b> Tranfer from workgroup 2FC004 to 200001. Historical data for cost center 2200-0165 was transferred to the Continous Improvement organization in 2015. A QA Supervisor postion orginally charged to 2200-0165 remained at the CCC. Costs for this position must be transferred back to the CCC.							
2014	Other	-3	0	0	0.0	1-Sided Adj	CTRINH20161114091612923
<b>Explanation:</b> Adjustment to transfer costs from USS 2200-2342 CS - Field Quality Assurance to NSS Workgroup 2FC004.000 CS - Field Support as activities in this cost center will no longer be shared							
2014	Other	110	9	0	0.8	1-Sided Adj	CTRINH20161116090512047
<b>Explanation:</b> Adjustment to transfer costs from USS 2100-3511 CCC Strategy And Analysis to NSS Workgroup 2FC004.000 CS - Field Support as activities in this cost center will no longer be shared							
2014	Other	-101	-1	0	-1.0	CCTR Transf To 2200-0342.000	CTRINH20161116142950623
<b>Explanation:</b> Adjustment made to reflect transfer of CSF Staff personnel to HR PMOS group. Transfer CSF Staff labor and non-labor from 2FC004.000 to 2HR003.000 in order to align historical costs with the workgroup in which the activity will be forecasted.							
2014	Other	-432	-129	0	-4.8	CCTR Transf To 2200-2551.000	CTRINH20161122143532543
<b>Explanation:</b> Transfer labor and non-labor expense from 2FC004.000 CSF Support to USS 2200-2551 Pipeline Safety Oversight in order to align historical costs with the workgroup in which the activity will be forecasted							
2014	Other	-89	0	0	-0.6	CCTR Transf To 2200-0342.000	CTRINH20161122194647127
<b>Explanation:</b> Transfer HR PMOS labor and non-labor expense from 2FC004.000 CSF Support to 2HR003.000 in order to align historical costs with the workgroup in which the activity will be forecasted							
2014	Other	3,477	9	0	41.1	1-Sided Adj	CTRINH20170227032446660
<b>Explanation:</b> Tranfer labor and non-labor expenses for CS - Field Support DOCs, DOMS, and FI from 2FC002 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted							

Note: Totals may include rounding differences.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC004.000 - Customer Services Field - Support

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>
2014	Other	203	27	0	1.9	1-Sided Adj	CTRINH20170227042537710
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Support DOMs from 2FC001 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted							
<b>2014 Total</b>		<b>4,494</b>	<b>308</b>	<b>0</b>	<b>53.0</b>		
2015	Other	1,644	145	0	18.4	1-Sided Adj	CTRINH20161114090110940
<b>Explanation:</b> Adjustment to transfer costs from USS 2200-0345 CS - Field Training to NSS Workgroup 2FC004.000 CS - Field Support as activities in this cost center will no longer be shared							
2015	Other	114	8	0	0.9	1-Sided Adj	CTRINH20161116090537263
<b>Explanation:</b> Adjustment to transfer costs from USS 2100-3511 CCC Strategy And Analysis to NSS Workgroup 2FC004.000 CS - Field Support as activities in this cost center will no longer be shared							
2015	Aliso	-11	0	0	-0.1	1-Sided Adj	CTRINH20161116093629430
<b>Explanation:</b> Aliso leak mitigation exclude costs captured in IO 300775156							
2015	Other	-94	-1	0	-0.9	CCTR Transf To 2200-0342.000	CTRINH20161116143120210
<b>Explanation:</b> Adjustment made to reflect transfer of CSF Staff personnel to HR PMOS group. Transfer CSF Staff labor and non-labor from 2FC004.000 to 2HR003.000 in order to align historical costs with the workgroup in which the activity will be forecasted.							
2015	Other	0	-27	0	0.0	CCTR Transf To 2200-8000.002	CTRINH20161121075703680
<b>Explanation:</b> Transfer non-labor from 2FC004.000 CSF Support to 2CP000.001 Corp Ctr Compensation & Benefits in order to align historical costs with the workgroup in which the activity will be forecasted							
2015	Other	-316	-73	0	-3.5	CCTR Transf To 2200-2551.000	CTRINH20161122143741297
<b>Explanation:</b> Transfer labor and non-labor expense from 2FC004.000 CSF Support to USS 2200-2551 Pipeline Safety Oversight in order to align historical costs with the workgroup in which the activity will be forecasted							
2015	Other	-35	-1	0	-0.2	CCTR Transf To 2200-0342.000	CTRINH20161122194732490
<b>Explanation:</b> Transfer HR PMOS labor and non-labor expense from 2FC004.000 CSF Support to 2HR003.000 in order to align historical costs with the workgroup in which the activity will be forecasted.							
2015	Other	3,866	9	0	43.8	1-Sided Adj	CTRINH20170227032258343
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Support DOCs, DOMS, and FI from 2FC002 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted							
2015	Other	88	12	0	1.1	1-Sided Adj	CTRINH20170227052102317
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Support DOCs from 2FC001 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted							

Note: Totals may include rounding differences.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC004.000 - Customer Services Field - Support

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>
<b>2015 Total</b>		<b>5,258</b>	<b>72</b>	<b>0</b>	<b>59.5</b>		
2016	Other	1,685	99	0	18.1	1-Sided Adj	CTRINH20161114090150190
<b>Explanation:</b> Adjustment to transfer costs from USS 2200-0345 CS - Field Training to NSS Workgroup 2FC004.000 CS - Field Support as activities in this cost center will no longer be shared							
2016	Other	119	6	0	0.9	1-Sided Adj	CTRINH20161116090601513
<b>Explanation:</b> Adjustment to transfer costs from USS 2100-3511 CCC Strategy And Analysis to NSS Workgroup 2FC004.000 CS - Field Support as activities in this cost center will no longer be shared							
2016	Aliso	-327	-5,044	0	-3.0	1-Sided Adj	CTRINH20161116094853030
<b>Explanation:</b> Aliso leak mitigation exclude costs captured in IO							
2016	Other	-807	-126	0	-8.4	CCTR Transf To 2200-2551.000	CTRINH20170222080623900
<b>Explanation:</b> Transfer Labor and Non-labor expense from 2FC004 CSF Support (Cost Center 2200-0442) to USS 2200-2551 Pipeline Safety Oversight in order to align historical costs with the workgroup in which the activity will be forecasted. These historical dollars are for Operator Qualification personnel in cost center 2200-2344.							
2016	Other	3,908	6	0	42.8	1-Sided Adj	CTRINH20170227032016923
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Support DOCs, DOMS, and FI from 2FC002 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted							
2016	Other	188	50	0	2.2	1-Sided Adj	CTRINH20170227044545420
<b>Explanation:</b> Transfer labor and non-labor expenses for CS - Field Support DOCs and DOMs from 2FC001 to 2FC004 in order to align historical expenses with the workgroup in which the activity will be forecasted							
2016	Other	-107	-13	0	-0.7	CCTR Transf To 2200-0342.000	CTRINH20170216104613050
<b>Explanation:</b> Transfer labor and non-labor expense from 2200-2543 in 2FC004 CSF Support to 2HR003 HR PMOS in order to align historical costs with the workgroup in which the activity will be forecasted.							
<b>2016 Total</b>		<b>4,659</b>	<b>-5,024</b>	<b>0</b>	<b>51.9</b>		

Note: Totals may include rounding differences.

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Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC004.000 - Customer Services Field - Support

**RAMP Item # 1**

Ref ID: TPTHT20170310181029563

RAMP Chapter: SCG-2

Program Name: Employee SKills Training, QA, and Field Rides

Program Description: Employee SKills Training, QA, and Field Rides

**Risk/Mitigation:**

Risk: Employee, Contractor, Customer and Public Safety

Mitigation: EmployeeSkills Training and QA inspections

**Forecast CPUC Cost Estimates (\$000)**

	<u>2017</u>	<u>2018</u>	<u>2019</u>
Low	6,995	6,668	6,288
High	9,028	8,599	8,431

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Mandated

Work Type Citation: Combination of Mandated and Non-Mandated

**Historical Embedded Cost Estimates (\$000)**

Embedded Costs: 3292

Explanation: CSF Support base forecast for employee skills training and QA, and field rides.

Southern California Gas Company  
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Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Category-Sub: 1. Customer Services Field  
Workpaper: 2FC004.000 - Customer Services Field - Support

**RAMP Item # 2**

Ref ID: TPTHT20170310181140210

RAMP Chapter: SCG-2

Program Name: Employee SKills Training, QA, and Field Rides

Program Description: Employee SKills Training, QA, and Field Rides

**Risk/Mitigation:**

Risk: Employee, Contractor, Customer and Public Safety

Mitigation: Employee Skills Training and QA Inspections

**Forecast CPUC Cost Estimates (\$000)**

	<u>2017</u>	<u>2018</u>	<u>2019</u>
Low	6,995	6,668	6,288
High	9,028	8,599	8,431

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Mandated

Work Type Citation: Combination of Mandated and Non-Mandated

**Historical Embedded Cost Estimates (\$000)**

Embedded Costs: 0

Explanation: Costs are shown in the RAMP Base detail screen.

**Beginning of Workpaper**  
**2FC005.000 - MSA Inspection Program**

Southern California Gas Company  
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Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Category-Sub: 1. Customer Services Field  
Workpaper: 2FC005.000 - MSA Inspection Program

**Activity Description:**

The Department of Transportation (DOT) Code of Federal Regulations (i.e., CFR 192.481) generally requires that each MSA be inspected every three years for atmospheric corrosion. Meter readers have historically performed this function, but with the implementation of AMI and the elimination of traditional Meter Reading function, a new group, the CS - Field MSA Inspection Organization, was formed in BY 2016. This includes costs to perform physical, onsite inspection of each meter set assembly (MSA) to comply with DOT required MSA inspections for atmospheric corrosion, to identify conditions which require remediation by CS - Field Operations and Distribution field employees, and to contact customers to resolve meter access issues.

**Forecast Explanations:**

**Labor - Zero-Based**

Labor costs are primarily driven by work order volumes. Work order volumes are largely driven by the number of inspections and remediation work to be completed to meet DOT compliance timeline requirements. It is also driven by factors outside of SoCalGas' control in the case of meter access issues and customer's response to SoCalGas' attempts to gain access to the meter to complete the inspections. A zero-based forecast is used to forecast TY 2019 expenses based on the volume of inspections and associated remediation work estimated to meet DOT requirements and the volume of meter access issues. For the field workforce (i.e., MSA Inspection Representatives and Field Service Assistants), the costs are driven by the order volumes, the average number of orders completed per employee, training time, and vacation and sick time; for the MSA Office Representatives, the costs are driven by the call volume associated with meter access issues and average calls handled per employee, training time, and vacation and sick time; and for the support staff, the costs are driven by the number of employees such as number of supervisors to manage employees, clerical employees who provide the administrative support to the group and other management staff and applicable wage rates. Refer to SCG-18-WP-2FC005 CS - Field MSA Inspection Program, Supplemental Workpapers 1 through 6, for calculations.

**Non-Labor - Zero-Based**

Non-labor costs are based on non-labor expense per FTE for related small tools, uniforms, cost of notices and miscellaneous supplies. The non-labor expense is based on BY 2016 average non-labor expense per FTE. Refer to SCG-18-WP-2FC005 CS - Field MSA Inspection Program, Supplemental Workpaper 1, for calculations..

**NSE - Zero-Based**

NSE is not applicable.

*Note: Totals may include rounding differences.*

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 Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC005.000 - MSA Inspection Program

**Summary of Results:**

		<b>In 2016\$ (000) Incurred Costs</b>								
		<b>Adjusted-Recorded</b>					<b>Adjusted-Forecast</b>			
<b>Years</b>		<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	
Labor		0	0	0	126	4,502	14,931	13,949	16,099	
Non-Labor		0	0	0	54	1,365	583	599	603	
NSE		0	0	0	0	0	0	0	0	
<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>180</b>	<b>5,867</b>	<b>15,514</b>	<b>14,548</b>	<b>16,702</b>	
FTE		0.0	0.0	0.0	1.4	83.6	242.8	224.1	260.3	

*Note: Totals may include rounding differences.*



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 Workpaper: 2FC005.000 - MSA Inspection Program

**Summary of Adjustments to Forecast:**

In 2016 \$(000) Incurred Costs										
Forecast Method		Base Forecast			Forecast Adjustments			Adjusted-Forecast		
Years		2017	2018	2019	2017	2018	2019	2017	2018	2019
Labor	Zero-Based	0	0	0	14,931	13,949	16,099	14,931	13,949	16,099
Non-Labor	Zero-Based	0	0	0	583	599	603	583	599	603
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>15,514</b>	<b>14,548</b>	<b>16,702</b>	<b>15,514</b>	<b>14,548</b>	<b>16,702</b>
FTE	Zero-Based	0.0	0.0	0.0	242.8	224.1	260.3	242.8	224.1	260.3

**Forecast Adjustment Details:**

Year	Adj Group	Labor	NLbr	NSE	Total	FTE	Adj Type	RefID	
2017	Other	4,710	128	0	4,838	72.9	1-Sided Adj	TPTHT20170310183035530	
<b>Explanation:</b>		CS - Field MSA Inspection Program forecast to perform the remediation work to resolve conditions identified during the MSA inspections. Refer to Ex. SCG-18-WP- 2FC005 CS - Field MSA Inspection Program, Supplemental Workpapers 1 & 3 for calculations.							
2017	RAMP Base	4,258	1,363	0	5,621	79.9	1-Sided Adj	TPTHT20170310183240177	
<b>Explanation:</b>		RAMP SCG-2 Employee Contractor Customer & Public Safety: CS - Field MSA Inspection Program base workload forecast for inspections of MSA for atmospheric corrosion to identify conditions which require remediation and to contact customers to resolve meter access issues. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to Ex. SCG-18-WP-2FC005 CS - Field MSA Inspection Program, Supplemental Workpapers 1-6 for calculations.							
2017	RAMP Incremental	5,963	-908	0	5,055	90.0	1-Sided Adj	TPTHT20170310183353003	
<b>Explanation:</b>		RAMP SCG-2 Employee Contractor Customer & Public Safety: CS - Field MSA Inspection Program incremental workload forecast for inspections of MSA for atmospheric corrosion to identify conditions which require remediation and to contact customers to resolve meter access issues. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to Ex. SCG-18-WP-2FC005 CS - Field MSA Inspection Program, Supplemental Workpapers 1-6 for calculations.							
<b>2017 Total</b>		<b>14,931</b>	<b>583</b>	<b>0</b>	<b>15,514</b>	<b>242.8</b>			

2018	Other	4,966	134	0	5,100	76.4	1-Sided Adj	TPTHT20170310183118770	
<b>Explanation:</b>		CS - Field MSA Inspection Program forecast to perform the remediation work to resolve conditions identified during the MSA inspections. Refer to Ex. SCG-18-WP- 2FC005 CS - Field MSA Inspection Program, Supplemental Workpapers 1 & 3 for calculations.							

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC005.000 - MSA Inspection Program

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>	<u>Adj_Type</u>	<u>RefID</u>
2018	RAMP Base	4,258	1,363	0	5,621	79.9	1-Sided Adj	TPTHT20170310183257720
<b>Explanation:</b> RAMP SCG-2 Employee Contractor Customer & Public Safety: CS - Field MSA Inspection Program base workload forecast for inspections of MSA for atmospheric corrosion to identify conditions which require remediation and to contact customers to resolve meter access issues. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to Ex. SCG-18-WP-2FC005 CS - Field MSA Inspection Program, Supplemental Workpapers 1-6 for calculations.								
2018	RAMP Incremental	4,725	-898	0	3,827	67.8	1-Sided Adj	TPTHT20170310183408910
<b>Explanation:</b> RAMP SCG-2 Employee Contractor Customer & Public Safety: CS - Field MSA Inspection Program incremental workload forecast for inspections of MSA for atmospheric corrosion to identify conditions which require remediation and to contact customers to resolve meter access issues. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to Ex. SCG-18-WP-2FC005 CS - Field MSA Inspection Program, Supplemental Workpapers 1-6 for calculations.								
<b>2018 Total</b>		<b>13,949</b>	<b>599</b>	<b>0</b>	<b>14,548</b>	<b>224.1</b>		
2019	Other	4,921	133	0	5,054	75.6	1-Sided Adj	TPTHT20170310183210610
<b>Explanation:</b> CS - Field MSA Inspection Program forecast to perform the remediation work to resolve conditions identified during the MSA inspections. Refer to Ex. SCG-18-WP- 2FC005 CS - Field MSA Inspection Program, Supplemental Workpapers 1 & 3 for calculations.								
2019	RAMP Base	4,258	1,363	0	5,621	79.9	1-Sided Adj	TPTHT20170310183313493
<b>Explanation:</b> RAMP SCG-2 Employee Contractor Customer & Public Safety: CS - Field MSA Inspection Program base workload forecast for inspections of MSA for atmospheric corrosion to identify conditions which require remediation and to contact customers to resolve meter access issues. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to Ex. SCG-18-WP-2FC005 CS - Field MSA Inspection Program, Supplemental Workpapers 1-6 for calculations.								
2019	RAMP Incremental	6,920	-893	0	6,027	104.8	1-Sided Adj	TPTHT20170310183431660
<b>Explanation:</b> RAMP SCG-2 Employee Contractor Customer & Public Safety: CS - Field MSA Inspection Program incremental workload forecast for inspections of MSA for atmospheric corrosion to identify conditions which require remediation and to contact customers to resolve meter access issues. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities. Refer to Ex. SCG-18-WP-2FC005 CS - Field MSA Inspection Program, Supplemental Workpapers 1-6 for calculations.								
<b>2019 Total</b>		<b>16,099</b>	<b>603</b>	<b>0</b>	<b>16,702</b>	<b>260.3</b>		

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Category-Sub: 1. Customer Services Field  
Workpaper: 2FC005.000 - MSA Inspection Program

**Determination of Adjusted-Recorded (Incurred Costs):**

	2012 (\$000)	2013 (\$000)	2014 (\$000)	2015 (\$000)	2016 (\$000)
<b>Recorded (Nominal \$)*</b>					
Labor	0	0	0	106	3,866
Non-Labor	0	0	0	54	1,365
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>160</b>	<b>5,230</b>
FTE	0.0	0.0	0.0	1.2	71.5
<b>Adjustments (Nominal \$) **</b>					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Nominal \$)</b>					
Labor	0	0	0	106	3,866
Non-Labor	0	0	0	54	1,365
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>160</b>	<b>5,230</b>
FTE	0.0	0.0	0.0	1.2	71.5
<b>Vacation &amp; Sick (Nominal \$)</b>					
Labor	0	0	0	17	637
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>637</b>
FTE	0.0	0.0	0.0	0.2	12.1
<b>Escalation to 2016\$</b>					
Labor	0	0	0	3	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Constant 2016\$)</b>					
Labor	0	0	0	126	4,502
Non-Labor	0	0	0	54	1,365
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>180</b>	<b>5,867</b>
FTE	0.0	0.0	0.0	1.4	83.6

\* 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.

