Application of SOUTHERN CALIFORNIA GAS)
COMPANY for authority to update its gas revenue)
requirement and base rates)
effective January 1, 2016 (U 904-G))

Application No. 14-11-___
Exhibit No.: (SCG-04-CWP)

CAPITAL WORKPAPERS TO
PREPARED DIRECT TESTIMONY
OF FRANK B. AYALA
ON BEHALF OF SOUTHERN CALIFORNIA GAS COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

NOVEMBER 2014

2016 General Rate Case - APP

INDEX OF WORKPAPERS

Exhibit SCG-04-CWP - GAS DISTRIBUTION

2016 General Rate Case - APP

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Exhibit SCG-04-CWP - GAS DISTRIBUTION

Overall Summary For Exhibit No. SCG-04-CWP

Area: GAS DISTRIBUTION

Witness: Frank B. Ayala

	In 2013 $ (000) Adjusted-Forecast		
	2014	2015	2016
B. New Business	24,190	28,636	32,493
C. Pressure Betterments	27,561	23,445	16,009
D. Supply Line Replacements	4,267	4,267	4,267
E. Main Replacements	47,233	47,233	47,233
F. Service Replacements	22,217	15,899	15,109
G. Main & Service Abandonments	3,582	3,582	3,582
H. Regulator Stations	5,554	5,554	5,554
I. Cathodic Protection Capital	8,048	9,169	9,169
J. Pipeline Relocations - Freeway	10,301	10,301	10,301
K. Pipeline Relocations - Franchise	18,472	20,128	21,783
L. Other Distribution Capital Projects & Meter Guards	3,867	3,867	3,867
M. Measurement & Regulation Devices	37,231	38,190	40,063
N. Capital Tools	8,169	8,129	10,964
O. Field Capital Support	53,734	53,448	53,222
Total	**274,426**	**271,848**	**273,616**

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Category: B. New Business
Workpaper: VARIOUS

Summary for Category: B. New Business

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
Labor	7,794	10,438	12,000	13,355
Non-Labor	17,665	20,162	23,046	25,548
NSE	-5,612	-6,410	-6,410	-6,410
Total	**19,847**	**24,190**	**28,636**	**32,493**
FTE	99.9	135.4	155.6	173.2
001510 New Business Construction				
Labor	7,794	10,438	12,000	13,355
Non-Labor	16,939	19,275	22,159	24,661
NSE	0	0	0	0
Total	**24,733**	**29,713**	**34,159**	**38,016**
FTE	99.9	135.4	155.6	173.2
A01510 New Business Trench Reimbursement				
Labor	0	0	0	0
Non-Labor	726	887	887	887
NSE	0	0	0	0
Total	**726**	**887**	**887**	**887**
FTE	0.0	0.0	0.0	0.0
B01510 New Business Forfeitures				
Labor	0	0	0	0
Non-Labor	0	0	0	0
NSE	-5,612	-6,410	-6,410	-6,410
Total	**-5,612**	**-6,410**	**-6,410**	**-6,410**
FTE	0.0	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
001510 - New Business Construction

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 1. New Business Construction
Workpaper Group: 001510 - New Business Construction

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	8,544	6,812	5,854	6,414	7,794	10,438	12,000	13,355
Non-Labor	Zero-Based	8,740	6,370	10,357	9,758	16,939	19,275	22,159	24,661
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**17,284**	**13,182**	**16,211**	**16,172**	**24,734**	**29,713**	**34,159**	**38,016**
FTE	Zero-Based	102.0	79.8	73.8	86.5	99.9	135.4	155.6	173.2

Business Purpose:

Budget Codes: 151-161, 165, 166.

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

Physical Description:

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

Project Justification:

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

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00151.0
Category:	B. New Business
Category-Sub:	1. New Business Construction
Workpaper Group:	001510 - New Business Construction

Forecast Methodology:

Labor - Zero-Based

The New Business expenditures for each forecast year were based on the projected number of new meter sets multiplied by the cost per meter set, which yielded the total projected cost. This total cost was then multiplied by the historical labor ratio to yield the corresponding forecasted labor cost. This zero based approach was deemed the most appropriate forecasting methodology for the labor component as it is based on the projected meter set growth. The projected number of new meter sets was obtained from Witness Rose-Marie Payan. The cost per meter set is based on the historical three-year weighted average (2011 - 2013). The labor ratio used in the calculation also represented an historical three-year weighted average (2011 - 2013).

See supplemental workpaper SCG-FBA-CAP-SUP-001 for calculation details.

Non-Labor - Zero-Based

Similarly, the forecast for the non-labor component was determined by multiplying the projected number of new meter sets with the cost per meter set. This total cost was then multiplied by the historical non-labor ratio to yield the corresponding forecasted non-labor cost. This zero based approach was deemed the most appropriate forecasting methodology for the non-labor component because it accounts for all the activities required to construct new main extensions and associated service laterals. These activities include the use of contractor services, third-party services, municipal permit fees, and the proportionate use of plastic and steel materials. The projected number of new meter sets was obtained from Witness Rose-Marie Payan. The cost per meter set is based on the historical three-year weighted average (2011 - 2013). The non-labor ratio used in the calculation is also based on an historical three-year weighted average (2011 - 2013).

See supplemental workpaper SCG-FBA-CAP-SUP-001 for calculation details.

NSE - Zero-Based

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 1. New Business Construction
Workpaper Group: 001510 - New Business Construction

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	Zero-Based	10,438	12,000	13,355	0	0	0	10,438	12,000	13,355
Non-Labor	Zero-Based	19,275	22,159	24,661	0	0	0	19,275	22,159	24,661
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**29,713**	**34,159**	**38,016**	**0**	**0**	**0**	**29,713**	**34,159**	**38,016**
FTE	Zero-Based	135.4	155.6	173.2	0.0	0.0	0.0	135.4	155.6	173.2

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 1. New Business Construction
Workpaper Group: 001510 - New Business Construction

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	5,864	4,915	4,648	5,514	6,640
Non-Labor	6,588	5,243	9,437	9,430	13,898
NSE	0	0	0	0	0
Total	**12,474**	**10,158**	**14,086**	**14,944**	**20,538**
FTE	85.5	67.5	62.8	73.8	85.0
Adjustments (Nominal $) **					
Labor	28	9	18	32	43
Non-Labor	528	166	189	359	3,042
NSE	0	0	0	0	0
Total	**556**	**176**	**207**	**392**	**3,085**
FTE	0.3	0.1	0.2	0.4	0.5
Recorded-Adjusted (Nominal $)					
Labor	5,892	4,924	4,667	5,547	6,683
Non-Labor	7,116	5,410	9,627	9,789	16,939
NSE	22	0	0	0	0
Total	**13,030**	**10,334**	**14,293**	**15,336**	**23,623**
FTE	85.8	67.6	63.0	74.2	85.5
Vacation & Sick (Nominal $)					
Labor	1,065	861	775	888	1,111
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**1,065**	**861**	**775**	**888**	**1,111**
FTE	16.2	12.2	10.8	12.3	14.4
Escalation to 2013$					
Labor	1,588	1,027	413	-21	0
Non-Labor	1,624	961	730	-31	0
NSE	0	0	0	0	0
Total	**3,211**	**1,988**	**1,143**	**-52**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	8,544	6,812	5,854	6,414	7,794
Non-Labor	8,740	6,370	10,357	9,758	16,939
NSE	22	0	0	0	0
Total	**17,306**	**13,182**	**16,211**	**16,172**	**24,734**
FTE	102.0	79.8	73.8	86.5	99.9

* 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.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 1. New Business Construction
Workpaper Group: 001510 - New Business Construction

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	28	9	18	32	43
Non-Labor	528	166	189	359	3,042
NSE	0	0	0	0	0
Total	**556**	**176**	**207**	**392**	**3,085**
FTE	0.3	0.1	0.2	0.4	0.5

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 1. New Business Construction
Workpaper Group: 001510 - New Business Construction

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009	28	528	0	556	0.3	TP1RMC2014021812294
Adjustment to transfer-in amount to this workgroup from workgroup A01510 (Trench Reimbursements) due to incorrect system mapping.						
2009 Total	28	528	0	556	0.3	
2010	9	166	0	176	0.1	TP1RMC2014021812304
Adjustment to transfer-in amount to this workgroup from workgroup A01510 (Trench Reimbursements) due to incorrect system mapping.						
2010 Total	9	166	0	176	0.1	
2011	18	189	0	207	0.2	TP1RMC2014021812312
Adjustment to transfer-in amount to this workgroup from workgroup A01510 (Trench Reimbursements) due to incorrect system mapping.						
2011 Total	18	189	0	207	0.2	
2012	32	359	0	392	0.4	TP1RMC2014021812320
Adjustment to transfer-in amount to this workgroup from workgroup A01510 (Trench Reimbursements) due to incorrect system mapping.						
2012 Total	32	359	0	392	0.4	
2013	43	3,042	0	3,085	0.5	TP1RMC2014021812323
Adjustment to transfer-in amount to this workgroup from workgroup A01510 (Trench Reimbursements) due to incorrect system mapping.						
2013 Total	43	3,042	0	3,085	0.5	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 001510

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 1. New Business Construction
Workpaper Group: 001510 - New Business Construction
Workpaper Detail: 001510.001 - New Business Construction

In-Service Date: Not Applicable

Description:

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

See supplemental workpaper SCG-FBA-CAP-SUP-001 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	10,438	12,000	13,355
Non-Labor	19,275	22,159	24,661
NSE	0	0	0
Total	**29,713**	**34,159**	**38,016**
FTE	135.4	155.6	173.2

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 001510

SCG-FBA-CAP-SUP-001
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper Calculations for the Zero Based New Business Construction Forecast
New Business Construction Workpaper

Assumptions:

[A] & [I] Refer to the prepared direct workpapers of Witness Rose-Marie Payan, Exhibit SCG-30-WP, for the new meter set forecast methodology.

Amounts are shown in 2013 dollars and include vacation and sick.

3-Year 2011-2013 Historical Data

	[A] Historical New Meter Set Installations	[B] Adjusted Recorded Historical Total	[C] Adjusted Recorded Historical Labor	[D] Adjusted Recorded Historical Non-Labor	[E] Historical FTEs	[F] ([C]/[E]) Historical 3-Yr Average Labor / FTE	[G] ([B]/[A]) Historical 3-Yr Average Cost Per Meter Set
2011	18,764	$ 16,211,247	$ 5,854,477	$ 10,356,770	73.8		
2012	21,898	$ 16,171,954	$ 6,414,176	$ 9,757,778	86.5		
2013	26,787	$ 24,733,599	$ 7,794,136	$ 16,939,463	99.9		
3-Yr Total	**67,449**	**$ 57,116,800**	**$ 20,062,789**	**$ 37,054,011**	**260.2**	**$ 77,105.26**	**$ 846.81**

	[H] ([C]/[B])
3-Year Historical Average Labor Ratio:	**35%**

Forecast Calculations

	[I] Projected Meter Set Installations	[J] ([I]x[G]) Total Forecast	[K] ([J]x[H]) Labor Forecast	[L] ([J]-[K]) Non-Labor Forecast	[M] ([K]/[F]) Forecasted FTEs
2014	35,089	$ 29,713,879	$ 10,438,486	$ 19,275,393	135.4
2015	40,339	$ 34,159,655	$ 12,000,287	$ 22,159,368	155.6
2016	44,894	$ 38,016,896	$ 13,355,336	$ 24,661,560	173.2

Beginning of Workpaper Group
A01510 - New Business Trench Reimbursement

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 2. New Business Trench Reimbursements
Workpaper Group: A01510 - New Business Trench Reimbursement

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	5-YR Average	0	0	0	0	0	0	0	0
Non-Labor	5-YR Average	1,491	859	720	637	726	887	887	887
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**1,491**	**859**	**720**	**637**	**726**	**887**	**887**	**887**
FTE	5-YR Average	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

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

Physical Description:

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

Project Justification:

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

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00151.0
Category:	B. New Business
Category-Sub:	2. New Business Trench Reimbursements
Workpaper Group:	A01510 - New Business Trench Reimbursement

Forecast Methodology:

Labor - 5-YR Average

N/A

Non-Labor - 5-YR Average

The estimate of expenditures in this category consists of reimbursement costs based on the five-year historical average (2009-2013). This average covers variations in spending levels from year to year.

NSE - 5-YR Average

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 2. New Business Trench Reimbursements
Workpaper Group: A01510 - New Business Trench Reimbursement

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	5-YR Average	0	0	0	0	0	0	0	0	0
Non-Labor	5-YR Average	886	886	886	0	0	0	886	886	886
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**886**	**886**	**886**	**0**	**0**	**0**	**886**	**886**	**886**
FTE	5-YR Average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 2. New Business Trench Reimbursements
Workpaper Group: A01510 - New Business Trench Reimbursement

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	28	9	18	32	43
Non-Labor	1,742	896	859	999	3,768
NSE	0	0	0	0	0
Total	**1,770**	**905**	**877**	**1,031**	**3,811**
FTE	0.4	0.1	0.2	0.4	0.5
Adjustments (Nominal $) **					
Labor	-28	-9	-18	-32	-43
Non-Labor	-528	-166	-189	-359	-3,042
NSE	0	0	0	0	0
Total	**-556**	**-176**	**-207**	**-392**	**-3,085**
FTE	-0.3	-0.1	-0.2	-0.4	-0.5
Recorded-Adjusted (Nominal $)					
Labor	0	0	0	0	0
Non-Labor	1,214	729	669	639	726
NSE	0	0	0	0	0
Total	**1,214**	**729**	**669**	**639**	**726**
FTE	0.1	0.0	0.0	0.0	0.0
Vacation & Sick (Nominal $)					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Escalation to 2013$					
Labor	0	0	0	0	0
Non-Labor	277	129	51	-2	0
NSE	0	0	0	0	0
Total	**277**	**129**	**51**	**-2**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	0	0	0	0	0
Non-Labor	1,491	859	720	637	726
NSE	0	0	0	0	0
Total	**1,491**	**859**	**720**	**637**	**726**
FTE	0.1	0.0	0.0	0.0	0.0

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 2. New Business Trench Reimbursements
Workpaper Group: A01510 - New Business Trench Reimbursement

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	-28	-9	-18	-32	-43
Non-Labor	-528	-166	-189	-359	-3,042
NSE	0	0	0	0	0
Total	**-556**	**-176**	**-207**	**-392**	**-3,085**
FTE	-0.3	-0.1	-0.2	-0.4	-0.5

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 2. New Business Trench Reimbursements
Workpaper Group: A01510 - New Business Trench Reimbursement

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009	-28	-528	0	-556	-0.3	TP1RMC2014021812210
Adjustment to transfer-out amount from this workgroup to the workgroup 01510 (New Business) due to incorrect system mapping.						
2009 Total	-28	-528	0	-556	-0.3	
2010	-9	-166	0	-176	-0.1	TP1RMC2014021812214
Adjustment to transfer-out amount from this workgroup to the workgroup 01510 (New Business) due to incorrect system mapping.						
2010 Total	-9	-166	0	-176	-0.1	
2011	-18	-189	0	-207	-0.2	TP1RMC2014021812221
Adjustment to transfer-out amount from this workgroup to the workgroup 01510 (New Business) due to incorrect system mapping.						
2011 Total	-18	-189	0	-207	-0.2	
2012	-32	-359	0	-392	-0.4	TP1RMC2014021812225
Adjustment to transfer-out amount from this workgroup to the workgroup 01510 (New Business) due to incorrect system mapping.						
2012 Total	-32	-359	0	-392	-0.4	
2013	-43	-3,042	0	-3,085	-0.5	TP1RMC2014021812234
Adjustment to transfer-out amount from this workgroup to the workgroup 01510 (New Business) due to incorrect system mapping.						
2013 Total	-43	-3,042	0	-3,085	-0.5	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group A01510

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 2. New Business Trench Reimbursements
Workpaper Group: A01510 - New Business Trench Reimbursement
Workpaper Detail: A01510.001 - New Business Trench Reimbursement

In-Service Date: Not Applicable

Description:

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

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	887	887	887
NSE	0	0	0
Total	**887**	**887**	**887**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
B01510 - New Business Forfeitures

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 3. New Business Forfeitures
Workpaper Group: B01510 - New Business Forfeitures

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	0	0	0
NSE	Zero-Based	-7,660	-7,709	-7,796	-6,390	-5,612	-6,410	-6,410	-6,410
Total		**-7,660**	**-7,709**	**-7,796**	**-6,390**	**-5,612**	**-6,410**	**-6,410**	**-6,410**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

New business forfeitures are recorded as reductions to new business expenditures for gas mains and services.

Physical Description:

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

Project Justification:

New business forfeitures reimburse the utility for the cost of unused and/or under-utilized facilities constructed at the request of new business customers.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00151.0
Category:	B. New Business
Category-Sub:	3. New Business Forfeitures
Workpaper Group:	B01510 - New Business Forfeitures

Forecast Methodology:

Labor - Zero-Based

N/A

Non-Labor - Zero-Based

N/A

NSE - Zero-Based

Forfeiture amounts are dependent on customer gas throughput levels incurred over a three to ten year period after commencement of service. Due to the high volume of activity and the inherent complexity to track each customer's construction job and the associated throughput over a period of time, SoCalGas forecasted Forfeitures based on the historical five-year (2009 – 2013) average in nominal dollars and entered the forecast as non-standard escalation. This methodology allows SoCalGas to capture years of high as well as years with low forfeiture activity.

See supplemental workpaper SCG-FBA-CAP-SUP-002 for calculation details.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 3. New Business Forfeitures
Workpaper Group: B01510 - New Business Forfeitures

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	0	0	0	0
NSE	Zero-Based	-6,410	-6,410	-6,410	0	0	0	-6,410	-6,410	-6,410
Total		**-6,410**	**-6,410**	**-6,410**	**0**	**0**	**0**	**-6,410**	**-6,410**	**-6,410**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 3. New Business Forfeitures
Workpaper Group: B01510 - New Business Forfeitures

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	-6,237	-6,547	-7,247	-6,411	-5,612
Total	**-6,237**	**-6,547**	**-7,247**	**-6,411**	**-5,612**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	-6,237	-6,547	-7,247	-6,411	-5,612
Total	**-6,237**	**-6,547**	**-7,247**	**-6,411**	**-5,612**
FTE	0.0	0.0	0.0	0.0	0.0
Vacation & Sick (Nominal $)					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Escalation to 2013$					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	-1,423	-1,163	-550	20	0
Total	**-1,423**	**-1,163**	**-550**	**20**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	-7,660	-7,709	-7,796	-6,390	-5,612
Total	**-7,660**	**-7,709**	**-7,796**	**-6,390**	**-5,612**
FTE	0.0	0.0	0.0	0.0	0.0

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 3. New Business Forfeitures
Workpaper Group: B01510 - New Business Forfeitures

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	-6,237	-6,547	-7,247	-6,411	-5,612
Total	**-6,237**	**-6,547**	**-7,247**	**-6,411**	**-5,612**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009	0	0	-6,237	-6,237	0.0	LCUEVAS201312061117
Historical direct forfeiture credits. See calculation details in Supplemental Workpaper SCG-FBA-CAP-SUP-002.						
2009 Total	0	0	-6,237	-6,237	0.0	
2010	0	0	-6,547	-6,547	0.0	LCUEVAS201312061118
Historical direct forfeiture credits. See calculation details in Supplemental Workpaper SCG-FBA-CAP-SUP-002.						
2010 Total	0	0	-6,547	-6,547	0.0	
2011	0	0	-7,247	-7,247	0.0	LCUEVAS201312061118
Historical direct forfeiture credits. See calculation details in Supplemental Workpaper SCG-FBA-CAP-SUP-002.						
2011 Total	0	0	-7,247	-7,247	0.0	
2012	0	0	-6,411	-6,411	0.0	LCUEVAS201312061119
Historical direct forfeiture credits. See calculation details in Supplemental Workpaper SCG-FBA-CAP-SUP-002.						
2012 Total	0	0	-6,411	-6,411	0.0	
2013	0	0	-5,612	-5,612	0.0	TP1RMC20140218130120
Historical direct forfeiture credits. See calculation details in Supplemental Workpaper SCG-FBA-CAP-SUP-002.						
2013 Total	0	0	-5,612	-5,612	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group B01510

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00151.0
Category: B. New Business
Category-Sub: 3. New Business Forfeitures
Workpaper Group: B01510 - New Business Forfeitures
Workpaper Detail: B01510.001 - New Business Forfeitures

In-Service Date: Not Applicable

Description:

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

See supplemental workpaper SCG-FBA-CAP-SUP-002 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	0	0	0
NSE	-6,410	-6,410	-6,410
Total	**-6,410**	**-6,410**	**-6,410**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group B01510

SCG-FBA-CAP-SUP-002
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper Calculations for Forfeitures Related to New Business
New Business - Forfeitures Workpaper

Assumptions:

Amounts are shown in thousands of dollars of the year.

		Historical Fully Loaded Forfeitures (Nominal $)				
	New Business Forfeitures	**2009**	**2010**	**2011**	**2012**	**2013**
[A]	Main & Stub Forfeitures	-1,199	-1,568	-3,248	-2,565	-1,867
[B]	Service & Meter Set Assembly Forfeitures	-8,156	-8,252	-7,621	-7,051	-6,550
([A]+[B])	**Total Loaded**	-9,355	-9,820	-10,870	-9,616	-8,417

[C]	Direct Cost Factor (Estimated Ratio of Loaded Forfeitures to Direct Forfeitures)	1.50	1.50	1.50	1.50	1.50

		Historical Direct Cost (Nominal Dollars of the Year)					5-Year Ave.	5-yr Average Forecast (NSE)		
	New Business Forfeitures	**2009**	**2010**	**2011**	**2012**	**2013**		**2014**	**2015**	**2016**
([A]/[C])	Main & Stub Forfeitures	-799	-1,045	-2,166	-1,710	-1,245	-1,393	-1,393	-1,393	-1,393
([B]/[C])	Service & Meter Set Assembly Forfeitures	-5,437	-5,502	-5,081	-4,701	-4,367	-5,018	-5,018	-5,018	-5,018
([D]+[E])	**Total Direct**	-6,237	-6,547	-7,247	-6,411	-5,612	-6,410	-6,410	-6,410	-6,410

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Category: C. Pressure Betterments
Workpaper: VARIOUS

Summary for Category: C. Pressure Betterments

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
Labor	179	558	553	446
Non-Labor	12,206	27,003	22,892	15,563
NSE	0	0	0	0
Total	**12,385**	**27,561**	**23,445**	**16,009**
FTE	2.0	6.3	6.3	5.1
002510 Pressure Betterments - Routine				
Labor	132	344	344	344
Non-Labor	9,021	12,045	12,045	12,045
NSE	0	0	0	0
Total	**9,153**	**12,389**	**12,389**	**12,389**
FTE	1.5	3.9	3.9	3.9
002810 Pressure Betterments - Non-Routine				
Labor	47	214	209	102
Non-Labor	3,185	14,958	10,847	3,518
NSE	0	0	0	0
Total	**3,232**	**15,172**	**11,056**	**3,620**
FTE	0.5	2.4	2.4	1.2

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002510 - Pressure Betterments - Routine

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00251.0
Category: C. Pressure Betterments
Category-Sub: 1. Pressure Betterments - Routine
Workpaper Group: 002510 - Pressure Betterments - Routine

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	5-YR Average	634	380	306	266	132	344	344	344
Non-Labor	5-YR Average	12,686	11,096	14,786	12,635	9,021	12,045	12,045	12,045
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**13,320**	**11,476**	**15,092**	**12,900**	**9,153**	**12,389**	**12,389**	**12,389**
FTE	5-YR Average	7.0	4.3	3.5	3.3	1.5	3.9	3.9	3.9

Business Purpose:

Budget Code: 251

This work category records expenditure for gas distribution pressure betterment projects performed on an on-going basis to maintain system reliability and service to all customers. Pressure betterment projects are performed in areas where there is insufficient capacity or pressure to meet load growth. Once a pipeline system is designed and installed, the available capacity remains relatively fixed. However, as load increases over time due to population expansion or increased density, as well as new or larger commercial/industrial businesses, the available system pressure decreases. This, in turn, reduces the available capacity for customers. If the diminishing pressure is not addressed, gas service to customers could be interrupted.

This workpaper covers routine pressure betterment projects. The forecast for non-routine pressure betterments can be found in Workpaper 002810 (Pressure Betterments - Non-Routine).

Physical Description:

Pressure betterment projects typically involve one or more of the following:
• Installing new mains.
• Upsizing existing mains.
• Upgrading existing mains to higher pressure.
• Installing new regulator stations.
• Upsizing existing regulator stations.

Project Justification:

To determine which areas need pressure betterments, growth information is gathered from customer records, builders, city, county, and state agencies. In addition, SoCalGas collects data from pressure gauges and electronic pressure recorders. This information is used to model system flow and identify capacity constraints. Based on analysis of these constraints, local region engineering identifies specific pressure betterment projects and the estimated year in which the projects will need to be constructed.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00251.0
Category:	C. Pressure Betterments
Category-Sub:	1. Pressure Betterments - Routine
Workpaper Group:	002510 - Pressure Betterments - Routine

Forecast Methodology:

Labor - 5-YR Average

The Labor forecast is based on the five-year (2009 - 2013) historical average for the amount of routine work that is required on the pipeline system. The five-year average captures the yearly variations in routine system pressure betterment requirements. Incremental additions for non-routine pressure betterment projects can be found in workpaper 002810 - Pressure Betterments - Non-Routine.

