

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-29-WP)

WORKPAPERS TO  
PREPARED DIRECT TESTIMONY  
OF DEBBIE S. ROBINSON  
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-29-WP - CORP CTR - PENSION & PBOPS**

<b>DOCUMENT</b>	<b>PAGE</b>
<b>Overall Summary For Exhibit No. SDG&amp;E-29-WP</b>	<b>1</b>
<b><i>Summary of Non-Shared Services Workpapers</i></b>	<b>2</b>
Category: A. Employee Pension	3
..1PN000.000 - EMPLOYEE PENSION	4
..1PN000.001 - EMPLOYEE PENSION-PBOP	17
<b><i>Appendix A: List of Non-Shared Cost Centers</i></b>	<b>26</b>

**Overall Summary For Exhibit No. SDG&E-29-WP**

<b>Area:</b>	<b>CORP CTR - PENSION &amp; PBOPs</b>
<b>Witness:</b>	<b>Debbie S. Robinson</b>

Description	In 2016 \$ (000) Incurred Costs			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
<b>Non-Shared Services</b>	2,357	31,070	44,370	65,400
<b>Shared Services</b>	0	0	0	0
<b>Total</b>	<b>2,357</b>	<b>31,070</b>	<b>44,370</b>	<b>65,400</b>

*Note: Totals may include rounding differences.*

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

Area: CORP CTR - PENSION & PBOPs  
 Witness: Debbie S. Robinson

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

<b>Description</b>	<b>In 2016 \$ (000) Incurred Costs</b>			
	<b>Adjusted-Recorded</b>	<b>Adjusted-Forecast</b>		
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
A. Employee Pension	2,357	31,070	44,370	65,400
<b>Total</b>	<b>2,357</b>	<b>31,070</b>	<b>44,370</b>	<b>65,400</b>

*Note: Totals may include rounding differences.*

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

Area: CORP CTR - PENSION & PBOPs  
Witness: Debbie S. Robinson  
Category: A. Employee Pension  
Workpaper: VARIOUS

**Summary for Category: A. Employee Pension**

	In 2016\$ (000) Incurred Costs			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	0	0	0
Non-Labor	2,357	0	0	0
NSE	0	31,070	44,370	65,400
<b>Total</b>	<b>2,357</b>	<b>31,070</b>	<b>44,370</b>	<b>65,400</b>
FTE	0.0	0.0	0.0	0.0

**Workpapers belonging to this Category:**

**1PN000.000 EMPLOYEE PENSION**

Labor	0	0	0	0
Non-Labor	0	0	0	0
NSE	0	26,630	42,850	63,970
<b>Total</b>	<b>0</b>	<b>26,630</b>	<b>42,850</b>	<b>63,970</b>
FTE	0.0	0.0	0.0	0.0

**1PN000.001 EMPLOYEE PENSION-PBOP**

Labor	0	0	0	0
Non-Labor	2,357	0	0	0
NSE	0	4,440	1,520	1,430
<b>Total</b>	<b>2,357</b>	<b>4,440</b>	<b>1,520</b>	<b>1,430</b>
FTE	0.0	0.0	0.0	0.0

*Note: Totals may include rounding differences.*

**Beginning of Workpaper**  
**1PN000.000 - EMPLOYEE PENSION**

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

Area: CORP CTR - PENSION & PBOPs  
 Witness: Debbie S. Robinson  
 Category: A. Employee Pension  
 Category-Sub: 1. Employee Pension  
 Workpaper: 1PN000.000 - EMPLOYEE PENSION

**Activity Description:**

This is SDG&E's qualified retirement benefits plan, also known as the San Diego Gas & Electric Company Cash Balance Plan. Represented and non-represented employees participate in the plan.

**Forecast Explanations:**

**Labor - Zero-Based**

Please see NSE below

**Non-Labor - Zero-Based**

Please see NSE below

**NSE - Zero-Based**

Zero Based method chosen as pension contributions are provided by the Company's certified actuary Willis Towers Watson.