Southern California Gas Company  
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Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC005.000 - MSA Inspection Program

**Summary of Adjustments to Recorded:**

In Nominal \$ (000) Incurred Costs					
Years	2012	2013	2014	2015	2016
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>
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*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Service Field  
 Category-Sub: 1. Customer Services Field  
 Workpaper: 2FC005.000 - MSA Inspection Program

**RAMP Item # 1**

Ref ID: TPTHT20170310183240177

RAMP Chapter: SCG-2

Program Name: MSA Inspections and Safety Equipment

Program Description: Inspection of above ground pipe and facilities

**Risk/Mitigation:**

Risk: Employee, Contractor, Customer and Public Safety

Mitigation: Gas Facility and Pipeline Inspections

**Forecast CPUC Cost Estimates (\$000)**

	<u>2017</u>	<u>2018</u>	<u>2019</u>
Low	669	655	5,639
High	818	801	8,593

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Mandated

Work Type Citation: Mandated

**Historical Embedded Cost Estimates (\$000)**

Embedded Costs: 5621

Explanation: MSA Operations base workload forecast for inspections of MSA for atmospheric corrosion and abnormal operation conditions. This also includes the costs for safety and personal protective equipment.

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2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Service Field  
Category-Sub: 1. Customer Services Field  
Workpaper: 2FC005.000 - MSA Inspection Program

**RAMP Item # 2**

Ref ID: TPTHT20170310183353003

RAMP Chapter: SCG-2

Program Name: MSA Inspections and Safety Equipment

Program Description: Inspection of above ground pipe and facilities

**Risk/Mitigation:**

Risk: Employee, Contractor, Customer and Public Safety

Mitigation: Gas Facility and Pipeline Inspections

**Forecast CPUC Cost Estimates (\$000)**

	<u>2017</u>	<u>2018</u>	<u>2019</u>
Low	0	0	4,997
High	0	0	7,808

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Mandated

Work Type Citation: Mandated

**Historical Embedded Cost Estimates (\$000)**

Embedded Costs: 0

Explanation: 2016 RAMP Embedded Costs asre shown in RAMP Base detail screen

**Supplemental Workpapers for Workpaper 2FC005.000**

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

SCG-18-WP - 2FC005 CS - Field MSA Inspection Program  
Supplemental Workpaper 1  
(Page 1 of 2)

**SUMMARY - TY 2019 ESTIMATE -  
TOTAL COST FOR MSA INSPECTION  
PROGRAM (in 2016 \$)**

Item	Reference Workpaper	Estimated Dollar Forecast (2016 \$)			Estimated FTE Forecast			TY 2019 Estimated RAMP vs Non-RAMP Costs			
		2017	2018	TY 2019 GRC	2017	2018	TY 2019 GRC	RAMP <sup>1</sup>	NON-RAMP	RAMP	NON-RAMP
		E	F	G	H	I	J	K	L	M	N
<b>A) LABOR</b>											
MSA Inspection Rep (MIR) - perform MSA	SCG-18-WP-2FC005-Supplemental WP 2, Item L.4	\$ 7,626,773	\$ 7,963,463	\$ 7,832,310	135.2	140.8	138.2	\$ 7,832,310		138.2	
A.1 Inspections	SCG-18-WP-2FC005-Supplemental WP 3, Item I.4	\$ 4,298,916	\$ 4,524,704	\$ 4,476,021	68.1	71.4	70.5	\$ 4,476,021			70.5
A.2 (FSA)-MSA Remediation	SCG-18-WP-2FC005-Supplemental WP 4, Item J.3	\$ 216,184	\$ 231,659	\$ 232,186	3.6	3.9	3.9	\$ 232,186		3.9	
A.3 MSA Chronic Access Work - 2 Man Team	SCG-18-WP-2FC005-Supplemental WP 5, Item J.3	\$ 1,066,773	\$ 1,104,545	\$ 1,078,054	18.6	19.2	18.7	\$ 1,078,054		18.7	
A.4 MSA Office Rep (MORS) - Meter Access Handling -	SCG-18-WP-2FC005-Supplemental WP 6, Item C.3	\$ 1,386,189	\$ 1,478,490	\$ 1,480,378	16.0	17.0	17.0	\$ 1,035,896	\$ 444,482	11.90	5.1
A.5 Field Supervision	SCG-18-WP-2FC005-Supplemental WP 6, Item C.1	\$ 121,181	\$ 121,647	\$ 121,802	2.0	2.0	2.0	\$ 121,802		2.0	
A.6 MSA Office Clerks	SCG-18-WP-2FC005-Supplemental WP 6, Item C.2	\$ 57,678	\$ 115,800	\$ 115,948	1.0	2.0	2.0	\$ 115,948		2.0	
A.6 CSR-2 (Cust Svc Rep) Other Management	SCG-18-WP-2FC005-Supplemental WP 6, Item C.8	\$ 653,462	\$ 760,975	\$ 761,947	7.0	8.0	8.0	\$ 761,947		8.0	
<b>A.8 Total Labor</b>		\$ 15,427,156	\$ 16,301,283	\$ 16,098,646	251.5	264.2	260.3	\$ 11,178,143	\$ 4,920,503	184.7	75.6
<b>B) NON-LABOR</b>											
B.1 Non-Labor Cost per FTE	BY 2016 data	\$ 2,318	\$ 2,318	\$ 2,318							
B.2 Total FTEs	from A.8	251.5	264.2	260.3							
<b>B.3 Total Non-Labor</b>	<b>B.1 x B.2</b>	\$ 583,052	\$ 612,446	\$ 603,475				\$ 470,138	\$ 133,337		
<b>C) GRAND TOTAL</b>		\$ 16,010,188	\$ 16,913,729	\$ 16,702,121	251.5	264.2	260.3	\$ 11,648,281	\$ 5,053,840	184.7	75.6
<b>D) AMIBA FUNDING</b>											
D.1 AMIBA Funding	applies to 2017 & 2018 only	\$ 496,000	\$ 2,365,000		8.8	40.1					
<b>D.2 REVISED GRAND TOTAL</b>	<b>C - D.1</b>	\$ 15,514,188	\$ 14,548,729		242.7	224.1					



Southern California Gas Company  
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Non-Shared Service Workpapers

SCG-18-WP - 2FC005 CS - Field MSA Inspection Program  
Supplemental Workpaper 1  
(Page 2 of 2)

**SUMMARY - TY 2019 ESTIMATE -  
TOTAL COST FOR MSA INSPECTION  
PROGRAM (in 2016 \$)**

Item	Reference Workpaper	2016 Adjusted Recorded			Comparison of BY 2016 to TY 2019 GRC (Incremental Request in TY 2019 GRC)				
		Labor	N/Labor	Total	FTE	Labor	N/Labor	Total	FTE
		O	P	Q	R	S = G - O	T = G - P	U = S + T	V = J - R
<b>A) LABOR</b>									
MSA Inspection Rep (MIR) - perform MSA Inspections	SCG-18-WP-2FC005- Supplemental WP 2, Item L.4	\$ 2,885,496		\$ 2,885,496	61.2	\$ 4,946,814		\$ 4,946,814	77.0
Field Service Assistant (FSA) - MSA Remediation	SCG-18-WP-2FC005- Supplemental WP 3, Item I.4	\$ 212,582		\$ 212,582	2.8	\$ 4,263,439		\$ 4,263,439	67.7
MSA Chronic Access Work - 2 Man Team	SCG-18-WP-2FC005- Supplemental WP 4, Item J.3	\$ -		\$ -	0	\$ 232,186		\$ 232,186	3.9
MSA Office Rep (MORs) - Meter Access Handling	SCG-18-WP-2FC005- Supplemental WP 5, Item J.3	\$ 426,031		\$ 426,031	7.9	\$ 652,023		\$ 652,023	10.8
Field Supervision	SCG-18-WP-2FC005- Supplemental WP 6, Item C.3	\$ 424,860		\$ 424,860	5.1	\$ 1,055,518		\$ 1,055,518	11.9
MSA Office Clerks	SCG-18-WP-2FC005- Supplemental WP 6, Item C.1	\$ 107,129		\$ 107,129	1.7	\$ 14,673		\$ 14,673	0.3
CSR-2 Labor	SCG-18-WP-2FC005- Supplemental WP 6, Item C.2			\$ -		\$ 115,948		\$ 115,948	2.0
Other Management	SCG-18-WP-2FC005- Supplemental WP 6, Item C.8	446206		\$ 446,206	4.9	\$ 315,741		\$ 315,741	3.1
<b>A.8 Total Labor</b>		\$ 4,502,304	\$ -	\$ 4,502,304	83.6	\$ 11,596,342	\$ -	\$ 11,596,342	176.7
<b>B) NON-LABOR</b>									
Non-Labor Cost per FTE	BY 2016 data								
Total FTEs	from A.8								
<b>B.3 Total Non-Labor</b>	<b>B.1 x B.2</b>		\$ 1,364,586	\$ 1,364,586		\$ (761,111)	\$ (761,111)	\$ (761,111)	
<b>C) GRAND TOTAL</b>		\$ 4,502,304	\$ 1,364,586	\$ 5,866,890		\$ 11,596,342	\$ (761,111)	\$ 10,835,231	176.7

Note 1: RAMP labor refer to costs associated with completing the DOT-mandated MSA inspections which includes the costs for MIRs who perform the inspections, costs for 2-man team to handle chronic meter access, MOR costs to contact customers to schedule the inspections, and costs for supervision, CSRs, MSA office clerks and other management support staff who support MSA inspection activities. RAMP non-labor is based on non-labor cost per FTE applied to total RAMP FTEs plus costs for uniforms and boot allowance (i.e., PPE) for the FSAs.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

SCG-18-WP - 2FC005 CS - Field MSA Inspection Program  
Supplemental Workpaper 2  
(Page 1 of 4)

Calculation of Field Labor Cost for MSA Inspections - MSA Inspection Representative (MIR) Labor (in 2016 \$)

Item	Notes/Calculation	TY 2019 GRC Period					TY 2019 GRC Request - Average (2019 - 2021)
		2017	2018	2019	2020	2021	
<b>A) Total Inspection Volume</b>							
A.1 Annual Inspections (Standard)		2,086,486	2,160,364	2,078,797	2,086,486	2,160,364	2,108,549
A.2 CGI (Can't Get In) Rate	BY 2016 data	8.7%	8.7%	8.7%	8.7%	8.7%	
A.3 Additional Inspections work due to CGI	A.1 X A.2	181,662	188,094	180,993	181,662	188,094	183,583
A.4 Total Annual Inspections Volume	A.1 + A.3	2,268,148	2,348,458	2,259,790	2,268,148	2,348,458	2,292,132
<b>B) Production Rate: Orders per Day per FTE</b>							
B.1 Basic Route: Orders per day per FTE	BY 2016 data Based on 2016 data + 4% increased drive time due to traffic congestion	99.9	99.9	99.9	99.9	99.9	
B.2 CGI Orders per day per FTE		23.7	22.9	22.3	22.3	22.3	
<b>C) Productive Hours</b>							
C.1 Standard Inspections: Productive Hours	A.1 / B.1 x 8 hours	167,114	173,031	166,498	167,114	173,031	168,881
C.2 CGI Inspections: Productive Hours	A.3 / B.2 x 8 hours	61,321	65,710	64,930	65,170	67,478	65,859
C.3 Total Productive Hours	C.1 + C.2	228,434	238,741	231,428	232,284	240,509	234,740
<b>D) Training Hours</b>							
D.1 Training to Productive Hour Ratio %	BY 2016 data	5.3%	5.3%	5.3%	5.3%	5.3%	
D.2 Training Hours	C.3 x D.1	12,107	12,653	12,266	12,311	12,747	12,441
<b>E) Vacation &amp; Sick (V&amp;S) Hours</b>							
E.1 V&S Percentage	BY 2016 V&S factor	16.92%	16.92%	16.92%	16.92%	16.92%	16.92%
E.2 V&S Hours -	(C.3 + D.2) x E.1	40,700	42,556	41,233	41,386	42,851	41,823

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Non-Shared Service Workpapers

SCG-18-WP - 2FC005 CS - Field MSA Inspection Program  
Supplemental Workpaper 2  
(Page 2 of 4)

**Calculation of Field Labor Cost for MSA Inspections - MSA Inspection Representative (MIR) Labor (in 2016 \$)**

Item	Notes/Calculation	TY 2019 GRC Period					TY 2019 GRC Request - Average (2019 - 2021)
		2017	2018	2019	2020	2021	
<b>F) Summary Total Hours: Productive/Meetings &amp; Training/V&amp;S</b>							
F.1	Total Productive Hours	228,434	238,741	231,428	232,284	240,509	234,740
F.2	Total Training Hours	12,107	12,653	12,266	12,311	12,747	12,441
F.3	Total V&S Hours	40,700	42,536	41,233	41,386	42,851	41,823
F.4	<b>Total Hours</b>	<b>281,241</b>	<b>293,930</b>	<b>284,927</b>	<b>285,981</b>	<b>296,107</b>	<b>289,005</b>
<b>To calculate costs, hours are split between District Hubs and Stand Alone Districts based on inspection data for these areas</b>							
<b>G) District Hubs versus Stand-Alone Districts</b>							
Split hours between District Hubs and Stand-Alone Districts. Employees in District Hubs are paid a higher wage rate per hour							
G.1	District Hub Percentage	94%	91%	91%	94%	91%	91%
G.2	Stand-Alone District Percentage	6%	9%	9%	6%	9%	9%
<b>District Hubs</b>							
G.3	Hubs: Productive Hours	215,159	216,521	209,495	218,785	218,124	215,468
G.4	Hubs: Training Hours	11,403	11,476	11,103	11,596	11,561	11,420
G.5	Hubs: V&S Hours	38,334	38,577	37,325	38,980	38,863	38,389
<b>Stand Alone Districts</b>							
G.6	Stand-Alone: Productive Hours	13,275	22,220	21,933	13,499	22,384	19,272
G.7	Stand Alone: Training Hrs	704	1,178	1,162	715	1,186	1,021
G.8	Stand Alone: V&S Hours	2,365	3,959	3,908	2,405	3,988	3,434
G.9	Total Hours: District Hubs and Stand Alone Districts	281,241	293,930	284,927	285,981	296,107	289,005

Southern California Gas Company  
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Non-Shared Service Workpapers

SCG-18-WP - 2FC005 CS - Field MSA Inspection Program  
Supplemental Workpaper 2  
(Page 3 of 4)

Calculation of Field Labor Cost for MSA Inspections - MSA Inspection Representative (MIR) Labor (in 2016 \$)

Item	Notes/Calculation	TY 2019 GRC Period					TY 2019 GRC Request - Average (2019 - 2021)
		2017	2018	2019	2020	2021	
<b>H) Split of Straight Time (ST) vs Overtime (OT) applies to productive hours only</b>							
H.1	ST Percentage	98.8%	98.8%	98.8%	98.8%	98.8%	
H.2	OT Percentage	1.2%	1.2%	1.2%	1.2%	1.2%	
<b>I) Total Hours: Productive/Training/V&amp;S</b>							
Employees in District Hubs are paid a higher wage rate per hour							
<b>District Hubs</b>							
I.1	District Hubs: ST Productive Hours	212,577	213,923	206,981	216,160	215,507	212,883
I.2	District Hubs: OT Productive Hours	2,582	2,598	2,514	2,625	2,617	2,586
I.3	District Hubs: Training Hours	11,403	11,476	11,103	11,596	11,561	11,420
I.4	District Hubs: V&S Hours	38,334	38,577	37,325	38,980	38,863	38,389
I.5	Total District Hub Hours	264,897	266,574	257,924	269,361	268,548	265,277
<b>Stand Alone Districts</b>							
I.6	Stand Alone: ST Productive Hours	13,116	21,953	21,670	13,337	22,116	19,041
I.7	Stand Alone: OT Productive Hours	159	267	263	162	269	231
I.8	Stand Alone: Training Hours	704	1,178	1,162	715	1,186	1,021
I.9	Stand Alone: V&S Hours	2,365	3,959	3,908	2,405	3,988	3,434
I.10	Total Stand Alone District Hours	16,344	27,356	27,003	16,620	27,559	23,727
<b>J) Total FTE: Straight Time (ST) and Overtime (OT)</b>							
J.1	Total Paid Hours per Year	2080	2088	2088	2096	2088	
J.2	ST FTE (includes Training and V&S Hours)	133.9	139.4	135.1	135.1	140.4	136.9
J.3	OT FTE	1.3	1.4	1.3	1.3	1.4	1.3
J.4	Total FTE	135.2	140.8	136.5	136.4	141.8	138.2