Non-Labor - 5-YR Average

The Non-Labor forecast is based on the five-year (2009 - 2013) historical average for the amount of routine work that is required on the pipeline system. The five-year average captures the yearly variations in routine system pressure betterment requirements. Incremental additions for non-routine pressure betterment projects can be found in workpaper 002810 - Pressure Betterments - Non-Routine.

NSE - 5-YR Average

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00251.0
Category: C. Pressure Betterments
Category-Sub: 1. Pressure Betterments - Routine
Workpaper Group: 002510 - Pressure Betterments - Routine

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	5-YR Average	343	343	343	0	0	0	343	343	343
Non-Labor	5-YR Average	12,044	12,044	12,044	0	0	0	12,044	12,044	12,044
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**12,387**	**12,387**	**12,387**	**0**	**0**	**0**	**12,387**	**12,387**	**12,387**
FTE	5-YR Average	3.9	3.9	3.9	0.0	0.0	0.0	3.9	3.9	3.9

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00251.0
Category: C. Pressure Betterments
Category-Sub: 1. Pressure Betterments - Routine
Workpaper Group: 002510 - Pressure Betterments - Routine

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	437	275	244	230	153
Non-Labor	10,329	9,422	13,744	12,675	12,206
NSE	0	0	0	0	0
Total	**10,766**	**9,697**	**13,988**	**12,905**	**12,359**
FTE	5.9	3.6	3.0	2.8	1.7
Adjustments (Nominal $) **					
Labor	0	0	0	0	-40
Non-Labor	0	0	0	0	-3,185
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**-3,225**
FTE	0.0	0.0	0.0	0.0	-0.4
Recorded-Adjusted (Nominal $)					
Labor	437	275	244	230	113
Non-Labor	10,329	9,422	13,744	12,675	9,021
NSE	0	0	0	0	0
Total	**10,766**	**9,697**	**13,988**	**12,905**	**9,134**
FTE	5.9	3.6	3.0	2.8	1.3
Vacation & Sick (Nominal $)					
Labor	79	48	41	37	19
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**79**	**48**	**41**	**37**	**19**
FTE	1.1	0.7	0.5	0.5	0.2
Escalation to 2013$					
Labor	118	57	22	-1	0
Non-Labor	2,357	1,673	1,042	-40	0
NSE	0	0	0	0	0
Total	**2,475**	**1,731**	**1,064**	**-41**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	634	380	306	266	132
Non-Labor	12,686	11,096	14,786	12,635	9,021
NSE	0	0	0	0	0
Total	**13,320**	**11,476**	**15,092**	**12,900**	**9,153**
FTE	7.0	4.3	3.5	3.3	1.5

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00251.0
Category: C. Pressure Betterments
Category-Sub: 1. Pressure Betterments - Routine
Workpaper Group: 002510 - Pressure Betterments - Routine

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	-40
Non-Labor	0	0	0	0	-3,185
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**-3,225**
FTE	0.0	0.0	0.0	0.0	-0.4

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013	-10	-93	0	-102	-0.1	DAVALOS201404251324
Removed WOA 81645 (Orange County Pressure Betterment) from historical. See corresponding adjustment in workpaper 002810 - Pressure Betterments - Non-Routine.						
	-30	-3,093	0	-3,123	-0.3	DAVALOS201404251326
Removed WOA 81921 (Arvin Pressure Betterment) from historical. See corresponding adjustment in workpaper 002810 - Pressure Betterments - Non-Routine.						
2013 Total	-40	-3,185	0	-3,225	-0.4	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002510

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00251.0
Category: C. Pressure Betterments
Category-Sub: 1. Pressure Betterments - Routine
Workpaper Group: 002510 - Pressure Betterments - Routine
Workpaper Detail: 002510.001 - Routine Pressure Betterment Installations

In-Service Date: Not Applicable

Description:

Routine pressure betterment activities. The five-year (2009 - 2013) historical average was used to forecast the routine Pressure Betterment component of this work category.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	344	344	344
Non-Labor	12,045	12,045	12,045
NSE	0	0	0
Total	**12,389**	**12,389**	**12,389**
FTE	3.9	3.9	3.9

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002810 - Pressure Betterments - Non-Routine

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00281.0
Category: C. Pressure Betterments
Category-Sub: 2. Pressure Betterments - Non-Routine
Workpaper Group: 002810 - Pressure Betterments - Non-Routine

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	47	214	209	102
Non-Labor	Zero-Based	0	0	0	0	3,185	14,958	10,847	3,518
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**3,232**	**15,172**	**11,056**	**3,620**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.5	2.4	2.4	1.2

Business Purpose:

This work category records expenditures for gas distribution pressure betterment projects performed on an on-going basis to maintain system reliability and service to all customers. Pressure betterment projects are performed in areas where there is insufficient capacity or pressure to meet load growth. Once a pipeline system is designed and installed, the available capacity remains relatively fixed. However, as load increases over time due to population expansion or increased density, as well as, new or larger commercial/industrial businesses, the available system pressure decreases. This, in turn, reduces the available capacity for customers. If the diminishing pressure is not addressed, gas service to customers could be interrupted.

This workpaper covers non-routine pressure betterment projects. The forecast for routine pressure betterments can be found in Workpaper 002510 (Pressure Betterments - Routine).

Physical Description:

Pressure betterment projects typically involve one or more of the following:
• Installing new mains.
• Upsizing existing mains.
• Upgrading existing mains to higher pressure.
• Installing new regulator stations.
• Upsizing existing regulator stations.

Project Justification:

To determine which areas need pressure betterments, growth information is gathered from customer records, builders, city, county, and state agencies. In addition, SoCalGas collects data from pressure gauges and electronic pressure recorders. This information is used to model system flow and identify capacity constraints. Based on analysis of these constraints, local region engineering identifies specific pressure betterment projects and the estimated year in which the projects will need to be constructed.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00281.0
Category:	C. Pressure Betterments
Category-Sub:	2. Pressure Betterments - Non-Routine
Workpaper Group:	002810 - Pressure Betterments - Non-Routine

Forecast Methodology:

Labor - Zero-Based

The labor related to these specific non-routine projects can be found in the accompanying sub-workpapers:
ii. Arvin Pressure Betterment (002810.002)
iii. Orange County Pressure Betterment (002810.003)

Non-Labor - Zero-Based

The non-labor related to these specific non-routine projects can be found in the accompanying sub-workpapers:
i. South Bay Cities Pressure Betterment (002810.001)
ii. Arvin Pressure Betterment (002810.002)
iii. Orange County Pressure Betterment (002810.003)

NSE - Zero-Based

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00281.0
Category: C. Pressure Betterments
Category-Sub: 2. Pressure Betterments - Non-Routine
Workpaper Group: 002810 - Pressure Betterments - Non-Routine

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	214	209	102	214	209	102
Non-Labor	Zero-Based	0	0	0	14,958	10,847	3,518	14,958	10,847	3,518
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**15,172**	**11,056**	**3,620**	**15,172**	**11,056**	**3,620**
FTE	Zero-Based	0.0	0.0	0.0	2.4	2.4	1.2	2.4	2.4	1.2

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014	0	4,241	0	4,241	0.0	RHFLAMIN201405(
i. South Bay Cities Pressure Betterment Project. See Workpaper 002810.001 for details on this incremental pressure betterment project. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-003.1.	214	10,717	0	10,931	2.4	RHFLAMIN201405(
ii. Arvin Pressure Betterment Project. See Workpaper 002810.002 for details on this incremental pressure betterment project. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-003.2.						
2014 Total	214	14,958	0	15,172	2.4	
2015	0	1,971	0	1,971	0.0	RHFLAMIN201405(
i. South Bay Cities Pressure Betterment Project. See Workpaper 002810.001 for details on this incremental pressure betterment project. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-003.1.	107	5,358	0	5,465	1.2	RHFLAMIN201405(
ii. Arvin Pressure Betterment Project. See Workpaper 002810.002 for details on this incremental pressure betterment project. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-003.2.	102	3,518	0	3,620	1.2	RHFLAMIN201405(
iii. Orange County Pressure Betterment Project. See Workpaper 002810.003 for details on this incremental pressure betterment project. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-003.3.						
2015 Total	209	10,847	0	11,056	2.4	
2016	102	3,518	0	3,620	1.2	RHFLAMIN201405(
iii. Orange County Pressure Betterment Project. See Workpaper 002810.003 for details on this incremental pressure betterment project. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-003.3.						
2016 Total	102	3,518	0	3,620	1.2	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00281.0
Category: C. Pressure Betterments
Category-Sub: 2. Pressure Betterments - Non-Routine
Workpaper Group: 002810 - Pressure Betterments - Non-Routine

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Adjustments (Nominal $) **					
Labor	0	0	0	0	40
Non-Labor	0	0	0	0	3,185
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**3,225**
FTE	0.0	0.0	0.0	0.0	0.4
Recorded-Adjusted (Nominal $)					
Labor	0	0	0	0	40
Non-Labor	0	0	0	0	3,185
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**3,225**
FTE	0.0	0.0	0.0	0.0	0.4
Vacation & Sick (Nominal $)					
Labor	0	0	0	0	7
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**7**
FTE	0.0	0.0	0.0	0.0	0.1
Escalation to 2013$					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	0	0	0	0	47
Non-Labor	0	0	0	0	3,185
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**3,232**
FTE	0.0	0.0	0.0	0.0	0.5

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00281.0
Category: C. Pressure Betterments
Category-Sub: 2. Pressure Betterments - Non-Routine
Workpaper Group: 002810 - Pressure Betterments - Non-Routine

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	40
Non-Labor	0	0	0	0	3,185
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**3,225**
FTE	0.0	0.0	0.0	0.0	0.4

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013	10	93	0	102	0.1	RHFLAMIN20140430115
Historical costs for WOA 81645 (Orange County Pressure Betterment). See corresponding historical adjustment under Workpaper 002510 - Pressure Betterments - Routine.						
	30	3,093	0	3,123	0.3	RHFLAMIN20140502204
Historical costs for WOA 81921 (Arvin Pressure Betterment). See corresponding historical adjustment under Workpaper 002510 - Pressure Betterments - Routine.						
2013 Total	40	3,185	0	3,225	0.4	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002810

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00281.0
Category: C. Pressure Betterments
Category-Sub: 2. Pressure Betterments - Non-Routine
Workpaper Group: 002810 - Pressure Betterments - Non-Routine
Workpaper Detail: 002810.001 - South Bay Cities Pressure Betterment

In-Service Date: 08/31/2015

Description:

The South Bay Cities Pressure Betterment is a cluster of supply line segments that will be replaced with larger-diameter pipeline to address pressure and reliability concerns in this region. The supply line replacements will be completed as part of the Company's Pipeline Safety Enhancement Plan (PSEP), and therefore, those costs are not included within this GRC filling. The costs included in this testimony are only for the difference in cost to acquire larger-diameter pipe instead of replacing the existing lines with in-kind sized pipe, as required to satisfy the safety-enhancing objectives of the PSEP project.

This effort will upsize the pipe diameter of three supply line segments by replacing approximately 16,400 feet of 16-inch with 24-inch diameter pipe, and replace an additional 31,680 feet of 16-inch with 20-inch diameter pipe. This project, as a whole, will provide pressure betterment to customers in the South Bay Cities and South Los Angeles.

See supplemental workpaper SCG-FBA-CAP-SUP-003.1 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	4,241	1,971	0
NSE	0	0	0
Total	**4,241**	**1,971**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00281.0
Category:	C. Pressure Betterments
Category-Sub:	2. Pressure Betterments - Non-Routine
Workpaper Group:	002810 - Pressure Betterments - Non-Routine
Workpaper Detail:	002810.002 - Arvin Pressure Betterment
In-Service Date:	10/31/2014

Description:

The Arvin Pressure Betterment will address a pressure and reliability risk in the Arvin / Lamont area of Kern County. The existing supply line is at near capacity and given known information regarding incremental load being added to the system by various customers, it will surpass the limit of the supply line's capacity. This project will consist of installing approximately 137,000 feet of 12-inch diameter high-pressure main to increase the capacity of the current system. This project will also result in the abandonment of approximately 22,300 feet of supply line 38-959. Another portion of supply line 38-959, approximately 22,900 feet, will be converted to medium pressure. This project will also provide for the supply line 38-335 system to be lowered to medium pressure.

See supplemental workpaper SCG-FBA-CAP-SUP-003.2 for calculation details.

Forecast In 2013 $(000)

Years	2014	2015	2016
Labor	214	107	0
Non-Labor	10,717	5,358	0
NSE	0	0	0
Total	**10,931**	**5,465**	**0**
FTE	2.4	1.2	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00281.0
Category: C. Pressure Betterments
Category-Sub: 2. Pressure Betterments - Non-Routine
Workpaper Group: 002810 - Pressure Betterments - Non-Routine
Workpaper Detail: 002810.003 - Orange County Pressure Betterment

In-Service Date: 09/30/2015

Description:

The Orange County Pressure Betterment will address a pressure and reliability risk in Orange County. The project will consist of the installation of approximately 10,000 feet of 16-inch diameter high pressure pipeline to connect the existing supply line 35-06 with supply line 35-07.

This project will accomplish the following:
a) The system pressure will increase by approximately 45 psig in extreme winter conditions.
b) It will operate as a backbone to supply line 42-46, supply line 35-06 and supply line 35-07 by creating a looped system.
c) It will add reliability to the system, which serves a large population, including various customers with high-pressure delivery requirements.

The existing system is operating at capacity at winter load conditions, thus creating a system reliability risk. Losing feed from any of these non-looped supply lines will cause over 67,000 outages spread over a 26-square mile area, impacting customers in the Garden Grove, Anaheim, and Santa Ana areas.

See supplemental workpaper SCG-FBA-CAP-SUP-003.3 for calculation details.

Forecast In 2013 $(000)

Years	2014	2015	2016
Labor	0	102	102
Non-Labor	0	3,518	3,518
NSE	0	0	0
Total	**0**	**3,620**	**3,620**
FTE	0.0	1.2	1.2

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 002810

SCG-FBA-CAP-SUP-003.1
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper Calculations for the South Bay Cities Pressure Betterment Project
Pressure Betterment - Non-Routine Workpaper, 002810.001

Breakdown of Forecasted Costs, Shown in 2013$

		Labor	Non-Labor			Total
			Contractor	Materials	Other	
	Total Project Cost					
[A]	SL30-18 Install 13,500 ft 20" Steel Pipe	$ 261,600	$ 7,841,630	$ 1,808,526	$ 2,934,445	$ 12,846,200
[B]	SL37-07 Install 16,400 ft 24" Steel Pipe	$ 293,400	$ 8,907,689	$ 2,667,659	$ 3,400,142	$ 15,268,890
[C]	SL37-18 Install 19,800 ft 20" Steel Pipe	$ 350,800	$ 11,306,018	$ 2,546,929	$ 3,998,999	$ 18,202,746
[D] ([A]+[B]+[C])	**Total**	**$ 905,800**	**$ 28,055,337**	**$ 7,023,114**	**$ 10,333,586**	**$ 46,317,836**
	Portion of Project Funded by PSEP (Pipe Diameter Required for PSEP Work)					
[E]	SL30-18 Install 12,000 ft 16" Steel Pipe	$ 261,600	$ 6,579,710	$ 1,203,514	$ 2,519,591	$ 10,564,415
[F]	SL37-07 Install 16,400 ft 16" Steel Pipe	$ 293,400	$ 8,143,613	$ 1,612,523	$ 3,010,007	$ 13,059,543
[G]	SL37-18 Install 19,800 ft 16" Steel Pipe	$ 350,800	$ 10,501,459	$ 1,950,278	$ 3,680,017	$ 16,482,554
[H] ([E]+[F]+[G])	**Subtotal PSEP**	**$ 905,800**	**$ 25,224,782**	**$ 4,766,315**	**$ 9,209,615**	**$ 40,106,512**
	Remaining Portion of Project Funded by Pressure Betterment (Larger Pipe Diameter Needed for Pressure Betterment)					
[I] ([A]-[E])	SL30-18 Total Press. Betterment Difference Cost	$ -	$ 1,261,920	$ 605,012	$ 414,854	$ 2,281,786
[J] ([B]-[F])	SL37-07 Total Press. Betterment Difference Cost	$ -	$ 764,076	$ 1,055,136	$ 390,135	$ 2,209,347
[K] ([C]-[G])	SL37-18 Total Press. Betterment Difference Cost	$ -	$ 804,559	$ 596,651	$ 318,982	$ 1,720,192
[L] ([I]+[J]+[K])	**Remaining Pressure Betterment**	**$ -**	**$ 2,830,555**	**$ 2,256,799**	**$ 1,123,971**	**$ 6,211,325**
[M] ([L])	**Pressure Betterment by Labor & Non-Labor**	**$ -**	**$**		**6,211,325**	**$ 6,211,325**

2014 - 2106 Forecast, Shown in Thousands of 2013$

		2014	2015	2106	Total
[N]	**Forecast Project % Complete**	68%	32%	0%	100%
[O] ([N]x [M,Labor]) /1000	**Labor $ per Year**	$ -	$ -	$ -	$ -
[P] ([N]x[M,N.L.]) /1000	**Non-Labor $ per Year**	$ 4,241	$ 1,970	$ -	$ 6,211
([O]+[P])	**Total**	**$ 4,241**	**$ 1,970**	**$ -**	**$ 6,211**

SCG-FBA-CAP-SUP-003.1
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper Calculations for the South Bay Cities Pressure Betterment Project
Pressure Betterment - Non-Routine Workpaper, 002810.001

South Bay Cities Pressure Betterment Project Details:

The South Bay Cities Pressure Betterment is a cluster of supply line segments that will be replaced with larger-diameter pipeline to address pressure and reliability concerns in this region. The supply line replacements will be completed as part of the Company's Pipeline Safety Enhancement Plan (PSEP), and therefore, those costs are not included within this GRC filling. The costs included in this testimony are only for the difference in cost to acquire larger-diameter pipe instead of replacing the existing lines with in-kind sized pipe, as required to satisfy the safety-enhancing objectives of the PSEP project.

This effort will upsize the pipe diameter of three supply line segments by replacing approximately 16,400 feet of 16-inch with 24-inch diameter pipe, and replace an additional 31,680 feet of 16-inch with 20-inch diameter pipe. This project, as a whole, will provide pressure betterment to customers in the South Bay Cities and South Los Angeles.

The three impacted segments are the following:

Supply line 37-07 – upsizing the existing 16-inch pipe with 24-inch diameter pipe will increase gas flow capacity into the South Los Angeles area and will adequately handle the daily cyclical load demand from this heavily-populated urban area.

Supply line 37-18 – upsizing the existing 16-inch pipe with 20-inch diameter pipe will increase gas flow capacity into the supply line network that sustains load demand for the South Bay cities and other neighboring easterly cities. Specifically, this supply line will deliver increased gas flow from the most northerly point of the supply line system known as the Southern Loop.

Supply line 30-18 – upsizing the existing 16-inch pipe with 20-inch diameter pipe will increase gas flow capacity into the supply line network that sustains load demand for the neighboring easterly cities of the South Bay cities. This supply line will complement supply line 37-18 by delivering increased gas flow from the most easterly point of the Southern Loop system.

Collectively, the Pressure Betterment work for these supply lines will adequately handle load growth demand and mitigate loss of service risk. Engineering load survey models indicate that without this pressure betterment, customers in the impacted areas are at risk due to the inability of the existing system to support full load in the event of an extreme winter condition. The funding requested in this area is specifically for the cost difference to purchase the larger-diameter pipe, which will be installed in an already-qualified supply line replacement project. SoCalGas plans to complete this larger-diameter pipe replacement in lieu of a like-kind pipeline replacement.

SCG-FBA-CAP-SUP-003.2
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper Calculations for the Arvin Pressure Betterment Project
Pressure Betterment - Non-Routine Workpaper, 002810.002

Breakdown of Forecasted Costs, Shown in 2013$

		Labor	Non-Labor			Total
			Contractor	Materials	Other	
	Install					
[A]	66,700 ft 12" Steel Pipe	$ 200,000	$ 9,343,740	$ 2,741,667	$ 175,000	$ 12,460,407
[B]	9,400 ft 8" Steel Pipe	$ 65,000	$ 1,363,000	$ 207,010	$ 750	$ 1,635,760
[C]	2,250 ft 6" Steel Pipe	$ 17,880	$ 335,250	$ 46,498	$ 750	$ 400,378
[D]	650 ft 6" Steel Pipe	$ 16,325	$ 158,250	$ 13,330	$ 200	$ 188,105
[E]	45 ft 3" Steel Pipe	$ 1,150	$ 14,750	$ 1,525	$ 150	$ 17,575
[F]	165 ft 2" Steel Pipe	$ 3,462	$ 37,125	$ 5,687	$ 260	$ 46,534
[G]	Replace 10 Services	$ 3,150	$ 19,250	$ 5,241	$ 100	$ 27,741
[H]	Replace 2 MSAs	$ 12,500	$ 100,000	$ 30,750	$ 1,250	$ 144,500
[I]	Exchange Meter Station	$ -	$ -	$ -	$ 3,800,000	$ 3,800,000
[J]	Pressure Limiting Station	$ 20,000	$ 275,000	$ 130,420	$ 75,000	$ 500,420
[K] (Sum [A] -- [J])	**Subtotal**	$ 339,467	$ 11,646,365	$ 3,182,128	$ 4,053,460	$ 19,221,420
	Abandon					
[L]	15,600 ft 6" Steel Pipe	$ 5,000	$ 75,000	$ 12,600	$ 100	$ 92,700
[M]	6,710 ft 6" Steel Pipe	$ 5,000	$ 75,000	$ 12,600	$ 100	$ 92,700
[N]	Reg Stations ID-1573	$ 500	$ 12,500	$ 100	$ 100	$ 13,200
[O]	Reg Stations ID-1574	$ 500	$ 12,500	$ 100	$ 100	$ 13,200
[P]	Reg Stations ID-9190	$ 500	$ 12,500	$ 100	$ 100	$ 13,200
[Q]	Reg Stations ID-1580	$ 500	$ 12,500	$ 100	$ 100	$ 13,200
[R] (Sum [L] -- [Q])	**Subtotal**	$ 12,000	$ 200,000	$ 25,600	$ 600	$ 238,200
	Other Expense					
[S]	Derate 28,000 ft 6" Pipe	$ 1,000	$ 10,000	$ -	$ 500	$ 11,500
[T]	Derate 19,800 ft 2-4" Pipe	$ 1,000	$ 10,000	$ -	$ 500	$ 11,500
[U]	Tie-Over 2 Services	$ 2,500	$ 20,000	$ 18,250	$ 1,000	$ 41,750
[V] (Sum [S] -- [U])	**Subtotal**	$ 4,500	$ 40,000	$ 18,250	$ 2,000	$ 64,750
[W] ([K]+[R]+[V])	**Total Project Forecast**	**$ 355,967**	**$ 11,886,365**	**$ 3,225,978**	**$ 4,056,060**	**$ 19,524,370**
[X] ([W])	**Total by Labor & Non-Labor**	**$ 355,967**	**$**		**19,168,403**	**$ 19,524,370**
[Y]	2013 Recorded Costs for This Project	$ 35,352	$		3,092,873	$ 3,128,225
[Z] ([X]-[Y])	**Remaining 2014 - 2016 Project Forecast**	**$ 320,615**	**$**		**16,075,530**	**$ 16,396,145**

2014 - 2106 Forecast, Shown in Thousands of 2013$

		2014	2015	2016	Total
[AA]	**Forecast Project % Complete**	67%	33%	0%	100%
[BB] ([X,L]x[AA])/1000	**Labor $ per Year**	$ 214	$ 107	$ -	$ 321
[CC] ([X,N.L.]x[AA])/1000	**Non-Labor $ per Year**	$ 10,718	$ 5,358	$ -	$ 16,076
[DD] ([BB]+[CC])	**Total**	**$ 10,931**	**$ 5,465**	**$ -**	**$ 16,396**
[EE]	**Historical 5-Year Weighted Average Labor Cost per FTE**	$ 87,652	$ 87,652	$ 87,652	$ 87,652
[FF] ([BB]/[EE])	**FTEs**	2.4	1.2	0.0	3.6

SCG-FBA-CAP-SUP-003.3
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper Calculations for the Orange County Pressure Betterment Project
Pressure Betterment - Non-Routine Workpaper, 002810.003

Breakdown of Forecasted Costs, Shown in 2013$

		Labor	Non-Labor			Total
			Contractor	Materials	Other	
[A]	Install 10000 ft 16" Steel pipe	$ 213,555	$ 2,528,733	$ 3,809,334	$ 744,081	$ 7,295,703
[B]	Abandon 10 ft 12" Steel pipe	$ 2,135	$ 25,287	$ 18,914	$ 1,604	$ 47,940
[C] ([A]+[B])	**Total Project Forecast**	**$ 215,690**	**$ 2,554,020**	**$ 3,828,248**	**$ 745,685**	**$ 7,343,643**
[D] ([C])	**Total by Labor & Non-Labor**	**$ 215,690**	**$**		**7,127,953**	**$ 7,343,643**
[E]	2013 Recorded Costs for This Project	$ 11,200	$		92,540	$ 103,740
[F] ([D]-[E])	**Remaining 2014 - 2016 Project Forecast**	**$ 204,490**	**$**		**7,035,413**	**$ 7,239,903**

2014 - 2106 Forecast, Shown in Thousands of 2013$

		2014	2015	2016	Total
[G]	**Forecast Project % Complete**	0%	50%	50%	100%
[H] ([F,Labor]x[G]) /1000	**Labor $ per Year**	$ -	$ 102	$ 102	$ 204
[I] ([F,N.L.]x[G]) /1000	**Non-Labor $ per Year**	$ -	$ 3,518	$ 3,518	$ 7,035
[J] ([H]+[I])	**Total**	**$ -**	**$ 3,620**	**$ 3,620**	**$ 7,240**
[K]	**Historical 5-Year Weighted Average Labor Cost per FTE**	$ 87,652	$ 87,652	$ 87,652	$ 87,652
[L] ([H]/[K])	**FTEs**	0.0	1.2	1.2	2.4

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Category: D. Supply Line Replacements
Workpaper: 002670

Summary for Category: D. Supply Line Replacements

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
Labor	91	131	131	131
Non-Labor	2,655	4,136	4,136	4,136
NSE	0	0	0	0
Total	**2,746**	**4,267**	**4,267**	**4,267**
FTE	1.4	1.5	1.5	1.5

002670 Supply Line Replacements

Labor	91	131	131	131
Non-Labor	2,655	4,136	4,136	4,136
NSE	0	0	0	0
Total	**2,746**	**4,267**	**4,267**	**4,267**
FTE	1.4	1.5	1.5	1.5

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002670 - Supply Line Replacements

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00267.0
Category: D. Supply Line Replacements
Category-Sub: 1. Supply Line Replacements
Workpaper Group: 002670 - Supply Line Replacements

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	5-YR Average	33	46	199	289	91	131	131	131
Non-Labor	5-YR Average	2,367	1,431	5,021	9,205	2,655	4,136	4,136	4,136
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**2,400**	**1,477**	**5,220**	**9,494**	**2,746**	**4,267**	**4,267**	**4,267**
FTE	5-YR Average	0.4	0.5	2.2	3.1	1.4	1.5	1.5	1.5

Business Purpose:

Budget Code: 267.