**Summary of Results:**

		In 2016\$ (000) Incurred Costs								
		Adjusted-Recorded					Adjusted-Forecast			
Years		2012	2013	2014	2015	2016	2017	2018	2019	
Labor		0	0	0	0	0	0	0	0	
Non-Labor		45,327	47,428	48,739	0	0	0	0	0	
NSE		0	0	0	0	0	26,630	42,850	63,970	
<b>Total</b>		<b>45,327</b>	<b>47,428</b>	<b>48,739</b>	<b>0</b>	<b>0</b>	<b>26,630</b>	<b>42,850</b>	<b>63,970</b>	
FTE		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

*Note: Totals may include rounding differences.*

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

Area: CORP CTR - PENSION & PBOPs  
 Witness: Debbie S. Robinson  
 Category: A. Employee Pension  
 Category-Sub: 1. Employee Pension  
 Workpaper: 1PN000.000 - EMPLOYEE PENSION

**Summary of Adjustments to Forecast:**

In 2016 \$(000) Incurred Costs										
Forecast Method		Base Forecast			Forecast Adjustments			Adjusted-Forecast		
Years		2017	2018	2019	2017	2018	2019	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	0	0	0	0
NSE	Zero-Based	0	0	0	26,630	42,850	63,970	26,630	42,850	63,970
<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>26,630</b>	<b>42,850</b>	<b>63,970</b>	<b>26,630</b>	<b>42,850</b>	<b>63,970</b>
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	Adj Group	Labor	NLbr	NSE	Total	FTE	Adj Type	RefID	
2017	Other	0	0	26,630	26,630	0.0	1-Sided Adj	JECHERRY20161203093804397	
<b>Explanation:</b>		2017 Pension Projection							
<b>2017 Total</b>		<b>0</b>	<b>0</b>	<b>26,630</b>	<b>26,630</b>	<b>0.0</b>			
2018	Other	0	0	42,850	42,850	0.0	1-Sided Adj	JECHERRY20161203093724610	
<b>Explanation:</b>		2018 Pension Projection							
<b>2018 Total</b>		<b>0</b>	<b>0</b>	<b>42,850</b>	<b>42,850</b>	<b>0.0</b>			
2019	Other	0	0	63,970	63,970	0.0	1-Sided Adj	JECHERRY20161203093834743	
<b>Explanation:</b>		2019 Pension Projection							
<b>2019 Total</b>		<b>0</b>	<b>0</b>	<b>63,970</b>	<b>63,970</b>	<b>0.0</b>			

Note: Totals may include rounding differences.

SDG&E/CORP CTR - PENSION & PBOPs/Exh No:SDG&E-29-WP/Witness: D. Robinson



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

Area: CORP CTR - PENSION & PBOPs  
Witness: Debbie S. Robinson  
Category: A. Employee Pension  
Category-Sub: 1. Employee Pension  
Workpaper: 1PN000.000 - EMPLOYEE PENSION

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

	2012 (\$000)	2013 (\$000)	2014 (\$000)	2015 (\$000)	2016 (\$000)
<b>Recorded (Nominal \$)*</b>					
Labor	0	0	0	0	0
Non-Labor	44,956	46,779	48,656	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>44,956</b>	<b>46,779</b>	<b>48,656</b>	<b>0</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Adjustments (Nominal \$) **</b>					
Labor	0	0	0	0	0
Non-Labor	-838	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>-838</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Nominal \$)</b>					
Labor	0	0	0	0	0
Non-Labor	44,118	46,779	48,656	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>44,118</b>	<b>46,779</b>	<b>48,656</b>	<b>0</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Vacation &amp; Sick (Nominal \$)</b>					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Escalation to 2016\$</b>					
Labor	0	0	0	0	0
Non-Labor	1,209	648	82	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>1,209</b>	<b>648</b>	<b>82</b>	<b>0</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Constant 2016\$)</b>					
Labor	0	0	0	0	0
Non-Labor	45,327	47,428	48,739	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>45,327</b>	<b>47,428</b>	<b>48,739</b>	<b>0</b>	<b>0</b>
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.