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Calculation of Field Labor Cost for MSA Inspections - MSA Inspection Representative (MIR) Labor (in 2016 \$)

Item	Notes/Calculation	TY 2019 GRC Period					TY 2019 GRC Request - Average (2019 - 2021)
		2017	2018	2019	2020	2021	
<b>K) Wage Rates</b>							
Employees in District Hubs are paid a higher wage rate per hour							
	2016 Blended Wage Rate						
K.1	ST Rate: District Hub MIR	\$ 27.11	\$ 27.11	\$ 27.11	\$ 27.11	\$ 27.11	
K.2	OT Rate: District Hub MIR	\$ 40.67	\$ 40.67	\$ 40.67	\$ 40.67	\$ 40.67	
K.3	ST Rate: Stand Alone District MIR	\$ 26.36	\$ 26.36	\$ 26.36	\$ 26.36	\$ 26.36	
K.4	OT Rate: Stand Alone District MIR	\$ 39.54	\$ 39.54	\$ 39.54	\$ 39.54	\$ 39.54	
K.5	ST Rate: Employees in Training	\$ 25.14	\$ 25.14	\$ 25.14	\$ 25.14	\$ 25.14	
<b>L) Total Labor Costs:</b>							
L.1	Labor: District Hubs (excl Training)	\$ 6,907,966	\$ 6,951,697	\$ 6,726,120	\$ 7,024,384	\$ 7,003,177	\$ 6,917,893
L.2	Labor: Stand Alone Districts (excl Training)	\$ 414,436	\$ 693,663	\$ 684,711	\$ 421,420	\$ 698,800	\$ 601,644
L.3	Labor Costs: Training	\$ 304,371	\$ 318,103	\$ 308,359	\$ 309,500	\$ 320,459	\$ 312,773
<b>L.4</b>	<b>Total Labor Costs: MSA Inspections</b>	<b>\$ 7,626,773</b>	<b>\$ 7,963,463</b>	<b>\$ 7,719,190</b>	<b>\$ 7,755,304</b>	<b>\$ 8,022,436</b>	<b>\$ 7,832,310</b>

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Calculation of Field Labor Cost for MSA Inspection Remediation Work - Field Service Assistant (FSA) Labor (in 2016 \$)

Item	Notes/Calculation	TY 2019 GRC Period					TY 2019 GRC Request - Average (2019 - 2021)
		2017	2018	2019	2020	2021	
<b>A) Total Inspection Volume</b>							
A.1 Annual Inspections		2,086,486	2,160,364	2,078,797	2,086,486	2,160,364	2,108,549
A.2 2016 Annual Follow Up Rate	BY 2016 data	7.1%	7.1%	7.1%	7.1%	7.1%	
A.3 FSA MSA Inspection Follow Up Orders	A.1 x A.2	148,305	153,557	147,759	148,305	153,557	149,874
A.4 CGI (Can't Get In) Rate	BY 2016 data	11.1%	11.1%	11.1%	11.1%	11.1%	
A.5 Total CGI MSA Follow Up	A.3 x A.4	16,461	17,044	16,401	16,461	17,044	16,635
A.6 Total MSA Inspection Follow Up Orders	A.3 + A.5	164,767	170,601	164,159	164,767	170,601	166,509
<b>B) Productive Hours</b>							
B.1 Orders per day per FTE	Based on 2016 data + 4% increased drive time due to traffic congestion	11.5	11.3	11.1	11.1	11.1	
B.2 Total Productive Hours	A.6 / B.1 x 8 hrs	115,020	121,061	118,069	118,505	122,701	119,758
<b>C) Training Hours</b>							
C.1 Training to Productive Hour Ratio %	BY 2016 data	5.3%	5.3%	5.3%	5.3%	5.3%	
C.2 Training Hours	B.2 x D.1	6,096	6,416	6,258	6,281	6,503	6,347
<b>D) Vacation &amp; Sick (V&amp;S) Hours</b>							
D.1 V&S Percentage	BY 2016 V&S factor	16.92%	16.92%	16.92%	16.92%	16.92%	
D.2 V&S Hours	(B.2 + C.2) x D.1	20,493	21,569	21,036	21,114	21,861	21,337
<b>E) Split of Straight Time (ST) vs Overtime (OT) applies to productive hours only</b>							
E.1 ST Percentage	BY 2016 data	98.8%	98.8%	98.8%	98.8%	98.8%	
E.2 OT Percentage	BY 2016 data	1.2%	1.2%	1.2%	1.2%	1.2%	

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Calculation of Field Labor Cost for MSA Inspection Remediation Work - Field Service Assistant (FSA) Labor (in 2016 \$)

Item	Notes/Calculation	TY 2019 GRC Period					TY 2019 GRC Request - Average (2019 - 2021)
		2017	2018	2019	2020	2021	
<b>F) Summary Total of Hours</b>							
F.1 Productive ST Hours	B.2 x E.1	113,640	119,608	116,652	117,083	121,229	118,321
F.2 Productive OT Hours	B.2 x E.2	1,380	1,453	1,417	1,422	1,472	1,437
F.3 Training Hours	From C.2	6,096	6,416	6,258	6,281	6,503	6,347
F.4 V&S Hours	From D.2	20,493	21,569	21,036	21,114	21,861	21,337
F.5 Total Hours	Sum of F.1 to F.4	141,609	149,046	145,362	145,900	151,066	147,443
<b>G) Total FTE: Straight Time (ST) and Overtime (OT)</b>							
G.1 Total Paid Hours per Year		2080	2088	2088	2096	2088	2,091
G.2 ST FTE (incl Training and V&S Hours)	(F.1 + F.3 + F.4) / G.1	67.4	70.7	68.9	68.9	71.6	69.8
G.3 OT FTE	F.2 / G.1	0.7	0.7	0.7	0.7	0.7	0.7
G.4 Total FTE	G.2 + G.3	68.1	71.4	69.6	69.6	72.3	70.5
<b>H) Wage Rates: Field Service Assistant (FSA)</b>							
H.1 FSA ST Rate	2016 Blended Rate	\$ 30.23	\$ 30.23	\$ 30.23	\$ 30.23	\$ 30.23	
H.2 FSA OT Rate	H.1 x 1.5 hrs	\$ 45.35	\$ 45.35	\$ 45.35	\$ 45.35	\$ 45.35	
H.3 FSA ST Rate for Training Labor	2016 Starting Rate	\$ 29.73	\$ 29.73	\$ 29.73	\$ 29.73	\$ 29.73	
<b>I) Total Labor Costs</b>							
I.1 Productive ST and V&S Labor	(F.1 + F.4) x H.1	\$ 4,055,089	\$ 4,268,071	\$ 4,162,574	\$ 4,177,971	\$ 4,325,904	\$ 4,222,150
I.2 Productive OT Labor	F.2 x H.2	\$ 62,591	\$ 65,878	\$ 64,250	\$ 64,488	\$ 66,771	\$ 65,170
I.3 Training Labor	F.3 x H.3	\$ 181,236	\$ 190,754	\$ 186,039	\$ 186,728	\$ 193,339	\$ 188,702
<b>I.4 Total Costs: MSA Insp Follow Up Orders</b>	<b>Sum of I.1 to I.3</b>	<b>\$ 4,298,916</b>	<b>\$ 4,524,704</b>	<b>\$ 4,412,864</b>	<b>\$ 4,429,186</b>	<b>\$ 4,586,014</b>	<b>\$ 4,476,021</b>

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**Calculation of Field Labor Cost to Handle Chronic Meter Access - 2 Man Access Team (in 2016 \$)**

Item	Notes/Calculation	TY 2019 GRC Period					TY 2019 GRC Request - Average (2019 - 2021)
		2017	2018	2019	2020	2021	
<b>A) Total Inspection Volume</b>							
A.1 Annual Inspections		2,086,486	2,160,364	2,078,797	2,086,486	2,160,364	2,108,549
A.2 Chronic Meter Access %	BY 2016 data	0.43%	0.43%	0.43%	0.43%	0.43%	
A.3 Total Chronic MSA Inspection Orders	A.1 x A.2	9,044	9,364	9,011	9,044	9,364	9,140
<b>B) Productive (Work Time) Hours</b>							
B.1 Orders per day per FTE	Based on 2016 data + 4% increased drive time due to traffic congestion	23.7	22.9	22.3	22.3	22.3	
B.2 Productive Hours (2 Man Access Team)	A.3 / B.1 x 8 hrs x 2 man team	6,106	6,543	6,465	6,489	6,719	6,558
<b>C) Meetings and Training</b>							
C.1 Meetings & Training %	BY 2016 data	5.3%	5.3%	5.3%	5.3%	5.3%	
C.2 Meeting & Training Hours	B.2 x C.1	324	347	343	344	356	670
<b>D) V&amp;S Factor</b>							
D.1 V&S Percentage	BY 2016 V&S factor	16.92%	16.92%	16.92%	16.92%	16.92%	
D.2 V&S Hours	(B.2 + C.2) x D.1	1,088	1,166	1,152	1,156	1,197	2,254
<b>E) Total Hours: Productive/Meetings &amp; Training/V&amp;S</b>							
E.1 Total Productive Hours	From B.2	6,106	6,543	6,465	6,489	6,719	6,558
E.2 Total Training Hours	From C.2	324	347	343	344	356	348
E.3 Total V&S Hours	From D.2	1,088	1,166	1,152	1,156	1,197	1,168
E.4 Total Hours	Total E.1 to E.4	7,517	8,055	7,960	7,989	8,272	8,074



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Calculation of Field Labor Cost to Handle Chronic Meter Access - 2 Man Access Team (in 2016 \$)

Item	Notes/Calculation	TY 2019 GRC Period					TY 2019 GRC Request - Average (2019 - 2021)
		2017	2018	2019	2020	2021	
<b>F) Split of Straight Time (ST) vs Overtime (OT) applies to productive hours only</b>							
F.1 ST Percentage	BY 2016 data	98.8%	98.8%	98.8%	98.8%	98.8%	
F.2 OT Percentage	BY 2016 data	1.2%	1.2%	1.2%	1.2%	1.2%	
<b>G) Hours: Straight Time vs OT Hours</b>							
G.1 MSA Inspection Rep: ST Hours	E.1 x 50% x F.1	3,016	3,232	3,194	3,206	3,319	3,239
G.2 MSA Inspection Rep: OT Hours	E.1 x 50% x F.2	37	39	39	39	40	39
G.3 MSA Inspection Rep: Training Hours	E.2 x 50%	162	173	171	172	178	
G.4 MSA Inspection Rep: V&S Hours	E.3 x 50%	544	583	576	578	599	
G.5 Field Svs Assistant: ST Hours	E.1 x 50% x F.1	3,016	3,232	3,194	3,206	3,319	3,239
G.6 Field Svs Assistant: OT Hours	E.1 x 50% x F.2	37	39	39	39	40	39
G.7 Fields Svc Assistant: Training Hours	E.2 x 50%	162	173	171	172	178	
G.8 Fields Svc Assistant: V&S Hours	E.3 x 50%	544	583	576	578	599	
G.9 Total Hours	Sum of G.1 to G.8	7,517	8,055	7,960	7,989	8,272	6,558
<b>H) Total FTE</b>							
H.1 Total Paid Hours per Year		2080	2088	2088	2096	2088	
H.2 Straight Time FTE	Sum of (G.1, G.3, G.4, G.5, G.7, G.8) / H.1	3.58	3.82	3.77	3.77	3.92	3.82
H.3 Overtime FTE	(G.2 + G.6) / H.1	0.04	0.04	0.04	0.04	0.04	0.04
H.4 Total FTE	H.2 + H.3	3.61	3.86	3.81	3.81	3.96	3.86

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**Calculation of Field Labor Cost to Handle Chronic Meter Access - 2 Man Access Team (in 2016 \$)**

Item	Notes/Calculation	TY 2019 GRC Period					TY 2019 GRC Request - Average (2019 - 2021)
		2017	2018	2019	2020	2021	
<b>J) Wage Rates: MSA Inspection Rep (MIR) and Field Service Assistant (FSA)</b>							
I.1	MIR ST Rate	\$ 27.11	\$ 27.11	\$ 27.11	\$ 27.11	\$ 27.11	
I.2	MIR OT Rate	\$ 40.67	\$ 40.67	\$ 40.67	\$ 40.67	\$ 40.67	
I.3	MIR Rate for Training Labor	\$ 25.14	\$ 25.14	\$ 25.14	\$ 25.14	\$ 25.14	
I.4	FSA ST Rate	\$ 30.23	\$ 30.23	\$ 30.23	\$ 30.23	\$ 30.23	
I.5	FSA OT Rate	\$ 45.35	\$ 45.35	\$ 45.35	\$ 45.35	\$ 45.35	
I.6	FSA Rate for Training Labor	\$ 29.73	\$ 29.73	\$ 29.73	\$ 29.73	\$ 29.73	
<b>J) Total Labor Costs</b>							
J.1	Total Costs: MSA Inspection Reps	\$ 102,083	\$ 109,390	\$ 108,092	\$ 108,492	\$ 112,333	\$ 109,639
J.2	Total Costs: Field Service Assistants	\$ 114,101	\$ 122,269	\$ 120,818	\$ 121,265	\$ 125,558	\$ 122,547
J.3	<b>Total Chronic Access Field Labor</b>	<b>\$ 216,184</b>	<b>\$ 231,659</b>	<b>\$ 228,910</b>	<b>\$ 229,757</b>	<b>\$ 237,892</b>	<b>\$ 232,186</b>

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Calculation of Labor Cost to Handle Call Volume for Meter Access Issues - MSA Office Rep (MOR) Labor (in 2016 \$)

Item	Notes/Calculation	TY 2019 GRC Period					TY 2019 GRC Request - Average (2019 - 2021)
		2017	2018	2019	2020	2021	
<b>A) Total Inspection Volume</b>							
A.1 Annual MSA Inspection Volume		2,086,486	2,160,364	2,078,797	2,086,486	2,160,364	2,108,549
A.2 CGI (Can't Get In) Rate - MSA Inspections	BY 2016 data	8.7%	8.7%	8.7%	8.7%	8.7%	
CGI Order Volume for MSA Meter Access							
A.3 Handling	A.1 x A.2	181,662	188,094	180,993	181,662	188,094	183,583
A.4 Call Volume per Order	BY 2016 data	1.4	1.4	1.4	1.4	1.4	
A.5 Total Call Volume	A.3 x A.4	254,327	263,332	253,390	254,327	263,332	257,016
<b>B) Inbound vs Outbound Call Volume</b>							
B.1 Inbound Call Volume %	BY 2016 data	49%	49%	49%	49%	49%	
B.2 Outbound Call Volume %	BY 2016 data	51%	51%	51%	51%	51%	
B.3 Inbound Call Volume	A.5 x B.1	124,620	129,033	124,161	124,620	129,033	125,938
B.4 Outbound Call Volume	A.5 x B.2	129,707	134,299	129,229	129,707	134,299	131,078
<b>C) Production Rate: Orders per Day per Employee</b>							
C.1 Inbound Avg Daily Call Volume per FTE	BY 2016 data	63	63	63	63	63	
C.2 Outbound Avg Daily Call Volume per FTE	BY 2016 data	60	60	60	60	60	
<b>D) Total Productive Hours</b>							
D.1 Inbound Calls: Productive Hours	B.3 / C.1 x 8 hrs	15,825	16,385	15,766	15,825	16,385	15,992
D.2 Outbound Calls: Productive Hours	B.4 / C.2 x 8 hrs	17,294	17,907	17,231	17,294	17,907	17,477
D.3 Total Productive Hours	D.1 + D.2	33,119	34,292	32,997	33,119	34,292	33,469
<b>E) Vacation &amp; Sick (V&amp;S) Hours</b>							
E.1 V&S Percentage	BY 2016 V&S factor	16.92%	16.92%	16.92%	16.92%	16.92%	
E.2 V&S Hours	D.3 x E.1	5,604	5,802	5,583	5,604	5,802	5,663

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Calculation of Labor Cost to Handle Call Volume for Meter Access Issues - MSA Office Rep (MOR) Labor (in 2016 \$)