This work category includes expenditures to replace high-pressure distribution pipelines, known at SoCalGas as supply lines. Some of the major drivers for these supply line replacement projects include deteriorating pipe conditions, risk to the public, and increased maintenance costs.

Physical Description:

The distribution supply line system is comprised of approximately 3,750 miles of high-pressure pipeline constructed between the early 1920s and the present, and ranges in diameter from 2-inch to 30-inch. These supply lines normally operate at pressures higher than 60 psig. Projects in this workgroup include replacements of pipelines and associated facilities within the supply line system.

Project Justification:

The condition of SoCalGas' supply line system is typically assessed through O&M activities (i.e. excavations, leakage survey, and damage repairs). When deteriorating conditions are found to exist on any supply line, an engineering evaluation of the pipeline is conducted to determine the requirement for replacement or abandonment. Supply line replacement decisions are based on several factors, including pipe condition, leakage history, operating history, construction methods, system demands, proximity to known potential geologic hazards, and consequence of potential failure.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00267.0
Category:	D. Supply Line Replacements
Category-Sub:	1. Supply Line Replacements
Workpaper Group:	002670 - Supply Line Replacements

Forecast Methodology:

Labor - 5-YR Average

SoCalGas is estimating the labor expenditures for the years 2014 through 2016 based on an historical average of recorded expenditures of the years 2009 through 2013. Based on the number of variables involved in these larger scale projects, this average is most representative of future work requirements and expected expenditures, as it captures typical fluctuations in supply line project costs from year to year.

Non-Labor - 5-YR Average

SoCalGas estimated the non-labor expenditures for the years 2014 through 2016 based on an historical average of recorded expenditures for the years 2009 through 2013. Based on the number of variables involved in these larger scale projects, this average is most representative of future work requirements and expected expenditures, as it captures typical fluctuations in supply line project costs from year to year.

NSE - 5-YR Average

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00267.0
Category: D. Supply Line Replacements
Category-Sub: 1. Supply Line Replacements
Workpaper Group: 002670 - Supply Line Replacements

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	5-YR Average	131	131	131	0	0	0	131	131	131
Non-Labor	5-YR Average	4,135	4,135	4,135	0	0	0	4,135	4,135	4,135
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**4,266**	**4,266**	**4,266**	**0**	**0**	**0**	**4,266**	**4,266**	**4,266**
FTE	5-YR Average	1.5	1.5	1.5	0.0	0.0	0.0	1.5	1.5	1.5

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00267.0
Category: D. Supply Line Replacements
Category-Sub: 1. Supply Line Replacements
Workpaper Group: 002670 - Supply Line Replacements

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	22	33	166	258	99
Non-Labor	173	1,215	4,893	10,655	3,078
NSE	0	0	0	0	0
Total	**195**	**1,248**	**5,059**	**10,912**	**3,177**
FTE	0.3	0.4	1.9	2.7	1.0
Adjustments (Nominal $) **					
Labor	0	0	-7	-8	-21
Non-Labor	1,754	0	-227	-1,420	-423
NSE	0	0	0	0	0
Total	**1,754**	**0**	**-234**	**-1,428**	**-444**
FTE	0.0	0.0	0.0	0.0	0.2
Recorded-Adjusted (Nominal $)					
Labor	23	33	159	250	78
Non-Labor	1,927	1,215	4,667	9,234	2,655
NSE	0	0	0	0	0
Total	**1,950**	**1,248**	**4,825**	**9,484**	**2,733**
FTE	0.3	0.4	1.9	2.7	1.2
Vacation & Sick (Nominal $)					
Labor	4	6	26	40	13
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**4**	**6**	**26**	**40**	**13**
FTE	0.1	0.1	0.3	0.4	0.2
Escalation to 2013$					
Labor	6	7	14	-1	0
Non-Labor	440	216	354	-29	0
NSE	0	0	0	0	0
Total	**446**	**223**	**368**	**-30**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	33	46	199	289	91
Non-Labor	2,367	1,431	5,021	9,205	2,655
NSE	0	0	0	0	0
Total	**2,400**	**1,477**	**5,220**	**9,494**	**2,746**
FTE	0.4	0.5	2.2	3.1	1.4

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00267.0
Category: D. Supply Line Replacements
Category-Sub: 1. Supply Line Replacements
Workpaper Group: 002670 - Supply Line Replacements

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	-7	-8	-21
Non-Labor	1,754	0	-227	-1,420	-423
NSE	0	0	0	0	0
Total	**1,754**	**0**	**-234**	**-1,428**	**-444**
FTE	0.0	0.0	0.0	0.0	0.2

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009	0.273	1,754	0	1,754	0.0	TP1RMC2013102207455
Adjustment to add-in cost of a project incorrectly categorized to BC276 rather than BC267 and left off the initial recorded spend.						
2009 Total	0.273	1,754	0	1,754	0.0	
2010 Total	0	0	0	0	0.0	
2011	-7	-227	0	-234	0.0	DAVALOS201404202327
Adjustment made to remove costs related to BC278.						
2011 Total	-7	-227	0	-234	0.0	
2012	-8	-1,420	0	-1,428	0.0	DAVALOS201404202329
Adjustment made to remove costs related to BC278.						
2012 Total	-8	-1,420	0	-1,428	0.0	
2013	-21	-423	0	-444	0.2	DAVALOS201404202334
Adjustment made to remove costs related to BC278.						
2013 Total	-21	-423	0	-444	0.2	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002670

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00267.0
Category: D. Supply Line Replacements
Category-Sub: 1. Supply Line Replacements
Workpaper Group: 002670 - Supply Line Replacements
Workpaper Detail: 002670.001 - Supply Line Replacements

In-Service Date: Not Applicable

Description:

This work category includes expenditures to replace high-pressure distribution pipelines, known at SoCalGas as supply lines. Some of the major drivers for these supply line replacement projects include deteriorating pipe conditions, risk to the public, and increased maintenance costs.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	131	131	131
Non-Labor	4,136	4,136	4,136
NSE	0	0	0
Total	**4,267**	**4,267**	**4,267**
FTE	1.5	1.5	1.5

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Category: E. Main Replacements
Workpaper: 002520

Summary for Category: E. Main Replacements

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
Labor	3,984	5,078	5,078	5,078
Non-Labor	40,512	42,155	42,155	42,155
NSE	0	0	0	0
Total	**44,496**	**47,233**	**47,233**	**47,233**
FTE	51.5	62.6	62.6	62.6

002520 Main Replacements

Labor	3,984	5,078	5,078	5,078
Non-Labor	40,512	42,155	42,155	42,155
NSE	0	0	0	0
Total	**44,496**	**47,233**	**47,233**	**47,233**
FTE	51.5	62.6	62.6	62.6

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002520 - Main Replacements

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00252.0
Category: E. Main Replacements
Category-Sub: 1. Main Replacements
Workpaper Group: 002520 - Main Replacements

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	5-YR Average	6,487	6,459	4,428	4,033	3,984	5,078	5,078	5,078
Non-Labor	5-YR Average	37,384	46,049	52,741	34,091	40,512	42,155	42,155	42,155
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**43,872**	**52,508**	**57,168**	**38,124**	**44,496**	**47,233**	**47,233**	**47,233**
FTE	5-YR Average	75.7	75.6	55.6	54.4	51.5	62.6	62.6	62.6

Business Purpose:

Budget Codes: 252, 253, 255,

This work category includes expenditures to replace main operating at 60 psig and below, also referred to as medium pressure main replacements. Some of the major drivers for these replacement projects include deteriorating pipe conditions, risk to the public, and increased maintenance costs.

Physical Description:

The distribution medium pressure system is comprised of approximately 50,400 miles of steel and plastic pipeline constructed between the early 1920s and the present, and ranges in diameter from 1-inch to 16-inch. These mains support the delivery of gas to more than 5.8 million customers. Pipeline replacement projects include:

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

Project Justification:

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

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00252.0
Category:	E. Main Replacements
Category-Sub:	1. Main Replacements
Workpaper Group:	002520 - Main Replacements

Forecast Methodology:

Labor - 5-YR Average

SoCalGas used the historical five-year (2009 - 2013) average to forecast the labor expenditures. This forecast methodology best represent the cyclical volume of work qualified on an annual basis and captures the various challenges encountered during the construction of main replacements as well as this work category's dependency on the condition of the pipe as observed during maintenance activities.

Non-Labor - 5-YR Average

The non-labor expenditures were also calculated using the historical five-year (2009 - 2013) average. This methodology was chosen because it complements the labor component in that it best represents the cyclical volume of work performed by pipeline contracts, third-party services, paving services, municipal permit and inspector fees, and materials cost.

NSE - 5-YR Average

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00252.0
Category: E. Main Replacements
Category-Sub: 1. Main Replacements
Workpaper Group: 002520 - Main Replacements

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	5-YR Average	5,078	5,078	5,078	0	0	0	5,078	5,078	5,078
Non-Labor	5-YR Average	42,155	42,155	42,155	0	0	0	42,155	42,155	42,155
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**47,233**	**47,233**	**47,233**	**0**	**0**	**0**	**47,233**	**47,233**	**47,233**
FTE	5-YR Average	62.6	62.6	62.6	0.0	0.0	0.0	62.6	62.6	62.6

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00252.0
Category: E. Main Replacements
Category-Sub: 1. Main Replacements
Workpaper Group: 002520 - Main Replacements

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	4,474	4,669	3,529	3,487	3,416
Non-Labor	30,438	39,105	49,022	34,200	40,512
NSE	0	0	0	0	0
Total	**34,912**	**43,774**	**52,552**	**37,687**	**43,929**
FTE	63.7	64.0	47.5	46.7	44.1
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	4,474	4,669	3,529	3,487	3,416
Non-Labor	30,438	39,105	49,022	34,200	40,512
NSE	0	0	0	0	0
Total	**34,912**	**43,774**	**52,552**	**37,687**	**43,929**
FTE	63.7	64.0	47.5	46.7	44.1
Vacation & Sick (Nominal $)					
Labor	808	816	586	558	568
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**808**	**816**	**586**	**558**	**568**
FTE	12.0	11.6	8.1	7.7	7.4
Escalation to 2013$					
Labor	1,205	974	312	-13	0
Non-Labor	6,946	6,944	3,718	-109	0
NSE	0	0	0	0	0
Total	**8,151**	**7,918**	**4,030**	**-122**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	6,487	6,459	4,428	4,033	3,984
Non-Labor	37,384	46,049	52,741	34,091	40,512
NSE	0	0	0	0	0
Total	**43,872**	**52,508**	**57,168**	**38,124**	**44,496**
FTE	75.7	75.6	55.6	54.4	51.5

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00252.0
Category: E. Main Replacements
Category-Sub: 1. Main Replacements
Workpaper Group: 002520 - Main Replacements

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002520

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00252.0
Category: E. Main Replacements
Category-Sub: 1. Main Replacements
Workpaper Group: 002520 - Main Replacements
Workpaper Detail: 002520.001 - Main Replacements

In-Service Date: Not Applicable

Description:

This work category includes expenditures to replace main operating at 60 psig and below, also referred to as medium pressure main replacements. Some of the major drivers for these replacement projects include deteriorating pipe conditions, risk to the public, and increased maintenance costs.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	5,078	5,078	5,078
Non-Labor	42,155	42,155	42,155
NSE	0	0	0
Total	**47,233**	**47,233**	**47,233**
FTE	62.6	62.6	62.6

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Category: F. Service Replacements
Workpaper: 002560

Summary for Category: F. Service Replacements

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
Labor	4,889	5,067	4,981	4,970
Non-Labor	12,602	17,150	10,918	10,139
NSE	0	0	0	0
Total	**17,491**	**22,217**	**15,899**	**15,109**
FTE	62.1	61.6	60.5	60.4

002560 Service Replacements

Labor	4,889	5,067	4,981	4,970
Non-Labor	12,602	17,150	10,918	10,139
NSE	0	0	0	0
Total	**17,491**	**22,217**	**15,899**	**15,109**
FTE	62.1	61.6	60.5	60.4

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002560 - Service Replacements

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00256.0
Category: F. Service Replacements
Category-Sub: 1. Service Replacements
Workpaper Group: 002560 - Service Replacements

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	5-YR Average	6,145	5,145	4,535	4,137	4,889	5,067	4,981	4,970
Non-Labor	5-YR Average	8,602	8,495	10,897	10,100	12,602	17,150	10,918	10,139
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**14,746**	**13,640**	**15,432**	**14,236**	**17,491**	**22,217**	**15,899**	**15,109**
FTE	5-YR Average	71.1	59.0	55.4	54.3	62.1	61.6	60.5	60.4

Business Purpose:

Budget Codes: 256, 257, 258, 260.

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

Physical Description:

SoCalGas has approximately 49,000 miles of service pipe. These distribution service lines are used to transports gas from a common source of supply to an individual residence, or to two adjacent or adjoining residences, or a small commercial customer. It is also common to serve multi-residential buildings and multi-commercial customers through a meter header or a manifold. A service line ends at the end of the customer meter or at the connection to a customer’s piping, whichever is further downstream, or at the connection to customer piping if there is no meter.

Project Justification:

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

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00256.0
Category:	F. Service Replacements
Category-Sub:	1. Service Replacements
Workpaper Group:	002560 - Service Replacements

Forecast Methodology:

Labor - 5-YR Average

Since the level of spending in this routine replacement category is highly dependent on the condition of the pipe as observed during maintenance activities, SoCalGas used the historical five-year (2009 - 2013) average to forecast the labor expenditures. This forecast methodology best represent the cyclical volume of routine work qualified on an annual basis and captures the various challenges encountered during the construction of service replacements. This workpaper also includes an incremental non-routine project to replace leaking services.

See 002560.002 - Replacement of Leaking Services and Supplemental Workpaper SCG-FBA-CAP-SUP-004.

Non-Labor - 5-YR Average

The non-labor expenditures were also calculated using the historical five-year (2009 - 2013) average. This methodology was selected because it complements the labor component in that it best represents the cyclical volume of work performed by pipeline contracts, third-party services, paving services, municipal permit and inspector fees, and materials cost. This workpaper also includes an incremental non-routine project to replace leaking services.

See 002560.002 - Replacement of Leaking Services and Supplemental Workpaper SCG-FBA-CAP-SUP-004.

NSE - 5-YR Average

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00256.0
Category: F. Service Replacements
Category-Sub: 1. Service Replacements
Workpaper Group: 002560 - Service Replacements

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	5-YR Average	4,969	4,969	4,969	97	11	0	5,066	4,980	4,969
Non-Labor	5-YR Average	10,139	10,139	10,139	7,011	779	0	17,150	10,918	10,139
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**15,108**	**15,108**	**15,108**	**7,108**	**790**	**0**	**22,216**	**15,898**	**15,108**
FTE	5-YR Average	60.4	60.4	60.4	1.2	0.1	0.0	61.6	60.5	60.4

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014	97	7,011	0	7,108	1.2	DAVALOS2014050
a. Replacement of Leaking Services. See Workpaper 002560.002 for additional details on this leakage reduction effort. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-004.						
2014 Total	97	7,011	0	7,108	1.2	
2015	11	779	0	790	0.1	DAVALOS2014050
a. Replacement of Leaking Services. See Workpaper 002560.002 for additional details on this leakage reduction effort. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-004.						
2015 Total	11	779	0	790	0.1	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00256.0
Category: F. Service Replacements
Category-Sub: 1. Service Replacements
Workpaper Group: 002560 - Service Replacements

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	4,237	3,719	3,615	3,577	3,506
Non-Labor	7,004	7,214	10,129	10,132	12,574
NSE	0	0	0	0	0
Total	**11,241**	**10,933**	**13,744**	**13,709**	**16,080**
FTE	59.8	50.0	47.3	46.6	43.5
Adjustments (Nominal $) **					
Labor	0	0	0	0	686
Non-Labor	0	0	0	0	28
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**714**
FTE	0.0	0.0	0.0	0.0	9.6
Recorded-Adjusted (Nominal $)					
Labor	4,237	3,719	3,615	3,577	4,192
Non-Labor	7,004	7,214	10,129	10,132	12,602
NSE	0	0	0	0	0
Total	**11,241**	**10,933**	**13,744**	**13,709**	**16,794**
FTE	59.8	50.0	47.3	46.6	53.1
Vacation & Sick (Nominal $)					
Labor	766	650	600	573	697
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**766**	**650**	**600**	**573**	**697**
FTE	11.3	9.0	8.1	7.7	9.0
Escalation to 2013$					
Labor	1,142	776	320	-13	0
Non-Labor	1,598	1,281	768	-32	0
NSE	0	0	0	0	0
Total	**2,740**	**2,057**	**1,088**	**-46**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	6,145	5,145	4,535	4,137	4,889
Non-Labor	8,602	8,495	10,897	10,100	12,602
NSE	0	0	0	0	0
Total	**14,746**	**13,640**	**15,432**	**14,236**	**17,491**
FTE	71.1	59.0	55.4	54.3	62.1

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00256.0
Category: F. Service Replacements
Category-Sub: 1. Service Replacements
Workpaper Group: 002560 - Service Replacements

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	686
Non-Labor	0	0	0	0	28
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**714**
FTE	0.0	0.0	0.0	0.0	9.6

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013	686	28	0	714	9.6	TP1RMC2014021813511
Move historical costs for capital MSA work to Service Replacements.						
2013 Total	686	28	0	714	9.6	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002560

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00256.0
Category: F. Service Replacements
Category-Sub: 1. Service Replacements
Workpaper Group: 002560 - Service Replacements
Workpaper Detail: 002560.001 - Service Replacements

In-Service Date: Not Applicable

Description:

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

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	4,970	4,970	4,970
Non-Labor	10,139	10,139	10,139
NSE	0	0	0
Total	**15,109**	**15,109**	**15,109**
FTE	60.4	60.4	60.4

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00256.0
Category:	F. Service Replacements
Category-Sub:	1. Service Replacements
Workpaper Group:	002560 - Service Replacements
Workpaper Detail:	002560.002 - Replacement of Leaking Services
In-Service Date:	Not Applicable

Description:

SoCalGas plans to mitigate 1800 gas leaks by performing service replacements. Most of the construction work will be performed by pipeline contractors. The expenditures forecasted in this workpaper sub represent the cost to complete this work. Both, the labor and non-labor were forecasted using the 2013 average cost per contractor service replacement times the targeted 1,800 service replacements.

See supplemental workpaper SCG-FBA-CAP-SUP-004 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	97	11	0
Non-Labor	7,011	779	0
NSE	0	0	0
Total	**7,108**	**790**	**0**
FTE	1.2	0.1	0.0

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 002560

SCG-FBA-CAP-SUP-004

Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala

Supplemental Workpaper Calculations for Incremental Costs Related to the Replacement of Leaking Services

Service Replacements Workpaper

Assumptions:

[A]: The total estimated number of backlog leaking services to be replaced over the forecast period.

[B]: The percentage of the leaking services in column [A] to be replaced in each year.

[D]: Labor Cost per order based on 2013 historical 3" & under services replaced with plastic using insert method performed by contractors.

[F]: Non-Labor Cost per order based on 2013 historical 3" & under services replaced with plastic using insert method performed by contractors plus cost of incremental anode.
($4268.05 historical cost per service replacement + $59.61 per anode = $4327.66)

[H] Labor Dollars per FTE based on 5-yr (2009-2013) average of historical labor and historical FTEs.
($4,970,000 Labor / 60.4 FTEs = $82,285 / FTE)

Amounts are shown in 2013 dollars and include vacation and sick.

	[A]	[B]	[C] ([A]x[B])	[D]	[E] ([C]x[D])	[F]	[G] ([C]x[F])	([E]+[G])	[H]	[I] ([E]/[H])
	Total	% Per Year	# of Services to Be Replaced per Year	Labor Cost per Order	Total Labor Forecast	Non-Labor Cost per Order	Total Non-Labor Forecast	Total Forecast	Average Historical Labor$ / FTE	FTEs
2014	1,800	90%	1,620	$ 59.84	$ 96,941	$ 4,327.66	$ 7,010,809	$ 7,107,750	$ 82,285	1.2
2015	1,800	10%	180	$ 59.84	$ 10,771	$ 4,327.66	$ 778,979	$ 789,750	$ 82,285	0.1
2016	1,800	0%	-	$ 59.84	$ -	$ 4,327.66	$ -	$ -	$ 82,285	0.0

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Category: G. Main & Service Abandonments
Workpaper: 002540

Summary for Category: G. Main & Service Abandonments

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
Labor	1,526	1,500	1,500	1,500
Non-Labor	2,547	2,082	2,082	2,082
NSE	0	0	0	0
Total	**4,073**	**3,582**	**3,582**	**3,582**
FTE	19.9	18.8	18.8	18.8

002540 Main & Service Abandonments

Labor	1,526	1,500	1,500	1,500
Non-Labor	2,547	2,082	2,082	2,082
NSE	0	0	0	0
Total	**4,073**	**3,582**	**3,582**	**3,582**
FTE	19.9	18.8	18.8	18.8

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002540 - Main & Service Abandonments

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00254.0
Category: G. Main & Service Abandonments
Category-Sub: 1. Main & Service Abandonments
Workpaper Group: 002540 - Main & Service Abandonments

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	5-YR Average	1,640	1,441	1,429	1,467	1,526	1,500	1,500	1,500
Non-Labor	5-YR Average	1,870	1,561	2,429	2,005	2,547	2,082	2,082	2,082
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**3,509**	**3,002**	**3,859**	**3,471**	**4,073**	**3,582**	**3,582**	**3,582**
FTE	5-YR Average	19.4	16.8	18.0	19.9	19.9	18.8	18.8	18.8

Business Purpose:

Budget Codes: 254, 259.

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

Physical Description:

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

Project Justification:

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

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00254.0
Category:	G. Main & Service Abandonments
Category-Sub:	1. Main & Service Abandonments
Workpaper Group:	002540 - Main & Service Abandonments

Forecast Methodology:

Labor - 5-YR Average

The level of spending in this routine abandonment category is highly dependent on the demand for demolition and grading of private and public right of ways. Due to the unscheduled and unpredictable nature of this work, SoCalGas used the historical five-year (2009 - 2013) average to forecast the labor expenditures to accommodate for this factor. This forecast methodology best represent the cyclical volume of work over a five-year period while considering the variables that impact main and service abandonments.

Non-Labor - 5-YR Average

The non-labor expenditures were also calculated using the historical five-year (2009 - 2013) average. This methodology was chosen because it complements the labor component in that it best represents the cyclical volume of work performed by pipeline contracts, third party services, paving services, municipal permit and inspector fees, and materials cost.

