

Application of SAN DIEGO GAS & ELECTRIC )  
COMPANY for authority to update its gas and )  
electric revenue requirement and base rates )  
effective January 1, 2019 (U 902-M) )

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

Exhibit No.: (SDG&E-12-WP)

WORKPAPERS TO  
PREPARED DIRECT TESTIMONY  
OF KENDALL K. HELM  
ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA

OCTOBER 2017



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

**Exhibit SDG&E-12-WP - ELECTRIC & FUEL PROCUREMENT**

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**Overall Summary For Exhibit No. SDG&E-12-WP**

<b>Area:</b>	<b>ELECTRIC &amp; FUEL PROCUREMENT</b>
<b>Witness:</b>	<b>Kendall K. Helm</b>

Description	In 2016 \$ (000) Incurred Costs			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
<b>Non-Shared Services</b>	7,962	8,641	8,641	8,641
<b>Shared Services</b>	0	0	0	0
<b>Total</b>	<b>7,962</b>	<b>8,641</b>	<b>8,641</b>	<b>8,641</b>

*Note: Totals may include rounding differences.*

San Diego Gas & Electric Company  
 2019 GRC - APP  
 Non-Shared Service Workpapers

Area: ELECTRIC & FUEL PROCUREMENT  
 Witness: Kendall K. Helm

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

Description	In 2016 \$ (000) Incurred Costs			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
A. Long Term Procurement	1,762	2,203	2,203	2,203
B. Trading & Scheduling	2,830	2,949	2,949	2,949
C. Mid and Back Office	3,370	3,489	3,489	3,489
<b>Total</b>	<b>7,962</b>	<b>8,641</b>	<b>8,641</b>	<b>8,641</b>

*Note: Totals may include rounding differences.*

San Diego Gas & Electric Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: ELECTRIC & FUEL PROCUREMENT  
 Witness: Kendall K. Helm  
 Category: A. Long Term Procurement  
 Workpaper: 1EP001.000

**Summary for Category: A. Long Term Procurement**

	In 2016\$ (000) Incurred Costs			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	1,663	1,955	1,955	1,955
Non-Labor	100	248	248	248
NSE	0	0	0	0
<b>Total</b>	<b>1,763</b>	<b>2,203</b>	<b>2,203</b>	<b>2,203</b>
FTE	12.7	14.7	14.7	14.7

**Workpapers belonging to this Category:**

**1EP001.000 Long Term Procurement**

Labor	1,663	1,955	1,955	1,955
Non-Labor	100	248	248	248
NSE	0	0	0	0
<b>Total</b>	<b>1,763</b>	<b>2,203</b>	<b>2,203</b>	<b>2,203</b>
FTE	12.7	14.7	14.7	14.7

*Note: Totals may include rounding differences.*

**Beginning of Workpaper**  
**1EP001.000 - Long Term Procurement**

San Diego Gas & Electric Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: ELECTRIC & FUEL PROCUREMENT  
Witness: Kendall K. Helm  
Category: A. Long Term Procurement  
Category-Sub: 1. Long Term Procurement  
Workpaper: 1EP001.000 - Long Term Procurement

**Activity Description:**

Long-Term Procurement functions include the Vice President of Energy Supply and the Origination and Portfolio Design ("O&PD") department. The Vice President is responsible for providing strategic direction consistent with and complementary to SDG&E's wider mission, developing policies to strengthen and enhance energy supply functions and performance, and ensuring that all energy procurement is conducted consistent with internal requirements, Commission rules and decisions, and CAISO tariffs. O&PD is responsible for soliciting energy supplies from independent producers and utility-owned resources to meet SDG&E's long-term energy and capacity requirements. For supplies from independent producers, O&PD negotiates and executes Power Purchase Agreements ("PPA"s). At the end of 2016, Electric & Fuel Procurement's ("E&FP's") portfolio included 72 PPAs for 4,774 Megawatts ("MW") of energy and capacity under contract terms ranging from 1 year to 30 years. To develop long-term procurement plans and implement legislative mandates, O&PD regularly participates in regulatory proceedings and interfaces with numerous government agencies, including the CPUC, the California Energy Commission, and the California Air Resources Board. O&PD must also negotiate contracts and oversee project development until commercial operation. Of note, O&PD must develop PPA language for new product types.