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

Area: CORP CTR - PENSION & PBOPs  
 Witness: Debbie S. Robinson  
 Category: A. Employee Pension  
 Category-Sub: 1. Employee Pension  
 Workpaper: 1PN000.000 - EMPLOYEE PENSION

**Summary of Adjustments to Recorded:**

In Nominal \$ (000) Incurred Costs					
Years	2012	2013	2014	2015	2016
Labor	0	0	0	0	0
Non-Labor	-838	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>-838</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</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
2012	Other	0	-838	0	0.0	1-Sided Adj	JECERRY20161115153237597

**Explanation:** Adjustment to agree to pension funding amount

<b>2012 Total</b>	<b>0</b>	<b>-838</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>
-------------------	----------	----------	----------	------------

<b>2016 Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>
-------------------	----------	----------	----------	------------

*Note: Totals may include rounding differences.*

**Supplemental Workpapers for Workpaper 1PN000.000**

San Diego Gas & Electric  
Pension Contribution Projection  
For Years 2017-2019

**ASSUMPTIONS**

1. Pension contribution amounts based on estimates provided by the Company's certified actuary, Willis Towers Watson.

	<b>Projected</b>		
	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>Pension Contributions</b>	<b><u>\$ 26,630,000</u></b>	<b><u>\$ 42,850,000</u></b>	<b><u>\$ 63,970,000</u></b>

See Attached Projection from Willis Towers Watson

San Diego Gas & Electric Company Cash Balance Plan  
 General Rate Case Forecast  
 10-Year Forecast of Projected ASC Accounting Costs and Contributions reflecting Projected Headcount  
 (\$ in millions)

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
<b>Pension</b>										
• FAS Cost (baseline)	27.23	27.97	29.05	28.45	27.69	26.89	25.65	24.13	22.89	23.03
• Minimum required contribution (baseline)	24.32	41.37	43.41	45.88	51.57	56.53	60.40	59.14	41.04	22.93
• PPA funded percentage (baseline)										
Actuarial value of assets (including receivables)	723.21	690.53	701.56	711.27	726.47	750.99	783.92	826.65	875.21	911.79
Funding target	717.46	751.94	754.58	759.89	784.74	812.83	842.40	860.33	873.67	890.85
Funded percentage	101%	92%	93%	94%	93%	92%	93%	96%	100%	102%
• New funding policy (FAS service cost + 7 yr amort)										
FAS service cost + 7 yr amort	24.32	41.37	63.97	63.97	63.97	56.88	56.88	56.88	35.98	20.22
• PBO funded percentage (new policy)										
Fair value of assets	714.08	673.52	678.29	733.91	769.00	810.20	849.40	894.94	945.70	981.01
PBO	900.83	880.29	863.26	854.71	849.47	849.00	852.47	861.34	874.02	891.83
Funded percentage	79%	77%	79%	86%	91%	95%	100%	104%	108%	110%
• FAS discount rate	4.10%	4.10%	4.10%	4.10%	4.10%	4.10%	4.10%	4.10%	4.10%	4.10%

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

**San Diego Gas & Electric Company Cash Balance Plan  
Additional Projection Details  
Exhibit 1: Projected Funding Policy Contributions**