NSE - 5-YR Average

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00254.0
Category: G. Main & Service Abandonments
Category-Sub: 1. Main & Service Abandonments
Workpaper Group: 002540 - Main & Service Abandonments

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	5-YR Average	1,500	1,500	1,500	0	0	0	1,500	1,500	1,500
Non-Labor	5-YR Average	2,082	2,082	2,082	0	0	0	2,082	2,082	2,082
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**3,582**	**3,582**	**3,582**	**0**	**0**	**0**	**3,582**	**3,582**	**3,582**
FTE	5-YR Average	18.8	18.8	18.8	0.0	0.0	0.0	18.8	18.8	18.8

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00254.0
Category: G. Main & Service Abandonments
Category-Sub: 1. Main & Service Abandonments
Workpaper Group: 002540 - Main & Service Abandonments

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	1,131	1,042	1,139	1,268	1,308
Non-Labor	1,522	1,325	2,258	2,011	2,547
NSE	0	0	0	0	0
Total	**2,653**	**2,367**	**3,397**	**3,279**	**3,855**
FTE	16.3	14.2	15.4	17.1	17.0
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	1,131	1,042	1,139	1,268	1,308
Non-Labor	1,522	1,325	2,258	2,011	2,547
NSE	0	0	0	0	0
Total	**2,653**	**2,367**	**3,397**	**3,279**	**3,855**
FTE	16.3	14.2	15.4	17.1	17.0
Vacation & Sick (Nominal $)					
Labor	204	182	189	203	217
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**204**	**182**	**189**	**203**	**217**
FTE	3.1	2.6	2.6	2.8	2.9
Escalation to 2013$					
Labor	305	217	101	-5	0
Non-Labor	347	235	171	-6	0
NSE	0	0	0	0	0
Total	**652**	**453**	**272**	**-11**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	1,640	1,441	1,429	1,467	1,526
Non-Labor	1,870	1,561	2,429	2,005	2,547
NSE	0	0	0	0	0
Total	**3,509**	**3,002**	**3,859**	**3,471**	**4,073**
FTE	19.4	16.8	18.0	19.9	19.9

* 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.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00254.0
Category: G. Main & Service Abandonments
Category-Sub: 1. Main & Service Abandonments
Workpaper Group: 002540 - Main & Service Abandonments

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002540

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00254.0
Category: G. Main & Service Abandonments
Category-Sub: 1. Main & Service Abandonments
Workpaper Group: 002540 - Main & Service Abandonments
Workpaper Detail: 002540.001 - Main and Service Abandonments

In-Service Date: Not Applicable

Description:

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

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	1,500	1,500	1,500
Non-Labor	2,082	2,082	2,082
NSE	0	0	0
Total	**3,582**	**3,582**	**3,582**
FTE	18.8	18.8	18.8

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Category: H. Regulator Stations
Workpaper: 002650

Summary for Category: H. Regulator Stations

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
Labor	239	354	354	354
Non-Labor	7,011	5,200	5,200	5,200
NSE	0	0	0	0
Total	**7,250**	**5,554**	**5,554**	**5,554**
FTE	2.7	4.1	4.1	4.1

002650 Regulator Stations

Labor	239	354	354	354
Non-Labor	7,011	5,200	5,200	5,200
NSE	0	0	0	0
Total	**7,250**	**5,554**	**5,554**	**5,554**
FTE	2.7	4.1	4.1	4.1

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002650 - Regulator Stations

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00265.0
Category: H. Regulator Stations
Category-Sub: 1. Regulator Stations
Workpaper Group: 002650 - Regulator Stations

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	5-YR Average	462	394	301	375	239	354	354	354
Non-Labor	5-YR Average	4,284	4,036	6,316	4,353	7,011	5,200	5,200	5,200
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**4,746**	**4,430**	**6,617**	**4,728**	**7,250**	**5,554**	**5,554**	**5,554**
FTE	5-YR Average	5.0	4.3	3.6	4.7	2.7	4.1	4.1	4.1

Business Purpose:

Budget Code: 265.

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

Physical Description:

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

Project Justification:

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

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00265.0
Category:	H. Regulator Stations
Category-Sub:	1. Regulator Stations
Workpaper Group:	002650 - Regulator Stations

Forecast Methodology:

Labor - 5-YR Average

Regulator Station replacements are dependent on the review of operating conditions, detailed planning requirements, acquiring the required permits, consideration to weather conditions and coordination of scheduling resources. Another factor that impacts labor cost is the likelihood of encountering unexpected challenges during construction. For these reasons, SoCalGas is estimating the labor expenditures for the years 2014 through 2016 based on an historical five-year (2009 - 2013) average of recorded expenditures. Based on the number of variables involved in these larger scale projects, this average is most representative of future work requirements and expected expenditures, as it captures typical fluctuations in costs from year to year.

Non-Labor - 5-YR Average

Due to the same factors influencing the labor component, SoCalGas estimated the non-labor expenditures for the years 2014 through 2016 based on an historical five-year (2009 - 2013) average of recorded expenditures. This methodology was chosen because it complements the labor component in that it best represents the cyclical volume of work performed by pipeline contracts, third-party services, paving services, municipal permit and inspector fees, and materials cost.

NSE - 5-YR Average

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00265.0
Category: H. Regulator Stations
Category-Sub: 1. Regulator Stations
Workpaper Group: 002650 - Regulator Stations

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	5-YR Average	354	354	354	0	0	0	354	354	354
Non-Labor	5-YR Average	5,199	5,199	5,199	0	0	0	5,199	5,199	5,199
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**5,553**	**5,553**	**5,553**	**0**	**0**	**0**	**5,553**	**5,553**	**5,553**
FTE	5-YR Average	4.1	4.1	4.1	0.0	0.0	0.0	4.1	4.1	4.1

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00265.0
Category: H. Regulator Stations
Category-Sub: 1. Regulator Stations
Workpaper Group: 002650 - Regulator Stations

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	318	285	240	325	205
Non-Labor	3,488	3,428	5,870	4,366	7,011
NSE	0	0	0	0	0
Total	**3,806**	**3,712**	**6,111**	**4,691**	**7,216**
FTE	4.2	3.6	3.1	4.0	2.3
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	318	285	240	325	205
Non-Labor	3,488	3,428	5,870	4,366	7,011
NSE	0	0	0	0	0
Total	**3,806**	**3,712**	**6,111**	**4,691**	**7,216**
FTE	4.2	3.6	3.1	4.0	2.3
Vacation & Sick (Nominal $)					
Labor	58	50	40	52	34
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**58**	**50**	**40**	**52**	**34**
FTE	0.8	0.7	0.5	0.7	0.4
Escalation to 2013$					
Labor	86	59	21	-1	0
Non-Labor	796	609	445	-14	0
NSE	0	0	0	0	0
Total	**882**	**668**	**466**	**-15**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	462	394	301	375	239
Non-Labor	4,284	4,036	6,316	4,353	7,011
NSE	0	0	0	0	0
Total	**4,746**	**4,430**	**6,617**	**4,728**	**7,250**
FTE	5.0	4.3	3.6	4.7	2.7

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00265.0
Category: H. Regulator Stations
Category-Sub: 1. Regulator Stations
Workpaper Group: 002650 - Regulator Stations

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002650

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00265.0
Category: H. Regulator Stations
Category-Sub: 1. Regulator Stations
Workpaper Group: 002650 - Regulator Stations
Workpaper Detail: 002650.001 - Regulator Stations

In-Service Date: Not Applicable

Description:

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

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	354	354	354
Non-Labor	5,200	5,200	5,200
NSE	0	0	0
Total	**5,554**	**5,554**	**5,554**
FTE	4.1	4.1	4.1

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Category: I. Cathodic Protection Capital
Workpaper: 001730

Summary for Category: I. Cathodic Protection Capital

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
Labor	178	580	933	933
Non-Labor	3,706	7,468	8,236	8,236
NSE	0	0	0	0
Total	**3,884**	**8,048**	**9,169**	**9,169**
FTE	1.9	6.3	10.2	10.2

001730 Cathodic Protection (CP) Capital

Labor	178	580	933	933
Non-Labor	3,706	7,468	8,236	8,236
NSE	0	0	0	0
Total	**3,884**	**8,048**	**9,169**	**9,169**
FTE	1.9	6.3	10.2	10.2

Note: Totals may include rounding differences.

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00173.0
Category: I. Cathodic Protection Capital
Category-Sub: 1. Cathodic Protection Capital
Workpaper Group: 001730 - Cathodic Protection (CP) Capital

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	5-YR Average	352	226	152	54	178	580	933	933
Non-Labor	5-YR Average	4,500	3,786	3,628	2,378	3,706	7,468	8,236	8,236
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**4,852**	**4,012**	**3,780**	**2,432**	**3,884**	**8,048**	**9,169**	**9,169**
FTE	5-YR Average	3.9	2.4	1.6	0.6	1.9	6.3	10.2	10.2

Business Purpose:

Budget Codes: 173, 263, 273.

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

Physical Description:

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

Project Justification:

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

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00173.0
Category:	I. Cathodic Protection Capital
Category-Sub:	1. Cathodic Protection Capital
Workpaper Group:	001730 - Cathodic Protection (CP) Capital

Forecast Methodology:

Labor - 5-YR Average

Expenses for this work group vary from year to year due to a variety of factors that impact the effectiveness and productivity of a cathodic protection system. For this reason the five-year (2009 - 2013) historical average is justified as being the best estimate for projected expenditures, assuming the same basic level of work is forecasted. In addition to the five-year average level of expenditures, an incremental level of required expenses have been identified to manage additional work that has been identified which is above and beyond the normal level seen in the historical data.

See Workpaper 001730.002 and Supplemental Workpaper SCG-FBA-CAP-SUP-005 for additional details.

Non-Labor - 5-YR Average

Expenses for this work group vary from year to year due to a variety of factors that impact the effectiveness and productivity of a cathodic protection system. For this reason the five-year (2009 - 2013) historical average is justified as being the best estimate for projected expenditures, assuming the same basic level of work is forecasted. In addition to the five-year average level of expenditures, an incremental level of required expenses have been identified to manage additional work that has been identified which is above and beyond the normal level seen in the historical data.

See Workpaper 001730.002 and Supplemental Workpaper SCG-FBA-CAP-SUP-005 for additional details.

NSE - 5-YR Average

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00173.0
Category: I. Cathodic Protection Capital
Category-Sub: 1. Cathodic Protection Capital
Workpaper Group: 001730 - Cathodic Protection (CP) Capital

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	5-YR Average	192	192	192	387	740	740	579	932	932
Non-Labor	5-YR Average	3,599	3,599	3,599	3,869	4,637	4,637	7,468	8,236	8,236
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**3,791**	**3,791**	**3,791**	**4,256**	**5,377**	**5,377**	**8,047**	**9,168**	**9,168**
FTE	5-YR Average	2.1	2.1	2.1	4.2	8.1	8.1	6.3	10.2	10.2

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014	387	3,869	0	4,256	4.2	TP1RMC20131126
a. Incremental Cathodic Protection System Enhancements. See Workpaper 001730.002 for details on the incremental cathodic protection system enhancements. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-005.						
2014 Total	387	3,869	0	4,256	4.2	
2015	740	4,637	0	5,377	8.1	TP1RMC20131126
a. Incremental Cathodic Protection System Enhancements. See Workpaper 001730.002 for details on the incremental cathodic protection system enhancements. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-005.						
2015 Total	740	4,637	0	5,377	8.1	
2016	740	4,637	0	5,377	8.1	TP1RMC20131126
a. Incremental Cathodic Protection System Enhancements. See Workpaper 001730.002 for details on the incremental cathodic protection system enhancements. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-005.						
2016 Total	740	4,637	0	5,377	8.1	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00173.0
Category: I. Cathodic Protection Capital
Category-Sub: 1. Cathodic Protection Capital
Workpaper Group: 001730 - Cathodic Protection (CP) Capital

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	243	164	121	47	153
Non-Labor	3,664	3,215	3,373	2,386	3,706
NSE	0	0	0	0	0
Total	**3,906**	**3,378**	**3,494**	**2,432**	**3,859**
FTE	3.3	2.0	1.4	0.5	1.6
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	243	164	121	47	153
Non-Labor	3,664	3,215	3,373	2,386	3,706
NSE	0	0	0	0	0
Total	**3,906**	**3,378**	**3,494**	**2,432**	**3,859**
FTE	3.3	2.0	1.4	0.5	1.6
Vacation & Sick (Nominal $)					
Labor	44	29	20	7	25
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**44**	**29**	**20**	**7**	**25**
FTE	0.6	0.4	0.2	0.1	0.3
Escalation to 2013$					
Labor	65	34	11	0	0
Non-Labor	836	571	256	-8	0
NSE	0	0	0	0	0
Total	**901**	**605**	**267**	**-8**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	352	226	152	54	178
Non-Labor	4,500	3,786	3,628	2,378	3,706
NSE	0	0	0	0	0
Total	**4,852**	**4,012**	**3,780**	**2,432**	**3,884**
FTE	3.9	2.4	1.6	0.6	1.9

* 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.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00173.0
Category: I. Cathodic Protection Capital
Category-Sub: 1. Cathodic Protection Capital
Workpaper Group: 001730 - Cathodic Protection (CP) Capital

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 001730

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00173.0
Category: I. Cathodic Protection Capital
Category-Sub: 1. Cathodic Protection Capital
Workpaper Group: 001730 - Cathodic Protection (CP) Capital
Workpaper Detail: 001730.001 - Cathodic Protection Capital

In-Service Date: Not Applicable

Description:

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

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	193	193	193
Non-Labor	3,599	3,599	3,599
NSE	0	0	0
Total	**3,792**	**3,792**	**3,792**
FTE	2.1	2.1	2.1

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00173.0
Category: I. Cathodic Protection Capital
Category-Sub: 1. Cathodic Protection Capital
Workpaper Group: 001730 - Cathodic Protection (CP) Capital
Workpaper Detail: 001730.002 - Incremental Cathodic Protection System Enhancements

In-Service Date: Not Applicable

Description:

SoCalGas has been experiencing an increase in the number of cathodic protection (CP) areas that require additional action to maintain the necessary output to appropriately protect the steel piping system. This is attributed to a number of factors that impact the effectiveness of a CP system. These factors include an aging infrastructure, which is primarily the degradation of the external pipe coating that naturally occurs over time; the reduction in output of a considerable number of magnesium anode beds - many more than routinely experienced (anode beds have a life expectancy of around 10-12 years); continuing dry weather – lack of rain and ground water tends to accelerate the depletion of magnesium anodes. As a result there is a need to replace an increasing number of depleting magnesium anode beds.

This incremental effort will focus on the assessment of the current cathodic protection systems (CP areas) with the goal of strategically combining multiple smaller areas into larger areas wherever possible and practical. These larger areas will be protected by impressed current systems rather than galvanic systems. Depending on the size of the area, shallow or deep well anode beds will be utilized.

Advantages of impressed current compared to galvanic include:
-Fewer anode locations, impressed current systems can adequately protect larger areas from one location.
-Typically simplifies the level of trouble shooting through use of interruption and application of signal to the system.
-Longer life between replacements of anode beds
-Provides for remote monitoring capabilities to help assess the system performance
-Ability to adjust output as conditions change, rather than installation and multiple replacements of additional galvanic anodes
-Increased ability to demonstrate compliance through gathering of amps and volt data in addition to pipe-to-soil measurements.

See supplemental workpaper SCG-FBA-CAP-SUP-005 for calculation details.

Forecast In 2013 $(000)

Years	2014	2015	2016
Labor	387	740	740
Non-Labor	3,869	4,637	4,637
NSE	0	0	0
Total	**4,256**	**5,377**	**5,377**
FTE	4.2	8.1	8.1

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 001730

SCG-FBA-CAP-SUP-005
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper Calculations for Incremental Cathodic Protection System Enhancements
Cathodic Protection (CP) Capital Workpaper

Assumptions:

[A]: Total Backlog of Capital Cathodic Protection (CP) Packages per system type.

[B]-[D]: CP Packages to be worked in each year.

[E]: Estimated non-labor spent on each package per system type. Estimates obtained from cathodic protection subject matter experts.

[I]: Estimated System Protection Specialist (SPS) hours spent on each package. Estimates obtained from cathodic protection subject matter experts.

[J]: System Protection Specialist Labor rate

Number of Capital CP Packages

	[A]	[B]	[C]	[D]
Types of Capital CP Packages	**Total CP Packages**	**2014 CP Packages**	**2015 CP Packages**	**2016 CP Packages**
4 pairs of 20lb Anodes	189	23	83	83
Shallow Well	34	20	7	7
6 pairs of 20lb Anodes	96	12	42	42
Deep Well	64	20	22	22
Total	**383**	**75**	**154**	**154**

Non-Labor (2013$)

	[E]	[F] ([B]x[E])	[G] ([C]x[E])	[H] ([D]x[E])
	Non Labor Cost per Package Category	**2014 Non-Labor**	**2015 Non-Labor**	**2016 Non-Labor**
4 pairs of 20lb Anodes	$ 14,046	$ 323,052.25	$ 1,165,797	$ 1,165,797
Shallow Well	$ 60,455	$ 1,209,099	$ 423,185	$ 423,185
6 pairs of 20lb Anodes	$ 16,551	$ 198,617	$ 695,161	$ 695,161
Deep Well	$ 106,933	$ 2,138,670	$ 2,352,537	$ 2,352,537
Total		**$ 3,869,438**	**$ 4,636,679**	**$ 4,636,679**

Labor (2013$)

	[I]	[J]	[K] ([B]x[I]x[J])	[L] ([C]x[I]x[J])	[M] ([D]x[I]x[J])
Types of Capital CP Packages	**Est. Hours per Package**	**SPS Labor Rate**	**2014 Labor**	**2015 Labor**	**2016 Labor**
4 pairs of 20lb Anodes	120	$ 37.96	$ 104,770	$ 378,082	$ 378,082
Shallow Well	140	$ 37.96	$ 106,288	$ 37,201	$ 37,201
6 pairs of 20lb Anodes	120	$ 37.96	$ 54,662	$ 191,318	$ 191,318
Deep Well	160	$ 37.96	$ 121,472	$ 133,619	$ 133,619
Total Labor			**$ 387,192**	**$ 740,220**	**$ 740,220**

FTEs

	[N]	[O] ([K]/[N])	[P] ([L]/[N])	[Q] ([M]/[N])
	5-Year Historical Average Labor / FTE	**2014 FTEs**	**2015 FTEs**	**2016 FTEs**
Total FTEs	$ 91,678	4.2	8.1	8.1

Forecast Summary (Thousands of 2013$)

	([F]/1000, [K]/1000, [O])	([G]/1000, [L]/1000, [P])	([H]/1000, [M]/1000, [Q])
	2014	**2015**	**2016**
Labor	$ 387	$ 740	$ 740
Non-Labor	$ 3,869	$ 4,637	$ 4,637
Total	**$ 4,256**	**$ 5,377**	**$ 5,377**
FTEs	4.2	8.1	8.1

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Category: J. Pipeline Relocations - Freeway
Workpaper: 002610

Summary for Category: J. Pipeline Relocations - Freeway

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
Labor	201	201	201	201
Non-Labor	10,100	10,100	10,100	10,100
NSE	0	0	0	0
Total	**10,301**	**10,301**	**10,301**	**10,301**
FTE	2.2	2.2	2.2	2.2

002610 Pipeline Relocations - Freeway

Labor	201	201	201	201
Non-Labor	10,100	10,100	10,100	10,100
NSE	0	0	0	0
Total	**10,301**	**10,301**	**10,301**	**10,301**
FTE	2.2	2.2	2.2	2.2

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002610 - Pipeline Relocations - Freeway

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00261.0
Category: J. Pipeline Relocations - Freeway
Category-Sub: 1. Pipeline Relocations - Freeway
Workpaper Group: 002610 - Pipeline Relocations - Freeway

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Base YR Rec	141	104	66	249	201	201	201	201
Non-Labor	Base YR Rec	2,585	1,973	1,449	8,798	10,100	10,100	10,100	10,100
NSE	Base YR Rec	0	0	0	0	0	0	0	0
Total		**2,725**	**2,077**	**1,515**	**9,047**	**10,301**	**10,301**	**10,301**	**10,301**
FTE	Base YR Rec	1.5	1.3	0.8	2.8	2.2	2.2	2.2	2.2

Business Purpose:

Budget Codes: 261, 268.

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

Physical Description:

Gas pipeline relocation projects are performed to establish adequate clearance to accommodate freeway construction improvements and/or expansions. These pipeline relocation projects include all sizes of distribution main and associated service lines, meter set assemblies and related gas facilities.
Freeway relocation projects include altering:
- Pipeline crossing over and under a freeway bridge span.
- Any gas facility interfering with construction and located within CalTrans' right-of-way.
- Any gas facility outside of CalTrans' right-of-way deemed to interfere with freeway construction.

Project Justification:

The exact timing and number of freeway pipeline projects are driven by outside agencies, thus expenditures in this category are dependent on the number, extent and timing of these requests and are outside of SoCalGas' control. However, when projects do occur, SoCalGas must complete its portion of the work in a timely manner in an effort to not cause construction schedule delays for the agency. Freeway construction is expected to continue at the same levels of activity as in 2013 due to the Department of Transportation's continued commitment to sponsor project grants through the Transportation Investment Generating Economic Recovery, which is helping fund many public projects throughout SoCalGas' service territory.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00261.0
Category:	J. Pipeline Relocations - Freeway
Category-Sub:	1. Pipeline Relocations - Freeway
Workpaper Group:	002610 - Pipeline Relocations - Freeway

Forecast Methodology:

Labor - Base YR Rec

The labor expenditures were forecasted using the 2013 historical expenditures as the base. Using the 2013 base year captures the latest magnitude of freeway construction activity experienced, which is expected to continue into the forecast years (2014 - 2016). A separate sub-workpaper was created to capture the forecasted collectible portion of this work category.

See workpapers 002610.001 and see 02610.002 for the collectible and non-collectible portions of the forecasts and supplemental workpaper SCG-FBA-CAP-SUP-006 for the calculation details.

Non-Labor - Base YR Rec

The non-labor expenditures also used the historical expenditures from 2013 as the base year as it best represents the volume of work performed by pipeline contracts, third-party services, paving services, municipal permit and inspector fees, and materials cost. A separate sub-workpaper was created to capture the forecasted collectible portion of this work category.

See workpapers 002610.001 and see 02610.002 for the collectible and non-collectible portions of the forecasts and supplemental workpaper SCG-FBA-CAP-SUP-006 for the calculation details.

NSE - Base YR Rec

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00261.0
Category: J. Pipeline Relocations - Freeway
Category-Sub: 1. Pipeline Relocations - Freeway
Workpaper Group: 002610 - Pipeline Relocations - Freeway

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	Base YR Rec	201	201	201	0	0	0	201	201	201
Non-Labor	Base YR Rec	10,099	10,099	10,099	0	0	0	10,099	10,099	10,099
NSE	Base YR Rec	0	0	0	0	0	0	0	0	0
Total		**10,300**	**10,300**	**10,300**	**0**	**0**	**0**	**10,300**	**10,300**	**10,300**
FTE	Base YR Rec	2.2	2.2	2.2	0.0	0.0	0.0	2.2	2.2	2.2

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00261.0
Category: J. Pipeline Relocations - Freeway
Category-Sub: 1. Pipeline Relocations - Freeway
Workpaper Group: 002610 - Pipeline Relocations - Freeway

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	97	75	53	215	173
Non-Labor	2,105	1,676	1,347	8,826	10,100
NSE	0	0	0	0	0
Total	**2,202**	**1,751**	**1,399**	**9,041**	**10,272**
FTE	1.3	1.1	0.7	2.4	1.9
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	97	75	53	215	173
Non-Labor	2,105	1,676	1,347	8,826	10,100
NSE	0	0	0	0	0
Total	**2,202**	**1,751**	**1,399**	**9,041**	**10,272**
FTE	1.3	1.1	0.7	2.4	1.9
Vacation & Sick (Nominal $)					
Labor	18	13	9	34	29
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**18**	**13**	**9**	**34**	**29**
FTE	0.2	0.2	0.1	0.4	0.3
Escalation to 2013$					
Labor	26	16	5	-1	0
Non-Labor	480	298	102	-28	0
NSE	0	0	0	0	0
Total	**506**	**313**	**107**	**-29**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	141	104	66	249	201
Non-Labor	2,585	1,973	1,449	8,798	10,100
NSE	0	0	0	0	0
Total	**2,725**	**2,077**	**1,515**	**9,047**	**10,301**
FTE	1.5	1.3	0.8	2.8	2.2

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00261.0
Category: J. Pipeline Relocations - Freeway
Category-Sub: 1. Pipeline Relocations - Freeway
Workpaper Group: 002610 - Pipeline Relocations - Freeway

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002610

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00261.0
Category:	J. Pipeline Relocations - Freeway
Category-Sub:	1. Pipeline Relocations - Freeway
Workpaper Group:	002610 - Pipeline Relocations - Freeway
Workpaper Detail:	002610.001 - Pipeline Relocations - Freeway -- Non-Collectible
In-Service Date:	Not Applicable

Description:

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

This workpaper contains the non-collectible portion of this forecast. The collectible portion can be found in workpaper 002610.002.

See supplemental workpaper SCG-FBA-CAP-SUP-006 for calculation details.