**Forecast Explanations:**

**Labor - 5-YR Average**

The forecast method developed for this cost category is a five-year historical average. This is most appropriate because, while work priorities can vary from year to year, Long-Term Procurement responsibilities in their entirety remain intact. For example, activities associated with monitoring contracts in development have been reduced. However, activities associated with the procurement regulatory landscape and for valuing and negotiating contracts for new resource types has become much more complex. Currently, E&FP must comply with between 10 to 15 different procurement mandates. At the same time, the CPUC is seeking in depth data and analysis from SDG&E regarding wholesale changes to the way electric procurement is conducted in the state, including discussion of full retail choice. In addition to regulatory responsibilities, the solicitation process is becoming more varied and complex. Least-cost best-fit valuation methodologies are evolving, transparency rules are being evaluated, and O&PD must assess the role of factors that are difficult to measure, such as societal costs and benefits. Among the most challenging of solicitation activities, O&PD must develop and implement a PPA for a third-party distributed resource that will displace traditional distribution system investments and guarantee the same level of performance to prevent outages. Along with energy efficiency and demand response, energy storage and distributed resources entail new and different operational issues and risks that must be identified and mitigated by expert negotiators to protect bundled customers' interests. As a result, vacancies in 2016 must be backfilled and repurposed to meet these changing needs.

**Non-Labor - 5-YR Average**

Non-labor costs consist primarily of technology, supplies, and travel expenses needed to support labor in fulfilling their responsibilities and a five-year historical forecast is the best projection of costs going forward given labor projections.

**NSE - 5-YR Average**

N/A

*Note: Totals may include rounding differences.*

San Diego Gas & Electric Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: ELECTRIC & FUEL PROCUREMENT  
 Witness: Kendall K. Helm  
 Category: A. Long Term Procurement  
 Category-Sub: 1. Long Term Procurement  
 Workpaper: 1EP001.000 - Long Term Procurement

**Summary of Results:**

		<b>In 2016\$ (000) Incurred Costs</b>								
		<b>Adjusted-Recorded</b>					<b>Adjusted-Forecast</b>			
<b>Years</b>		<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	
Labor		2,074	2,157	2,004	1,877	1,663	1,956	1,956	1,956	
Non-Labor		429	257	249	206	100	248	248	248	
NSE		0	0	0	0	0	0	0	0	
<b>Total</b>		<b>2,504</b>	<b>2,414</b>	<b>2,253</b>	<b>2,083</b>	<b>1,762</b>	<b>2,204</b>	<b>2,204</b>	<b>2,204</b>	
FTE		15.0	16.2	15.5	14.3	12.6	14.7	14.7	14.7	

*Note: Totals may include rounding differences.*



San Diego Gas & Electric Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: ELECTRIC & FUEL PROCUREMENT  
 Witness: Kendall K. Helm  
 Category: A. Long Term Procurement  
 Category-Sub: 1. Long Term Procurement  
 Workpaper: 1EP001.000 - Long Term Procurement

**Summary of Adjustments to Forecast:**

In 2016 \$(000) Incurred Costs										
Forecast Method		Base Forecast			Forecast Adjustments			Adjusted-Forecast		
Years		2017	2018	2019	2017	2018	2019	2017	2018	2019
Labor	5-YR Average	1,955	1,955	1,955	0	0	0	1,955	1,955	1,955
Non-Labor	5-YR Average	248	248	248	0	0	0	248	248	248
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>2,203</b>	<b>2,203</b>	<b>2,203</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,203</b>	<b>2,203</b>	<b>2,203</b>
FTE	5-YR Average	14.7	14.7	14.7	0.0	0.0	0.0	14.7	14.7	14.7