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<b>A. Policy Base Amount (New Policy)</b>											
1. Projected Benefit Obligation	n/a	n/a	863,263	854,706	849,466	849,005	852,466	861,336	874,018	891,830	913,771
2. Fair value of assets			678,285	733,909	768,996	810,203	849,404	894,935	945,696	981,013	1,005,148
3. Shortfall (1. - 2.)			184,978	120,797	80,470	38,802	3,062	(33,599)	(71,678)	(89,183)	
4. Discount rate			4.10%	4.10%	4.10%	4.10%	4.10%	4.10%	4.10%	4.10%	4.10%
5. 7-year amortization factor			6.2251			6.2251			6.2251		
6. Present value of remaining payments			-			112,020			(14,625)		
7. Shortfall amortization amount ((3. - 6.) / 5.)			29,715	29,715	29,715	(11,762)			(9,165)		
8. Shortfall amortization at 1/1/2019			29,715	29,715	29,715	29,715	29,715	29,715	29,715	29,715	29,715
9. Shortfall amortization at 1/1/2022						(11,762)	(11,762)	(11,762)	(11,762)	(11,762)	(11,762)
10. Shortfall amortization at 1/1/2025									(9,165)	(9,165)	(9,165)
11. Service Cost at Base Year			31,739			36,687			41,268		
12. Shortfall amortization (8. + 9. + 10.)			29,715			17,953			8,788		
13. Base Policy Amount (11. + 12.)			61,454	61,454	61,454	54,640	54,640	54,640	50,056	50,056	50,056
14. EOY Base Policy Amount 13. * 1.0410			63,974	63,974	63,974	56,880	56,880	56,880	52,108	52,108	52,108
<b>B. Minimum Required Contribution</b>											
1. MRC (Exhibit 2, C.6)	24,320	41,370	43,410	24,610	10,980	80	-	-	-	-	-
<b>C. 85% AFTAP Minimum</b>											
1. Funding Target Liability at 1/1	717,457	751,942	754,580	759,891	784,743	812,831	842,398	860,332	873,675	890,845	913,771
2. 85% of 1.	609,838	639,151	641,393	645,907	667,032	690,906	716,038	731,282	742,624	757,218	772,812
3. Actuarial Value of Assets	723,211	690,526	701,555	731,806	765,606	803,946	839,362	880,365	929,608	963,955	1,005,148
4. Minimum Required Contribution reflecting payment limit	-	-	-	-	-	-	-	-	-	-	-
5. 85% AFTAP Minimum at the end of the year	-	-	-	-	-	-	-	-	-	-	-
<b>D. 110% of PBO Cap</b>											
1. 110% of PBO at t+1			940,177	934,413	933,906	937,713	947,470	961,420	981,013	1,005,148	1,026,218
2. Fair value of assets at t+1 (prior to contribution at t)			669,935	705,022	746,229	792,524	838,055	888,816	945,037	984,930	1,005,148
3. Maximum contribution (end of year) (1. - 2.)			270,242	229,391	187,677	145,189	109,415	72,604	35,976	20,218	20,218
<b>E. Funding Policy Contribution</b>											
1. Old policy amount (greater of B.1 and C.5)	24,320	41,370									
2. New policy amount (greater of A.14, B.1, and C.5, not no more than D.3)			63,974	63,974	63,974	56,880	56,880	56,880	52,108	52,108	52,108
3. Recoverable amount (1. before 2018, 2. after)	24,320	41,370	63,974	63,974	63,974	56,880	56,880	56,880	52,108	52,108	52,108

**San Diego Gas & Electric Company Cash Balance Plan  
Additional Projection Details**

**Exhibit 2: Projected Minimum Required Contributions If Contributions Made Under New Policy**

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
<b>Projected Minimum Required Contribution (\$thousand)</b>										
<b>A. Funding Shortfall</b>										
1. Effective Interest Rate (EIR)	5.86%	5.67%	5.51%	5.37%	4.96%	4.56%	4.19%	4.06%	4.05%	4.04%
2. Funding Target Liability	717,457	751,942	754,580	759,891	784,743	812,831	842,398	860,332	873,675	890,845
3. Actuarial value of assets	723,211	690,526	701,555	731,806	765,606	803,946	839,362	880,865	929,608	963,955
4. Prefunding balance	-	-	-	20,528	39,283	53,427	57,835	59,573	61,466	54,001
5. Funding shortfall / (surplus) (2. - [3. - 4.])	(5,754)	61,416	53,025	48,613	58,420	62,312	60,871	39,040	5,533	(19,109)
<b>B. Shortfall Amortization Payments</b>										
1. Starting 1/1/2016			10,026	10,026	10,026	10,026	10,026	10,026	(220)	(220)
2. Starting 1/1/2017			(220)	(220)	(220)	(220)	(220)	(220)	(220)	(220)
3. Starting 1/1/2018				491	491	491	491	491	491	491
4. Starting 1/1/2019					2,966	2,966	2,966	2,966	2,966	2,966
5. Starting 1/1/2020						2,407	2,407	2,407	2,407	2,407
6. Starting 1/1/2021							1,932	1,932	1,932	1,932
7. Starting 1/1/2022								(908)	(908)	(908)
8. Starting 1/1/2023									(2,713)	(2,713)
9. Starting 1/1/2024										
10. Starting 1/1/2025										
11. Starting 1/1/2026										
12. Total (Sum of 1. through 11.)	-	10,026	9,806	10,297	13,263	15,670	17,602	16,694	3,955	-
<b>C. Minimum Required Contribution</b>										
1. Target Normal Cost at 1/1	28,782	29,604	32,042	33,976	36,643	37,833	38,887	39,823	41,389	43,027
2. Adjusted Target Normal Cost (1. + A.5. if surplus)	23,028	29,604	32,042	33,976	36,643	37,833	38,887	39,823	41,389	23,918
3. Shortfall amortization (B.12.)	-	10,026	9,806	10,297	13,263	15,670	17,602	16,694	3,955	-
4. Prefunding balance (A.4)	-	-	-	20,528	39,283	53,427	57,835	59,573	61,466	54,001
5. Minimum Required Contribution (2. + 3. - 4., no less than \$0)	23,028	39,630	41,848	23,745	10,623	76	-	-	-	-
6. Minimum Required Contribution reflecting payment timing	24,320	41,370	43,410	24,610	10,980	80	-	-	-	-