Forecast In 2013 $(000)

Years	2014	2015	2016
Labor	194	194	194
Non-Labor	9,752	9,752	9,752
NSE	0	0	0
Total	**9,946**	**9,946**	**9,946**
FTE	2.1	2.1	2.1

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00261.0
Category: J. Pipeline Relocations - Freeway
Category-Sub: 1. Pipeline Relocations - Freeway
Workpaper Group: 002610 - Pipeline Relocations - Freeway
Workpaper Detail: 002610.002 - Pipeline Relocations - Freeway -- Collectible

In-Service Date: Not Applicable

Description:

This workpaper sub isolates the corresponding forecasted collectible portion that typically accompanies this work category. Master agreements dictate cost responsibility, which result in certain agencies contributing funds toward the cost of the project. A collectible percentage was determined using an historical five-year (2009 - 2013) average, and then applied to the forecast totals to determine the corresponding collectible portions.

See supplemental workpaper SCG-FBA-CAP-SUP-006 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	7	7	7
Non-Labor	348	348	348
NSE	0	0	0
Total	**355**	**355**	**355**
FTE	0.1	0.1	0.1

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 002610

SCG-FBA-CAP-SUP-006
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper Calculations for Collectible Cost Related to Freeway
Pipeline Replacements - Freeway Workpaper

Assumptions:

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

** The forecasted ratio of cash to total direct cost is the historical five-year (2009-2013) average ratio. This ratio is applied to the forecasted amount to calculate the collectible and non-collectible portions.

Amounts are shown in thousands of 2013 dollars and include vacation and sick.

		Adjusted Recorded History					2009-2013 Total	Forecast (2013 Base Year)		
		2009	2010	2011	2012	2013		2014	2015	2016
Total Capital										
[A]	Labor	$ 141	$ 104	$ 66	$ 249	$ 201		$ 201	$ 201	$ 201
[B]	Non-Labor	$ 2,585	$ 1,973	$ 1,449	$ 8,798	$ 10,100		$ 10,100	$ 10,100	$ 10,100
[C]	**Total**	**$ 2,726**	**$ 2,077**	**$ 1,515**	**$ 9,047**	**$ 10,301**	**$ 25,666**	**$ 10,301**	**$ 10,301**	**$ 10,301**
[D]	FTEs	1.5	1.3	0.8	2.8	2.2		2.2	2.2	2.2
Collectible Ratio Calculations										
[E]	Historical Direct Cash Credits*	$ -	$ (189)	$ (48)	$ (649)	$ -	$ (886)			
[F] (-[E]/[C])	Ratio Cash to Total Direct Cost**	0%	9%	3%	7%	0%	3%	3%	3%	3%
Collectible Portion of Forecast										
[G] ([A]x[F]]	Labor							$ 7	$ 7	$ 7
[H] ([B]x[F])	Non-Labor							$ 348	$ 348	$ 348
([G]+[H])	**Total**							**$ 355**	**$ 355**	**$ 355**
[I] ([D]x[F])	FTEs							0.1	0.1	0.1
Non-Collectible Portion of Forecast										
[J] ([A]-[G])	Labor							$ 194	$ 194	$ 194
[K] ([B]-[H])	Non-Labor							$ 9,752	$ 9,752	$ 9,752
([J]+[K])	**Total**							**$ 9,946**	**$ 9,946**	**$ 9,946**
([D]-[I])	FTEs							2.1	2.1	2.1

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Category: K. Pipeline Relocations - Franchise
Workpaper: 002620

Summary for Category: K. Pipeline Relocations - Franchise

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
Labor	651	651	651	651
Non-Labor	15,916	17,821	19,477	21,132
NSE	0	0	0	0
Total	**16,567**	**18,472**	**20,128**	**21,783**
FTE	7.8	7.8	7.8	7.8

002620 Pipeline Relocations - Franchise

Labor	651	651	651	651
Non-Labor	15,916	17,821	19,477	21,132
NSE	0	0	0	0
Total	**16,567**	**18,472**	**20,128**	**21,783**
FTE	7.8	7.8	7.8	7.8

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002620 - Pipeline Relocations - Franchise

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00262.0
Category: K. Pipeline Relocations - Franchise
Category-Sub: 1. Pipeline Relocations - Franchise
Workpaper Group: 002620 - Pipeline Relocations - Franchise

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Base YR Rec	1,134	963	736	641	651	651	651	651
Non-Labor	5-YR Linear	9,780	12,187	9,910	16,474	15,916	17,821	19,477	21,132
NSE	5-YR Linear	0	0	0	0	0	0	0	0
Total		**10,914**	**13,150**	**10,646**	**17,115**	**16,566**	**18,472**	**20,128**	**21,783**
FTE	Base YR Rec	13.0	10.8	8.4	8.0	7.8	7.8	7.8	7.8

Business Purpose:

Budget Codes: 262, 269, 271, 272.

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

Physical Description:

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

Project Justification:

The exact timing and number of franchise pipeline projects are driven by outside agencies. Therefore, expenditures in this category are dependent on the number, extent, and timing of these requests and are outside of SoCalGas' control. However, when projects do occur, SoCalGas must complete its portion of the work in a timely manner in an effort to not cause construction schedule delays for the municipality or agency. SoCalGas expects to see an increased number of requests from municipalities for pipe relocations and alterations in future years. Some of the factors that are expected to increase the amount of municipality work include the following:
• Improving economic conditions.
• Availability of funding to municipalities.
• Population growth and density.
• Age of public infrastructure.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00262.0
Category:	K. Pipeline Relocations - Franchise
Category-Sub:	1. Pipeline Relocations - Franchise
Workpaper Group:	002620 - Pipeline Relocations - Franchise

Forecast Methodology:

Labor - Base YR Rec

The labor expenditures were forecasted using the 2013 historical expenditures as the base. The labor expense is a relatively small portion of this workgroup. An analysis of the historical costs included here, show that the most recent costs best represent the forecast level for the forecast period (2014 - 2016). A separate workpaper sub was created to capture the forecasted collectible portion of this work category.

See workpapers 002620.001 and 02620.002 for the collectible and non-collectible portions of the forecasts and see supplemental workpaper SCG-FBA-CAP-SUP-007 for the calculation details.

Non-Labor - 5-YR Linear

With the economic improvement seen over the last few years and the ongoing availability of both state and federal municipal improvement funding, SoCalGas is anticipating that the local municipalities will continue to take advantage of these funds and project levels will continue on the trend that the historical data is showing. In forecasting the required non-labor expenses for the franchise replacement projects, a five-year (2009 - 2013) linear trend based on historical spending levels from 2009-2013 was used to forecast the expenses required for this category. A separate workpaper sub was created to capture the forecasted collectible portion of this work category.

See workpapers 002620.001 and 02620.002 for the collectible and non-collectible portions of the forecasts and see supplemental workpaper SCG-FBA-CAP-SUP-007 for the calculation details.

NSE - 5-YR Linear

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00262.0
Category: K. Pipeline Relocations - Franchise
Category-Sub: 1. Pipeline Relocations - Franchise
Workpaper Group: 002620 - Pipeline Relocations - Franchise

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	Base YR Rec	650	650	650	0	0	0	650	650	650
Non-Labor	5-YR Linear	17,820	19,476	21,132	0	0	0	17,820	19,476	21,132
NSE	5-YR Linear	0	0	0	0	0	0	0	0	0
Total		**18,470**	**20,126**	**21,782**	**0**	**0**	**0**	**18,470**	**20,126**	**21,782**
FTE	Base YR Rec	7.8	7.8	7.8	0.0	0.0	0.0	7.8	7.8	7.8

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00262.0
Category: K. Pipeline Relocations - Franchise
Category-Sub: 1. Pipeline Relocations - Franchise
Workpaper Group: 002620 - Pipeline Relocations - Franchise

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	782	696	587	554	558
Non-Labor	7,963	10,349	9,211	16,527	15,916
NSE	0	0	0	0	0
Total	**8,745**	**11,045**	**9,798**	**17,081**	**16,474**
FTE	10.9	9.1	7.2	6.9	6.7
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	782	696	587	554	558
Non-Labor	7,963	10,349	9,211	16,527	15,916
NSE	0	0	0	0	0
Total	**8,745**	**11,045**	**9,798**	**17,081**	**16,474**
FTE	10.9	9.1	7.2	6.9	6.7
Vacation & Sick (Nominal $)					
Labor	141	122	97	89	93
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**141**	**122**	**97**	**89**	**93**
FTE	2.1	1.7	1.2	1.1	1.1
Escalation to 2013$					
Labor	211	145	52	-2	0
Non-Labor	1,817	1,838	699	-53	0
NSE	0	0	0	0	0
Total	**2,028**	**1,983**	**751**	**-55**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	1,134	963	736	641	651
Non-Labor	9,780	12,187	9,910	16,474	15,916
NSE	0	0	0	0	0
Total	**10,914**	**13,150**	**10,646**	**17,115**	**16,566**
FTE	13.0	10.8	8.4	8.0	7.8

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00262.0
Category: K. Pipeline Relocations - Franchise
Category-Sub: 1. Pipeline Relocations - Franchise
Workpaper Group: 002620 - Pipeline Relocations - Franchise

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002620

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00262.0
Category:	K. Pipeline Relocations - Franchise
Category-Sub:	1. Pipeline Relocations - Franchise
Workpaper Group:	002620 - Pipeline Relocations - Franchise
Workpaper Detail:	002620.001 - Pipeline Relocations - Franchise -- Non-Collectible
In-Service Date:	Not Applicable

Description:

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

This workpaper contains the non-collectible portion of this forecast. The collectible portion can be found in workpaper 002620.002.

See supplemental workpaper SCG-FBA-CAP-SUP-007 for calculation details.

Forecast In 2013 $(000)

Years	2014	2015	2016
Labor	588	588	588
Non-Labor	16,093	17,589	19,083
NSE	0	0	0
Total	**16,681**	**18,177**	**19,671**
FTE	7.0	7.0	7.0

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00262.0
Category:	K. Pipeline Relocations - Franchise
Category-Sub:	1. Pipeline Relocations - Franchise
Workpaper Group:	002620 - Pipeline Relocations - Franchise
Workpaper Detail:	002620.002 - Pipeline Relocations - Franchise -- Collectible
In-Service Date:	Not Applicable

Description:

This workpaper sub isolates the corresponding forecasted collectible portion that typically accompanies this work category. Franchise agreements dictate cost responsibility which result in certain agencies contributing funds toward the cost of the project. A collectible percentage was determined using an historical five-year (2009 - 2013) average and then applied to the forecast totals to determine the corresponding collectible portions.

See supplemental workpaper SCG-FBA-CAP-SUP-007 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	63	63	63
Non-Labor	1,728	1,888	2,049
NSE	0	0	0
Total	**1,791**	**1,951**	**2,112**
FTE	0.8	0.8	0.8

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 002620

SCG-FBA-CAP-SUP-007
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper Calculations for Collectible Cost Related to Franchise
Pipeline Replacements - Franchise Workpaper

Assumptions:

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

** The forecasted ratio of cash to total direct cost is the historical five-year (2009-2013) average ratio. This ratio is applied to the forecasted amount to calculate the collectible and non-collectible portions.

Amounts are shown in thousands of 2013 dollars and include vacation and sick.

		Adjusted Recorded History					2009-2013 Total	Forecast (2013 Base Year Labor, Five-Year Trend Non-Labor)		
		2009	2010	2011	2012	2013		2014	2015	2016
Total Capital										
[A]	Labor	$ 1,134	$ 963	$ 736	$ 641	$ 651		$ 651	$ 651	$ 651
[B]	Non-Labor	$ 9,780	$ 12,187	$ 9,910	$ 16,474	$ 15,916		$ 17,821	$ 19,477	$ 21,132
[C]	**Total**	**$ 10,914**	**$ 13,150**	**$ 10,646**	**$ 17,115**	**$ 16,567**	**$ 68,392**	**$ 18,472**	**$ 20,128**	**$ 21,783**
[D]	FTEs	13.0	10.8	8.4	8.0	7.8		7.8	7.8	7.8
Collectible Ratio Calculations										
[E]	Hist. Direct Cash Credits*	$ (1,014)	$ (1,572)	$ (627)	$ (2,474)	$ (872)	$ (6,559)			
[F] (-[E]/[C])	Ratio Cash to Total Direct Cost**	9%	12%	6%	14%	5%	10%	10%	10%	10%
Collectible Portion of Forecast										
[G] ([A]x[F])	Labor							$ 63	$ 63	$ 63
[H] ([B]x[F])	Non-Labor							$ 1,728	$ 1,889	$ 2,049
([G]+[H])	**Total**							**$ 1,791**	**$ 1,952**	**$ 2,112**
[I] ([D]x[F])	FTEs							0.8	0.8	0.8
Non-Collectible Portion of Forecast										
[J] ([A]-[G])	Labor							$ 588	$ 588	$ 588
[K] ([B]-[H])	Non-Labor							$ 16,093	$ 17,588	$ 19,083
([J]+[K])	**Total**							**$ 16,681**	**$ 18,176**	**$ 19,671**
([D]-[I])	FTEs							7.0	7.0	7.0

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Category: L. Other Distribution Capital Projects & Meter Guards
Workpaper: VARIOUS

Summary for Category: L. Other Distribution Capital Projects & Meter Guards

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
Labor	667	1,008	1,008	1,008
Non-Labor	3,842	2,859	2,859	2,859
NSE	0	0	0	0
Total	**4,509**	**3,867**	**3,867**	**3,867**
FTE	7.9	12.1	12.1	12.1
002700 Other Distribution Capital Projects				
Labor	387	335	335	335
Non-Labor	3,736	2,707	2,707	2,707
NSE	0	0	0	0
Total	**4,123**	**3,042**	**3,042**	**3,042**
FTE	4.3	3.7	3.7	3.7
002640 Meter Guards				
Labor	280	673	673	673
Non-Labor	106	152	152	152
NSE	0	0	0	0
Total	**386**	**825**	**825**	**825**
FTE	3.6	8.4	8.4	8.4

Note: Totals may include rounding differences.

Beginning of Workpaper Group
002700 - Other Distribution Capital Projects

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00270.0
Category: L. Other Distribution Capital Projects & Meter Guards
Category-Sub: 1. Other Distribution Capital Projects
Workpaper Group: 002700 - Other Distribution Capital Projects

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	5-YR Average	592	385	177	132	387	335	335	335
Non-Labor	5-YR Average	2,785	2,777	1,241	2,997	3,736	2,707	2,707	2,707
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**3,377**	**3,163**	**1,419**	**3,129**	**4,123**	**3,042**	**3,042**	**3,042**
FTE	5-YR Average	6.3	4.3	2.1	1.6	4.3	3.7	3.7	3.7

Business Purpose:

Budget Codes: 270, 274, 275.

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

Physical Description:

These facility relocation projects include all sizes of distribution main and associated service lines, meter set assemblies and related gas facilities.
Examples of these “other” projects include, but are not limited to:
• Replacement or alteration and abandonment of appurtenance to mains such as valves and vaults, drips, traps, roads, and fences due to condition in order to maintain the reliable operation of the distribution system.
• Raising, lowering or relocating main due to interference with external party construction.
• Changes to Company facilities at customer request. This could include items such as alteration or relocation of main or meter set assemblies; installation of customer exclusively used mains, or moving or relocating regulator stations.
• Changes to SoCalGas facilities in accordance with right-of-way agreements, encroachment permits, and railroad crossing lease agreements.

Project Justification:

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

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00270.0
Category:	L. Other Distribution Capital Projects & Meter Guards
Category-Sub:	1. Other Distribution Capital Projects
Workpaper Group:	002700 - Other Distribution Capital Projects

Forecast Methodology:

Labor - 5-YR Average

The level of spending in this work category is highly driven by the volume of external construction activity. Given the generally unpredictable nature of this activity, SoCalGas used the historical five-year (2009 - 2013) average to forecast the labor expenditures. This forecast methodology best represents the cyclical volume of work qualified on an annual basis and captures the various challenges encountered during construction, which tend to require a higher level of coordination with external parties.

See workpapers 002700.001 and 02700.002 for the collectible and non-collectible portions of the forecasts and see supplemental workpaper SCG-FBA-CAP-SUP-008 for the calculation details.

Non-Labor - 5-YR Average

The non-labor expenditures were also calculated using the historical five-year (2009 - 2013) average. This methodology was chosen because it complements the labor component in that it best represents the cyclical volume of work performed by pipeline contracts, third party services, paving services, municipal permit and inspector fees, and materials cost.

See workpapers 002700.001 and 02700.002 for the collectible and non-collectible portions of the forecasts and see supplemental workpaper SCG-FBA-CAP-SUP-008 for the calculation details.

NSE - 5-YR Average

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00270.0
Category: L. Other Distribution Capital Projects & Meter Guards
Category-Sub: 1. Other Distribution Capital Projects
Workpaper Group: 002700 - Other Distribution Capital Projects

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	5-YR Average	334	334	334	0	0	0	334	334	334
Non-Labor	5-YR Average	2,707	2,707	2,707	0	0	0	2,707	2,707	2,707
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**3,041**	**3,041**	**3,041**	**0**	**0**	**0**	**3,041**	**3,041**	**3,041**
FTE	5-YR Average	3.7	3.7	3.7	0.0	0.0	0.0	3.7	3.7	3.7

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00270.0
Category: L. Other Distribution Capital Projects & Meter Guards
Category-Sub: 1. Other Distribution Capital Projects
Workpaper Group: 002700 - Other Distribution Capital Projects

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	408	279	141	114	332
Non-Labor	2,267	2,359	1,154	3,007	3,736
NSE	0	0	0	0	0
Total	**2,677**	**2,637**	**1,295**	**3,121**	**4,068**
FTE	5.3	3.6	1.8	1.4	3.7
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	408	279	141	114	332
Non-Labor	2,267	2,359	1,154	3,007	3,736
NSE	2	0	0	0	0
Total	**2,677**	**2,637**	**1,295**	**3,121**	**4,068**
FTE	5.3	3.6	1.8	1.4	3.7
Vacation & Sick (Nominal $)					
Labor	74	49	23	18	55
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**74**	**49**	**23**	**18**	**55**
FTE	1.0	0.7	0.3	0.2	0.6
Escalation to 2013$					
Labor	110	58	12	0	0
Non-Labor	517	419	88	-10	0
NSE	0	0	0	0	0
Total	**627**	**477**	**100**	**-10**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	592	385	177	132	387
Non-Labor	2,785	2,777	1,241	2,997	3,736
NSE	2	0	0	0	0
Total	**3,378**	**3,163**	**1,419**	**3,129**	**4,123**
FTE	6.3	4.3	2.1	1.6	4.3

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00270.0
Category: L. Other Distribution Capital Projects & Meter Guards
Category-Sub: 1. Other Distribution Capital Projects
Workpaper Group: 002700 - Other Distribution Capital Projects

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002700

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00270.0
Category:	L. Other Distribution Capital Projects & Meter Guards
Category-Sub:	1. Other Distribution Capital Projects
Workpaper Group:	002700 - Other Distribution Capital Projects
Workpaper Detail:	002700.001 - Other Distribution Capital Projects -- Non-Collectible
In-Service Date:	Not Applicable

Description:

This work category covers the expenditures for capital relocations of SoCalGas facilities not specifically included in any of the other capital categories of work.

This workpaper contains the non-collectible portion of this forecast. The collectible portion can be found in workpaper 002700.002.

See supplemental workpaper SCG-FBA-CAP-SUP-008 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	220	220	220
Non-Labor	1,782	1,782	1,782
NSE	0	0	0
Total	**2,002**	**2,002**	**2,002**
FTE	2.4	2.4	2.4

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00270.0
Category:	L. Other Distribution Capital Projects & Meter Guards
Category-Sub:	1. Other Distribution Capital Projects
Workpaper Group:	002700 - Other Distribution Capital Projects
Workpaper Detail:	002700.002 - Other Distribution Capital Projects -- Collectible
In-Service Date:	Not Applicable

Description:

This workpaper sub isolates the corresponding forecasted collectible portion that typically accompanies this work category. External parties not covered by franchise or freeway agreements assume cost responsibility which result in such parties contributing funds toward the cost of the project. A collectible percentage was determined using an historical five-year (2009 - 2013) average and then applied to the forecast totals to determine the corresponding collectible portions.

See supplemental workpaper SCG-FBA-CAP-SUP-008 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	115	115	115
Non-Labor	925	925	925
NSE	0	0	0
Total	**1,040**	**1,040**	**1,040**
FTE	1.3	1.3	1.3

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 002700

SCG-FBA-CAP-SUP-008
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper Calculations for Collectible Cost Related to Other Distribution Capital
Other Distribution Capital Workpaper

Assumptions:

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

** The forecasted ratio of cash to total direct cost is the historical five-year (2009-2013) average ratio. This ratio is applied to the forecasted amount to calculate the collectible and non-collectible portions.

Amounts are shown in thousands of 2013 dollars and include vacation and sick.

		Adjusted Recorded History					2009-2013 Total	Forecast (Five-Year Average)		
		2009	2010	2011	2012	2013		2014	2015	2016
Total Capital										
[A]	Labor	$ 592	$ 385	$ 177	$ 132	$ 387		$ 335	$ 335	$ 335
[B]	Non-Labor	$ 2,785	$ 2,777	$ 1,241	$ 2,997	$ 3,736		$ 2,707	$ 2,707	$ 2,707
[C]	**Total**	**$ 3,377**	**$ 3,162**	**$ 1,418**	**$ 3,129**	**$ 4,123**	**$ 15,209**	**$ 3,042**	**$ 3,042**	**$ 3,042**
[D]	FTEs	6.3	4.3	2.1	1.6	4.3		3.7	3.7	3.7
Collectible Ratio Calculations										
[E]	Historical Direct Cash Credits*	$ (1,799)	$ (883)	$ (530)	$ (191)	$ (1,803)	$ (5,206)			
[F] (-[E]/[C])	Ratio Cash to Total Direct Cost**	53%	28%	37%	6%	44%	34%	34%	34%	34%
Collectible Portion of Forecast										
[G] ([A]x[F]]	Labor							$ 114	$ 114	$ 114
[H] ([B]x[F])	Non-Labor							$ 926	$ 926	$ 926
([G]+[H])	**Total**							**$ 1,040**	**$ 1,040**	**$ 1,040**
[I] ([D]x[F])	FTEs							1.3	1.3	1.3
Non-Collectible Portion of Forecast										
[J] ([A]-[G])	Labor							$ 220	$ 220	$ 220
[K] ([B]-[H])	Non-Labor							$ 1,781	$ 1,781	$ 1,781
([J]+[K])	**Total**							**$ 2,002**	**$ 2,002**	**$ 2,002**
([D]-[I])	FTEs							2.4	2.4	2.4

Beginning of Workpaper Group
002640 - Meter Guards

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00264.0
Category: L. Other Distribution Capital Projects & Meter Guards
Category-Sub: 2. Meter Guards
Workpaper Group: 002640 - Meter Guards

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	5-YR Average	925	1,055	626	479	280	673	673	673
Non-Labor	5-YR Average	-140	410	174	209	106	152	152	152
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**785**	**1,465**	**800**	**688**	**385**	**825**	**825**	**825**
FTE	5-YR Average	11.1	12.6	8.1	6.6	3.6	8.4	8.4	8.4

Business Purpose:

Budget Code: 264

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

Physical Description:

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

Project Justification:

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

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00264.0
Category:	L. Other Distribution Capital Projects & Meter Guards
Category-Sub:	2. Meter Guards
Workpaper Group:	002640 - Meter Guards

Forecast Methodology:

Labor - 5-YR Average

The labor expenses for the routine-type meter guard installations was forecasted using a five-year average based on historical spend from 2009 through 2013 as it captures the cyclical swings in activity level.

Non-Labor - 5-YR Average

SoCalGas expects that the non-labor expenditures will be in direct correlation with the labor, and for this reason the same forecasting methodology used on the labor side was applied to the non-labor. The methodology being a five-year average based on historical spend from 2009 through 2013.