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

SDG&E/ELECTRIC & FUEL PROCUREMENT/Exh No:SDG&E-12-WP/Witness: K. Helm

San Diego Gas & Electric Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: ELECTRIC & FUEL PROCUREMENT  
Witness: Kendall K. Helm  
Category: A. Long Term Procurement  
Category-Sub: 1. Long Term Procurement  
Workpaper: 1EP001.000 - Long Term Procurement

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

	2012 (\$000)	2013 (\$000)	2014 (\$000)	2015 (\$000)	2016 (\$000)
<b>Recorded (Nominal \$)*</b>					
Labor	1,658	1,741	1,651	1,588	1,426
Non-Labor	413	251	248	205	345
NSE	0	0	0	0	0
<b>Total</b>	<b>2,071</b>	<b>1,992</b>	<b>1,898</b>	<b>1,793</b>	<b>1,771</b>
FTE	12.9	13.8	13.1	12.2	10.7
<b>Adjustments (Nominal \$) **</b>					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	-246
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-246</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Nominal \$)</b>					
Labor	1,658	1,741	1,651	1,588	1,426
Non-Labor	413	251	248	205	100
NSE	0	0	0	0	0
<b>Total</b>	<b>2,071</b>	<b>1,992</b>	<b>1,898</b>	<b>1,793</b>	<b>1,526</b>
FTE	12.9	13.8	13.1	12.2	10.7
<b>Vacation &amp; Sick (Nominal \$)</b>					
Labor	240	276	264	245	237
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>240</b>	<b>276</b>	<b>264</b>	<b>245</b>	<b>237</b>
FTE	2.1	2.4	2.4	2.1	1.9
<b>Escalation to 2016\$</b>					
Labor	176	140	90	44	0
Non-Labor	17	6	1	1	0
NSE	0	0	0	0	0
<b>Total</b>	<b>192</b>	<b>146</b>	<b>91</b>	<b>45</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Constant 2016\$)</b>					
Labor	2,074	2,157	2,004	1,877	1,663
Non-Labor	429	257	249	206	100
NSE	0	0	0	0	0
<b>Total</b>	<b>2,504</b>	<b>2,414</b>	<b>2,253</b>	<b>2,083</b>	<b>1,762</b>
FTE	15.0	16.2	15.5	14.3	12.6

\* 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.

San Diego Gas & Electric Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: ELECTRIC & FUEL PROCUREMENT  
 Witness: Kendall K. Helm  
 Category: A. Long Term Procurement  
 Category-Sub: 1. Long Term Procurement  
 Workpaper: 1EP001.000 - Long Term Procurement

**Summary of Adjustments to Recorded:**

In Nominal \$ (000) Incurred Costs					
Years	2012	2013	2014	2015	2016
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	-246
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-246</b>
FTE	0.0	0.0	0.0	0.0	0.0

**Detail of Adjustments to Recorded:**

Year	Adj Group	Labor	NLbr	NSE	FTE	Adj Type	RefID
<b>2012 Total</b>		0	0	0	0.0		
<b>2013 Total</b>		0	0	0	0.0		
<b>2014 Total</b>		0	0	0	0.0		
<b>2015 Total</b>		0	0	0	0.0		
2016	Other	0	-246	0	0.0	1-Sided Adj	KNGO20161129112857317
<b>Explanation:</b>		Other non-labor - Subscription & Services					
<b>2016 Total</b>		0	-246	0	0.0		

*Note: Totals may include rounding differences.*

San Diego Gas & Electric Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: ELECTRIC & FUEL PROCUREMENT  
 Witness: Kendall K. Helm  
 Category: B. Trading & Scheduling  
 Workpaper: 1EP002.000

**Summary for Category: B. Trading & Scheduling**

	In 2016\$ (000) Incurred Costs			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	2,263	2,333	2,333	2,333
Non-Labor	568	616	616	616
NSE	0	0	0	0
<b>Total</b>	<b>2,831</b>	<b>2,949</b>	<b>2,949</b>	<b>2,949</b>
FTE	19.5	20.4	20.4	20.4