Item	Notes/Calculation	TY 2019 GRC Period					TY 2019 GRC Request - Average (2019 - 2021)
		2017	2018	2019	2020	2021	
<b>F) Summary Total Hours</b>							
F.1 Total Productive Hours	From D.3	33,119	34,292	32,997	33,119	34,292	33,469
F.2 Total V&S Hours	From E.2	5,604	5,802	5,583	5,604	5,802	5,663
F.3 Total Hours	F.1 + F.2	38,723	40,094	38,580	38,723	40,094	39,132
<b>G) Total FTE</b>							
G.1 Total Paid Hours per Year		2080	2088	2088	2096	2088	
G.2 Total FTE (incl Training and V&S Hours)	F.3 / G.1	18.62	19.20	18.48	18.47	19.20	18.72
<b>H) Split 50/50 between MSA Office Rep Non-Bilingual and MSA Office Rep - Bilingual</b>							
H.1 Total Hours: MSA Office Rep - Non-Bilingual	F.3 x 50%	19,361	20,047	19,290	19,361	20,047	19,566
H.2 Total Hours: MSA Office Rep - Bilingual	F.3 x 50%	19,361	20,047	19,290	19,361	20,047	19,566
<b>I) Wage Rates: MSA Office Representative (MOR)</b>							
I.1 MOR Non-Bilingual Wage Rate	2016 Blended Rate	\$ 27.23	\$ 27.23	\$ 27.23	\$ 27.23	\$ 27.23	
I.2 MOR Bilingual Wage Rate	2016 Blended Rate	\$ 27.86	\$ 27.86	\$ 27.86	\$ 27.86	\$ 27.86	
<b>J) Total Estimated Costs</b>							
J.1 Costs: MSA Office Rep Non-Bilingual	H.1 x I.1	\$ 527,288	\$ 545,958	\$ 525,345	\$ 527,288	\$ 545,958	\$ 532,863
J.2 Costs: MSA Office Rep Bilingual	H.2 x I.2	\$ 539,485	\$ 558,588	\$ 537,497	\$ 539,485	\$ 558,588	\$ 545,190
<b>J.3 Total Labor: MSA Office Reps</b>	J.1 + J.2	\$ 1,066,773	\$ 1,104,545	\$ 1,062,842	\$ 1,066,773	\$ 1,104,545	\$ 1,078,054

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**Labor for Clerical, Customer Service Reps, Field Supervision and Other Management Support Staff (in 2016 \$)**

Item	Notes/ Calculation	TY 2019 GRC Period					TY 2019 GRC Request - Average (2019 - 2021)
		2017	2018	2019	2020	2021	
<b>A) Clerical, CSR and Management FTEs</b>							
<b>Clerical &amp; CSF</b>							
A.1 MSA Office Clerks		2.0	2.0	2.0	2.0	2.0	2.0
A.2 Customer Service Reps (CSRs)		1.0	2.0	2.0	2.0	2.0	2.0
<b>Field Supervision (Management)</b>							
A.3 MSA Inspection Supervisor		16.0	17.0	17.0	17.0	17.0	17.0
<b>Other Management Support Staff</b>							
A.4 MSA Inspection Manager		1.0	1.0	1.0	1.0	1.0	1.0
A.5 MSA Administrative Supervisor		1.0	1.0	1.0	1.0	1.0	1.0
A.6 MSA Program Analysts and Specialist		4.0	4.0	4.0	4.0	4.0	4.0
A.7 MSA Inspection Field Team Lead		1.0	2.0	2.0	2.0	2.0	2.0
A.8 Total Management	Sum of A.4 - A.10	<b>7.0</b>	<b>8.0</b>	<b>8.0</b>	<b>8.0</b>	<b>8.0</b>	<b>8.0</b>
<b>A.9 Total Management &amp; Clerical</b>	A.1+A.2+A.3+A.8	<b>25.0</b>	<b>27.0</b>	<b>27.0</b>	<b>27.0</b>	<b>27.0</b>	<b>27.0</b>
<b>B) Clerical, CSR and Management Hours</b>							
B.1 Total Paid Hours per Year		2,080	2,088	2,088	2,096	2,088	
<b>Clerical and CSR</b>							
B.2 MSA Office Clerks	A.1 x B.1	4,160	4,176	4,176	4,192	4,176	4,181
B.3 Customer Service Reps (CSRs)	A.2 x B.1	2,080	4,176	4,176	4,192	4,176	4,181
<b>Field Supervision (Management)</b>							
B.4 MSA Inspection Supervisor	A.3 x B.1	33,280	35,496	35,496	35,632	35,496	35,541
<b>Other Management Support Staff</b>							
B.5 MSA Inspection Manager	A.4 x B.1	2,080	2,088	2,088	2,096	2,088	2,091
B.6 MSA Administrative Supervisor	A.5 x B.1	2,080	2,088	2,088	2,096	2,088	2,091
B.7 MSA Program Analysts and Specialist	A.6 x B.1	8,320	8,352	8,352	8,384	8,352	8,363
B.8 MSA Inspection Field Team Lead	A.7 x B.1	2,080	4,176	4,176	4,192	4,176	4,181
<b>B.9 Total Other Management</b>	Sum of B.5 - B.8	<b>14,560</b>	<b>16,704</b>	<b>16,704</b>	<b>16,768</b>	<b>16,704</b>	<b>16,725</b>
<b>B.12 Total Mgmt/Clerical/CSR</b>	B.2+B.3+B.4+B.11	<b>54,080</b>	<b>60,552</b>	<b>60,552</b>	<b>60,784</b>	<b>60,552</b>	<b>60,629</b>

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**Labor for Clerical, Customer Service Reps, Field Supervision and Other Management Support Staff (in 2016 \$)**

Item	Notes/ Calculation	TY 2019 GRC Period					TY 2019 GRC Request - Average (2019 - 2021)
		2017	2018	2019	2020	2021	
<b>C) Clerical, CSR and Management Labor Cost</b>	<b>Rate</b>						
<b>Clerical and CSR</b>							
C.1 MSA Office Clerks	B.2 x rate	\$ 121,181	\$ 121,647	\$ 121,647	\$ 122,113	\$ 121,647	\$ 121,802
C.2 Customer Service Reps (CSRs)	B.3 x rate	\$ 57,678	\$ 115,800	\$ 115,800	\$ 116,244	\$ 115,800	\$ 115,948
<b>Field Supervision (Management)</b>							
C.3 MSA Inspection Supervisor	B.4 x rate	\$ 1,386,189	\$ 1,478,490	\$ 1,478,490	\$ 1,484,155	\$ 1,478,490	\$ 1,480,378
<b>Other Management Support Staff</b>							
C.4 MSA Inspection Manager	B.5 x rate	\$ 126,513	\$ 127,000	\$ 127,000	\$ 127,487	\$ 127,000	\$ 127,162
C.5 MSA Administrative Supervisor	B.6 x rate	\$ 91,648	\$ 92,000	\$ 92,000	\$ 92,352	\$ 92,000	\$ 92,117
C.6 MSA Program Analysts and Specialis	B.7 x rate	\$ 330,703	\$ 331,975	\$ 331,975	\$ 333,247	\$ 331,975	\$ 332,399
C.7 MSA Inspection Field Team Lead	B.8 x rate	\$ 104,598	\$ 210,000	\$ 210,000	\$ 210,805	\$ 210,000	\$ 210,268
C.8 <b>Total Other Management</b>	<b>Sum of C.4 - C.7</b>	<b>\$ 653,462</b>	<b>\$ 760,975</b>	<b>\$ 760,975</b>	<b>\$ 763,891</b>	<b>\$ 760,975</b>	<b>\$ 761,947</b>
<b>Total Labor Costs:</b>							
<b>C.11 Clerical, CSR and Management</b>	<b>C.1 + C.2 + C.3 + C.10</b>	<b>\$ 2,160,831</b>	<b>\$ 2,361,112</b>	<b>\$ 2,361,112</b>	<b>\$ 2,370,158</b>	<b>\$ 2,361,112</b>	<b>\$ 2,364,127</b>

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: B. Meter Reading  
Workpaper: VARIOUS

**Summary for Category: B. Meter Reading**

	In 2016\$ (000) Incurred Costs			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	9,318	5,045	810	2,941
Non-Labor	745	341	40	86
NSE	0	0	0	0
<b>Total</b>	<b>10,063</b>	<b>5,386</b>	<b>850</b>	<b>3,027</b>
FTE	186.8	96.8	10.0	59.6

**Workpapers belonging to this Category:**

**2FC006.000 Meter Reading - Operations**

Labor	6,727	3,665	41	2,172
Non-Labor	305	76	1	47
NSE	0	0	0	0
<b>Total</b>	<b>7,032</b>	<b>3,741</b>	<b>42</b>	<b>2,219</b>
FTE	156.2	81.0	1.0	50.6

**2FC007.000 Meter Reading - Clerical**

Labor	510	222	147	147
Non-Labor	4	2	1	1
NSE	0	0	0	0
<b>Total</b>	<b>514</b>	<b>224</b>	<b>148</b>	<b>148</b>
FTE	7.1	3.0	2.0	2.0

**2FC008.000 Meter Reading - Supervision & Training**

Labor	1,110	416	334	334
Non-Labor	70	26	21	21
NSE	0	0	0	0
<b>Total</b>	<b>1,180</b>	<b>442</b>	<b>355</b>	<b>355</b>
FTE	13.4	5.0	4.0	4.0

**2FC009.000 Meter Reading - Support**

Labor	971	742	288	288
Non-Labor	366	237	17	17
NSE	0	0	0	0
<b>Total</b>	<b>1,337</b>	<b>979</b>	<b>305</b>	<b>305</b>
FTE	10.1	7.8	3.0	3.0

Note: Totals may include rounding differences.

**Beginning of Workpaper**  
**2FC006.000 - Meter Reading - Operations**



Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: B. Meter Reading  
 Category-Sub: 1. Meter Reading  
 Workpaper: 2FC006.000 - Meter Reading - Operations

**Activity Description:**

The CS - Meter Reading Operations cost category includes part-time meter readers who are dispersed across SoCalGas' operating bases to capture manual reads at customer premises for customers enrolled in the Opt Out Program (173,180 in TY 2019), customers located in AMI's escalated cities (156,000 in TY 2019) and customers affected by AMI MTU failures (6,565 in TY 2019).

**Forecast Explanations:**

**Labor - Zero-Based**

A zero based forecast is used to forecast TY 2019 expenses in lieu of other forecasting methodology to reflect the effect of AMI implementation. The cost is primarily driven by the number of gas meters to be read each month, and to some degree, by the proficiency level of each part-time meter reader. The forecast is based on the average number of read orders per meter reader, training time, and vacation and sick time.

**Non-Labor - Zero-Based**

Non-labor expenses such as uniforms, materials used on the job and other miscellaneous expenses are driven by forecasted operations workforce levels. The zero-based non-labor forecast is based on the BY 2016 average non-labor expense per CS - Meter Reading Operations FTE, which appropriately aligns the average non-labor expense incurred by meter reading employees with the forecasted FTEs.

**NSE - Zero-Based**

NSE is not applicable to this workgroup.

**Summary of Results:**

		In 2016\$ (000) Incurred Costs								
		Adjusted-Recorded					Adjusted-Forecast			
Years		2012	2013	2014	2015	2016	2017	2018	2019	
Labor		30,195	27,311	19,504	12,907	6,727	3,665	41	2,172	
Non-Labor		1,931	1,657	1,058	649	305	76	1	47	
NSE		0	0	0	0	0	0	0	0	
<b>Total</b>		<b>32,125</b>	<b>28,968</b>	<b>20,561</b>	<b>13,556</b>	<b>7,032</b>	<b>3,741</b>	<b>42</b>	<b>2,219</b>	
FTE		734.7	660.6	466.6	313.3	156.2	81.0	1.0	50.6	

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: B. Meter Reading  
 Category-Sub: 1. Meter Reading  
 Workpaper: 2FC006.000 - Meter Reading - Operations

**Summary of Adjustments to Forecast:**

In 2016 \$(000) Incurred Costs										
Forecast Method		Base Forecast			Forecast Adjustments			Adjusted-Forecast		
Years		2017	2018	2019	2017	2018	2019	2017	2018	2019
Labor	Zero-Based	0	0	0	3,665	41	2,172	3,665	41	2,172
Non-Labor	Zero-Based	0	0	0	76	1	47	76	1	47
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>3,741</b>	<b>42</b>	<b>2,219</b>	<b>3,741</b>	<b>42</b>	<b>2,219</b>
FTE	Zero-Based	0.0	0.0	0.0	81.0	1.0	50.6	81.0	1.0	50.6

**Forecast Adjustment Details:**

Year	Adj Group	Labor	NLbr	NSE	Total	FTE	Adj Type	RefID	
2017	Other	1,833	10	0	1,843	40.3	1-Sided Adj	TPHT20170310191612517	
<b>Explanation:</b>		Labor and non-labor expenses for meter readers to manually capture monthly meter reads for customers located at escalated jurisdictions and affected by AMI MTU failures. This does not include manual meter reading costs for customers who are enrolled in the SoCalGas' Opt-Out Program.							
2017	RAMP Base	1,832	66	0	1,898	40.7	1-Sided Adj	TPHT20170310191737230	
<b>Explanation:</b>		RAMP SCG-2 Employee Contractor Customer & Public Safety: Labor expenses for meter readers associated with atmospheric corrosion inspections. Non-labor expenses are the costs for PPE (uniforms and boot allowance). Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities.							
<b>2017 Total</b>		<b>3,665</b>	<b>76</b>	<b>0</b>	<b>3,741</b>	<b>81.0</b>			
2018	Other	21	0	0	21	0.5	1-Sided Adj	TPHT20170310191626447	
<b>Explanation:</b>		Labor and non-labor expenses for meter readers to manually capture monthly meter reads at customer premises affected by AMI MTU failures.							
2018	RAMP Base	20	1	0	21	0.5	1-Sided Adj	TPHT20170310191750267	
<b>Explanation:</b>		RAMP SCG-2 Employee Contractor Customer & Public Safety: Labor expenses for meter readers associated with atmospheric corrosion inspections. Non-labor expenses are the costs for PPE (uniforms and boot allowance). Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities.							
<b>2018 Total</b>		<b>41</b>	<b>1</b>	<b>0</b>	<b>42</b>	<b>1.0</b>			
2019	Other	1,086	7	0	1,093	25.3	1-Sided Adj	TPHT20170310191655200	

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: B. Meter Reading  
 Category-Sub: 1. Meter Reading  
 Workpaper: 2FC006.000 - Meter Reading - Operations

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>
<b>Explanation:</b> CS - Meter Reading Operations labor and non-labor costs for part time meters to capture manual reads at customer premises for customers enrolled i the Opt-Out Program, customers located in AMI's escalated cities, and customers affected by AMI MTU remediation failures. Refer to SCG-18-WP-2FC006 CS - Meter Reading Operations, Supplemental Workpaper 1, for calculations.								
2019	RAMP Base	1,086	40	0	1,126	25.3	1-Sided Adj	TPTHT20170310191806553
<b>Explanation:</b> RAMP SCG-2 Employee Contractor Customer & Public Safety: CS - Meter Reading Operations labor expenses for part time meter readers associated with performing atmospheric corrosion inspections. Non-labor expenses are the costs for PPE (uniforms and boot allowance). Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities Refer to SCG-18-WP-2FC006 CS - Meter Reading Operations, Supplemental Workpaper 1, for calculations.								
<b>2019 Total</b>		<b>2,172</b>	<b>47</b>	<b>0</b>	<b>2,219</b>	<b>50.6</b>		

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: B. Meter Reading  
Category-Sub: 1. Meter Reading  
Workpaper: 2FC006.000 - Meter Reading - Operations

**Determination of Adjusted-Recorded (Incurred Costs):**

	2012 (\$000)	2013 (\$000)	2014 (\$000)	2015 (\$000)	2016 (\$000)
<b>Recorded (Nominal \$)*</b>					
Labor	23,676	21,809	15,642	10,041	4,651
Non-Labor	1,876	1,636	1,057	638	279
NSE	0	0	0	0	0
<b>Total</b>	<b>25,552</b>	<b>23,444</b>	<b>16,699</b>	<b>10,679</b>	<b>4,930</b>
FTE	629.6	565.0	391.4	248.9	106.5
<b>Adjustments (Nominal \$) **</b>					
Labor	25	31	347	803	1,125
Non-Labor	0	1	4	9	26
NSE	0	0	0	0	0
<b>Total</b>	<b>25</b>	<b>33</b>	<b>351</b>	<b>812</b>	<b>1,151</b>
FTE	0.6	0.1	8.2	19.3	27.1
<b>Recorded-Adjusted (Nominal \$)</b>					
Labor	23,701	21,840	15,989	10,844	5,776
Non-Labor	1,876	1,637	1,061	648	305
NSE	0	0	0	0	0
<b>Total</b>	<b>25,577</b>	<b>23,477</b>	<b>17,050</b>	<b>11,492</b>	<b>6,081</b>
FTE	630.2	565.1	399.6	268.2	133.6
<b>Vacation &amp; Sick (Nominal \$)</b>					
Labor	3,795	3,630	2,609	1,755	951
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>3,795</b>	<b>3,630</b>	<b>2,609</b>	<b>1,755</b>	<b>951</b>
FTE	104.5	95.5	67.0	45.1	22.6
<b>Escalation to 2016\$</b>					
Labor	2,699	1,841	905	308	0
Non-Labor	54	20	-3	2	0
NSE	0	0	0	0	0
<b>Total</b>	<b>2,754</b>	<b>1,861</b>	<b>901</b>	<b>310</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Constant 2016\$)</b>					
Labor	30,195	27,311	19,504	12,907	6,727
Non-Labor	1,931	1,657	1,058	649	305
NSE	0	0	0	0	0
<b>Total</b>	<b>32,125</b>	<b>28,968</b>	<b>20,561</b>	<b>13,556</b>	<b>7,032</b>
FTE	734.7	660.6	466.6	313.3	156.2