NSE - 5-YR Average

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00264.0
Category: L. Other Distribution Capital Projects & Meter Guards
Category-Sub: 2. Meter Guards
Workpaper Group: 002640 - Meter Guards

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	5-YR Average	672	672	672	0	0	0	672	672	672
Non-Labor	5-YR Average	151	151	151	0	0	0	151	151	151
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**823**	**823**	**823**	**0**	**0**	**0**	**823**	**823**	**823**
FTE	5-YR Average	8.4	8.4	8.4	0.0	0.0	0.0	8.4	8.4	8.4

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00264.0
Category: L. Other Distribution Capital Projects & Meter Guards
Category-Sub: 2. Meter Guards
Workpaper Group: 002640 - Meter Guards

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	638	762	499	414	240
Non-Labor	-114	348	162	209	106
NSE	0	0	0	0	0
Total	**524**	**1,111**	**661**	**623**	**346**
FTE	9.4	10.7	6.9	5.7	3.1
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	638	762	499	414	240
Non-Labor	-114	348	162	209	106
NSE	0	0	0	0	0
Total	**524**	**1,111**	**661**	**623**	**346**
FTE	9.4	10.7	6.9	5.7	3.1
Vacation & Sick (Nominal $)					
Labor	115	133	83	66	40
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**115**	**133**	**83**	**66**	**40**
FTE	1.7	1.9	1.2	0.9	0.5
Escalation to 2013$					
Labor	172	159	44	-2	0
Non-Labor	-26	62	12	-1	0
NSE	0	0	0	0	0
Total	**146**	**221**	**56**	**-2**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	925	1,055	626	479	280
Non-Labor	-140	410	174	209	106
NSE	0	0	0	0	0
Total	**785**	**1,465**	**800**	**688**	**385**
FTE	11.1	12.6	8.1	6.6	3.6

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00264.0
Category: L. Other Distribution Capital Projects & Meter Guards
Category-Sub: 2. Meter Guards
Workpaper Group: 002640 - Meter Guards

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002640

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00264.0
Category:	L. Other Distribution Capital Projects & Meter Guards
Category-Sub:	2. Meter Guards
Workpaper Group:	002640 - Meter Guards
Workpaper Detail:	002640.001 - Meter Guards
In-Service Date:	Not Applicable

Description:

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

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	673	673	673
Non-Labor	152	152	152
NSE	0	0	0
Total	**825**	**825**	**825**
FTE	8.4	8.4	8.4

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Category: M. Measurement & Regulation Devices
Workpaper: VARIOUS

Summary for Category: M. Measurement & Regulation Devices

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
Labor	1,362	2,002	2,100	1,989
Non-Labor	26,657	35,229	36,090	38,074
NSE	0	0	0	0
Total	**28,019**	**37,231**	**38,190**	**40,063**
FTE	17.1	26.1	27.1	26.0
001630 Meters				
Labor	809	1,488	1,521	1,552
Non-Labor	18,178	24,911	25,404	26,058
NSE	0	0	0	0
Total	**18,987**	**26,399**	**26,925**	**27,610**
FTE	11.1	20.4	20.8	21.3
001640 Regulators				
Labor	5	7	7	8
Non-Labor	6,821	8,530	8,705	10,329
NSE	0	0	0	0
Total	**6,826**	**8,537**	**8,712**	**10,337**
FTE	0.1	0.1	0.1	0.1
002800 Gas Energy Measurement Systems (GEMS)				
Labor	220	241	253	263
Non-Labor	925	1,126	1,190	1,245
NSE	0	0	0	0
Total	**1,145**	**1,367**	**1,443**	**1,508**
FTE	2.3	2.6	2.7	2.8
001810 Electronic Pressure Monitors (EPMs)				
Labor	328	266	319	166
Non-Labor	733	662	791	442
NSE	0	0	0	0
Total	**1,061**	**928**	**1,110**	**608**
FTE	3.6	3.0	3.5	1.8

Note: Totals may include rounding differences.

Beginning of Workpaper Group
001630 - Meters

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00163.0
Category: M. Measurement & Regulation Devices
Category-Sub: 1. Meters
Workpaper Group: 001630 - Meters

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	665	546	485	558	809	1,488	1,521	1,552
Non-Labor	Zero-Based	19,451	18,478	17,087	15,916	18,178	24,911	25,404	26,058
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**20,116**	**19,024**	**17,572**	**16,474**	**18,987**	**26,399**	**26,925**	**27,610**
FTE	Zero-Based	7.8	6.6	6.6	7.8	11.1	20.4	20.8	21.3

Business Purpose:

Budget Code: 163

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

Physical Description:

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

Project Justification:

Meters are purchased for:
• Installation at new customers' premises.
• Replacements due to meter accuracy, age, or operation.
• Replacements due to a pre-determined replacement cycle based on meter capacity, size, and performance.
It is necessary to install new and replacement meters to obtain accurate measurement of customers' gas consumption for billing purposes.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00163.0
Category:	M. Measurement & Regulation Devices
Category-Sub:	1. Meters
Workpaper Group:	001630 - Meters

Forecast Methodology:

Labor - Zero-Based

A Zero-Based forecasting methodology was used to forecast the labor expenditures. This methodology was chosen for the same reasons that influence the non-labor forecast. The fact that the projected number of new meter sets will reach levels not seen in the past five years substantiates the increase in labor to adequately handle the forecasted volume of meter set purchases.

See supplemental workpaper SCG-FBA-CAP-SUP-009 for calculation details.

Non-Labor - Zero-Based

A Zero-Based forecasting methodology was used to forecast the non-labor expenditures. This methodology was chosen because it allowed the forecasting calculations to consider the projected number of new meter sets as discussed by SoCalGas' Customer Growth Witness Rose-Marie Payan in Exhibit SCG-30-WP. This methodology also allowed for the calculation to consider weighted averages based on historical meter purchases factoring in the quantities purchased of each type of meter and its corresponding cost per meter. Since the zero-based calculation incorporates these factors, it yields the most accurate forecast which is consistent with the projected customer growth while at the same time taking into account the historical proportional cost per meter type.

See supplemental workpaper SCG-FBA-CAP-SUP-009 for calculation details.

NSE - Zero-Based

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00163.0
Category: M. Measurement & Regulation Devices
Category-Sub: 1. Meters
Workpaper Group: 001630 - Meters

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	Zero-Based	1,488	1,521	1,552	0	0	0	1,488	1,521	1,552
Non-Labor	Zero-Based	24,911	25,404	26,058	0	0	0	24,911	25,404	26,058
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**26,399**	**26,925**	**27,610**	**0**	**0**	**0**	**26,399**	**26,925**	**27,610**
FTE	Zero-Based	20.4	20.8	21.3	0.0	0.0	0.0	20.4	20.8	21.3

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00163.0
Category: M. Measurement & Regulation Devices
Category-Sub: 1. Meters
Workpaper Group: 001630 - Meters

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	458	394	387	483	694
Non-Labor	15,837	15,692	15,882	15,967	18,178
NSE	0	0	0	0	0
Total	**16,295**	**16,086**	**16,269**	**16,449**	**18,871**
FTE	6.6	5.6	5.6	6.7	9.5
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	458	394	387	483	694
Non-Labor	15,837	15,692	15,882	15,967	18,178
NSE	0	0	0	0	0
Total	**16,295**	**16,086**	**16,269**	**16,449**	**18,871**
FTE	6.6	5.6	5.6	6.7	9.5
Vacation & Sick (Nominal $)					
Labor	83	69	64	77	115
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**83**	**69**	**64**	**77**	**115**
FTE	1.2	1.0	1.0	1.1	1.6
Escalation to 2013$					
Labor	123	82	34	-2	0
Non-Labor	3,614	2,787	1,205	-51	0
NSE	0	0	0	0	0
Total	**3,738**	**2,869**	**1,239**	**-53**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	665	546	485	558	809
Non-Labor	19,451	18,478	17,087	15,916	18,178
NSE	0	0	0	0	0
Total	**20,116**	**19,024**	**17,572**	**16,474**	**18,987**
FTE	7.8	6.6	6.6	7.8	11.1

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00163.0
Category: M. Measurement & Regulation Devices
Category-Sub: 1. Meters
Workpaper Group: 001630 - Meters

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 001630

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00163.0
Category: M. Measurement & Regulation Devices
Category-Sub: 1. Meters
Workpaper Group: 001630 - Meters
Workpaper Detail: 001630.001 - Meters

In-Service Date: Not Applicable

Description:

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

See supplemental workpaper SCG-FBA-CAP-SUP-009 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	1,488	1,521	1,552
Non-Labor	24,911	25,404	26,058
NSE	0	0	0
Total	**26,399**	**26,925**	**27,610**
FTE	20.4	20.8	21.3

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 001630

SCG-FBA-CAP-SUP-009
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper for Zero-Based Calculations Related to Meters
Meters Workpaper

Assumptions: [A], [H]: Refer to the prepared direct workpapers of Witness Rose-Marie Payan, Exhibit SCG-30-WP for the new meter set forecast methodology.
[D], [E], [L], [M], [N]: Routine Meter Change-Outs (RMCs) and Planned Meter Change-Outs (PMCs).
[L]: Forecasted replacements size 1-3 meters. Estimated to be 180,000 meters per year.
[M]: Forecasted replacements size 4+ meters for PMCs. Based on meters currently scheduled for replacement. (10-year replacement cycle, scheduled through SAP)

Table 1: Historical Units and Dollars, 2013 Dollars with Vacation & Sick

	Historical New Business (NB) Meters			Historical Replacement Meters			Total
	[A]	[B]	[C] ([A]-[B])	[D]	[E]	[F] ([D]+[E])	[G] ([A]+[F])
	Total Historical NB Meter Sets	Historical Size 4+ NB Meters	Historical Size 1-3 NB Meters	Historical PMCs & Size 1-3 RMCs	Historical Size 4+ RMCs & Meter Resets	Total Historical Replacement Meters	Total Historical Meters
2009	31,828	1,522	30,306	138,015	5,766	143,781	175,609
2010	26,585	1,065	25,520	163,154	5,316	168,470	195,055
2011	18,764	1,301	17,463	168,451	4,521	172,972	191,736
2012	21,898	1,510	20,388	121,225	4,048	125,273	147,171
2013	26,787	2,036	24,751	91,107	4,902	96,009	122,796

Table 2: Forecasted Meters

	New Business (NB) Meter Forecast				Replacement Meter Forecast				Total
	[H]	[I] (% Growth in Each Year for [H])	[J] (1+[I])x(Previous Year [J])	[K] ([H]-[J])	[L]	[M]	[N] (Ave. of [E])	[O] ([L]+[M]+[N])	[P] [H]+[O]
	Total NB Meter Set Forecast	NB Forecast Growth Factor	Size 4+ NB Forecast	Size 1-3 NB Forecast	Size 1-3 RMCs & PMCs Forecast	Size 4+ PMCs Forecast	Size 4+ RMCs Forecast	Total Replacement Meter Forecast	Total Meter Forecast
2013 (Table 1)	26,787	N/A	2,036	24,751		91,107	4,902	96,009	122,796
2014	35,089	31%	2,667	32,422	180,000	5,743	4,911	190,654	225,743
2015	40,339	15%	3,066	37,273	180,000	5,536	4,911	190,447	230,786
2016	44,894	11%	3,412	41,482	180,000	5,691	4,911	190,602	235,496

SCG-FBA-CAP-SUP-009
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper for Zero-Based Calculations Related to Meters
Meters Workpaper

Table 3: 2013 Historical Meter Costs (2013$ with Vacation & Sick)

	[Q] Historical FTEs	[R] Historical Labor $	[S] Historical Non-Labor $	[T] ([R]+[S]) Historical Total $
2013	11.1	809,164	18,177,523	18,986,687

Table 4: 2013 Unit Costs and FTEs/Meter Installation (2013$ with Vacation & Sick)

	[U] ([Q]/([G] for 2013)) 2013 FTEs per Meter	[V] ([R]/([G] for 2013)) 2013 Labor per Meter	[W] 2013 Average Weighted Non-Labor Cost per Size 1-3 Meter	[X] 2013 Average Weighted Non-Labor Cost per Size 4 Meter
2013	0.000090	$6.59	$74.69	$678.99

Table 5: Forecasted FTEs and Dollars (Thousands of 2013$ with Vacation & Sick)

	[Y] ([P]x[U]) FTEs	[Z] ([P]x[V]]/1000 Labor Forecast	[AA] ([K]+[L])x[W] /1000 Non-Labor for Size 1-3 Meters	[BB] ([J]+[M]+[N])x[X] /1000 Non-Labor for Size 4+ Meters	[CC] ([AA]+[BB]) Total Non-Labor Forecast	[CC] ([Z]+[CC]) Total Forecast
2014	20.4	$ 1,488	$ 15,867	$ 9,045	$ 24,911	$ 26,399
2015	20.8	$ 1,521	$ 16,229	$ 9,175	$ 25,404	$ 26,925
2016	21.3	$ 1,552	$ 16,543	$ 9,515	$ 26,059	$ 27,610

Beginning of Workpaper Group
001640 - Regulators

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00164.0
Category: M. Measurement & Regulation Devices
Category-Sub: 2. Regulators
Workpaper Group: 001640 - Regulators

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	30	3	-1	0	5	7	7	8
Non-Labor	Zero-Based	4,252	4,452	4,757	4,321	6,821	8,530	8,705	10,329
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**4,282**	**4,454**	**4,756**	**4,321**	**6,826**	**8,537**	**8,712**	**10,337**
FTE	Zero-Based	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.1

Business Purpose:

Budget Code: 164

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

Physical Description:

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

Project Justification:

While new installations are driven by new meter set activities, replacement needs are driven by customer or company identified problems, age, and obsolescence of equipment.
Regulators are purchased for:
• Installation at new customers' premises.
• Replacements due to regulator age or operation.
• Replacements due to a pre-determined replacement cycle based on meter set assembly capacity, size, and performance.
It is necessary to install new and replace regulators in conjunction with work on meter set assemblies to obtain accurate measurement of customers' gas consumption for billing purposes.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00164.0
Category:	M. Measurement & Regulation Devices
Category-Sub:	2. Regulators
Workpaper Group:	001640 - Regulators

Forecast Methodology:

Labor - Zero-Based

The forecasted labor expenditures for regulators used as a basis the historical five-year ratio between purchased meters to purchased regulators (2009 - 2013). The determined five-year ratio represented the regulator factor used to forecast the number of regulators to be purchased. By multiplying the regulator to meter ratio with the projected number of forecasted meter set purchases, it yielded the projected number of regulators for each of the forecast years. The labor expenditure was then calculated by taking the projected number of regulators multiplied by the historical 2013 average labor cost per regulator.

See supplemental workpaper SCG-FBA-CAP-SUP-010 for calculation details.

Non-Labor - Zero-Based

Taking the same projected number of regulator count used in the labor calculations, the non-labor expenditures were determined by multiplying the projected number of regulators by the historical 2013 weighted average of the non-labor cost per regulator.

See supplemental workpaper SCG-FBA-CAP-SUP-010 for calculation details.

NSE - Zero-Based

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00164.0
Category: M. Measurement & Regulation Devices
Category-Sub: 2. Regulators
Workpaper Group: 001640 - Regulators

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	Zero-Based	7	7	8	0	0	0	7	7	8
Non-Labor	Zero-Based	8,530	8,705	10,329	0	0	0	8,530	8,705	10,329
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**8,537**	**8,712**	**10,337**	**0**	**0**	**0**	**8,537**	**8,712**	**10,337**
FTE	Zero-Based	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00164.0
Category: M. Measurement & Regulation Devices
Category-Sub: 2. Regulators
Workpaper Group: 001640 - Regulators

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	21	2	-1	0	4
Non-Labor	3,462	3,780	4,422	4,335	6,821
NSE	0	0	0	0	0
Total	**3,482**	**3,782**	**4,421**	**4,335**	**6,825**
FTE	0.2	0.0	0.0	0.0	0.1
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	21	2	-1	0	4
Non-Labor	3,462	3,780	4,422	4,335	6,821
NSE	0	0	0	0	0
Total	**3,482**	**3,782**	**4,421**	**4,335**	**6,825**
FTE	0.2	0.0	0.0	0.0	0.1
Vacation & Sick (Nominal $)					
Labor	4	0	0	0	1
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**4**	**0**	**0**	**0**	**1**
FTE	0.0	0.0	0.0	0.0	0.0
Escalation to 2013$					
Labor	6	0	0	0	0
Non-Labor	790	671	335	-14	0
NSE	0	0	0	0	0
Total	**796**	**672**	**335**	**-14**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	30	3	-1	0	5
Non-Labor	4,252	4,452	4,757	4,321	6,821
NSE	0	0	0	0	0
Total	**4,282**	**4,454**	**4,756**	**4,321**	**6,826**
FTE	0.2	0.0	0.0	0.0	0.1

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00164.0
Category: M. Measurement & Regulation Devices
Category-Sub: 2. Regulators
Workpaper Group: 001640 - Regulators

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 001640

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00164.0
Category:	M. Measurement & Regulation Devices
Category-Sub:	2. Regulators
Workpaper Group:	001640 - Regulators
Workpaper Detail:	001640.001 - Regulators
In-Service Date:	Not Applicable

Description:

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

See supplemental workpaper SCG-FBA-CAP-SUP-010 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	7	7	8
Non-Labor	8,530	8,705	10,329
NSE	0	0	0
Total	**8,537**	**8,712**	**10,337**
FTE	0.1	0.1	0.1

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 001640

SCG-FBA-CAP-SUP-010
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper for Zero Based Calculations Related to Regulators
Regulators Workpaper

Table 1: Historical Units (Meters taken from Table 1 in supplemental workpaper SCG-FBA-CAP-SUP-009):

	[A] ([G] from SCG-FBA-CAP-SUP-009)	**[B]**	[C] ([B]/[A])
	Total Meters Purchased	Total Regulators Purchased	Regulator Factor
2009	175,609	85,988	49.0%
2010	195,055	91,110	46.7%
2011	191,736	74,872	39.0%
2012	147,171	83,959	57.0%
2013	122,796	89,205	72.6%

[D] (Sum of [B] / Sum of [A])
5-Year Average Regulator Factor
51.1%

Table 2: Forecasted Meters (Taken from Table 2, in supplemental workpaper SCG-FBA-CAP-SUP-009):

	New Business (NB) Meter Forecast			**Replacement Meter Forecast**				**Total**
	[H]	**[J]**	**[K]**	**[L]**	**[M]**	**[N]**	**[O]**	**[P]**
	Total NB Meter Set Forecast	Size 4+ NB Forecast	Size 1-3 NB Forecast	Size 1-3 RMCs & PMCs Forecast	Size 4+ PMCs Forecast	Size 4+ RMCs Forecast	Total Replacement Meter Forecast	Total Meter Forecast
2014	35,089	2,667	32,422	180,000	5,743	4,911	190,654	225,743
2015	40,339	3,066	37,273	180,000	5,536	4,911	190,447	230,786
2016	44,894	3,412	41,482	180,000	5,691	4,911	190,602	235,496

Table 3: Forecasted Regulators

	New Business (NB) Regulators Forecast			**Replacement Regulator Forecast**					**Total**
	[E] ([F]+[G])	[F] ([J]x[D])	[G] ([K]x[D])	[Q] ([L]x[D])	[R] ([M]x[D])	[S] ([N]x[D])	**[T]**	[U] ([Q]+[R]+[S]+[T])	[V] ([E]+[U])
	Total NB Regulators	Commercial & Industrial NB Regulators	Residential NB Regulators	Residential Replacement Regulators	Commercial & Industrial PMC Regulators	Commercial & Industrial RMC Regulators	Proactive Curb Regulator Replacements	Total Replacement Regulators	Total Regulator Forecast
2014	17,922	1,362	16,560	91,936	2,933	2,508	-	97,377	115,299
2015	20,603	1,566	19,037	91,936	2,828	2,508	-	97,272	117,875
2016	22,930	1,743	21,187	91,936	2,907	2,508	10,030	107,381	130,311

SCG-FBA-CAP-SUP-010
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper for Zero Based Calculations Related to Regulators
Regulators Workpaper

Table 3: 2013 Historical Regulator Costs (2013$ with Vacation & Sick)

	[W] Historical FTEs	[X] Historical Labor $	[Y] Historical Non-Labor $	[Z] ([X]+[Y]) Historical Total $
2013	0.1	5,227	6,820,702	6,825,929

Table 5: 2013 Unit Costs and FTEs/Regulator Installation (2013$ with Vacation & Sick)

	[AA] ([W]/([B] for 2013)) 2013 FTEs per Regulator	[BB] ([X]/([B] for 2013)) 2013 Labor per Regulator	[CC] 2013 Average Weighted Non-Labor Cost per Residential Regulator	[DD] 2013 Average Weighted Non-Labor Cost per Commercial & Industrial Regulator	[EE] 2013 Average Weighted Non-Labor Cost per Curb Regulator
2013	0.00000079	$0.06	$56.72	$349.32	$140.88

Table 6: Forecasted FTEs and Dollars (Thousands of 2013$ with Vacation & Sick)

	[FF] ([V]x[AA]) FTEs	[GG] ([V]x[BB]]/1000 Labor Forecast	[HH] ([G]+[Q])x[CC] /1000 Non-Labor for Residential Regulators	[II] ([F]+[R]+[S])x[DD] /1000 Non-Labor for Commercial & Industrial Regulators	[JJ] [T]x[[EE]/1000 Non-Labor for Curb Regulators	[KK] ([HH]+[II]+[JJ]) Total Non-Labor Forecast	[LL] ([GG]+[KK]) Total Forecast
2014	0.1	$ 7	$ 6,154	$ 2,376	$ -	$ 8,530	$ 8,537
2015	0.1	$ 7	$ 6,294	$ 2,411	$ -	$ 8,705	$ 8,712
2016	0.1	$ 8	$ 6,416	$ 2,500	$ 1,413	$ 10,329	$ 10,337

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00280.0
Category: M. Measurement & Regulation Devices
Category-Sub: 3. Gas Energy Measurement Systems
Workpaper Group: 002800 - Gas Energy Measurement Systems (GEMS)

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	335	124	189	232	220	241	253	263
Non-Labor	Zero-Based	158	336	785	1,223	925	1,126	1,190	1,245
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**493**	**460**	**973**	**1,454**	**1,146**	**1,367**	**1,443**	**1,508**
FTE	Zero-Based	3.7	1.3	2.1	2.6	2.3	2.6	2.7	2.8

Business Purpose:

Budget Codes: 180, 280.

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

Physical Description:

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

Project Justification:

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

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00280.0
Category:	M. Measurement & Regulation Devices
Category-Sub:	3. Gas Energy Measurement Systems
Workpaper Group:	002800 - Gas Energy Measurement Systems (GEMS)

Forecast Methodology:

Labor - Zero-Based

The forecasted labor expenditures for the GEMS category used as a basis the projected number of new GEMS installations plus the projected replacement units for each of the forecast years (2014 -2016). The projected total count of new GEMS installations was obtained using the recorded number of GEMS purchased towards new installations from year 2013, plus the new business growth factor. The projected total count of GEMS replacements was determined using the recorded number of GEMS purchased towards replacements from the year 2013 plus an additional five new generation measurement systems per year. The resulting projected totals were then multiplied by the 2013 average cost per unit determined for the new installations and the replacements. The sum of the total labor cost of both, the new installations and replacements, yielded the corresponding labor expenditure for this category.

See supplemental workpaper SCG-FBA-CAP-SUP-011 for calculation details.

Non-Labor - Zero-Based

Taking the same projected number of GEMS count used in the labor calculations, the non-labor expenditures were determined by multiplying the projected number of units by the historical 2013 average non-labor cost per unit, not including the 5 new generation measurement systems. The additional non-labor cost from the new generation units was forecasted separately as these are high cost units. The sum of the non-labor of both, the routine GEMS and the new generation units, yielded the corresponding non-labor expenditures for this category.

See supplemental workpaper SCG-FBA-CAP-SUP-011 for calculation details.

NSE - Zero-Based

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00280.0
Category: M. Measurement & Regulation Devices
Category-Sub: 3. Gas Energy Measurement Systems
Workpaper Group: 002800 - Gas Energy Measurement Systems (GEMS)

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	Zero-Based	241	253	263	0	0	0	241	253	263
Non-Labor	Zero-Based	1,126	1,190	1,245	0	0	0	1,126	1,190	1,245
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**1,367**	**1,443**	**1,508**	**0**	**0**	**0**	**1,367**	**1,443**	**1,508**
FTE	Zero-Based	2.6	2.7	2.8	0.0	0.0	0.0	2.6	2.7	2.8

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00280.0
Category: M. Measurement & Regulation Devices
Category-Sub: 3. Gas Energy Measurement Systems
Workpaper Group: 002800 - Gas Energy Measurement Systems (GEMS)

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	231	90	150	201	189
Non-Labor	128	285	729	1,226	925
NSE	0	0	0	0	0
Total	**359**	**375**	**880**	**1,427**	**1,114**
FTE	3.1	1.1	1.8	2.2	2.0
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	231	90	150	201	189
Non-Labor	128	285	729	1,226	925
NSE	0	0	0	0	0
Total	**359**	**375**	**880**	**1,427**	**1,114**
FTE	3.1	1.1	1.8	2.2	2.0
Vacation & Sick (Nominal $)					
Labor	42	16	25	32	31
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**42**	**16**	**25**	**32**	**31**
FTE	0.6	0.2	0.3	0.4	0.3
Escalation to 2013$					
Labor	62	19	13	-1	0
Non-Labor	29	51	55	-4	0
NSE	0	0	0	0	0
Total	**92**	**69**	**69**	**-5**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	335	124	189	232	220
Non-Labor	158	336	785	1,223	925
NSE	0	0	0	0	0
Total	**493**	**460**	**973**	**1,454**	**1,146**
FTE	3.7	1.3	2.1	2.6	2.3

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00280.0
Category: M. Measurement & Regulation Devices
Category-Sub: 3. Gas Energy Measurement Systems
Workpaper Group: 002800 - Gas Energy Measurement Systems (GEMS)

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 002800

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00280.0
Category:	M. Measurement & Regulation Devices
Category-Sub:	3. Gas Energy Measurement Systems
Workpaper Group:	002800 - Gas Energy Measurement Systems (GEMS)
Workpaper Detail:	002800.001 - Gas Energy Measurement Systems
In-Service Date:	Not Applicable

Description:

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

See supplemental workpaper SCG-FBA-CAP-SUP-011 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	241	253	263
Non-Labor	1,126	1,190	1,245
NSE	0	0	0
Total	**1,367**	**1,443**	**1,508**
FTE	2.6	2.7	2.8

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 002800

SCG-FBA-CAP-SUP-011

Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala

Supplemental Workpaper for Zero Based Calculations Related to Gas Energy Measurement Systems

Gas Energy Measurement Systems (GEMS) Workpaper

Unit Forecast

	Growth	New Installations		Replacement Installations				Total
	[I] (SCG-FBA -CAP-SUP-009, Table 2, [I])	[A] ([I]* [A] for Previous Year)	[B] ([I]* [B] for Previous Year)	[C] (2013 Base)	[D] (2013 Base)	[E] (2013 Base)	[F] (Est. 5/yr)	[G] (Sum [A] Thru [F])
	NB Forecast Growth Factor	Electronic Correctors	Little GEMS	Electronic Corrector	Little GEMS	Big GEMS	New Generation Gas Analyzer	Total
2013 Historical [1]	N/A	80	122	200	122	12	-	536
2014 [2]	30.99%	105	160	200	122	12	5	604
2015 [3]	14.96%	120	184	200	122	12	5	643
2016 [4]	11.29%	134	204	200	122	12	5	677

2013 Historical Costs and FTEs (2013$ with vacation & sick)

	New Installations		Replacement Installations				Total
	Electronic Correctors	Little GEMS	Electronic Corrector	Little GEMS	Big GEMS	New Generation Gas Analyzer	
2013 Non-Labor [5]	136,707	193,406	224,030	240,328	130,890	-	925,360
2013 Labor [6]		59,604				160,747	220,351
2013 FTEs [7]		0.6				1.7	2.3

Non-Labor Forecast (2013$ with vacation & sick)

	New Installations		Replacement Installations				Total [H]
	Electronic Correctors	Little GEMS	Electronic Corrector	Little GEMS	Big GEMS	New Generation Gas Analyzer*	
Non-Labor Unit Cost [8] ([5]/[1])	1,709	1,585	1,120	1,970	10,908	19,575	36,866
2014 ([8]x[2])	179,427	253,647	224,030	240,328	130,890	97,873	1,126,195
2015 ([8]x[3])	205,060	291,694	224,030	240,328	130,890	97,873	1,189,875
2016 ([8]x[4])	228,983	323,400	224,030	240,328	130,890	97,873	1,245,505

* 2013 historical weighted average cost not available, so forecasted unit cost was estimated.