**Workpapers belonging to this Category:**

**1EP002.000 Trading & Scheduling**

Labor	2,263	2,333	2,333	2,333
Non-Labor	568	616	616	616
NSE	0	0	0	0
<b>Total</b>	<b>2,831</b>	<b>2,949</b>	<b>2,949</b>	<b>2,949</b>
FTE	19.5	20.4	20.4	20.4

*Note: Totals may include rounding differences.*

**Beginning of Workpaper**  
**1EP002.000 - Trading & Scheduling**

San Diego Gas & Electric Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: ELECTRIC & FUEL PROCUREMENT  
Witness: Kendall K. Helm  
Category: B. Trading & Scheduling  
Category-Sub: 1. Trading & Scheduling  
Workpaper: 1EP002.000 - Trading & Scheduling

**Activity Description:**

The Energy Supply & Dispatch ("ES&D") department optimizes SDG&E's generation and contracted resources within the California Independent System Operator ("CAISO") markets to serve bundled customers in a least-cost dispatch manner and consistent with Commission-approved procurement plans. In 2016, ES&D managed electric supply resources to meet a peak load of over 64,000 megawatt hours. To support these activities, ES&D personnel have advanced and specific CAISO market expertise and leverage several information management systems across functions, including Power Costs System Inc. ("PCI"), YES Energy, and Morningstar.

Within ES&D, Electric Procurement & Trading performs short-term planning, procurement, and trading functions for transactions inside of a five-year time horizon. Planning activities include developing short-term forecasting methodologies, performing short-term power planning studies and regulatory analysis, and assessing changes in tariffs and regulations governing least-cost dispatch of electric and gas portfolios. Electric Procurement & Trading is also responsible for all short-term electricity transactions related to dispatchable generation, including executing all trades, purchases, hedges and sales to manage the electricity supply portfolio consistent with SDG&E's LTPP. In addition, Electric Procurement & Trading is responsible for procuring gas needed for dispatchable generation and for performing gas scheduling on the electronic bulletin boards of the interstate and intrastate pipelines it uses to deliver fuel to its gas-fired resources, including SDG&E-owned resources and contracts for tolling resources.

**Forecast Explanations:**

**Labor - 5-YR Average**

The forecast method developed for this cost category is a five-year historical average. This is most appropriate because, while ES&D costs vary from year to year with short-term vacancies and periodic system investments, overall responsibilities remain consistent over time. For example, between 2012 and 2016, E&SD costs exceeded \$3 million in both 2012 and 2014 due in part to costs associated with periodic maintenance of data systems used for daily resources scheduling. In 2013 and 2016, ES&D costs were below average due in part to temporary vacancies. However, the daily procurement process consists of complex energy transactions with large dollar values. In 2017, ES&D began absorbing additional scheduling activities associated with 37.5 MW of energy storage that was added to the portfolio and is developing further expertise to reliably manage a portfolio with rising levels of rooftop solar. Looking ahead, the scope, complexity, and importance of E&SD's work will continue to require skilled and competent personnel, accurate and efficient information management systems, and regular training. Using a five-year average reflects these new responsibilities, reduces variability between years, and is consistent with the forecast methodology chosen for the other cost categories in the GRC application.

**Non-Labor - 5-YR Average**

Same as labor.