\* 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.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: B. Meter Reading  
 Category-Sub: 1. Meter Reading  
 Workpaper: 2FC006.000 - Meter Reading - Operations

**Summary of Adjustments to Recorded:**

In Nominal \$ (000) Incurred Costs					
Years	2012	2013	2014	2015	2016
Labor	25	31	347	803	1,125
Non-Labor	0	1	4	9	26
NSE	0	0	0	0	0
<b>Total</b>	<b>25</b>	<b>33</b>	<b>351</b>	<b>812</b>	<b>1,151</b>
FTE	0.6	0.1	8.2	19.3	27.1

**Detail of Adjustments to Recorded:**

Year	Adj Group	Labor	NLbr	NSE	FTE	Adj Type	RefID
2012	Other	25	0	0	0.6	1-Sided Adj	CTRINH20161129204558513
<b>Explanation:</b> Transfer CS - Meter Reading Operations labor from 2FC008.000 CS - Meter Reading Supervision & Training to 2FC006.000 CS - Meter Reading Operations in order to align historical costs with the workgroup in which the activity will be forecasted							
<b>2012 Total</b>		<b>25</b>	<b>0</b>	<b>0</b>	<b>0.6</b>		
2013	Other	9	0	0	0.1	1-Sided Adj	CTRINH20161129204647857
<b>Explanation:</b> Transfer CS - Meter Reading Operations labor from 2FC008.000 CS - Meter Reading Supervision & Training to 2FC006.000 CS - Meter Reading Operations in order to align historical costs with the workgroup in which the activity will be forecasted							
2013	Other	22	1	0	0.0	1-Sided Adj	CTRINH20170227092023560
<b>Explanation:</b> Transfer of CS - Meter Reading labor and non-labor expenses from 2FC001 to 2FC006 in order to align historical expenses with the workgroup in which the activity will be forecasted							
<b>2013 Total</b>		<b>31</b>	<b>1</b>	<b>0</b>	<b>0.1</b>		
2014	Other	9	0	0	0.1	1-Sided Adj	CTRINH20161129204725170
<b>Explanation:</b> Transfer CS - Meter Reading Operations labor from 2FC008.000 CS - Meter Reading Supervision & Training to 2FC006.000 CS - Meter Reading Operations in order to align historical costs with the workgroup in which the activity will be forecasted							
2014	Other	338	4	0	8.1	1-Sided Adj	CTRINH20170227092123030
<b>Explanation:</b> Transfer of CS - Meter Reading labor and non-labor expenses from 2FC001 to 2FC006 in order to align historical expenses with the workgroup in which the activity will be forecasted							

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: B. Meter Reading  
 Category-Sub: 1. Meter Reading  
 Workpaper: 2FC006.000 - Meter Reading - Operations

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>
<b>2014 Total</b>		<b>347</b>	<b>4</b>	<b>0</b>	<b>8.2</b>		
2015	Other	6	0	0	0.1	1-Sided Adj	CTRINH20161129204808077
<b>Explanation:</b>		Transfer CS - Meter Reading Operations labor from 2FC008.000 CS - Meter Reading Supervision & Training to 2FC006.000 CS - Meter Reading Operations in order to align historical costs with the workgroup in which the activity will be forecasted					
2015	Other	797	9	0	19.2	1-Sided Adj	CTRINH20170227092237087
<b>Explanation:</b>		Transfer of CS - Meter Reading labor and non-labor expenses from 2FC001 to 2FC006 in order to align historical expenses with the workgroup in which the activity will be forecasted					
<b>2015 Total</b>		<b>803</b>	<b>9</b>	<b>0</b>	<b>19.3</b>		
2016	Other	6	0	0	0.1	1-Sided Adj	CTRINH20161129204933280
<b>Explanation:</b>		Transfer CS - Meter Reading Operations labor from 2FC008.000 CS - Meter Reading Supervision & Training to 2FC006.000 CS - Meter Reading Operations in order to align historical costs with the workgroup in which the activity will be forecasted					
2016	Aliso	-208	-11	0	-3.6	1-Sided Adj	CTRINH20170215105826830
<b>Explanation:</b>		Aliso leak mitigation exclude costs captured in IO					
2016	Other	1,328	37	0	30.6	1-Sided Adj	CTRINH20170227092336570
<b>Explanation:</b>		Transfer of CS - Meter Reading labor and non-labor expenses from 2FC001 to 2FC006 in order to align historical expenses with the workgroup in which the activity will be forecasted					
<b>2016 Total</b>		<b>1,125</b>	<b>26</b>	<b>0</b>	<b>27.1</b>		

Note: Totals may include rounding differences.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: B. Meter Reading  
Category-Sub: 1. Meter Reading  
Workpaper: 2FC006.000 - Meter Reading - Operations

**RAMP Item # 1**

Ref ID: TPTHT20170310191737230

RAMP Chapter: SCG-2

Program Name: Safety Equipment and Safety Inspections

Program Description: Safety Equipment and Safety Inspections

**Risk/Mitigation:**

Risk: Employee, Contractor, Customer and Public Safety

Mitigation: PPE and Safety Equipment and Gas Facility and Pipeline inspections

**Forecast CPUC Cost Estimates (\$000)**

	<u>2017</u>	<u>2018</u>	<u>2019</u>
Low	5,662	5,662	5,662
High	6,920	6,920	6,920

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Mandated

Work Type Citation: Mandated

**Historical Embedded Cost Estimates (\$000)**

Embedded Costs: 1126

Explanation: Labor expenses for meter readers associated with atmospheric corrosion inspections. Non-labor expenses are the costs for PPE (uniforms and boot allowance)

**Supplemental Workpapers for Workpaper 2FC006.000**



Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

SCG-18-WP- 2FC006 CS - Meter Reading Operations  
Supplemental Workpaper 1  
(Page 1 of 3)

**Calculation of Labor and Non-Labor Costs for CS - Meter Reading Operations**

			In 2016 \$
Item No.	Component	Notes/Calculations	TY 2019 Estimated
<b>A) Manual Meter Reading Volume</b>			
A.1	Opt-Out Reads	See Note 1	173,180
A.2	AMI's Escalated Jurisdictions	See Note 2	156,000
A.3	Manual Reads due to AMI MTU Failures	See Note 3	6,564
<b>A.4</b>	<b>Total Manual Meter Reads</b>	<b>Sum of A.1 to A.5</b>	<b>335,744</b>
<b>B) Productive Hours</b>			
B.1	No. of Reads per Hour	See Note 4	3.7
B.2	Opt-Out Reads	A.1 / B.1	46,429
B.3	AMI's Escalated Jurisdictions	A.2 / B.1	41,823
B.4	Manual Reads due to AMI MTU Failures	A.3 / B.1	1,760
<b>B.5</b>	<b>Total Productive Hours</b>	<b>Sum of B.1 - B.4</b>	<b>90,012</b>
<b>C) Training Hours</b>			
C.1	Training %	BY 2016	0.46%
C.2	Opt-Out Reads	B.2 x C.1	213
C.3	AMI's Escalated Jurisdictions	B.3 X C.1	192
C.4	Manual Reads due to AMI MTU Failures	B.4 x C.1	8
<b>C.2</b>	<b>Total Training Hours</b>	<b>Sum of C.1 - C.4</b>	<b>413</b>
<b>D) Vacation &amp; Sick (V&amp;S) Hours</b>			
D.1	V&S Factor	BY 2016	16.92%
D.2	Opt-Out Reads	(B.2 + C.2) x D.1	7,892
D.3	AMI's Escalated Jurisdictions	(B.3 + C.3) x D.1	7,109
D.4	Manual Reads due to AMI MTU Failures	(B.4 + C.4) x D.1	299
<b>D.2</b>	<b>Total V&amp;S Hours</b>	<b>Sum of D.1 - D.4</b>	<b>15,300</b>
<b>E) Summary of Total Hours (Productive/Training/V&amp;S)</b>			
E.1	Opt-Out Reads	B.2 + C.2 + D.2	54,534
E.2	AMI's Escalated Jurisdictions	B.3 + C.3 + D.3	49,124
E.3	Manual Reads due to AMI MTU Failures	B.4 + C.4 + D.4	2,067
<b>E.4</b>	<b>Total Hours</b>	<b>Sum of E.1 - E.3</b>	<b>105,725</b>
<b>F) Total FTE</b>			
F.1	Total Paid Hours per Year		2088
F.2	Opt-Out Reads	E.1 / F.1	26.1
F.3	AMI's Escalated Jurisdictions	E.2 / F.1	23.5
F.4	Manual Reads due to AMI MTU Failures	E.3 / F.1	1.0
<b>F.5</b>	<b>Total FTEs per Year</b>	<b>Sum of F.2 - F.4</b>	<b>50.6</b>

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

SCG-18-WP- 2FC006 CS - Meter Reading Operations  
Supplemental Workpaper 1  
(Page 2 of 3)

**Calculation of Labor and Non-Labor Costs for CS - Meter Reading Operations**

Item No.	Component	Notes/Calculations	In 2016 \$
			TY 2019 Estimated
<b>G) Labor Costs</b>			
G.1	Part Time Meter Reader Wage Rate	2016 Wage Rate	\$ 20.54
G.2	Opt-Out Reads	E.1 x G.1	\$ 1,120,129
G.3	AMI's Escalated Jurisdictions	E.2 x G.1	\$ 1,009,008
G.4	Manual Reads due to AMI MTU Failures	E.3 x G.1	\$ 42,456
<b>G.5</b>	<b>Total Labor Costs</b>	<b>Sum of G.2 - G4</b>	<b>\$ 2,171,593</b>
<b>H) Non-Labor Costs</b>			
H.1	Non-Labor Cost pe FTE	BY 2016	\$ 930
H.2	Opt-Out Reads	F.2 x H.1	\$ 24,293
H.3	AMI's Escalated Jurisdictions	F.3 x H.1	\$ 21,883
H.4	Manual Reads due to AMI MTU Failures	F.4 x H.1	\$ 921
<b>H.5</b>	<b>Total Non-Labor Costs</b>	<b>Sum of H.2 - H.4</b>	<b>\$ 47,096</b>
<b>I) Summary of Total Costs: Labor + Non-Labor</b>			
I.1	Opt-Out Reads	G.2 + H.2	\$ 1,144,421
I.2	AMI's Escalated Jurisdictions	G.3 + H.3	\$ 1,030,891
I.3	Manual Reads due to AMI MTU Failures	G.4 + H.4	\$ 43,377
<b>I.4</b>	<b>Total Costs</b>	<b>Sum of I.1 - I.3</b>	<b>\$ 2,218,689</b>

<b>J. RAMP Costs</b>			
J.1	RAMP - Labor Costs	I.1 x 50% (see Note 5)	\$ 1,085,796
J.2	RAMP - Non Labor Costs	see Note 6	\$ 40,265
<b>J.3</b>	<b>Total RAMP Costs</b>	<b>J.1 + J.2</b>	<b>\$ 1,126,061</b>
<b>J.4</b>	<b>Total RAMP FTE</b>	<b>F.5 x 50%</b>	<b>25.3</b>

Southern California Gas Company  
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SCG-18-WP- 2FC006 CS - Meter Reading Operations  
Supplemental Workpaper 1  
(Page 3 of 3)

**Calculation of Labor and Non-Labor Costs for CS - Meter Reading Operations**

**Notes:**

- 1) Opt Out Reads: The first opportunity to integrate the Opt-out related expenses in the GRC is in TY 2019 GRC. Refer to the AMI testimony of Rene Garcia, Ex. SCG-17.
- 2) AMI's Escalated Jurisdictions: These refer to areas within SoCalGas service territory whereby SoCalGas has been unable to complete the installation of the AMI communication network. Information on impacted areas are covered in the AMI testimony of Rene Garcia, Ex. SCG-17.
- 3) Manual reads due to MTU failures: The expected annual failure rate for MTUs is 0.68% (see Ex. 17 SCG/Garcia). In most cases, CS - Field Operations will be able to remediate the MTU issue prior to the customer's next billing cycle. However, in some instances, due to the timing on when the failure occurs, CS - Field Operations will be unable to complete the remediation work prior to the customer's next billing cycle; hence, a meter reader will have to manually capture the read to generate a bill for the customer.
- 4) Reads per Hour include on-premises time and drive time. Unlike the pre-AMI meter reading function whereby locations are clustered together to create efficient routes for each employee, the locations associated with the manual meter reading volume in Item A are farther apart requiring additional drive time from one location to the next. The drive time component assumed the same drive time used in the calculation of CS - Field Operations costs for TY 2019.
- 5) RAMP Labor costs: In addition to taking a meter read, the Meter Reader also inspects the meter for atmospheric corrosion which is a RAMP mitigation activity (i.e, gas facility and pipeline inspections). Since the inspection is performed during the meter reading process, on-premises time is not tracked separately for capturing a manual meter read versus performing the inspection. In the absence of this, a 50/50 labor allocation was estimated to split the time for capturing the read and performing the inspection for atmospheric corrosion.
- 6) RAMP Non-labor costs: It refers to costs for the annual boot allowance and uniforms which falls under the PPE and safety equipment mitigation activity.

SCG-18-WP - 2FC006 CS - MR Operations  
Supplemental Workpaper 2 (Page 1 of 2)

**CS - Meter Reading AMI Benefit Calculations**

Calculation Steps --->>>	A	B	C	D	E	F	G <sup>1</sup>	H = I x D	I = G / E / C	
Line#	Year	Meter Growth	V&S Factor	Annual Paid Hours	2010 Non-Labor Per FTE	2010 Blended Wage Rate	Average On-Prem And Drive Time (Minutes)	Labor	Non-Labor	FTE
1	2010	36,354	0.1808	2,088	\$ 3,797	\$ 18.01	0.79	\$ -	\$ -	-
2	2011	32,510	0.1711	2,080	\$ 3,797	\$ 18.01	0.79	\$ 87,259	\$ 8,845	2.3
3	2012	27,177	0.1659	2,080	\$ 3,797	\$ 18.01	0.79	\$ 76,121	\$ 7,716	2.0
4	2013	29,758	0.1690	2,088	\$ 3,797	\$ 18.01	0.79	\$ 69,630	\$ 7,031	1.9
5	2014	33,049	0.1678	2,088	\$ 3,797	\$ 18.01	0.79	\$ 76,549	\$ 7,730	2.0
6	2015	27,966	0.1680	2,088	\$ 3,797	\$ 18.01	0.79	\$ 77,802	\$ 7,856	2.1
7	2016	33,790	0.1692	2,080	\$ 3,797	\$ 18.01	0.79	\$ 74,288	\$ 7,530	2.0
8	2017	30,897	0.1692	2,080	\$ 3,797	\$ 18.01	0.79	\$ 81,536	\$ 8,265	2.2
9	2018	42,612	0.1692	2,088	\$ 3,797	\$ 18.01	0.79	\$ 86,446	\$ 8,729	2.3
10	2019	45,866	0.1692	2,088	\$ 3,797	\$ 18.01	0.79	\$ 108,540	\$ 10,960	2.9
<b>Line#</b>	<b>Labor</b>	<b>Non-Labor</b>	<b>Total</b>	<b>FTE</b>	<b>Notes:</b>					
11	\$ 29,322,307	\$ 1,495,393	\$ 30,817,700	667.1	TY 2013 GRC CS - Meter Reading Operations costs escalated to BY 2016 dollars					
12	\$ 738,172	\$ 74,661	\$ 812,833	19.7	Estimated costs to read additional meters from estimated Meter Growth (2011 - 2019)					
13	\$ 30,060,479	\$ 1,570,055	\$ 31,630,533	686.8	Total TY 2019 Estimated CS - Meter Reading Operations Cost					
<b>Line#</b>	<b>Labor</b>	<b>Non-Labor</b>	<b>Total</b>	<b>FTE</b>	<b>Notes:</b>					
14	\$ 1,170,920	\$ 21,262	\$ 1,192,182	16.3	TY 2013 GRC CS - Meter Reading Clerical costs escalated to BY 2016 dollars					
15	\$ 3,861,248	\$ 462,691	\$ 4,323,939	50.5	TY 2013 GRC CS - Meter Reading Supervision & Training cost escalated to BY 2016 dollars					
16	\$ 2,049,110	\$ 584,185	\$ 2,633,295	23.3	TY 2013 GRC CS - Meter Reading Support costs escalated to BY 2016 dollars					

SCG-18-WP - 2FC006 CS - MR Operations  
 Supplemental Workpaper 2 (Page 2 of 2)

**CS - Meter Reading AMI Benefit Calculations**

TY 2019 Estimated CS - Meter Reading AMI Benefit					
Line#	Labor	Non-Labor	Total	FTE	Notes:
17	\$ 37,141,757	\$ 2,638,193	\$ 39,779,949	776.9	Total TY 2019 Estimated CS - Meter Reading Cost Pre AMI
TY 2019 Estimated CS - Meter Reading AMI Cost					
Line#	Labor	Non-Labor	Total	FTE	Notes:
18	\$ 1,500,151	\$ 42,565	\$ 1,542,715	29.9	Total TY 2019 Estimated CS - Meter Reading Cost Post AMI
TY 2019 Estimated Meter Reading Net AMI Benefit					
Line#	Labor	Non-Labor	Total	FTE	Notes:
19	\$ 35,641,606	\$ 2,595,628	\$ 38,237,234	747.0	Total TY 2019 Estimated CS - Meter Reading Cost Post AMI

**NOTES:**

- 1) Annual cost to read additional meters from meter growth is calculated as  $[(A / 2 \times 12 \times F / 60 \times E) \text{ of previous year meter growth}] + [(A / 2 \times 6 \times F / 60 \times E) \text{ of current year meter growth}] \times (1 + V\&S \text{ Loader})$
- 2) Line # (11, 14, 15, 16) is TY 2013 GRC estimated cost for CS - Meter Reading Operations , Clerical, Supervision & Training, and Support escalated to BY 2016 dollars. TY 2013 GRC costs were estimated as Pre AMI.
- 3) Line #12 is the sum of line #2 thru #10 for calculation steps G thru I
- 4) Line #17 is the sum of line # (13, 14, 15, 16)
- 5) Details for line #18 can be found in SCG-18 GMarelli section III.C.1 for CS - Meter Reading Operations costs, and SCG-18 GMarelli section III.C.2 for CS - Meter Reading Supervision & Training costs

**Beginning of Workpaper**  
**2FC007.000 - Meter Reading - Clerical**

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: B. Meter Reading  
 Category-Sub: 1. Meter Reading  
 Workpaper: 2FC007.000 - Meter Reading - Clerical

**Activity Description:**

CS - Meter Reading clerks handle the timekeeping, payroll, scheduling of part-time meter readers, and various customer facility record and geographical coding updates necessary for meter reading operations. The clerical group also handles meter access issues and provides general administrative support to the CS - Meter Reading organization.