SCG-FBA-CAP-SUP-011

Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala

Supplemental Workpaper for Zero Based Calculations Related to Gas Energy Measurement Systems

Gas Energy Measurement Systems (GEMS) Workpaper

Labor Forecast (2013$ with vacation & sick)

	New Installations	Replacement Installations	Total [I]
Labor Unit Cost [9] ([6]/[1])	295.07	481	776
2014 ([9]x[2])	78,193	163,153.39	241,347
2015 ([9]x[3])	89,701	163,153.39	252,854
2016 ([9]x[4])	99,733	163,153.39	262,887

FTE Forecast (with vacation & sick)

	New Installations	Replacement Installations	Total [J]
FTEs per Unit [10] ([7]/[1])	0.0032	0.0051	0.0
2014 ([10]x[2])	0.8	1.72	2.6
2015 ([10]x[3])	1.0	1.72	2.7
2016 ([10]x[4])	1.1	1.72	2.8

Total Forecast (Thousands of 2013$ with vacation & sick)

	FTEs ([J])	Labor ([I]/1000)	Non-Labor ([H]/1000)	Total ([I]+[H])
2014	2.6	241	1,126	1,368
2015	2.7	253	1,190	1,443
2016	2.8	263	1,246	1,508

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00181.0
Category: M. Measurement & Regulation Devices
Category-Sub: 4. Electronic Pressure Monitors
Workpaper Group: 001810 - Electronic Pressure Monitors (EPMs)

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	75	81	230	256	328	266	319	166
Non-Labor	Zero-Based	105	200	581	461	733	662	791	442
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**180**	**281**	**811**	**717**	**1,061**	**928**	**1,110**	**608**
FTE	Zero-Based	0.8	0.8	2.7	3.1	3.6	3.0	3.5	1.8

Business Purpose:

Budget Codes: 181, 281.

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

Physical Description:

Electronic Pressure Monitor (EPM) is a box shaped unit made for the purpose of measuring and recording gas pressure within a gas conduit via a connected gas transducer sensor. The unit has a box shaped shell cover that protects the internal circuitry from environmental hazards. After initial installation, this device is placed on an annual maintenance plan, which includes inspection of the battery pack serving as the source of power for most EPMs. This device is commonly connected to a telephone hardline, but it is not uncommon to see a device set up with cellular capabilities. The line of communication is what allows the EPM device to send pressure data logs to a calling computer, at which point, the pressure data can be electronically reviewed, analyzed, stored, and archived. These EPM units are commonly affixed to wall-mount and pole-mount configurations.

Project Justification:

The primary purpose of the electronic pressure monitor network is for system safety and mandatory compliance with 49 CFR 192.741. SoCalGas is planning to install 560 new EPMs throughout the distribution network during the 2014 through 2016 period. Many of these new installations will replace existing mechanical pressure recorders used at a majority of SoCalGas' regulator stations and system terminal points. These mechanical recorders are resource intensive as they require a technician to drive to each location once a month to retrieve pressure history recorded on paper charts, thus real time information is not readily available to help better manage and respond to pipeline over-pressure or under-pressure events. Also, when failure in mechanical pressure recording chart equipment occurs such as a recording pen failure, which would result in no data being recorded, the problem is not noticed or fixed until the next scheduled chart collection. For these reasons, the industry is replacing the mechanical pressure chart system with EPMs. This industry change has resulted in a declining number of suppliers of mechanical pressure recording chart equipment, and consequently, reduced the availability of replacement parts and supplies. In addition, due to the fact that SoCalGas has been using EPMs for over a decade, it is reasonable to expect replacement cost as wear and tear begins to impact the performance of the aged EPMs. For this reason, SoCalGas plans to replace 142 existing units during the same three-year period (2014 - 2016).

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00181.0
Category:	M. Measurement & Regulation Devices
Category-Sub:	4. Electronic Pressure Monitors
Workpaper Group:	001810 - Electronic Pressure Monitors (EPMs)

Forecast Methodology:

Labor - Zero-Based

For the new EPM installations, the labor was forecasted using the historical 2013 expenditures. Using this historical data, SoCalGas was able to determine the average labor cost per new install. Taking this labor cost per new installation and multiplying by the number of planned new EPM installations yielded the forecasted total labor cost required to complete this work.

For the EPM replacements, the labor was forecasted using the historical 2012 average labor cost per replacement. The 2012 labor cost per unit was the latest available information, and therefore the reason why 2013 was not used. Taking this labor cost per replacement and multiplying by the number of planned replacements yielded the forecasted total labor cost required to complete this work.

See supplemental workpaper SCG-FBA-CAP-SUP-012 for calculation details.

Non-Labor - Zero-Based

The forecasted non-labor cost for new EPM installations also used the historical 2013 expenditures to determine an average non-labor cost per new installation. Multiplying this non-labor cost per new installation by the number of planned new EPM installations yielded the forecasted total non-labor cost required to complete this work.

The non-labor cost for EPM replacements was forecasted using the historical 2012 average non-labor cost per replacement since information from 2013 was not available. Multiplying this non-labor cost per replacement by the number of planned EPM replacements yielded the forecasted total non-labor cost required to complete this work.

See supplemental workpaper SCG-FBA-CAP-SUP-012 for calculation details.

NSE - Zero-Based

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00181.0
Category: M. Measurement & Regulation Devices
Category-Sub: 4. Electronic Pressure Monitors
Workpaper Group: 001810 - Electronic Pressure Monitors (EPMs)

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	Zero-Based	266	319	166	0	0	0	266	319	166
Non-Labor	Zero-Based	662	791	442	0	0	0	662	791	442
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**928**	**1,110**	**608**	**0**	**0**	**0**	**928**	**1,110**	**608**
FTE	Zero-Based	3.0	3.5	1.8	0.0	0.0	0.0	3.0	3.5	1.8

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00181.0
Category: M. Measurement & Regulation Devices
Category-Sub: 4. Electronic Pressure Monitors
Workpaper Group: 001810 - Electronic Pressure Monitors (EPMs)

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	52	59	184	221	282
Non-Labor	86	170	540	463	733
NSE	0	0	0	0	0
Total	**137**	**228**	**723**	**684**	**1,014**
FTE	0.7	0.7	2.3	2.7	3.1
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	52	59	184	221	282
Non-Labor	86	170	540	463	733
NSE	0	0	0	0	0
Total	**137**	**228**	**723**	**684**	**1,014**
FTE	0.7	0.7	2.3	2.7	3.1
Vacation & Sick (Nominal $)					
Labor	9	10	30	35	47
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**9**	**10**	**30**	**35**	**47**
FTE	0.1	0.1	0.4	0.4	0.5
Escalation to 2013$					
Labor	14	12	16	-1	0
Non-Labor	20	30	41	-1	0
NSE	0	0	0	0	0
Total	**33**	**42**	**57**	**-2**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	75	81	230	256	328
Non-Labor	105	200	581	461	733
NSE	0	0	0	0	0
Total	**180**	**281**	**811**	**717**	**1,061**
FTE	0.8	0.8	2.7	3.1	3.6

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00181.0
Category: M. Measurement & Regulation Devices
Category-Sub: 4. Electronic Pressure Monitors
Workpaper Group: 001810 - Electronic Pressure Monitors (EPMs)

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 001810

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00181.0
Category:	M. Measurement & Regulation Devices
Category-Sub:	4. Electronic Pressure Monitors
Workpaper Group:	001810 - Electronic Pressure Monitors (EPMs)
Workpaper Detail:	001810.001 - Electronic Pressure Monitors
In-Service Date:	Not Applicable

Description:

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

See supplemental workpaper SCG-FBA-CAP-SUP-012 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	266	319	166
Non-Labor	662	791	442
NSE	0	0	0
Total	**928**	**1,110**	**608**
FTE	3.0	3.5	1.8

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 001810

SCG-FBA-CAP-SUP-012
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper for Zero Based Calculations Related to Electronic Pressure Monitors
Electronic Pressure Monitor (EPM) Workpaper

Historical Data Table (2013$ with Vacation & Sick)

	Historical New EPM Installations (2013 Base Year for Unit Costs)				Historical Replacement EPM Installations (2012 Base Year for Unit Costs)			
	New EPMs Installed	Labor $	Non-Labor $	FTEs	EPMs Replaced [U]	Labor $	Non-Labor $	FTEs
2009	95	$ 74,851	$ 105,083	0.8	0	$ -	$ -	0.0
2010	106	$ 81,127	$ 147,402	0.8	30	$ -	$ 52,336	0.0
2011	237	$ 201,601	$ 498,196	2.3	50	$ 28,679	$ 82,478	0.4
2012	225	$ 231,504	$ 277,496	2.8	107	$ 24,360	$ 183,910	0.3
2013	247	$ 317,041	$ 728,865	3.5	0	$ 11,254	$ 3,777	0.1
	[A]	[D]	[E]	[F]	[B]	[G]	[H]	[I]
Base Year	247	$ 317,041	$ 728,865	3.5	107	$ 24,360	$ 183,910	0.3
	[A]	[J] ([D]/[A])	[K] ([E]/[A])	[L] ([F]/[A])	[B]	[M] ([G]/[B])	[N] ([H]/[B])	[O] ([I]/[B])
$ and FTEs per EPM in Base Year	247	$ 1,284	$ 2,951	0.0142	107	$ 228	$ 1,719	0.0028

	[V] (Ave. of [U])
5-Year Average Number of EPM Replacements	37

Calculations for Forecasted EPM Units

	New EPMs	Total EPMs in Service			Replacement EPMs
		Start of Year EPMs	End of Year EPMs	In Service Growth Factor (Over 2013)	
	[P]	[Q] (Previous Row [R])	[R] ([P]+[Q])	[S] ([R]-[C])/[C]	[T] ([S]+1)*[V]
2013 EOY [C]			1,515		
2014	200	1,515	1,715	13.2%	42
2015	240	1,715	1,955	29.0%	48
2016	120	1,955	2,075	37.0%	51

SCG-FBA-CAP-SUP-012
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper for Zero Based Calculations Related to Electronic Pressure Monitors
Electronic Pressure Monitor (EPM) Workpaper

Calculations for Forecasted Dollars and FTEs (2013$ with Vacation & Sick)

	New EPM Installations				Replacement EPM Installations			
	New EPMs [P]	Labor $ [W] ([P]x[J])	Non-Labor $ [X] ([P]x[K])	FTEs [Y] ([P]x[L])	Replacement EPMs [T]	Labor $ [Z] ([T]x[M])	Non-Labor $ [AA] ([T]x[N])	FTEs [BB] ([T]x[O])
2014	200	$ 256,713	$ 590,174	2.8	42	$ 9,639	$ 72,769	0.1
2015	240	$ 308,056	$ 708,209	3.4	48	$ 10,988	$ 82,952	0.1
2016	120	$ 154,028	$ 354,104	1.7	51	$ 11,662	$ 88,044	0.1

	Total New and Replacement EPM Installations (Thousands of 2013$)				
	Total EPM Installations ([P]+[T])	Labor $ [CC] ([W]+[Z]) /1000	Non-Labor $ [DD] ([X]+[AA]) /1000	Total $ ([CC]+[DD])	FTEs ([Y]+[BB])
2014	242	$ 266	$ 663	$ 929	3.0
2015	288	$ 319	$ 791	$ 1,110	3.5
2016	171	$ 166	$ 442	$ 608	1.8

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Category: N. Capital Tools
Workpaper: VARIOUS

Summary for Category: N. Capital Tools

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
Labor	0	0	0	0
Non-Labor	2,366	8,169	8,129	10,964
NSE	0	0	0	0
Total	**2,366**	**8,169**	**8,129**	**10,964**
FTE	0.0	0.0	0.0	0.0
007250 Capital Tools & Equipment - Routine				
Labor	0	0	0	0
Non-Labor	2,383	2,710	3,115	3,519
NSE	0	0	0	0
Total	**2,383**	**2,710**	**3,115**	**3,519**
FTE	0.0	0.0	0.0	0.0
009060 Capital Tools - Non-Routine				
Labor	0	0	0	0
Non-Labor	-17	3,133	2,688	5,700
NSE	0	0	0	0
Total	**-17**	**3,133**	**2,688**	**5,700**
FTE	0.0	0.0	0.0	0.0
00725A Capital Tools - MDT Replacements				
Labor	0	0	0	0
Non-Labor	0	2,326	2,326	1,745
NSE	0	0	0	0
Total	**0**	**2,326**	**2,326**	**1,745**
FTE	0.0	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
007250 - Capital Tools & Equipment - Routine

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00725.0
Category: N. Capital Tools
Category-Sub: 1. Capital Tools & Equipment - Routine
Workpaper Group: 007250 - Capital Tools & Equipment - Routine

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	58	64	58	3	0	0	0	0
Non-Labor	5-YR Linear	775	1,238	1,016	2,068	2,383	2,710	3,115	3,519
NSE	5-YR Linear	0	0	0	0	0	0	0	0
Total		**833**	**1,302**	**1,074**	**2,071**	**2,383**	**2,710**	**3,115**	**3,519**
FTE	Zero-Based	0.5	0.6	0.6	0.0	0.0	0.0	0.0	0.0

Business Purpose:

Budget Codes: 725, 727, 729.

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

This workpaper covers routine capital tool and equipment purchases. The forecast for non-routine capital tool and equipment purchases can be found in Workpaper 009060 - Capital Tools – Non-Routine.

Physical Description:

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

Project Justification:

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

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00725.0
Category:	N. Capital Tools
Category-Sub:	1. Capital Tools & Equipment - Routine
Workpaper Group:	007250 - Capital Tools & Equipment - Routine

Forecast Methodology:

Labor - Zero-Based

There are no dollars forecasted for labor costs in this category.

Non-Labor - 5-YR Linear

The non-labor expenditures were separated by routine purchases and by significant system-wide replacements. Routine purchases include replacements of broken and obsolete tools and equipment, while the system-wide replacements include the roll out of new technology. The forecasted non-labor expenditures for routine purchases were determined by using the historical five-year (2009 - 2013) linear trend of the non-labor component. As for the significant system-wide non-routine tool replacements, the details can be found in Workpaper 009060.

NSE - 5-YR Linear

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00725.0
Category: N. Capital Tools
Category-Sub: 1. Capital Tools & Equipment - Routine
Workpaper Group: 007250 - Capital Tools & Equipment - Routine

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	0	0	0	0
Non-Labor	5-YR Linear	2,709	3,114	3,519	0	0	0	2,709	3,114	3,519
NSE	5-YR Linear	0	0	0	0	0	0	0	0	0
Total		**2,709**	**3,114**	**3,519**	**0**	**0**	**0**	**2,709**	**3,114**	**3,519**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00725.0
Category: N. Capital Tools
Category-Sub: 1. Capital Tools & Equipment - Routine
Workpaper Group: 007250 - Capital Tools & Equipment - Routine

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	40	46	46	3	0
Non-Labor	1,161	2,445	1,583	2,132	2,367
NSE	0	0	0	0	0
Total	**1,201**	**2,492**	**1,629**	**2,135**	**2,367**
FTE	0.4	0.5	0.5	0.0	0.0
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	-530	-1,394	-639	-58	17
NSE	0	0	0	0	0
Total	**-530**	**-1,394**	**-639**	**-58**	**17**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	40	46	46	3	0
Non-Labor	631	1,051	944	2,074	2,383
NSE	0	0	0	0	0
Total	**671**	**1,098**	**991**	**2,077**	**2,383**
FTE	0.4	0.5	0.5	0.0	0.0
Vacation & Sick (Nominal $)					
Labor	7	8	8	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**7**	**8**	**8**	**0**	**0**
FTE	0.1	0.1	0.1	0.0	0.0
Escalation to 2013$					
Labor	11	10	4	0	0
Non-Labor	144	187	72	-7	0
NSE	0	0	0	0	0
Total	**155**	**196**	**76**	**-7**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	58	64	58	3	0
Non-Labor	775	1,238	1,016	2,068	2,383
NSE	0	0	0	0	0
Total	**833**	**1,302**	**1,074**	**2,071**	**2,383**
FTE	0.5	0.6	0.6	0.0	0.0

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00725.0
Category: N. Capital Tools
Category-Sub: 1. Capital Tools & Equipment - Routine
Workpaper Group: 007250 - Capital Tools & Equipment - Routine

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	0
Non-Labor	-530	-1,394	-639	-58	17
NSE	0	0	0	0	0
Total	**-530**	**-1,394**	**-639**	**-58**	**17**
FTE	0.0	0.0	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00725.0
Category: N. Capital Tools
Category-Sub: 1. Capital Tools & Equipment - Routine
Workpaper Group: 007250 - Capital Tools & Equipment - Routine

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009	0	-530	0	-530	0.0	TP1RMC2013111222142
Removal of non-routine capital expenses for program to replace GasTrak equipment system wide. See corresponding adjustment under Workpaper 009060 - Capital Tools - Non-Routine.						
2009 Total	0	-530	0	-530	0.0	
2010	0	-1,394	0	-1,394	0.0	TP1RMC2013111222144
Removal of non-routine capital expenses for program to replace GasTrak equipment system wide. See corresponding adjustment under Workpaper 009060 - Capital Tools - Non-Routine.						
2010 Total	0	-1,394	0	-1,394	0.0	
2011	0	-466	0	-466	0.0	TP1RMC2013111222113
Removal of refundable DIMP-SLIP expenses inadvertently included in this workpaper.						
	0	-173	0	-173	0.0	TP1RMC2013111222150
Removal of non-routine capital expenses for program to replace GasTrak equipment system wide. See corresponding adjustment under Workpaper 009060 - Capital Tools - Non-Routine.						
2011 Total	0	-639	0	-639	0.0	
2012	0	-58	0	-58	0.0	TP1RMC2013111222153
Removal of non-routine capital expenses for program to replace GasTrak equipment system wide. See corresponding adjustment under Workpaper 009060 - Capital Tools - Non-Routine.						
2012 Total	0	-58	0	-58	0.0	
2013	0	17	0	17	0.0	DAVALOS201404210910
Adjustment to remove credit for non-routine capital GasTrak equipment. Capital expenses related to replacement of GasTrak equipment were also removed from previous years. See corresponding adjustment under Workpaper 009060 - Capital Tools - Non-Routine.						
2013 Total	0	17	0	17	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 007250

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00725.0
Category: N. Capital Tools
Category-Sub: 1. Capital Tools & Equipment - Routine
Workpaper Group: 007250 - Capital Tools & Equipment - Routine
Workpaper Detail: 007250.001 - Routine Tool Purchases

In-Service Date: Not Applicable

Description:

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

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	2,710	3,115	3,519
NSE	0	0	0
Total	**2,710**	**3,115**	**3,519**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
009060 - Capital Tools - Non-Routine

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00906.0
Category: N. Capital Tools
Category-Sub: 2. Capital Tools - Non-Routine
Workpaper Group: 009060 - Capital Tools - Non-Routine

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	651	1,641	186	58	-17	3,133	2,688	5,700
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**651**	**1,641**	**186**	**58**	**-17**	**3,133**	**2,688**	**5,700**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

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

This workpaper covers non-routine capital tool and equipment purchases. The forecast for routine capital tool and equipment purchases can be found in Workpaper 007250 - Capital Tools & Equipment – Routine.

Physical Description:

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

Project Justification:

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

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00906.0
Category:	N. Capital Tools
Category-Sub:	2. Capital Tools - Non-Routine
Workpaper Group:	009060 - Capital Tools - Non-Routine

Forecast Methodology:

Labor - Zero-Based

There are no dollars forecasted for labor costs in this category.

Non-Labor - Zero-Based

The details for the significant system-wide non-routine tool replacements are provided in the accompanying workpapers:

i. Multi-Gas Detector Replacement Effort (009060.002)
ii. Combustible Gas Indicator Equipment Replacement Effort (009060.003)
iii. Leak Detection Equipment Replacement Effort (009060.001)
iv. GIS-Based Leak Survey Tracker (009060.004)
v. Field Training Facility Improvement for Situation City (009060.005)

NSE - Zero-Based

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00906.0
Category: N. Capital Tools
Category-Sub: 2. Capital Tools - Non-Routine
Workpaper Group: 009060 - Capital Tools - Non-Routine

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	3,133	2,688	5,700	3,133	2,688	5,700
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**3,133**	**2,688**	**5,700**	**3,133**	**2,688**	**5,700**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014	0	3,133	0	3,133	0.0	RHFLAMIN201405(
ii. Combustible Gas Indicator Equipment Replacement Effort. See Workpaper 009060.003 for details on this incremental item. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-013.						
2014 Total	0	3,133	0	3,133	0.0	
2015	0	271	0	271	0.0	DAVALOS2014050
v. Field Training Facility Improvement for Situation City. See Workpaper 009060.005 for details on this incremental item. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-013.						
	0	2,417	0	2,417	0.0	RHFLAMIN201405(
i. Multi-Gas Detector Replacement Effort and Related Support Equipment. See Workpaper 009060.002 for details on this incremental item. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-013.						
2015 Total	0	2,688	0	2,688	0.0	
2016	0	1,271	0	1,271	0.0	DAVALOS2014050
iv. GIS-Based Leak Survey Tracker. See Workpaper 009060.004 for details on this incremental item. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-013.						
	0	4,429	0	4,429	0.0	RHFLAMIN201405(
iii. Leak Detection Equipment Replacement Effort. See Workpaper 009060.001 for details on this incremental item. Calculations can be found in Supplemental Workpaper SCG-FBA-CAP-SUP-013.						
2016 Total	0	5,700	0	5,700	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00906.0
Category: N. Capital Tools
Category-Sub: 2. Capital Tools - Non-Routine
Workpaper Group: 009060 - Capital Tools - Non-Routine

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	3	0	0	0	0
Non-Labor	1	0	0	0	0
NSE	0	0	0	0	0
Total	**4**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Adjustments (Nominal $) **					
Labor	-3	0	0	0	0
Non-Labor	529	1,394	173	58	-17
NSE	0	0	0	0	0
Total	**526**	**1,394**	**173**	**58**	**-17**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	0	0	0	0	0
Non-Labor	530	1,394	173	58	-17
NSE	0	0	0	0	0
Total	**530**	**1,394**	**173**	**58**	**-17**
FTE	0.0	0.0	0.0	0.0	0.0
Vacation & Sick (Nominal $)					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Escalation to 2013$					
Labor	0	0	0	0	0
Non-Labor	121	248	13	0	0
NSE	0	0	0	0	0
Total	**121**	**248**	**13**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	0	0	0	0	0
Non-Labor	651	1,641	186	58	-17
NSE	0	0	0	0	0
Total	**651**	**1,641**	**186**	**58**	**-17**
FTE	0.0	0.0	0.0	0.0	0.0

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00906.0
Category: N. Capital Tools
Category-Sub: 2. Capital Tools - Non-Routine
Workpaper Group: 009060 - Capital Tools - Non-Routine

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	-3	0	0	0	0
Non-Labor	529	1,394	173	58	-17
NSE	0	0	0	0	0
Total	**526**	**1,394**	**173**	**58**	**-17**
FTE	0.0	0.0	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00906.0
Category: N. Capital Tools
Category-Sub: 2. Capital Tools - Non-Routine
Workpaper Group: 009060 - Capital Tools - Non-Routine

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009	-3	-1	0	-4	0.0	RHFLAMIN20140430122
Zero out historical charges not related to Equipment & Tools.						
	0	530	0	530	0.0	RHFLAMIN20140430122
Non-routine historical tool - GasTrak. See corresponding adjustment under Workpaper 007250 - Capital Tools & Equipment - Routine.						
2009 Total	-3	529	0	526	0.0	
2010	0	1,394	0	1,394	0.0	RHFLAMIN20140430122
Non-routine historical tool - GasTrak. See corresponding adjustment under Workpaper 007250 - Capital Tools & Equipment - Routine.						
2010 Total	0	1,394	0	1,394	0.0	
2011	0	173	0	173	0.0	RHFLAMIN20140430122
Non-routine historical tool - GasTrak. See corresponding adjustment under Workpaper 007250 - Capital Tools & Equipment - Routine.						
2011 Total	0	173	0	173	0.0	
2012	0	58	0	58	0.0	RHFLAMIN20140430122
Non-routine historical tool - GasTrak. See corresponding adjustment under Workpaper 007250 - Capital Tools & Equipment - Routine.						
2012 Total	0	58	0	58	0.0	
2013	0	-17	0	-17	0.0	RHFLAMIN20140430123
Credit for non-routine historical tool - GasTrak. See corresponding adjustment under Workpaper 007250 - Capital Tools & Equipment - Routine.						
2013 Total	0	-17	0	-17	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 009060

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00906.0
Category: N. Capital Tools
Category-Sub: 2. Capital Tools - Non-Routine
Workpaper Group: 009060 - Capital Tools - Non-Routine
Workpaper Detail: 009060.001 - Leak Detection Equipment Replacement Effort

In-Service Date: Not Applicable

Description:

Project Scope: This project encompasses a system wide replacement of existing leak detection equipment to be executed in 2016. This handheld unit is the primary leak detection instrument utilized by SoCalGas when performing Annual, Routine and Special underground leakage survey activities. SoCalGas currently employs an inventory comprised of approximately 375 units utilizing first generation infrared technology to identify and quantify underground leakage.