**NSE - 5-YR Average**

N/A

*Note: Totals may include rounding differences.*

San Diego Gas & Electric Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: ELECTRIC & FUEL PROCUREMENT  
 Witness: Kendall K. Helm  
 Category: B. Trading & Scheduling  
 Category-Sub: 1. Trading & Scheduling  
 Workpaper: 1EP002.000 - Trading & Scheduling

**Summary of Results:**

		<b>In 2016\$ (000) Incurred Costs</b>								
		<b>Adjusted-Recorded</b>					<b>Adjusted-Forecast</b>			
<b>Years</b>		<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	
Labor		2,453	2,351	2,282	2,317	2,263	2,334	2,334	2,334	
Non-Labor		827	394	709	583	568	615	615	615	
NSE		0	0	0	0	0	0	0	0	
<b>Total</b>		<b>3,280</b>	<b>2,745</b>	<b>2,991</b>	<b>2,900</b>	<b>2,830</b>	<b>2,949</b>	<b>2,949</b>	<b>2,949</b>	
FTE		21.4	20.7	20.0	20.3	19.5	20.4	20.4	20.4	

*Note: Totals may include rounding differences.*

San Diego Gas & Electric Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: ELECTRIC & FUEL PROCUREMENT  
 Witness: Kendall K. Helm  
 Category: B. Trading & Scheduling  
 Category-Sub: 1. Trading & Scheduling  
 Workpaper: 1EP002.000 - Trading & Scheduling

**Summary of Adjustments to Forecast:**

In 2016 \$(000) Incurred Costs										
Forecast Method		Base Forecast			Forecast Adjustments			Adjusted-Forecast		
Years		2017	2018	2019	2017	2018	2019	2017	2018	2019
Labor	5-YR Average	2,333	2,333	2,333	0	0	0	2,333	2,333	2,333
Non-Labor	5-YR Average	616	616	616	0	0	0	616	616	616
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>2,949</b>	<b>2,949</b>	<b>2,949</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,949</b>	<b>2,949</b>	<b>2,949</b>
FTE	5-YR Average	20.4	20.4	20.4	0.0	0.0	0.0	20.4	20.4	20.4

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



San Diego Gas & Electric Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: ELECTRIC & FUEL PROCUREMENT  
Witness: Kendall K. Helm  
Category: B. Trading & Scheduling  
Category-Sub: 1. Trading & Scheduling  
Workpaper: 1EP002.000 - Trading & Scheduling

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

	2012 (\$000)	2013 (\$000)	2014 (\$000)	2015 (\$000)	2016 (\$000)
<b>Recorded (Nominal \$)*</b>					
Labor	1,961	1,897	1,880	1,960	1,941
Non-Labor	795	385	705	579	455
NSE	0	0	0	0	0
<b>Total</b>	<b>2,756</b>	<b>2,283</b>	<b>2,584</b>	<b>2,540</b>	<b>2,395</b>
FTE	18.5	17.7	17.0	17.3	16.5
<b>Adjustments (Nominal \$) **</b>					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	113
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>113</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Nominal \$)</b>					
Labor	1,961	1,897	1,880	1,960	1,941
Non-Labor	795	385	705	579	568
NSE	0	0	0	0	0
<b>Total</b>	<b>2,756</b>	<b>2,283</b>	<b>2,584</b>	<b>2,540</b>	<b>2,508</b>
FTE	18.5	17.7	17.0	17.3	16.5
<b>Vacation &amp; Sick (Nominal \$)</b>					
Labor	284	301	300	303	322
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>284</b>	<b>301</b>	<b>300</b>	<b>303</b>	<b>322</b>
FTE	3.0	3.1	3.0	3.0	3.0
<b>Escalation to 2016\$</b>					
Labor	208	153	102	54	0
Non-Labor	32	9	4	4	0
NSE	0	0	0	0	0
<b>Total</b>	<b>240</b>	<b>161</b>	<b>107</b>	<b>57</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Constant 2016\$)</b>					
Labor	2,453	2,351	2,282	2,317	2,263
Non-Labor	827	394	709	583	568
NSE	0	0	0	0	0
<b>Total</b>	<b>3,280</b>	<b>2,745</b>	<b>2,991</b>	<b>2,900</b>	<b>2,830</b>
FTE	21.5	20.8	20.0	20.3	19.5

\* 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.