**Forecast Explanations:**

**Labor - Zero-Based**

A zero based forecast is used to forecast TY 2019 expenses in lieu of other forecasting methodology to reflect the effect of AMI implementation. Cost for the CS - Meter Reading clerical group is primarily driven by the number of clerical personnel and applicable wage rates. Although most of the manual meter reading function will be eliminated (except for those stated in 2FC006 CS-Meter Reading Operations), clerical support is still needed to handle customer information system facility updates for the new business meter process and provide administrative support to the remaining meter reading operations workforce such as timekeeping and scheduling.

**Non-Labor - Zero-Based**

Non-labor costs were forecasted using BY 2016 average expense per FTE.

**NSE - Zero-Based**

NSE is not applicable to this workgroup.

**Summary of Results:**

		In 2016\$ (000) Incurred Costs								
		Adjusted-Recorded					Adjusted-Forecast			
Years		2012	2013	2014	2015	2016	2017	2018	2019	
Labor		1,167	1,136	1,015	784	510	222	147	147	
Non-Labor		23	20	15	5	4	2	1	1	
NSE		0	0	0	0	0	0	0	0	
<b>Total</b>		<b>1,190</b>	<b>1,156</b>	<b>1,030</b>	<b>789</b>	<b>514</b>	<b>224</b>	<b>148</b>	<b>148</b>	
FTE		16.4	15.8	13.4	10.2	7.1	3.0	2.0	2.0	

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: B. Meter Reading  
Category-Sub: 1. Meter Reading  
Workpaper: 2FC007.000 - Meter Reading - Clerical

**Summary of Adjustments to Forecast:**

In 2016 \$(000) Incurred Costs										
Forecast Method		Base Forecast			Forecast Adjustments			Adjusted-Forecast		
Years		2017	2018	2019	2017	2018	2019	2017	2018	2019
Labor	Zero-Based	0	0	0	222	147	147	222	147	147
Non-Labor	Zero-Based	0	0	0	2	1	1	2	1	1
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>224</b>	<b>148</b>	<b>148</b>	<b>224</b>	<b>148</b>	<b>148</b>
FTE	Zero-Based	0.0	0.0	0.0	3.0	2.0	2.0	3.0	2.0	2.0

**Forecast Adjustment Details:**

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>	
2017	Other	222	2	0	224	3.0	1-Sided Adj	TPTHT20170310192126173	
<b>Explanation:</b>		Labor and non-labor expense of CS - Meter Reading clerks handling timekeeping, payroll scheduling of part time meter readers and customer facility record updates necessary for meter reading operations. Labor cost is based on average hourly labor rate of \$35.29 x 2080 paid hours x 3.03 FTEs. Non-labor cost is based on 2016 BY non-labor cost per FTE of \$616 x 3.03 FTEs.							
<b>2017 Total</b>		<b>222</b>	<b>2</b>	<b>0</b>	<b>224</b>	<b>3.0</b>			
2018	Other	147	1	0	148	2.0	1-Sided Adj	TPTHT20170310192157903	
<b>Explanation:</b>		Labor and non-labor expense of CS - Meter Reading clerks handling timekeeping, payroll scheduling of part time meter readers and customer facility record updates necessary for meter reading operations. Labor cost is based on average hourly labor rate of \$35.29 x 2088 paid hours x 2 FTEs. Non-labor cost is based on 2016 BY non-labor cost per FTE of \$616 x 2 FTEs.							
<b>2018 Total</b>		<b>147</b>	<b>1</b>	<b>0</b>	<b>148</b>	<b>2.0</b>			
2019	Other	147	1	0	148	2.0	1-Sided Adj	TPTHT20170310192216430	
<b>Explanation:</b>		Labor and non-labor expense of CS - Meter Reading clerks handling timekeeping, payroll scheduling of part time meter readers and customer facility record updates necessary for meter reading operations. Labor cost is based on average hourly labor rate of \$35.29 x 2088 paid hours x 2 FTEs. Non-labor cost is based on 2016 BY non-labor cost per FTE of \$616 x 2 FTEs.							
<b>2019 Total</b>		<b>147</b>	<b>1</b>	<b>0</b>	<b>148</b>	<b>2.0</b>			

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli



Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: B. Meter Reading  
Category-Sub: 1. Meter Reading  
Workpaper: 2FC007.000 - Meter Reading - Clerical

**Determination of Adjusted-Recorded (Incurred Costs):**

	2012 (\$000)	2013 (\$000)	2014 (\$000)	2015 (\$000)	2016 (\$000)
<b>Recorded (Nominal \$)*</b>					
Labor	916	908	832	659	438
Non-Labor	22	20	15	5	4
NSE	0	0	0	0	0
<b>Total</b>	<b>939</b>	<b>929</b>	<b>847</b>	<b>664</b>	<b>442</b>
FTE	14.1	13.5	11.5	8.7	6.1
<b>Adjustments (Nominal \$) **</b>					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Nominal \$)</b>					
Labor	916	908	832	659	438
Non-Labor	22	20	15	5	4
NSE	0	0	0	0	0
<b>Total</b>	<b>939</b>	<b>929</b>	<b>847</b>	<b>664</b>	<b>442</b>
FTE	14.1	13.5	11.5	8.7	6.1
<b>Vacation &amp; Sick (Nominal \$)</b>					
Labor	147	151	136	107	72
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>147</b>	<b>151</b>	<b>136</b>	<b>107</b>	<b>72</b>
FTE	2.3	2.3	1.9	1.5	1.0
<b>Escalation to 2016\$</b>					
Labor	104	77	47	19	0
Non-Labor	1	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>105</b>	<b>77</b>	<b>47</b>	<b>19</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Constant 2016\$)</b>					
Labor	1,167	1,136	1,015	784	510
Non-Labor	23	20	15	5	4
NSE	0	0	0	0	0
<b>Total</b>	<b>1,190</b>	<b>1,156</b>	<b>1,030</b>	<b>789</b>	<b>514</b>
FTE	16.4	15.8	13.4	10.2	7.1

\* 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.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: B. Meter Reading  
 Category-Sub: 1. Meter Reading  
 Workpaper: 2FC007.000 - Meter Reading - Clerical

**Summary of Adjustments to Recorded:**

In Nominal \$ (000) Incurred Costs					
Years	2012	2013	2014	2015	2016
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>
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*Note: Totals may include rounding differences.*

**Beginning of Workpaper**  
**2FC008.000 - Meter Reading - Supervision & Training**

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: B. Meter Reading  
 Category-Sub: 1. Meter Reading  
 Workpaper: 2FC008.000 - Meter Reading - Supervision & Training

**Activity Description:**

The CS - Meter Reading Supervision and Training cost category includes meter reading supervisors who are distributed across SoCalGas' operating bases from which meter readers work, to supervise, coach and manage the performance of meter reading employees.

**Forecast Explanations:**

**Labor - Zero-Based**

A zero based forecast is used to forecast TY 2019 expenses in lieu of other forecasting methodology to reflect the effect of AMI implementation. Forecasted TY 2019 expenses are based on forecasted CS - Meter Reading Operations workforce and maintaining a reasonable span of control. Geographical dispersion of the workforce was also a consideration as supervision needs to be able to respond to employee in case of emergencies. Labor is based on BY 2016 average hourly rate for the CS - Meter Reading Supervision costs multiplied by the number of FTEs and number of paid hours in TY 2019.

**Non-Labor - Zero-Based**

Forecasted TY 2019 non-labor expenses are based on BY 2016 average non-labor cost per FTE

**NSE - Zero-Based**

NSE is not applicable to this workgroup.

**Summary of Results:**

		<b>In 2016\$ (000) Incurred Costs</b>								
		<b>Adjusted-Recorded</b>					<b>Adjusted-Forecast</b>			
<b>Years</b>		<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	
Labor		3,321	3,121	2,272	1,753	1,110	416	334	334	
Non-Labor		470	316	214	134	70	26	21	21	
NSE		0	0	0	0	0	0	0	0	
<b>Total</b>		<b>3,791</b>	<b>3,437</b>	<b>2,486</b>	<b>1,888</b>	<b>1,180</b>	<b>442</b>	<b>355</b>	<b>355</b>	
FTE		43.6	39.7	28.6	22.7	13.3	5.0	4.0	4.0	

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: B. Meter Reading  
 Category-Sub: 1. Meter Reading  
 Workpaper: 2FC008.000 - Meter Reading - Supervision & Training

**Summary of Adjustments to Forecast:**

In 2016 \$(000) Incurred Costs										
Forecast Method		Base Forecast			Forecast Adjustments			Adjusted-Forecast		
Years		2017	2018	2019	2017	2018	2019	2017	2018	2019
Labor	Zero-Based	0	0	0	416	334	334	416	334	334
Non-Labor	Zero-Based	0	0	0	26	21	21	26	21	21
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>442</b>	<b>355</b>	<b>355</b>	<b>442</b>	<b>355</b>	<b>355</b>
FTE	Zero-Based	0.0	0.0	0.0	5.0	4.0	4.0	5.0	4.0	4.0

**Forecast Adjustment Details:**

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>	
2017	Other	416	26	0	442	5.0	1-Sided Adj	TPHT20170310192430387	
<b>Explanation:</b>		Labor and non-labor costs for CS - Meter Reading Supervisors who provide direct supervision for meter readers. Labor cost is based on 2016 BY average hourly labor rate of \$39.98 x 2080 paid hours x 5 FTEs. Non-labor costs is based on 2016 BY non-labor cost per FTE of \$5,274 x 5 FTEs							
<b>2017 Total</b>		<b>416</b>	<b>26</b>	<b>0</b>	<b>442</b>	<b>5.0</b>			
2018	Other	334	21	0	355	4.0	1-Sided Adj	TPHT20170310192455110	
<b>Explanation:</b>		Labor and non-labor costs for CS - Meter Reading Supervisors who provide direct supervision for meter readers. Labor cost is based on 2016 BY average hourly labor rate of \$39.98 x 2088 paid hours x 4 FTEs. Non-labor costs is based on 2016 BY non-labor cost per FTE of \$5,274 x 4 FTEs.							
<b>2018 Total</b>		<b>334</b>	<b>21</b>	<b>0</b>	<b>355</b>	<b>4.0</b>			
2019	Other	334	21	0	355	4.0	1-Sided Adj	TPHT20170310192628923	
<b>Explanation:</b>		Labor and non-labor costs for CS - Meter Reading Supervisors who provide direct supervision for meter readers. Labor cost is based on 2016 BY average hourly labor rate of \$39.98 x 2088 paid hours x 4 FTEs. Non-labor costs is based on 2016 BY non-labor cost per FTE of \$5,274 x 4 FTEs							
<b>2019 Total</b>		<b>334</b>	<b>21</b>	<b>0</b>	<b>355</b>	<b>4.0</b>			

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: B. Meter Reading  
 Category-Sub: 1. Meter Reading  
 Workpaper: 2FC008.000 - Meter Reading - Supervision & Training

**Determination of Adjusted-Recorded (Incurred Costs):**

	2012 (\$000)	2013 (\$000)	2014 (\$000)	2015 (\$000)	2016 (\$000)
<b>Recorded (Nominal \$)*</b>					
Labor	2,632	2,505	1,872	1,479	959
Non-Labor	457	312	215	134	70
NSE	0	0	0	0	0
<b>Total</b>	<b>3,089</b>	<b>2,817</b>	<b>2,086</b>	<b>1,613</b>	<b>1,029</b>
FTE	38.0	34.1	24.6	19.5	11.5
<b>Adjustments (Nominal \$) **</b>					
Labor	-25	-9	-9	-6	-6
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>-25</b>	<b>-9</b>	<b>-9</b>	<b>-6</b>	<b>-6</b>
FTE	-0.6	-0.1	-0.1	-0.1	-0.1
<b>Recorded-Adjusted (Nominal \$)</b>					
Labor	2,607	2,496	1,863	1,473	953
Non-Labor	457	312	215	134	70
NSE	0	0	0	0	0
<b>Total</b>	<b>3,064</b>	<b>2,808</b>	<b>2,077</b>	<b>1,607</b>	<b>1,023</b>
FTE	37.4	34.0	24.5	19.4	11.4
<b>Vacation &amp; Sick (Nominal \$)</b>					
Labor	417	415	304	238	157
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>417</b>	<b>415</b>	<b>304</b>	<b>238</b>	<b>157</b>
FTE	6.2	5.7	4.1	3.3	1.9
<b>Escalation to 2016\$</b>					
Labor	297	210	105	42	0
Non-Labor	13	4	-1	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>310</b>	<b>214</b>	<b>105</b>	<b>42</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Constant 2016\$)</b>					
Labor	3,321	3,121	2,272	1,753	1,110
Non-Labor	470	316	214	134	70
NSE	0	0	0	0	0
<b>Total</b>	<b>3,791</b>	<b>3,437</b>	<b>2,486</b>	<b>1,888</b>	<b>1,180</b>
FTE	43.6	39.7	28.6	22.7	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.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: B. Meter Reading  
 Category-Sub: 1. Meter Reading  
 Workpaper: 2FC008.000 - Meter Reading - Supervision & Training

**Summary of Adjustments to Recorded:**

In Nominal \$ (000) Incurred Costs					
Years	2012	2013	2014	2015	2016
Labor	-25	-9	-9	-6	-6
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>-25</b>	<b>-9</b>	<b>-9</b>	<b>-6</b>	<b>-6</b>
FTE	-0.6	-0.1	-0.1	-0.1	-0.1

**Detail of Adjustments to Recorded:**

Year	Adj Group	Labor	NLbr	NSE	FTE	Adj Type	RefID
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2012	Other	-25	0	0	-0.6	1-Sided Adj	CTRINH20161129204536860
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**Explanation:** Transfer CS - Meter Reading Operations labor from 2FC008.000 CS -Meter Reading Supervision & Training to 2FC006.000 CS - Meter Reading Operations in order to align historical costs with the workgroup in which the activity will be forecasted

<b>2012 Total</b>	<b>-25</b>	<b>0</b>	<b>0</b>	<b>-0.6</b>
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2013	Other	-9	0	0	-0.1	1-Sided Adj	CTRINH20161129204634200
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**Explanation:** Transfer CS - Meter Reading Operations labor from 2FC008.000 CS - Meter Reading Supervision & Training to 2FC006.000 CS - Meter Reading Operations in order to align historical costs with the workgroup in which the activity will be forecasted

<b>2013 Total</b>	<b>-9</b>	<b>0</b>	<b>0</b>	<b>-0.1</b>
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2014	Other	-9	0	0	-0.1	1-Sided Adj	CTRINH20161129204712327
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**Explanation:** Transfer CS - Meter Reading Operations labor from 2FC008.000 CS - Meter Reading Supervision & Training to 2FC006.000 CS - Meter Reading Operations in order to align historical costs with the workgroup in which the activity will be forecasted

<b>2014 Total</b>	<b>-9</b>	<b>0</b>	<b>0</b>	<b>-0.1</b>
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2015	Other	-6	0	0	-0.1	1-Sided Adj	CTRINH20161129204750107
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**Explanation:** Transfer CS -Meter Reading Operations labor from 2FC008.000 CS - Meter Reading Supervision & Training to 2FC006.000 CS - Meter Reading Operations in order to align historical costs with the workgroup in which the activity will be forecasted

*Note: Totals may include rounding differences.*

Southern California Gas Company  
 2019 GRC - APP  
 Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: B. Meter Reading  
 Category-Sub: 1. Meter Reading  
 Workpaper: 2FC008.000 - Meter Reading - Supervision & Training

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>
<b>2015 Total</b>		-6	0	0	-0.1		
2016	Other	-6	0	0	-0.1	1-Sided Adj	CTRINH20161129204920340
<b>Explanation:</b>		Transfer CS - Meter Reading Operations labor from 2FC008.000 CS - Meter Reading Supervision & Training to 2FC006.000 CS - Meter Reading Operations in order to align historical costs with the workgroup in which the activity will be forecasted					
<b>2016 Total</b>		-6	0	0	-0.1		

*Note: Totals may include rounding differences.*



**Beginning of Workpaper**  
**2FC009.000 - Meter Reading - Support**

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: B. Meter Reading  
 Category-Sub: 1. Meter Reading  
 Workpaper: 2FC009.000 - Meter Reading - Support

**Activity Description:**

The CS - Meter Reading Support cost category consists of a meter reading manager who support meter reading operations and business analysts who support the meter reading technologies, including the process to download and upload data to meter reading MDTs (aka handheld devices), conduct meter reading route analyses and route realignments, project management, and other reporting and analysis.