San Diego Gas & Electric Company Cash Balance Plan  
 Additional Projection Details  
 Exhibit 3: Projected Assets If Contributions Made Under New Policy

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
<b>Projected Assets (\$thousand)</b>										
<b>A. Fair Value of Assets (FVA)</b>										
1. FVA at beginning of year	714,077	673,517	678,285	733,909	768,996	810,203	849,404	894,935	945,696	981,013
2. Employer contributions (adjusted for timing and interest)	-	42,647	88,877	63,973	63,973	56,880	56,880	56,880	35,976	20,218
3. Benefit payments	(84,265)	(80,066)	(76,436)	(74,319)	(70,484)	(68,151)	(64,486)	(62,287)	(60,194)	(57,984)
4. Investment return	43,705	42,189	43,183	45,433	47,718	50,472	53,137	56,168	59,535	61,901
5. FVA at end of year (sum 1 through 4)	673,517	678,285	733,909	768,996	810,203	849,404	894,935	945,696	981,013	1,005,148
6. Assumed investment return	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
<b>B. Actuarial Asset Value for Minimum Purposes</b>										
1. Market value of assets (MVA), without receivables	714,077	673,517	678,285	733,909	768,996	810,203	849,404	894,935	945,696	981,013
2. Present value of receivables	-	24,377	24,161	-	-	-	-	-	-	-
3. MVA including receivables (1. + 2.)	714,077	697,894	702,446	733,909	768,996	810,203	849,404	894,935	945,696	981,013
4. Asset gain or (loss) from prior year	50,522	120	1,277	2,516	3,827	7,473	11,326	15,443	16,410	17,397
5. Asset gain or (loss) from two years prior	(71,128)	50,522	120	1,277	2,516	3,827	7,473	11,326	15,443	16,410
6. Asset deferral	(9,134)	7,368	891	2,103	3,390	6,258	10,042	14,070	16,088	17,068
7. Actuarial value of assets (AVA) prior to corridor (3. - 6.)	723,211	690,526	701,555	731,806	765,606	803,945	839,362	880,865	929,608	963,945
8. Lower corridor 90% of MVA	642,669	628,105	632,201	660,518	692,096	729,183	764,464	805,442	851,126	882,912
9. Upper corridor 110% of MVA	785,485	767,683	772,691	807,300	845,896	891,223	934,344	984,429	1,040,266	1,079,114
10. Final AVA (limited to 90% to 110% of MVA)	723,211	690,526	701,555	731,806	765,606	803,945	839,362	880,865	929,608	963,945