San Diego Gas & Electric Company  
2019 GRC - APP  
Non-Shared Service Workpapers

Area: ELECTRIC & FUEL PROCUREMENT  
 Witness: Kendall K. Helm  
 Category: B. Trading & Scheduling  
 Category-Sub: 1. Trading & Scheduling  
 Workpaper: 1EP002.000 - Trading & Scheduling

**Summary of Adjustments to Recorded:**

In Nominal \$ (000) Incurred Costs					
Years	2012	2013	2014	2015	2016
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	113
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>113</b>
FTE	0.0	0.0	0.0	0.0	0.0

**Detail of Adjustments to Recorded:**

Year	Adj Group	Labor	NLbr	NSE	FTE	Adj Type	RefID
<b>2012 Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>		
<b>2013 Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>		
<b>2014 Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>		
<b>2015 Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>		
2016	Other	0	113	0	0.0	1-Sided Adj	KNGO20170131145126270
<b>2016 Total</b>		<b>0</b>	<b>113</b>	<b>0</b>	<b>0.0</b>		

**Explanation:** Subscription & Services Other Non-Labor adjustments.

*Note: Totals may include rounding differences.*

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Non-Shared Service Workpapers

Area: ELECTRIC & FUEL PROCUREMENT  
 Witness: Kendall K. Helm  
 Category: C. Mid and Back Office  
 Workpaper: 1EP003.000

**Summary for Category: C. Mid and Back Office**

	In 2016\$ (000) Incurred Costs			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	2,525	2,429	2,429	2,429
Non-Labor	844	1,060	1,060	1,060
NSE	0	0	0	0
<b>Total</b>	<b>3,369</b>	<b>3,489</b>	<b>3,489</b>	<b>3,489</b>
FTE	24.3	24.6	24.6	24.6

**Workpapers belonging to this Category:**

**1EP003.000 Mid and Back Office**

Labor	2,525	2,429	2,429	2,429
Non-Labor	844	1,060	1,060	1,060
NSE	0	0	0	0
<b>Total</b>	<b>3,369</b>	<b>3,489</b>	<b>3,489</b>	<b>3,489</b>
FTE	24.3	24.6	24.6	24.6

*Note: Totals may include rounding differences.*

**Beginning of Workpaper**  
**1EP003.000 - Mid and Back Office**

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Area: ELECTRIC & FUEL PROCUREMENT  
Witness: Kendall K. Helm  
Category: C. Mid and Back Office  
Category-Sub: 1. Mid and Back Office  
Workpaper: 1EP003.000 - Mid and Back Office

**Activity Description:**

Middle-Office and Back-Office functions include the Energy Risk Management (“Energy Risk”) department and the Settlements and Systems (“S&S”) department. The Energy Risk department is responsible for all Middle-Office functions, including identifying, managing, monitoring, and reporting on market, credit, financial and operational risks associated with E&FP functions. To ensure compliance with Commission-approved risk metrics, Energy Risk reviews daily market pricing data, forward price curves, volatilities, and correlations used for the evaluation and measurement of portfolio risk. Energy Risk is responsible for compliance with Dodd-Frank requirements, Sarbanes-Oxley (“SOX”) 404 compliance, and FERC-required reporting of fixed price transactions to index publishers. Energy Risk also assesses credit exposure for various contracts and transactions. S&S is responsible for Back-Office financial and accounting activities required to settle all energy contracts for E&FP’s power procurement, verify CAISO charges and support the primary operational systems (PCI, Allegro and Versify) used in E&FP’s operations. This settlement process requires annually verifying and processing over 2,100 invoices and billing requests, filing disputes of questionable charges when appropriate, and preparing journal entries for recording expenses and revenues. S&S is also responsible for financial accounting and payment of the commodity, transportation, hedging, and other related transactions associated with the gas burned at the five SDG&E-owned power plants with E&FP tolling agreements.