**Forecast Explanations:**

**Labor - Zero-Based**

A zero based forecast is used to forecast TY 2019 expenses in lieu of other forecasting methodology to reflect the effect of AMI implementation. Labor is based on BY 2016 average hourly rate for the CS - Meter Reading Support costs multiplied by the number of FTEs and number of paid hours in TY 2019.

**Non-Labor - Zero-Based**

Forecasted TY 2019 non-labor expenses are based on BY 2016 non-labor cost per FTE

**NSE - Zero-Based**

NSE is not applicable to this workgroup.

**Summary of Results:**

		In 2016\$ (000) Incurred Costs								
		Adjusted-Recorded					Adjusted-Forecast			
Years		2012	2013	2014	2015	2016	2017	2018	2019	
Labor		1,544	1,525	1,313	1,134	971	742	288	288	
Non-Labor		460	359	207	323	366	237	17	17	
NSE		0	0	0	0	0	0	0	0	
<b>Total</b>		<b>2,005</b>	<b>1,884</b>	<b>1,520</b>	<b>1,457</b>	<b>1,337</b>	<b>979</b>	<b>305</b>	<b>305</b>	
FTE		17.4	16.6	14.4	11.6	10.0	7.8	3.0	3.0	

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: B. Meter Reading  
 Category-Sub: 1. Meter Reading  
 Workpaper: 2FC009.000 - Meter Reading - Support

**Summary of Adjustments to Forecast:**

In 2016 \$(000) Incurred Costs										
Forecast Method		Base Forecast			Forecast Adjustments			Adjusted-Forecast		
Years		2017	2018	2019	2017	2018	2019	2017	2018	2019
Labor	Zero-Based	0	0	0	742	288	288	742	288	288
Non-Labor	Zero-Based	0	0	0	237	17	17	237	17	17
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>979</b>	<b>305</b>	<b>305</b>	<b>979</b>	<b>305</b>	<b>305</b>
FTE	Zero-Based	0.0	0.0	0.0	7.8	3.0	3.0	7.8	3.0	3.0

**Forecast Adjustment Details:**

Year	Adj Group	Labor	NLbr	NSE	Total	FTE	Adj Type	RefID
2017	Other	742	237	0	979	7.8	1-Sided Adj	TPHT20170310192757170

**Explanation:** Labor and non-labor expenses of CS - Meter Reading Support employees consisting of managers and analysts who support route analysis/scheduling and other reporting and analysis. Non-labor also includes the maintenance and licensing costs for the meter reading handheld system. Labor cost is based on 2016 BY average hourly labor rate of \$46.04 x 2080 hrs x 7.8 FTEs. Non-labor cost is based on 2016 BY average non-labor cost per FTE of \$5,726 x 7.8 FTEs. Additionally, the costs for maintenance and licensing costs were added to the non-labor costs.

<b>2017 Total</b>		<b>742</b>	<b>237</b>	<b>0</b>	<b>979</b>	<b>7.8</b>		
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2018	Other	288	17	0	305	3.0	1-Sided Adj	TPHT20170310192814157
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**Explanation:** Labor and non-labor expenses of CS -Meter Reading Support employees which consists of a manager and two analysts who support route analysis/scheduling and other reporting and analysis. Labor cost is based on 2016 BY average hourly labor rate of \$46.04 x 2088 hrs x 3 FTEs. Non-labor cost is based on 2016 BY average non-labor cost per FTE of \$5,726 x 3 FTEs.

<b>2018 Total</b>		<b>288</b>	<b>17</b>	<b>0</b>	<b>305</b>	<b>3.0</b>		
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2019	Other	288	17	0	305	3.0	1-Sided Adj	TPHT20170310192921727
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**Explanation:** Labor and non-labor expenses of CS -Meter Reading Support employees which consists of a manager and two analysts who support route analysis/scheduling and other reporting and analysis. Labor cost is based on 2016 BY average hourly labor rate of \$46.04 x 2088 hrs x 3 FTEs. Non-labor cost is based on 2016 BY average non-labor cost per FTE of \$5,726 x 3 FTEs.

<b>2019 Total</b>		<b>288</b>	<b>17</b>	<b>0</b>	<b>305</b>	<b>3.0</b>		
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Note: Totals may include rounding differences.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: B. Meter Reading  
Category-Sub: 1. Meter Reading  
Workpaper: 2FC009.000 - Meter Reading - Support

**Determination of Adjusted-Recorded (Incurred Costs):**

	2012 (\$000)	2013 (\$000)	2014 (\$000)	2015 (\$000)	2016 (\$000)
<b>Recorded (Nominal \$)*</b>					
Labor	1,290	1,270	1,076	953	865
Non-Labor	455	355	207	322	366
NSE	0	0	0	0	0
<b>Total</b>	<b>1,745</b>	<b>1,624</b>	<b>1,284</b>	<b>1,275</b>	<b>1,231</b>
FTE	15.7	14.7	12.3	9.9	8.9
<b>Adjustments (Nominal \$) **</b>					
Labor	-78	-50	0	0	-31
Non-Labor	-7	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>-85</b>	<b>-51</b>	<b>0</b>	<b>0</b>	<b>-31</b>
FTE	-0.8	-0.5	0.0	0.0	-0.3
<b>Recorded-Adjusted (Nominal \$)</b>					
Labor	1,212	1,220	1,076	953	834
Non-Labor	447	354	207	322	366
NSE	0	0	0	0	0
<b>Total</b>	<b>1,660</b>	<b>1,574</b>	<b>1,284</b>	<b>1,275</b>	<b>1,200</b>
FTE	14.9	14.2	12.3	9.9	8.6
<b>Vacation &amp; Sick (Nominal \$)</b>					
Labor	194	203	176	154	137
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>194</b>	<b>203</b>	<b>176</b>	<b>154</b>	<b>137</b>
FTE	2.5	2.4	2.1	1.7	1.5
<b>Escalation to 2016\$</b>					
Labor	138	103	61	27	0
Non-Labor	13	4	-1	1	0
NSE	0	0	0	0	0
<b>Total</b>	<b>151</b>	<b>107</b>	<b>60</b>	<b>28</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Constant 2016\$)</b>					
Labor	1,544	1,525	1,313	1,134	971
Non-Labor	460	359	207	323	366
NSE	0	0	0	0	0
<b>Total</b>	<b>2,005</b>	<b>1,884</b>	<b>1,520</b>	<b>1,457</b>	<b>1,337</b>
FTE	17.4	16.6	14.4	11.6	10.1

\* 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.

Southern California Gas Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: B. Meter Reading  
 Category-Sub: 1. Meter Reading  
 Workpaper: 2FC009.000 - Meter Reading - Support

**Summary of Adjustments to Recorded:**

In Nominal \$ (000) Incurred Costs					
Years	2012	2013	2014	2015	2016
Labor	-78	-50	0	0	-31
Non-Labor	-7	-0.417	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>-85</b>	<b>-51</b>	<b>0</b>	<b>0</b>	<b>-31</b>
FTE	-0.8	-0.5	0.0	0.0	-0.3

**Detail of Adjustments to Recorded:**

Year	Adj Group	Labor	NLbr	NSE	FTE	Adj Type	RefID
2012	Other	-78	-7	0	-0.8	CCTR Transf To 2200-0331.000	CTRINH20161130211437787
<b>Explanation:</b>		Adjustment due to reorg of Operational Planners to Financial Planning. Transfer labor and non-labor expenses from 2FC009.000 Meter Reading Support to 2AG005.000 in order to align historical costs with the workgroup in which the activity will be forecasted					
<b>2012 Total</b>		<b>-78</b>	<b>-7</b>	<b>0</b>	<b>-0.8</b>		
2013	Other	-50	0	0	-0.5	CCTR Transf To 2200-0331.000	CTRINH20161130211708020
<b>Explanation:</b>		Adjustment due to reorg of Operational Planners to Financial Planning. Transfer labor and non-labor expenses from 2FC009.000 Meter Reading Support to 2AG005.000 in order to align historical costs with the workgroup in which the activity will be forecasted					
<b>2013 Total</b>		<b>-50</b>	<b>0</b>	<b>0</b>	<b>-0.5</b>		
<b>2014 Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>		
<b>2015 Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>		
2016	Aliso	-31	0	0	-0.3	1-Sided Adj	CTRINH20170215105912580
<b>Explanation:</b>		Aliso leak mitigation exclude costs captured in IO					
<b>2016 Total</b>		<b>-31</b>	<b>0</b>	<b>0</b>	<b>-0.3</b>		

*Note: Totals may include rounding differences.*

Southern California Gas Company  
 2019 GRC - APP  
 Shared Services Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli

**Summary of Shared Services Workpapers:**

Description	In 2016 \$ (000) Incurred Costs			
	Adjusted-Recorded	Adjusted-Forecast		
		2016	2017	2018
A. Customer Services Field Staff	1,194	1,514	1,514	1,514
<b>Total</b>	<b>1,194</b>	<b>1,514</b>	<b>1,514</b>	<b>1,514</b>

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Shared Services Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Services Field Staff  
 Cost Center: 2200-0942.000

**Summary for Category: A. Customer Services Field Staff**

	In 2016\$ (000) Incurred Costs			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	1,050	1,384	1,384	1,384
Non-Labor	144	130	130	130
NSE	0	0	0	0
<b>Total</b>	<b>1,194</b>	<b>1,514</b>	<b>1,514</b>	<b>1,514</b>
FTE	10.0	14.0	14.0	14.0

**Cost Centers belonging to this Category:**

**2200-0942.000 CS FIELD STAFF MANAGER**

Labor	1,050	1,384	1,384	1,384
Non-Labor	144	130	130	130
NSE	0	0	0	0
<b>Total</b>	<b>1,194</b>	<b>1,514</b>	<b>1,514</b>	<b>1,514</b>
FTE	10.0	14.0	14.0	14.0

*Note: Totals may include rounding differences.*

**Beginning of Workpaper**  
**2200-0942.000 - CS FIELD STAFF MANAGER**



Southern California Gas Company  
2019 GRC - APP  
Shared Services Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Services Field Staff  
 Category-Sub: 1. Customer Services Field Staff  
 Cost Center: 2200-0942.000 - CS FIELD STAFF MANAGER

**Activity Description:**

CSF Staff is comprised primarily of management personnel who develop and implement processes, policies and procedures, including Gas Standards and Information Bulletins; track, analyze and report operational data; and manage special projects for CSF operations. The CSF Staff cost category also includes an administrative assistant who provides clerical support to the CSF Staff organization. Although the CSF Staff is primarily centralized in SoCalGas' Los Angeles headquarters building, this organization supports both SoCalGas' and SDG&E's CSF organizations.

**Forecast Explanations:**

**Labor - Zero-Based**

A five-year historical average was used to avoid the potential for artificially inflating or deflating results based on short-term anomalies. The shared services allocation percentage is based on an assessment of the specific activities performed by each individual CSF Staff employee. Some positions assigned to this cost category perform work solely for SoCalGas and their costs are allocated accordingly. As a result of assessing the work performed by positions in this cost category, 5.56% of CSF Staff costs are allocated to SDG&E in 2019.

**Non-Labor - Zero-Based**

Non-labor costs include cell phone expenses, office supplies, travel and other miscellaneous expenses. A five-year historical average was used to avoid the potential for artificially inflating or deflating results based on short-term anomalies.

**NSE - Zero-Based**

NSE is not applicable to this workgroup.

**Summary of Results:**

		In 2016\$ (000) Incurred Costs								
		Adjusted-Recorded					Adjusted-Forecast			
Years		2012	2013	2014	2015	2016	2017	2018	2019	
Labor		1,567	1,520	1,347	1,225	1,050	1,384	1,384	1,384	
Non-Labor		74	115	165	137	144	130	130	130	
NSE		0	0	0	0	0	0	0	0	
<b>Total</b>		<b>1,641</b>	<b>1,634</b>	<b>1,512</b>	<b>1,362</b>	<b>1,194</b>	<b>1,514</b>	<b>1,514</b>	<b>1,514</b>	
FTE		16.5	15.9	13.6	12.0	9.9	14.0	14.0	14.0	

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Shared Services Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Services Field Staff  
 Category-Sub: 1. Customer Services Field Staff  
 Cost Center: 2200-0942.000 - CS FIELD STAFF MANAGER

**Cost Center Allocations (Incurred Costs):**

	2016 Adjusted-Recorded					2017 Adjusted-Forecast				
	Labor	Non-Labor	NSE	Total	FTE	Labor	Non-Labor	NSE	Total	FTE
<b>Directly Retained</b>	212	17	0	229	2.3	1,384	130	0	1,514	14.0
<b>Directly Allocated</b>	0	0	0	0	0.0	0	0	0	0	0.0
<b>Subj. To % Alloc.</b>	838	127	0	965	7.7	0	0	0	0	0.0
<b>Total Incurred</b>	<b>1,050</b>	<b>144</b>	<b>0</b>	<b>1,194</b>	<b>10.0</b>	<b>1,384</b>	<b>130</b>	<b>0</b>	<b>1,514</b>	<b>14.0</b>
<b>% Allocation</b>										
Retained	94.44%	94.44%				94.44%	94.44%			
SEU	5.56%	5.56%				5.56%	5.56%			
CORP	0.00%	0.00%				0.00%	0.00%			
Unreg	0.00%	0.00%				0.00%	0.00%			

	2018 Adjusted-Forecast					2019 Adjusted-Forecast				
	Labor	Non-Labor	NSE	Total	FTE	Labor	Non-Labor	NSE	Total	FTE
<b>Directly Retained</b>	1,384	130	0	1,514	14.0	1,384	130	0	1,514	14.0
<b>Directly Allocated</b>	0	0	0	0	0.0	0	0	0	0	0.0
<b>Subj. To % Alloc.</b>	0	0	0	0	0.0	0	0	0	0	0.0
<b>Total Incurred</b>	<b>1,384</b>	<b>130</b>	<b>0</b>	<b>1,514</b>	<b>14.0</b>	<b>1,384</b>	<b>130</b>	<b>0</b>	<b>1,514</b>	<b>14.0</b>
<b>% Allocation</b>										
Retained	94.44%	94.44%				94.44%	94.44%			
SEU	5.56%	5.56%				5.56%	5.56%			
CORP	0.00%	0.00%				0.00%	0.00%			
Unreg	0.00%	0.00%				0.00%	0.00%			

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Shared Services Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Services Field Staff  
Category-Sub: 1. Customer Services Field Staff  
Cost Center: 2200-0942.000 - CS FIELD STAFF MANAGER

**Cost Center Allocation Percentage Drivers/Methodology:**

**Cost Center Allocation Percentage for 2016**

The shared services allocation percentage is based on the cost center managers' or team leads' assessment of the activities and contributions of each individual employee, with input from each employee. It was determined that drilling down to the individual employee level was the most accurate way to determine how much of each employee's time is spent performing shared services.

**Cost Center Allocation Percentage for 2017**

The shared services allocation percentage is based on the cost center managers' or team leads' assessment of the activities and contributions of each individual employee, with input from each employee. It was determined that drilling down to the individual employee level was the most accurate way to determine how much of each employee's time is spent performing shared services.

**Cost Center Allocation Percentage for 2018**

The shared services allocation percentage is based on the cost center managers' or team leads' assessment of the activities and contributions of each individual employee, with input from each employee. It was determined that drilling down to the individual employee level was the most accurate way to determine how much of each employee's time is spent performing shared services.

**Cost Center Allocation Percentage for 2019**

The shared services allocation percentage is based on the cost center managers' or team leads' assessment of the activities and contributions of each individual employee, with input from each employee. It was determined that drilling down to the individual employee level was the most accurate way to determine how much of each employee's time is spent performing shared services.