**San Diego Gas & Electric Company Cash Balance Plan  
Additional Projection Details**

**Exhibit 4: Projected Minimum Required Contributions If Contributions Made Under Prior Policy**

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
<b>Projected Minimum Required Contribution (\$thousand)</b>										
<b>A. Funding Shortfall</b>										
1. Effective Interest Rate (EIR)	5.86%	5.67%	5.51%	5.37%	4.96%	4.56%	4.19%	4.06%	4.05%	4.04%
2. Funding Target Liability	717,457	751,942	754,580	759,891	784,743	812,831	842,398	860,332	873,675	890,845
3. Actuarial value of assets	723,211	690,526	701,555	711,274	726,466	750,988	783,922	826,651	875,213	911,792
4. Prefunding balance	-	-	-	-	-	-	-	-	-	-
5. Funding shortfall / (surplus) (2. - [3. - 4.])	(5,754)	61,416	53,025	48,617	58,277	61,843	58,476	33,681	(1,538)	(20,947)
<b>B. Shortfall Amortization Payments</b>										
1. Starting 1/1/2016										
2. Starting 1/1/2017										
3. Starting 1/1/2018		10,026	10,026	10,026	10,026	10,026	10,026	10,026	-	-
4. Starting 1/1/2019			(220)	(220)	(220)	(220)	(220)	(220)	-	-
5. Starting 1/1/2020				492	492	492	492	492	-	-
6. Starting 1/1/2021					2,943	2,943	2,943	2,943	-	-
7. Starting 1/1/2022						2,353	2,353	2,353	-	-
8. Starting 1/1/2023							1,621	1,621	-	-
9. Starting 1/1/2024								(1,417)	-	-
10. Starting 1/1/2025									-	-
11. Starting 1/1/2026										-
12. Total (Sum of 1. through 11.)	-	10,026	9,806	10,298	13,241	15,594	17,215	15,798	-	-
<b>C. Minimum Required Contribution</b>										
1. Target Normal Cost at 1/1	28,782	29,604	32,042	33,976	36,643	39,240	41,517	41,762	41,489	43,027
2. Adjusted Target Normal Cost (1. + A.5. if surplus)	23,028	29,604	32,042	33,976	36,643	39,240	41,517	41,762	39,951	22,080
3. Shortfall amortization (B.12.)	-	10,026	9,806	10,298	13,241	15,594	17,215	15,798	-	-
4. Prefunding credit (A.4)	-	-	-	-	-	-	-	-	-	-
5. Minimum Required Contribution (2. + 3. - 4., no less than \$0)	23,028	39,630	41,848	44,274	49,884	54,834	58,732	57,560	39,951	22,080
6. Minimum Required Contribution reflecting payment timing	24,320	41,370	43,410	45,880	51,570	56,530	60,400	59,140	41,040	22,930

**San Diego Gas & Electric Company Cash Balance Plan**  
**Additional Projection Details**  
**Exhibit 5: Projected Assets If Contributions Made Under Prior Policy**

		Projected Assets (\$thousand)									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
<b>A. Fair Value of Assets (FVA)</b>											
1.	FVA at beginning of year	714,077	673,517	678,285	688,183	713,766	738,622	773,907	819,180	870,143	913,840
2.	Employer contributions (adjusted for timing and interest)	-	42,647	53,152	45,326	49,490	55,691	59,448	59,888	47,521	14,262
3.	Benefit payments	(84,265)	(80,066)	(76,436)	(74,319)	(70,484)	(68,151)	(64,486)	(62,287)	(60,194)	(57,984)
4.	Investment return	43,705	42,189	43,182	44,576	45,850	47,745	50,311	53,362	56,370	58,195
5.	FVA at end of year (sum 1 through 4)	673,517	678,285	698,183	713,766	738,622	773,907	819,180	870,143	913,840	928,313
6.	Assumed investment return	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
<b>B. Actuarial Asset Value for Minimum Purposes</b>											
1.	Market value of assets (MVA), without receivables	714,077	673,517	678,285	698,183	713,766	738,622	773,907	819,180	870,143	913,840
2.	Present value of receivables	-	24,377	24,161	15,198	16,035	18,402	19,551	20,790	20,323	14,103
3.	MVA including receivables (1. + 2.)	714,077	697,894	702,446	713,381	729,801	757,024	793,458	839,970	890,466	927,943
4.	Asset gain or (loss) from prior year	50,522	120	1,277	2,522	3,742	7,182	10,714	14,621	15,569	16,443
5.	Asset gain or (loss) from two years prior	(9,134)	7,368	891	2,107	3,335	6,035	9,536	13,318	15,253	16,151
6.	Asset deferral	723,211	690,526	701,555	711,274	726,466	750,989	783,922	826,652	875,213	911,792
7.	Actuarial value of assets (AVA) prior to corridor (3. - 6.)	642,689	628,105	632,201	642,043	656,821	681,322	714,112	755,973	801,419	835,149
8.	Lower corridor 90% of MVA	785,485	767,683	772,691	784,719	802,781	832,726	872,804	923,967	979,513	1,020,737
9.	Upper corridor 110% of MVA	723,211	690,526	701,555	711,274	726,466	750,989	783,922	826,652	875,213	911,792
10.	Final AVA (limited to 90% to 110% of MVA)										