**Forecast Explanations:**

**Labor - 5-YR Average**

The forecast method developed for this cost category is a five-year historical average. This is most appropriate because the five-year average is indicative of how we expect Middle-Office and Back-Office functions to operate going forward and reflects a small decrease in labor costs that accords with streamlining efforts. Going forward, however, labor costs must ensure E&FP has access to needed expertise. For example, due to the technical nature of the tasks, Energy Risk requires highly educated and specially trained staff and sophisticated systems to conduct quantitative analysis. Similar to other departments within E&FP, Energy Risk has already leveraged existing resources to tackle additional modeling and risks associated with new technologies and new market products. The functions performed by Energy Risk are critical to protect the interests of the company and its customers. Looking ahead, S&S will need to manage settlement activities associated with additional resources, including new energy storage projects, as well as numerous additional economic curtailment amendments and must ensure it continues to have the capacity to perform its functions successfully.

**Non-Labor - 5-YR Average**

The forecast method developed for this cost category is a five-year historical average. This is most appropriate because the five-year average is indicative of how we expect Middle-Office and Back-Office functions to operate going forward. For example, non-labor costs have varied in recent years from over \$1.2 million in 2014 to approximately \$850,000 in 2016. Because S&S may change from year to year how it manages software subscriptions and leverages technology systems and new offerings to support E&FP operations, reporting, and compliance, a five-year average reduces the associated variability.

**NSE - 5-YR Average**

N/A

*Note: Totals may include rounding differences.*

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Area: ELECTRIC & FUEL PROCUREMENT  
 Witness: Kendall K. Helm  
 Category: C. Mid and Back Office  
 Category-Sub: 1. Mid and Back Office  
 Workpaper: 1EP003.000 - Mid and Back Office

**Summary of Results:**

		<b>In 2016\$ (000) Incurred Costs</b>								
		<b>Adjusted-Recorded</b>					<b>Adjusted-Forecast</b>			
<b>Years</b>		<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	
Labor		2,328	2,335	2,387	2,571	2,525	2,429	2,429	2,429	
Non-Labor		1,051	1,196	1,224	984	844	1,059	1,059	1,059	
NSE		0	0	0	0	0	0	0	0	
<b>Total</b>		<b>3,379</b>	<b>3,531</b>	<b>3,610</b>	<b>3,554</b>	<b>3,370</b>	<b>3,488</b>	<b>3,488</b>	<b>3,488</b>	
FTE		25.2	24.6	24.3	24.8	24.3	24.6	24.6	24.6	

*Note: Totals may include rounding differences.*

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Area: ELECTRIC & FUEL PROCUREMENT  
 Witness: Kendall K. Helm  
 Category: C. Mid and Back Office  
 Category-Sub: 1. Mid and Back Office  
 Workpaper: 1EP003.000 - Mid and Back Office

**Summary of Adjustments to Forecast:**

In 2016 \$(000) Incurred Costs										
Forecast Method		Base Forecast			Forecast Adjustments			Adjusted-Forecast		
Years		2017	2018	2019	2017	2018	2019	2017	2018	2019
Labor	5-YR Average	2,429	2,429	2,429	0	0	0	2,429	2,429	2,429
Non-Labor	5-YR Average	1,060	1,060	1,060	0	0	0	1,060	1,060	1,060
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>3,489</b>	<b>3,489</b>	<b>3,489</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3,489</b>	<b>3,489</b>	<b>3,489</b>
FTE	5-YR Average	24.6	24.6	24.6	0.0	0.0	0.0	24.6	24.6	24.6

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

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Area: ELECTRIC & FUEL PROCUREMENT  
Witness: Kendall K. Helm  
Category: C. Mid and Back Office  
Category-Sub: 1. Mid and Back Office  
Workpaper: 1EP003.000 - Mid and Back Office