Business Justification: SoCalGas will systematically upgrade its existing inventory of handheld pipeline leak detection equipment as supported below:
• Optical enhancements associated with advances in infrared technology will eliminate moisture related false read indications during leak investigations. Newer instruments are built with a longer infrared wavelength design which significantly reduces sensitivity to variations in humidity conditions that exist with our current inventory of instruments.
• Improved manufacturing and assembly processes associated with critical components in this equipment have increased the reliability and consistency of the instrument.
• Addition of Bluetooth technology will provide a path of communication for future data collection and integration with existing software platforms.
• The lifespan of the electrical and optical components built into existing leak detection technology is approximately 7 to 8 years.

Budget Estimates: Current estimates reflect replacement cost of $11,809 per unit with a planned purchase of 375 units. The total estimated project cost to obtain 375 advanced leak detection units is $4.4 million.

Schedule: The equipment purchase and delivery will be executed in 2016.

See supplemental workpaper SCG-FBA-CAP-SUP-013 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	0	0	4,429
NSE	0	0	0
Total	**0**	**0**	**4,429**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00906.0
Category: N. Capital Tools
Category-Sub: 2. Capital Tools - Non-Routine
Workpaper Group: 009060 - Capital Tools - Non-Routine
Workpaper Detail: 009060.002 - Multi-Gas Detector Replacement Effort

In-Service Date: Not Applicable

Description:

Project Scope: This project encompasses a system wide replacement of existing multi-gas leak detectors and related support equipment utilized by SoCalGas Customer Services Field personnel to measure for carbon monoxide and perform leakage and CO safety investigations.

Business Justification: SoCalGas will conduct a system wide replacement of multi-gas test equipment in 2015 to mitigate the following issues:
• Warranty expiration in September 2014 resulting in the potential for incurring significant repair cost.
• Electrical components incorporated with multi-gas detection technology have a limited lifespan requiring repair and/or replacement of these components with more frequency.
• SoCalGas has been experiencing reliability and performance related issues that support full replacement of existing multi-gas detection equipment.
Due to forecasted operating and repair costs associated with maintaining the current inventory of multi-gas detectors, as well as technological advances in leak detection equipment, SoCalGas is planning the replacement of all Customer Services Field multi-gas detection units.

Budget Estimates: Evaluations are on-going on several makes/models from vendors considered as suitable replacements. The cost is estimated at approximately $1,700 per unit, and calibration stations priced at about $3,000 each. The total projected cost to obtain approximately 1,300 multi-gas detection units and 60 calibration stations is $2.41 million.

Schedule: The equipment purchase and delivery will be executed in 2015.

See supplemental workpaper SCG-FBA-CAP-SUP-013 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	0	2,417	0
NSE	0	0	0
Total	**0**	**2,417**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00906.0
Category: N. Capital Tools
Category-Sub: 2. Capital Tools - Non-Routine
Workpaper Group: 009060 - Capital Tools - Non-Routine
Workpaper Detail: 009060.003 - Combustible Gas Indicator Equipment Replacement Effort

In-Service Date: Not Applicable

Description:

Project Scope: This project encompasses the system wide replacement of existing instruments used for methane detection that are obsolete. Combustible gas indicators (CGIs), a leak detection and quantification instrument, is currently utilized by multiple departments within SoCalGas (e.g. Distribution Operations, Transmission Operations and Storage Operations). Due to the challenges associated with adequately maintaining the current inventory of combustible gas indicators, as well as technological advances in leak quantification equipment, SoCalGas is planning replacement of all combustible gas indicators.

Business Justification: SoCalGas has been utilizing the same combustible gas indicator model for 30 years. A review of this equipment substantiates the need to perform a system wide replacement of these instruments as supported below:
• The age of the equipment varies from 10 to 30 years old, and in many cases units have exceeded their life expectancy.
• The manufacturer has discontinued manufacturing the components required to support this equipment thus limiting the ability to maintain our existing inventory.
• Advancements in technology related to calibration, data logging, and continual sampling will enhance SoCalGas' ability to provide more accurate leak monitoring and access instrument data

Budget Estimates: Evaluations are on-going on several makes/models from vendors considered as suitable replacements. The cost is estimated at approximately $1,500 per unit, and calibration stations priced at about $6,400 per station. The total projected cost to obtain approximately 1,800 combustible gas indicators and 65 calibration stations is $3.1 million.

Schedule: The equipment purchase and delivery will be executed in 2014.

See supplemental workpaper SCG-FBA-CAP-SUP-013 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	3,133	0	0
NSE	0	0	0
Total	**3,133**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00906.0
Category:	N. Capital Tools
Category-Sub:	2. Capital Tools - Non-Routine
Workpaper Group:	009060 - Capital Tools - Non-Routine
Workpaper Detail:	009060.004 - GIS-Based Leak Survey Tracker
In-Service Date:	Not Applicable

Description:

Project Scope: The GIS-based leak survey tracker is a hand-held device that will be used while performing leak surveys. This technology will enable surveyors to geo-tag the position of as-found leaks. Such geo-tag information can then be collected electronically to document the field survey findings. The ability to collect this information electronically with interface to SoCalGas' existing technologies such as, the GIS and Maintenance & Inspections database, can enhance the ability for abnormal field conditions to be reported, recorded, and followed up accordingly with minimal manual intervention involving data entry. This device will be blue-tooth linked to SoCalGas' leak detectors and will run on a mid-ware application that will integrate with the GIS and inspection systems. The forecasted expenditures is for the purchase of 400 units at $3,200 each for a total of $1.27 million.

See supplemental workpaper SCG-FBA-CAP-SUP-013 for calculation details.

Forecast In 2013 $(000)

Years	2014	2015	2016
Labor	0	0	0
Non-Labor	0	0	1,271
NSE	0	0	0
Total	**0**	**0**	**1,271**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00906.0
Category:	N. Capital Tools
Category-Sub:	2. Capital Tools - Non-Routine
Workpaper Group:	009060 - Capital Tools - Non-Routine
Workpaper Detail:	009060.005 - Field Training Facility Improvement for Situation City
In-Service Date:	08/31/2015

Description:

Project Scope: This project will construct a restroom in SoCalGas' field training grounds known as Pico Rivera's Situation City. The construction of this restroom will provide a proper facility at a location where students are trained on a regular basis. Increased usage of the Situation City training area at Pico Rivera has created a need for a permanent full use restroom. There is a considerable distance from the regular training building to the field training grounds. The maintenance of this facility is not part of the Company's Facility Services organization, and therefore is not included within that cost.

See supplemental workpaper SCG-FBA-CAP-SUP-013 for calculation details.

Forecast In 2013 $(000)

Years	2014	2015	2016
Labor	0	0	0
Non-Labor	0	271	0
NSE	0	0	0
Total	**0**	**271**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 009060

SCG-FBA-CAP-SUP-013
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper Calculations for Non-Routine Tool and Equipment Purchases
Capital Tools - Non Routine Workpaper

Assumptions:

[F]: Cost for Taxes and Shipping.
10% Tax.
$100 Shipping for Surveying Leak Detector. $25 Shipping for other tools.

[G]: Total non-labor cost per unit after tax and other fees.
[E] - [G]: Amounts are shown in 2013 dollars.
[H] - [K]: Amounts are shown in thousands of 2013 dollars.

Units

Description	[B] 2014 Total Qty	[C] 2015 Total Qty	[D] 2016 Total Qty	[A] Total Qty
Surveying Leak Detector (WP 009060.001)			375	375
GIS-base Leak Survey tracker (WP 009060.004)			400	400
Multi-Gas Detector (WP 009060.002)		1300		1300
Multi-Gas Calibration (WP 009060.002)		60		60
Combustible Gas Detector (WP 009060.003)	1800			1800
Combustible Gas Calibration (WP 009060.003)	65			65
Field Training Facility Improvement (WP 009060.005)		1		1

Non-Labor

Description	[E] Base Cost Per Unit	[F] Taxes and Shipping Fees	[G] ([E]+[F]) Total Cost Per Unit	[H] ([B]x[G])/1000 2014 Non-Labor ($000)	[I] ([C]x[G])/1000 2015 Non-Labor ($000)	[J] ([D]x[G])/1000 2016 Non-Labor ($000)	[K] ([H]+[I]+[J]) Total Non-Labor ($000)
Surveying Leak Detector (WP 009060.001)	$ 10,645	$ 1,164.50	$ 11,810	$ -	$ -	$ 4,429	$ 4,429
GIS-base Leak Survey tracker (WP 009060.004)	$ 2,865	$ 311.50	$ 3,177	$ -	$ -	$ 1,271	$ 1,271
Multi-Gas Detector (WP 009060.002)	$ 1,540	$ 179.00	$ 1,719	$ -	$ 2,235	$ -	$ 2,235
Multi-Gas Calibration (WP 009060.002)	$ 2,750	$ 300.00	$ 3,050	$ -	$ 183	$ -	$ 183
Combustible Gas Detector (WP 009060.003)	$ 1,350	$ 160.00	$ 1,510	$ 2,718	$ -	$ -	$ 2,718
Combustible Gas Calibration (WP 009060.003)	$ 5,780	$ 603.00	$ 6,383	$ 415	$ -	$ -	$ 415
Field Training Facility Improvement (WP 009060.005)	$ 271,297	$ -	$ 271,297	$ -	$ 271	$ -	$ 271
Totals				**$ 3,133**	**$ 2,689**	**$ 5,700**	**$ 11,522**

Beginning of Workpaper Group
00725A - Capital Tools - MDT Replacements

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00725.0
Category: N. Capital Tools
Category-Sub: 3. Capital Tools - Mobile Data Terminal Replacements
Workpaper Group: 00725A - Capital Tools - MDT Replacements

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	2,326	2,326	1,745
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**2,326**	**2,326**	**1,745**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

This activity encompasses the replacement of existing mobile data terminals (MDTs) utilized by Field Operations construction personnel and their Supervisors. These ruggedized laptops are a critical component in the management and scheduling of work throughout the day as well as provide two-way communication between the field crews and their dispatch and management contacts.

Physical Description:

This activity encompasses the systematic replacement of approximately 1,100 MDT units and associated peripherals utilized by SoCalGas Field construction personnel and their Supervisors.

Project Justification:

SoCalGas will perform a systematic replacement of Field Operations mobile data terminals to mitigate the following issues:

• Most of the existing MDTs are more than five years old and are well beyond their original three-year manufacturer's warranty. SoCalGas has been experiencing increasing levels of unit failures requiring increased and significant repair costs.
• By their nature, field computers have a limited lifespan due to the working environment and constant use they are subjected to on a daily basis. Replacement and upgrades to newer technologies (faster computing speed, better processors, increased memory, and communications abilities) prevents field operation disruptions and downtime, and upgrade technology to better meet work demands.
• SoCalGas has experienced an average failure rate for MDTs at about 25% in the first five years of use in the field. The rate increases after five years, and therefore, this project strives to maintain operational reliability by prioritizing the replacement of those reaching five years and out of warranty. Not replacing these units will result in operational disruption due to failures, O&M expenses for repairs, and higher capital costs in following years due to replacement cycles.

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00725.0
Category:	N. Capital Tools
Category-Sub:	3. Capital Tools - Mobile Data Terminal Replacements
Workpaper Group:	00725A - Capital Tools - MDT Replacements

Forecast Methodology:

Labor - Zero-Based

N/A

Non-Labor - Zero-Based

This is a zero-based forecast based on a per-unit cost of approximately $5,800 per MDT. The replacement schedule is forecasted to be 400 units in 2014, 400 units in 2015, and 300 units in 2016.

See supplemental workpaper SCG-FBA-CAP-SUP-013.1 for calculation details.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00725A

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00725.0
Category:	N. Capital Tools
Category-Sub:	3. Capital Tools - Mobile Data Terminal Replacements
Workpaper Group:	00725A - Capital Tools - MDT Replacements
Workpaper Detail:	00725A.001 - Mobile Data Terminal Replacement
In-Service Date:	Not Applicable

Description:

This activity encompasses the replacement of existing mobile data terminals (MDTs) utilized by Field Operations construction personnel and their Supervisors. These ruggedized laptops are a critical component in the management and scheduling of work throughout the day as well as provide two-way communication between the field crews and their dispatch and management contacts. SoCalGas plans to replace the entire inventory of existing MDTs, which are approximately 1,100 units. The cost to replace each MDT is about $5,800. The total cost for all replacements is approximately $6.4 million.

See supplemental workpaper SCG-FBA-CAP-SUP-013.1 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	2,326	2,326	1,745
NSE	0	0	0
Total	**2,326**	**2,326**	**1,745**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 00725A

SCG-FBA-CAP-SUP-013.1
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper Calculations for Non-Routine Mobile Data Terminal Replacement Purchases
Capital Tools - Non-Routine, Mobile Data Terminals Workpaper, 00725A.001

Assumptions:

[F]: Cost for Taxes and Shipping. 10% Tax. $25 Shipping.
[G]: Total non-labor cost per unit after tax and other fees.
Amounts are shown in 2013 dollars.

Units

	[B] 2014 Total Qty	[C] 2015 Total Qty	[D] 2016 Total Qty	[A] Total Qty
Mobile Data Terminals (WP 00725A.001)	400	400	300	1,100

Non-Labor

	[E] Base Cost Per Unit	[F] Taxes and Shipping Fees	[G] ([E]+[F]) Total Cost Per Unit	[H] ([B]x[G]) 2014 Non-Labor	[I] ([C]x[G]) 2015 Non-Labor	[J] ([D]x[G]) 2016 Non-Labor	[K] ([H]+[I]+[J]) Total Non-Labor
Mobile Data Terminals (WP 00725A.001)	$ 5,264.40	$ 551.44	$ 5,815.84	$ 2,326,336	$ 2,326,336	$ 1,744,752	$ 6,397,424

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Category: O. Field Capital Support
Workpaper: 009030

Summary for Category: O. Field Capital Support

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
Labor	43,887	53,734	53,448	53,222
Non-Labor	343	0	0	0
NSE	0	0	0	0
Total	**44,230**	**53,734**	**53,448**	**53,222**
FTE	517.4	626.6	623.2	620.6

009030 Field Capital Support

Labor	43,887	53,734	53,448	53,222
Non-Labor	343	0	0	0
NSE	0	0	0	0
Total	**44,230**	**53,734**	**53,448**	**53,222**
FTE	517.4	626.6	623.2	620.6

Note: Totals may include rounding differences.

Beginning of Workpaper Group
009030 - Field Capital Support

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00903.0
Category: O. Field Capital Support
Category-Sub: 1. Field Capital Support
Workpaper Group: 009030 - Field Capital Support

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	44,145	41,436	40,275	39,131	43,887	53,734	53,448	53,222
Non-Labor	Zero-Based	-248	-2,077	26	-252	343	0	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**43,897**	**39,359**	**40,301**	**38,879**	**44,230**	**53,734**	**53,448**	**53,222**
FTE	Zero-Based	485.3	452.2	470.7	480.5	517.4	626.6	623.2	620.6

Business Purpose:

Budget Code: 903

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

Physical Description:

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

Project Justification:

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

Note: Totals may include rounding differences.

Area:	GAS DISTRIBUTION
Witness:	Frank B. Ayala
Budget Code:	00903.0
Category:	O. Field Capital Support
Category-Sub:	1. Field Capital Support
Workpaper Group:	009030 - Field Capital Support

Forecast Methodology:

Labor - Zero-Based

The forecast expenditures for Field Capital Support labor are based on a weighted ratio of historical costs as a percentage of incurred construction costs. Therefore, as a foundational forecast, SoCalGas applied a labor ratio of 30.4% to the overall projected capital construction cost. The labor ratio was determined using the weighted average of the past four years (2010 - 2013).

See supplemental workpaper SCG-FBA-CAP-SUP-014 for calculation details.

Non-Labor - Zero-Based

There are no non-labor costs forecasted during this period in this work category.

NSE - Zero-Based

N/A

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00903.0
Category: O. Field Capital Support
Category-Sub: 1. Field Capital Support
Workpaper Group: 009030 - Field Capital Support

Adjustments to Forecast

In 2013 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2014**	**2015**	**2016**	**2014**	**2015**	**2016**	**2014**	**2015**	**2016**
Labor	Zero-Based	53,734	53,448	53,222	0	0	0	53,734	53,448	53,222
Non-Labor	Zero-Based	0	0	0	0	0	0	0	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**53,734**	**53,448**	**53,222**	**0**	**0**	**0**	**53,734**	**53,448**	**53,222**
FTE	Zero-Based	626.6	623.2	620.6	0.0	0.0	0.0	626.6	623.2	620.6

Forecast Adjustment Details

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2014 Total	0	0	0	0	0.0	
2015 Total	0	0	0	0	0.0	
2016 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00903.0
Category: O. Field Capital Support
Category-Sub: 1. Field Capital Support
Workpaper Group: 009030 - Field Capital Support

Determination of Adjusted-Recorded:

	2009 ($000)	2010 ($000)	2011 ($000)	2012 ($000)	2013 ($000)
Recorded (Nominal $)*					
Labor	30,540	30,036	32,176	33,915	37,698
Non-Labor	-81	-1,743	108	-235	374
NSE	0	0	0	0	0
Total	**30,458**	**28,293**	**32,285**	**33,680**	**38,072**
FTE	409.3	384.0	402.8	412.9	443.3
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	30,540	30,036	32,176	33,915	37,698
Non-Labor	-81	-1,743	108	-235	374
NSE	0	0	0	0	0
Total	**30,458**	**28,293**	**32,285**	**33,680**	**38,072**
FTE	409.3	384.0	402.8	412.9	443.3
Vacation & Sick (Nominal $)					
Labor	5,516	5,249	5,343	5,429	6,265
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**5,516**	**5,249**	**5,343**	**5,429**	**6,265**
FTE	77.4	69.4	68.9	68.5	74.9
Escalation to 2013$					
Labor	8,228	6,266	2,846	-126	0
Non-Labor	-19	-309	8	1	0
NSE	0	0	0	0	0
Total	**8,209**	**5,956**	**2,854**	**-125**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2013$)					
Labor	44,283	41,550	40,365	39,218	43,963
Non-Labor	-100	-2,052	117	-235	374
NSE	0	0	0	0	0
Total	**44,183**	**39,498**	**40,482**	**38,983**	**44,337**
FTE	486.7	453.4	471.7	481.4	518.2

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

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00903.0
Category: O. Field Capital Support
Category-Sub: 1. Field Capital Support
Workpaper Group: 009030 - Field Capital Support

Adjustments to Recorded:

In Nominal $(000)					
Years	**2009**	**2010**	**2011**	**2012**	**2013**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year/Explanation	Labor	NLbr	NSE	Total	FTE	RefID
2009 Total	0	0	0	0	0.0	
2010 Total	0	0	0	0	0.0	
2011 Total	0	0	0	0	0.0	
2012 Total	0	0	0	0	0.0	
2013 Total	0	0	0	0	0.0	

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 009030

Area: GAS DISTRIBUTION
Witness: Frank B. Ayala
Budget Code: 00903.0
Category: O. Field Capital Support
Category-Sub: 1. Field Capital Support
Workpaper Group: 009030 - Field Capital Support
Workpaper Detail: 009030.001 - Field Capital Support

In-Service Date: Not Applicable

Description:

This work category provides the funding for a broad range of services to support Gas Distribution field capital asset construction. Traditional work elements recorded to this budget category include project planning, local engineering, clerical support, field dispatch, field management and supervision, and off-production time for support personnel and field crews who install the Gas Distribution capital assets.

See supplemental workpaper SCG-FBA-CAP-SUP-014 for calculation details.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	53,734	53,448	53,222
Non-Labor	0	0	0
NSE	0	0	0
Total	**53,734**	**53,448**	**53,222**
FTE	626.6	623.2	620.6

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 009030

SCG-FBA-CAP-SUP-014
Southern California Gas Company -- Gas Distribution -- Witness Frank Ayala
Supplemental Workpaper Calculations for Support Personnel Related To Field Capital Construction Work
Field Capital Support Workpaper

Assumptions:

** Construction costs include only the work categories requiring field support.*

*** South Bay Cities Pressure Betterment Project was excluded from this total.*

Amounts include vacation and sick.

Capital Construction Costs and Historical Field Capital Support Labor Costs (Thousands of 2013$)

	Historical				Forecast		
	2010	2011	2012	2013	2014	2015	2016
New Business	13,182	16,211	16,172	24,734	29,713	34,159	38,016
Pressure Betterment**	11,476	15,092	12,900	12,385	23,320	21,475	16,009
Supply Line Replacement	1,477	5,220	9,494	2,746	4,267	4,267	4,267
Main Replacement	52,508	57,168	38,124	44,496	47,233	47,233	47,233
Service Replacement	13,640	15,432	14,236	17,491	22,217	15,899	15,109
Main/Service Abandon	3,002	3,859	3,471	4,073	3,582	3,582	3,582
Regulator Stations	4,430	6,617	4,728	7,250	5,554	5,554	5,554
Cathodic Protection	4,012	3,780	2,432	3,884	8,048	9,169	9,169
Freeway Relocation	2,077	1,515	9,047	10,301	10,301	10,301	10,301
Franchise Relocation	13,150	10,646	17,115	16,566	18,472	20,128	21,783
Other Distribution Capital Projects	3,163	1,419	3,129	4,123	3,042	3,042	3,042
Meter Guards	1,465	800	688	385	825	825	825
Total Construction Costs* **[A]**	123,582	137,758	131,536	148,433	176,574	175,634	174,890
Historical Field Support Labor **[B]**	41,436	40,275	39,131	43,887			
Historical Field Support Ratio ([B]/[A])	33.5%	29.2%	29.7%	29.6%			

Historical Calculations (2013$)

	[C] ([A]*1000) **Historical 4-Year Total Applicable Capital**	**[D]** ([B]*1000) **Historical Capital Field Support Labor**	**[E]** **Historical Field Capital Support FTEs**
2010	$ 123,581,915	$ 41,436,188	452.2
2011	$ 137,758,409	$ 40,274,879	470.7
2012	$ 131,535,895	$ 39,130,557	480.5
2013	$ 148,432,917	$ 43,886,805	517.4
4-Year 2010-2013 Total	**$ 541,309,136**	**$ 164,728,429**	**1,920.8**

4-Year 2010-2013 Average Ratio of Labor to Capital Construction Total	**30.4%**	**[F]** [D/C]
4-Year 2010-2013 Average Labor Dollars per FTE	**$ 85,760**	**[G]** [D/E]

Forecast Data (Thousands of 2013$)

	[H] ([A]) **Forecasted Total Applicable Capital**	**[I]** ([H]*[F]) **Forecasted Labor Expenditures**	**[J]** ([I]*1000/[G]) **Forecasted FTEs**
2014	$ 176,574	$ 53,734	626.6
2015	$ 175,634	$ 53,448	623.2
2016	$ 174,890	$ 53,222	620.6