**Beginning of Workpaper**  
**1PN000.001 - EMPLOYEE PENSION-PBOP**

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

Area: CORP CTR - PENSION & PBOPs  
 Witness: Debbie S. Robinson  
 Category: A. Employee Pension  
 Category-Sub: 2. Employee Pension-PBOP  
 Workpaper: 1PN000.001 - EMPLOYEE PENSION-PBOP

**Activity Description:**

SDG&E provides post-retirement benefits other than pensions (PBOP) such as health and life insurance benefits, also known as the San Diego Gas & Electric Company Postretirement Health and Life Plans. Represented and non-represented employees participate in the plan.

**Forecast Explanations:**

**Labor - Zero-Based**

Please see NSE below

**Non-Labor - Zero-Based**

Please see NSE below

**NSE - Zero-Based**

Zero Based method chosen as PBOP contributions are provided by the Company's certified actuary Willis Towers Watson.

**Summary of Results:**

		In 2016\$ (000) Incurred Costs								
		Adjusted-Recorded					Adjusted-Forecast			
Years		2012	2013	2014	2015	2016	2017	2018	2019	
Labor		0	0	0	0	0	0	0	0	
Non-Labor		13,703	14,390	14,168	7,314	2,357	0	0	0	
NSE		0	0	0	0	0	4,440	1,520	1,430	
<b>Total</b>		<b>13,703</b>	<b>14,390</b>	<b>14,168</b>	<b>7,314</b>	<b>2,357</b>	<b>4,440</b>	<b>1,520</b>	<b>1,430</b>	
FTE		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

*Note: Totals may include rounding differences.*

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

Area: CORP CTR - PENSION & PBOPs  
 Witness: Debbie S. Robinson  
 Category: A. Employee Pension  
 Category-Sub: 2. Employee Pension-PBOP  
 Workpaper: 1PN000.001 - EMPLOYEE PENSION-PBOP

**Summary of Adjustments to Forecast:**

In 2016 \$(000) Incurred Costs										
Forecast Method		Base Forecast			Forecast Adjustments			Adjusted-Forecast		
Years		2017	2018	2019	2017	2018	2019	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	0	0	0	0
NSE	Zero-Based	0	0	0	4,440	1,520	1,430	4,440	1,520	1,430
<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>4,440</b>	<b>1,520</b>	<b>1,430</b>	<b>4,440</b>	<b>1,520</b>	<b>1,430</b>
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Forecast Adjustment Details:**

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>	
2017	Other	0	0	4,440	4,440	0.0	1-Sided Adj	JECHERRY20161203095913823	
<b>Explanation:</b>		2017 PBOP projection							
<b>2017 Total</b>		<b>0</b>	<b>0</b>	<b>4,440</b>	<b>4,440</b>	<b>0.0</b>			
2018	Other	0	0	1,520	1,520	0.0	1-Sided Adj	JECHERRY20161203095930540	
<b>Explanation:</b>		2018 PBOP projection							
<b>2018 Total</b>		<b>0</b>	<b>0</b>	<b>1,520</b>	<b>1,520</b>	<b>0.0</b>			
2019	Other	0	0	1,430	1,430	0.0	1-Sided Adj	JECHERRY20161203100015790	
<b>Explanation:</b>		2019 PBOP projection							
<b>2019 Total</b>		<b>0</b>	<b>0</b>	<b>1,430</b>	<b>1,430</b>	<b>0.0</b>			

Note: Totals may include rounding differences.