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

	2012 (\$000)	2013 (\$000)	2014 (\$000)	2015 (\$000)	2016 (\$000)
<b>Recorded (Nominal \$)*</b>					
Labor	1,808	1,885	1,966	2,175	2,166
Non-Labor	1,011	1,169	1,217	977	1,144
NSE	0	0	0	0	0
<b>Total</b>	<b>2,818</b>	<b>3,053</b>	<b>3,182</b>	<b>3,152</b>	<b>3,310</b>
FTE	20.9	20.9	20.6	21.1	20.6
<b>Adjustments (Nominal \$) **</b>					
Labor	53	0	0	0	0
Non-Labor	0	0	0	0	-300
NSE	0	0	0	0	0
<b>Total</b>	<b>53</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-300</b>
FTE	0.8	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Nominal \$)</b>					
Labor	1,861	1,885	1,966	2,175	2,166
Non-Labor	1,011	1,169	1,217	977	844
NSE	0	0	0	0	0
<b>Total</b>	<b>2,871</b>	<b>3,053</b>	<b>3,182</b>	<b>3,152</b>	<b>3,010</b>
FTE	21.7	20.9	20.6	21.1	20.6
<b>Vacation &amp; Sick (Nominal \$)</b>					
Labor	270	299	314	336	359
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>270</b>	<b>299</b>	<b>314</b>	<b>336</b>	<b>359</b>
FTE	3.5	3.7	3.7	3.7	3.7
<b>Escalation to 2016\$</b>					
Labor	197	152	107	60	0
Non-Labor	41	27	7	6	0
NSE	0	0	0	0	0
<b>Total</b>	<b>238</b>	<b>179</b>	<b>114</b>	<b>66</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Constant 2016\$)</b>					
Labor	2,328	2,335	2,387	2,571	2,525
Non-Labor	1,051	1,196	1,224	984	844
NSE	0	0	0	0	0
<b>Total</b>	<b>3,379</b>	<b>3,531</b>	<b>3,610</b>	<b>3,554</b>	<b>3,370</b>
FTE	25.2	24.6	24.3	24.8	24.3

\* 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.



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Area: ELECTRIC & FUEL PROCUREMENT  
 Witness: Kendall K. Helm  
 Category: C. Mid and Back Office  
 Category-Sub: 1. Mid and Back Office  
 Workpaper: 1EP003.000 - Mid and Back Office

**Summary of Adjustments to Recorded:**

		In Nominal \$ (000) Incurred Costs				
Years		2012	2013	2014	2015	2016
Labor		53	0	0	0	0
Non-Labor		0	0	0	0	-300
NSE		0	0	0	0	0
	<b>Total</b>	<b>53</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-300</b>
FTE		0.8	0.0	0.0	0.0	0.0

**Detail of Adjustments to Recorded:**

Year	Adj Group	Labor	NLbr	NSE	FTE	Adj Type	RefID
2012	Other	53	0	0	0.8	CCTR Transf From 2100-0008.000	CSCRAMM20161016142927080

**Explanation:** Transfer labor and FTE associated with Billing Analyst role that moved between organizations in late 2012 from cost center 2100-0008 in work paper group 100002 Billing to cost center 2100-0244 in work paper group 1EP003 Mid and Back Office to align historical costs with current organization structure.

<b>2012 Total</b>	<b>53</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.8</b>		
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<b>2013 Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>		
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<b>2014 Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>		
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<b>2015 Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>		
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2016	Other	0	-300	0	0.0	1-Sided Adj	KNGO20161129112608333
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**Explanation:** Other non-labor Subscription & Services

<b>2016 Total</b>	<b>0</b>	<b>-300</b>	<b>0</b>	<b>0</b>	<b>0.0</b>		
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*Note: Totals may include rounding differences.*

San Diego Gas & Electric Company  
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Area: ELECTRIC & FUEL PROCUREMENT  
Witness: Kendall K. Helm

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

<b>Cost Center</b>	<b>Sub</b>	<b>Description</b>
2100-0240	000	VP ELECTRIC & GAS PROCUREMENT
2100-0241	000	Procurement and Portfolio Design
2100-0244	000	Settlements and Systems
2100-0247	000	Energy Supply and Dispatch
2100-0665	000	ENERGY RISK
2100-0713	000	GENERATION & SUPPLY PROJECT MANAGEMENT