*Note: Totals may include rounding differences.*

Southern California Gas Company  
2019 GRC - APP  
Shared Services Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Services Field Staff  
 Category-Sub: 1. Customer Services Field Staff  
 Cost Center: 2200-0942.000 - CS FIELD STAFF MANAGER

**Summary of Adjustments to Forecast:**

In 2016 \$(000) Incurred Costs										
Forecast Method		Base Forecast			Forecast Adjustments			Adjusted-Forecast		
Years		2017	2018	2019	2017	2018	2019	2017	2018	2019
Labor	Zero-Based	0	0	0	1,384	1,384	1,384	1,384	1,384	1,384
Non-Labor	Zero-Based	0	0	0	130	130	130	130	130	130
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>1,514</b>	<b>1,514</b>	<b>1,514</b>	<b>1,514</b>	<b>1,514</b>	<b>1,514</b>
FTE	Zero-Based	0.0	0.0	0.0	14.0	14.0	14.0	14.0	14.0	14.0

**Forecast Adjustment Details:**

Year	Adj Group	Labor	NLbr	NSE	Total	FTE	Adj Type	RefID	
2017	RAMP Base	846	115	0	961	7.9	1-Sided Adj	CTRINH20170310191934447	
<b>Explanation:</b>		RAMP SCG-2 Employee Contractor Customer & Public Safety: Policy, Procedures, Standards and ESCMP - Development and management of formal procedures, processes and standards. Labor and non-labor expenses for CSF operations support related to CSF policies and procedures. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities.							
2017	Other	538	15	0	553	6.1	1-Sided Adj	CTRINH20170310192127843	
<b>Explanation:</b>		Labor and non-labor expenses for CSF operations support related to CSF analysis and reporting. This is based on a 5 year average.							
<b>2017 Total</b>		<b>1,384</b>	<b>130</b>	<b>0</b>	<b>1,514</b>	<b>14.0</b>			
2018	RAMP Base	846	115	0	961	7.9	1-Sided Adj	CTRINH20170310192248157	
<b>Explanation:</b>		RAMP SCG-2 Employee Contractor Customer & Public Safety: Policy, Procedures, Standards and ESCMP - Development and management of formal procedures, processes and standards. Labor and non-labor expenses for CSF operations support related to CSF policies and procedures. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities.							
2018	Other	538	15	0	553	6.1	1-Sided Adj	CTRINH20170310192339457	
<b>Explanation:</b>		Labor and non-labor expenses for CSF operations support related to CSF analysis and reporting. This is based on a 5 year average.							
<b>2018 Total</b>		<b>1,384</b>	<b>130</b>	<b>0</b>	<b>1,514</b>	<b>14.0</b>			

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

Southern California Gas Company  
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Shared Services Workpapers

Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Services Field Staff  
 Category-Sub: 1. Customer Services Field Staff  
 Cost Center: 2200-0942.000 - CS FIELD STAFF MANAGER

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>	<u>Adj_Type</u>	<u>RefID</u>	
2019	RAMP Base	846	115	0	961	7.9	1-Sided Adj	CTRINH20170310192413527	
<b>Explanation:</b>		RAMP SCG-2 Employee Contractor Customer & Public Safety: Policy, Procedures, Standards and ESCMP - Development and management of formal procedures, processes and standards. Labor and non-labor expenses for CSF operations support related to CSF policies and procedures. Refer to testimony of SoCalGas witness G. Marelli, Ex. SCG-18, Section II, for more information on RAMP-related activities.							
2019	Other	538	15	0	553	6.1	1-Sided Adj	CTRINH20170310192502137	
<b>Explanation:</b>		Labor and non-labor expenses for CSF operations support related to CSF analysis and reporting. This is based on a 5 year average.							
<b>2019 Total</b>		<b>1,384</b>	<b>130</b>	<b>0</b>	<b>1,514</b>	<b>14.0</b>			

Note: Totals may include rounding differences.

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

Southern California Gas Company  
2019 GRC - APP  
Shared Services Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Services Field Staff  
Category-Sub: 1. Customer Services Field Staff  
Cost Center: 2200-0942.000 - CS FIELD STAFF MANAGER

**Determination of Adjusted-Recorded (Incurred Costs):**

	2012 (\$000)	2013 (\$000)	2014 (\$000)	2015 (\$000)	2016 (\$000)
<b>Recorded (Nominal \$)*</b>					
Labor	1,274	1,253	1,133	1,041	1,100
Non-Labor	70	110	162	136	157
NSE	0	0	0	0	0
<b>Total</b>	<b>1,344</b>	<b>1,363</b>	<b>1,294</b>	<b>1,177</b>	<b>1,258</b>
FTE	14.2	13.6	11.6	10.3	10.8
<b>Adjustments (Nominal \$) **</b>					
Labor	0	0	0	0	-198
Non-Labor	0	0	0	0	-14
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-212</b>
FTE	0.0	0.0	0.0	0.0	-2.3
<b>Recorded-Adjusted (Nominal \$)</b>					
Labor	1,274	1,253	1,133	1,041	902
Non-Labor	70	110	162	136	144
NSE	0	0	0	0	0
<b>Total</b>	<b>1,344</b>	<b>1,363</b>	<b>1,294</b>	<b>1,177</b>	<b>1,045</b>
FTE	14.2	13.6	11.6	10.3	8.5
<b>Vacation &amp; Sick (Nominal \$)</b>					
Labor	204	208	185	168	149
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>204</b>	<b>208</b>	<b>185</b>	<b>168</b>	<b>149</b>
FTE	2.3	2.3	2.0	1.7	1.4
<b>Escalation to 2016\$</b>					
Labor	89	59	29	15	0
Non-Labor	4	4	4	2	0
NSE	0	0	0	0	0
<b>Total</b>	<b>93</b>	<b>63</b>	<b>33</b>	<b>17</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Constant 2016\$)</b>					
Labor	1,567	1,520	1,347	1,225	1,050
Non-Labor	74	115	165	137	144
NSE	0	0	0	0	0
<b>Total</b>	<b>1,641</b>	<b>1,634</b>	<b>1,512</b>	<b>1,362</b>	<b>1,194</b>
FTE	16.5	15.9	13.6	12.0	9.9

\* 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.

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Area: CS - FIELD & METER READING  
 Witness: Gwen R. Marelli  
 Category: A. Customer Services Field Staff  
 Category-Sub: 1. Customer Services Field Staff  
 Cost Center: 2200-0942.000 - CS FIELD STAFF MANAGER

**Summary of Adjustments to Recorded:**

In Nominal \$ (000) Incurred Costs					
Years	2012	2013	2014	2015	2016
Labor	0	0	0	0	-198
Non-Labor	0	0	0	0	-14
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-212</b>
FTE	0.0	0.0	0.0	0.0	-2.3

**Detail of Adjustments to Recorded:**

Year	Adj Group	Labor	NLbr	NSE	FTE	Adj Type	RefID
<b>2012 Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>		
<b>2013 Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>		
<b>2014 Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>		
<b>2015 Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>		
2016	Other	-16	-1	0	-0.3	CCTR Transf To 2200-2442.000	CTRINH20170216104324127
<b>Explanation:</b>		Transfer labor and non-labor expense from USS 2200-0942 CS - Field Staff Mgr to 2HR003 HR PMOS in order to align historical costs with the workgroup in which the activity will be forecasted.					
2016	Aliso	-182	-13	0	-2.0	1-Sided Adj	CTRINH20170509135652967
<b>Explanation:</b>		Aliso leak mitigation exclude costs captured in IO					
<b>2016 Total</b>		<b>-198</b>	<b>-14</b>	<b>0</b>	<b>-2.3</b>		

*Note: Totals may include rounding differences.*

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Shared Services Workpapers

Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli  
Category: A. Customer Services Field Staff  
Category-Sub: 1. Customer Services Field Staff  
Cost Center: 2200-0942.000 - CS FIELD STAFF MANAGER

**RAMP Item # 1**

Ref ID: CTRINH20170310191934447

RAMP Chapter: SCG-2

Program Name: Development of formal procedures, processes and standards

Program Description: Development of formal procedures, processes and standards

**Risk/Mitigation:**

Risk: Employee, Contractor, Customer and Public Safety

Mitigation: Policy, Procedures, Standards, and ESCMP

**Forecast CPUC Cost Estimates (\$000)**

	<u>2017</u>	<u>2018</u>	<u>2019</u>
Low	1,174	1,174	1,174
High	1,435	1,435	1,435

Funding Source: CPUC-GRC

Forecast Method: Other

Work Type: Non-Mandated

Work Type Citation:

**Historical Embedded Cost Estimates (\$000)**

Embedded Costs: 961

Explanation: Policy Procedures Standards and ESCMP - Development and management of formal procedures, processes and standards. Labor and non-labor expenses for CSF operations support related to CSF policies and procedures



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Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli

**Appendix A: List of Non-Shared Cost Centers**

<b>Cost Center</b>	<b>Sub</b>	<b>Description</b>
2200-0165	000	CCC PLANNING & ANALYSIS (SCG)
2200-0343	000	CS TECHNOLOGY - PACER
2200-0357	000	METER READING OPERATIONS STAFF
2200-0358	000	MTR READING CENTRAL AREA MGR
2200-0359	000	METER READING RIVERSIDE - BEAUMONT
2200-0361	000	MTR READING RIM-FOREST
2200-0362	000	METER READING FONTANA
2200-0363	000	METER READING CORONA
2200-0364	000	METER READING CHINO
2200-0365	000	METER READING MURRIETA
2200-0366	000	METER READING RAMONA
2200-0367	000	METER READING EL CENTRO & BLYTHE
2200-0368	000	MTR READ PALM DESERT & YUCCA
2200-0369	000	MTR READ SBRNDO-WRTWD-VICTORVILLE
2200-0370	000	METER READING ALISO VIEJO
2200-0371	000	METER READING SANTA ANA
2200-0372	000	METER READING DOWNEY
2200-0373	000	METER READING WHITTIER
2200-0374	000	METER READING ANAHEIM
2200-0375	000	METER READING LA JOLLA
2200-0376	000	METER READING GARDEN GROVE
2200-0377	000	METER READING INDUSTRY
2200-0378	000	METER READING AZUSA
2200-0379	000	METER READING OPER SUPPORT CENTRAL
2200-0380	000	MTR READING NORTH MGR
2200-0381	000	METER READING VALENCIA
2200-0382	000	METER READING BAKERSFIELD & PORTERVILLE
2200-0383	000	METER READING LANCASTER & MOJAVE
2200-0384	000	METER READING OXNARD
2200-0385	000	METER READING CANOGA
2200-0386	000	METER READING SIMI
2200-0387	000	METER READING VISALIA & HANDFORD
2200-0388	000	METER READING YUKON
2200-0389	000	METER READING TEMPLETON & SLO
2200-0390	000	METER READING SANTA MARIA & LOMPOC
2200-0391	000	METER READING SANTA BARBARA
2200-0392	000	METER READING SATICOY
2200-0393	000	METER READING HOLLYWOOD
2200-0394	000	METER READING 182ND STREET
2200-0395	000	METER READING SANTA MONICA
2200-0396	000	METER READING COMPTON
2200-0397	000	METER READING PASADENA
2200-0398	000	METER READING OPERATIONS MGT
2200-0399	000	METER READING GLENDALE
2200-0400	000	METER READING OPER SUPPORT NORTH

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Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli

**Appendix A: List of Non-Shared Cost Centers**

<b>Cost Center</b>	<b>Sub</b>	<b>Description</b>
2200-0432	000	SOUTH INLAND REGION DIRECTOR
2200-0440	000	CSF DISPATCH INLAND
2200-0442	000	CSF SE FIELD OPERATIONS MGR
2200-0445	000	CSF SE SAN BERNARDINO
2200-0448	000	CSF SE AREA MGR INLAND EAST
2200-0449	000	CSF SE CHINO
2200-0451	000	CSF DOM SAN BERNARDINO
2200-0452	000	CSF SE FONTANA
2200-0454	000	CSF DOM PALM DESERT
2200-0455	000	CSF SE PALM DESERT
2200-0457	000	CSF SE AREA MGR INLAND SOUTH
2200-0458	000	CSF SE RIVRSIDE
2200-0462	000	CSF SE RAMONA
2200-0463	000	CSF SE AREA MGR DESERT VALLEY
2200-0464	000	CSF SE EL CENTRO
2200-0467	000	CSF SE RIM FOREST
2200-0470	000	CSF SE ALHAMBRA
2200-0473	000	CSF SE AZUSA
2200-0475	000	CSF SE CORONA
2200-0476	000	CSF DOM ALHAMBRA/PASADENA
2200-0477	000	CSF SE PASADENA
2200-0479	000	CSF NORTHWEST REGION DIRECTOR
2200-0493	000	CSF NW VISALIA
2200-0495	000	CSF NW AREA MGR SAN JOAQUIN
2200-0497	000	CSF NW BAKERSFIELD
2200-0498	000	CSF DISPATCH CHATSWORTH
2200-0502	000	CSF NW SAN LUIS OBISPO/TEMPLETON
2200-0503	000	CSF NW AREA MGR NORTH COAST
2200-0505	000	CSF NW SANTA MARIA
2200-0506	000	CSF DISPATCH COMPTON
2200-0507	000	CSF DISPATCH ANAHEIM
2200-0508	000	CSF NW AREA MGR CENTRAL COAST
2200-0509	000	CSF NW VENTURA
2200-0513	000	CSF NW SANTA BARBARA
2200-0514	000	CSF NORTHWEST REGION FIELD OPERATIONS MGR
2200-0515	000	CSF NW AREA MGR SAN FERNANDO VALLEY
2200-0516	000	CSF NW CANOGA
2200-0519	000	CSF NW SIMI VALLEY
2200-0522	000	CSF NW SATICOY
2200-0525	000	CSF NW BRANFORD
2200-0529	000	CSF NW GLENDALE
2200-0530	000	CSF NW AREA MGR NORTH VALLEY
2200-0531	000	CSF NW VALENCIA
2200-0534	000	CSF NW LANCASTER
2200-0536	000	CSF SOUTH EAST REGION DIRECTOR

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

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Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli

**Appendix A: List of Non-Shared Cost Centers**

<b>Cost Center</b>	<b>Sub</b>	<b>Description</b>
2200-0546	000	CSF SE DOWNEY
2200-0548	000	CSF SE WHITTIER DOM
2200-0550	000	CSF SE WHITTIER
2200-0551	000	CSF SE AREA MGR ORANGE NORTH
2200-0552	000	CSF SE ANAHEIM
2200-0554	000	CSF DOM ANAHEIM/LA JOLLA
2200-0556	000	CSF SE LA JOLLA
2200-0557	000	CS SE RGN SPEC PROJ 6 (FKA ARSO)
2200-0560	000	CSF SE ALISO VIEJO
2200-0561	000	CSF AREA MGR ORANGE COUNTY COAST
2200-0563	000	CSF SE GARDEN GROVE
2200-0564	000	CS SE RGN SPEC PROJ 1 (FKA SNA DOM)
2200-0566	000	CSF SE SANTA ANA
2200-0568	000	CSF SE AREA MGR SAN GABRIEL VALLEY
2200-0570	000	CSF SE INDUSTRY
2200-0573	000	CSF AREA MGR MID CITY LA
2200-0574	000	CSF NW BELVEDERE
2200-0578	000	CSF NW JUANITA
2200-0579	000	CSF DOM EL CENTRO
2200-0582	000	CSF NW HUNTINGTON PARK
2200-0584	000	CSF NW AREA MGR HARBOR CORRIDOR
2200-0585	000	CSF NW COMPTON
2200-0587	000	CSF AREA MGR SOUTH COAST
2200-0589	000	CSF NW CRENSHAW
2200-0591	000	CSF NW SANTA MONICA
2200-0594	000	CSF NW REDONDO BEACH
2200-0596	000	CSF DOM REDONDO/SAN PEDRO
2200-0597	000	CSF NW SAN PEDRO
2200-0599	000	CSF DOM JUANITA/HOLLYWOOD
2200-0600	000	CSF NW HOLLYWOOD
2200-0603	000	CS NW RGN SPEC PROJ 6 (FKA TSM)
2200-1146	000	METER READING TRAINING OPERATIONS
2200-1544	000	CS SE RGN SPEC PROJ 5 (FKA OPQUAL)
2200-2024	000	MTR READING EAST MGR
2200-2025	000	METER READING PLANNING & ANALYSIS
2200-2029	000	MGR FIELD COLLECTIONS
2200-2081	000	CSF SE MURRIETA
2200-2082	000	CSF SE BEAUMONT
2200-2105	000	METER READING MANAGER
2200-2111	000	CSF STAFF DIRECTOR
2200-2113	000	CSF NW YUKON
2200-2114	000	CSF DOM YUKON
2200-2115	000	PACIFIC RGN ENV
2200-2116	000	CS SE RGN SPEC PROJ 7 (FKA OC TSM)
2200-2152	000	METER READING SYSTEMS

SCG/CS - FIELD & METER READING/Exh No:SCG-18-WP/Witness: G. Marelli

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Area: CS - FIELD & METER READING  
Witness: Gwen R. Marelli

**Appendix A: List of Non-Shared Cost Centers**

<b>Cost Center</b>	<b>Sub</b>	<b>Description</b>
2200-2153	000	METER READING OPERATIONS MGR
2200-2183	000	CUSTOMER SERVICE-MASS MARKETS VP - NSS
2200-2206	000	QUALITY ASSURANCE
2200-2217	000	CSF SE AREA MGR MOUNTAIN PASS
2200-2223	000	CSF DOM FONTANA
2200-2224	000	CSF DOM RIM FOREST
2200-2225	000	CSF DOM BEAUMONT
2200-2226	000	CSF DOM CORONA
2200-2227	000	CSF DOM RIVERSIDE
2200-2228	000	CSF DOM MURRIETA
2200-2230	000	CSF DOM YUCCA VALLEY
2200-2231	000	CSF SE YUCCA
2200-2237	000	METER READING MONTEREY PARK
2200-2255	000	CS TECHNOLOGY - ART
2200-2364	000	MTR RDG OCOAST MGR
2200-2404	000	METER READING ROUTE ANALYSIS
2200-2539	000	CSF CURB METER PROJECT
2200-2543	000	CS CONTINUOUS IMPROVEMENT
2200-2567	000	CUST SVC MSA INSPECTIONS
2200-2571	000	MSA INSPECTION PROGRAM
2200-2583	000	CSF FIELD INSTRUCTOR
2200-2592	000	CSF ADV METER PROJ - CURB REPLACEMENT