SDG&E/CORP CTR - PENSION & PBOPs/Exh No:SDG&E-29-WP/Witness: D. Robinson

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

Area: CORP CTR - PENSION & PBOPs  
 Witness: Debbie S. Robinson  
 Category: A. Employee Pension  
 Category-Sub: 2. Employee Pension-PBOP  
 Workpaper: 1PN000.001 - EMPLOYEE PENSION-PBOP

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

	2012 (\$000)	2013 (\$000)	2014 (\$000)	2015 (\$000)	2016 (\$000)
<b>Recorded (Nominal \$)*</b>					
Labor	0	0	0	0	0
Non-Labor	13,337	14,193	14,144	7,298	2,357
NSE	0	0	0	0	0
<b>Total</b>	<b>13,337</b>	<b>14,193</b>	<b>14,144</b>	<b>7,298</b>	<b>2,357</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Adjustments (Nominal \$) **</b>					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Nominal \$)</b>					
Labor	0	0	0	0	0
Non-Labor	13,337	14,193	14,144	7,298	2,357
NSE	0	0	0	0	0
<b>Total</b>	<b>13,337</b>	<b>14,193</b>	<b>14,144</b>	<b>7,298</b>	<b>2,357</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Vacation &amp; Sick (Nominal \$)</b>					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Escalation to 2016\$</b>					
Labor	0	0	0	0	0
Non-Labor	365	197	24	16	0
NSE	0	0	0	0	0
<b>Total</b>	<b>365</b>	<b>197</b>	<b>24</b>	<b>16</b>	<b>0</b>
FTE	0.0	0.0	0.0	0.0	0.0
<b>Recorded-Adjusted (Constant 2016\$)</b>					
Labor	0	0	0	0	0
Non-Labor	13,703	14,390	14,168	7,314	2,357
NSE	0	0	0	0	0
<b>Total</b>	<b>13,703</b>	<b>14,390</b>	<b>14,168</b>	<b>7,314</b>	<b>2,357</b>
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.

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

Area: CORP CTR - PENSION & PBOPs  
 Witness: Debbie S. Robinson  
 Category: A. Employee Pension  
 Category-Sub: 2. Employee Pension-PBOP  
 Workpaper: 1PN000.001 - EMPLOYEE PENSION-PBOP

**Summary of Adjustments to Recorded:**

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

<u>Year</u>	<u>Adj Group</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>FTE</u>	<u>Adj Type</u>	<u>RefID</u>
-------------	------------------	--------------	-------------	------------	------------	-----------------	--------------

*Note: Totals may include rounding differences.*

**Supplemental Workpapers for Workpaper 1PN000.001**



San Diego Gas & Electric  
PBOP Contribution Projection  
For Years 2017-2019

**ASSUMPTIONS**

1. PBOP contribution amounts based on estimates provided by the Company's certified actuary, Willis Towers Watson.

	<b>Projected</b>		
	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>PBOP Contributions</b>	<b><u>\$ 4,440,000</u></b>	<b><u>\$ 1,520,000</u></b>	<b><u>\$ 1,430,000</u></b>

See Attached Projection from Willis Towers Watson

San Diego Gas and Electric Company PBOP  
 General Rate Case Forecast  
 10-Year Forecast of Projected ASC Accounting Costs and Contributions reflecting Projected Headcount  
 (\$ in millions)

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
<b>PBOP</b>										
• FAS Cost	5.27	5.67	5.29	3.64	4.24	4.79	5.29	5.91	6.59	7.34
• Contributions										
Contributions to trust	4.29	1.37	1.28	1.19	1.11	1.03	0.96	0.89	0.83	0.77
Pay-as-you-go	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Total contributions	4.44	1.52	1.43	1.34	1.26	1.18	1.11	1.04	0.98	0.92
• APBO funded percentage (alternative)										
Fair value of assets	168.83	173.87	175.15	176.05	176.48	176.56	176.32	176.04	175.72	175.33
APBO	190.07	193.41	196.61	199.98	203.43	207.12	211.12	215.74	221.04	227.03
Funded percentage	89%	90%	89%	88%	87%	85%	84%	82%	79%	77%
• FAS discount rate	4.15%	4.15%	4.15%	4.15%	4.15%	4.15%	4.15%	4.15%	4.15%	4.15%

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

**SDG&E and SoCalGas PBOP  
10-Year Forecast of Projected ASC Accounting Costs and Contributions reflecting Projected Headcount  
Other Key Assumptions and Methodology: PBOP**

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Ultimate
<b>Other Key Assumptions</b>											
FAS Discount rate	See forecast exhibits										
Expected Return on Plan Assets for Determining ASC 715 Benefit Cost (except for post tax VEBAs and SoCalGas 401(f))	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%
Expected Return on SoCalGas 401(f)	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%
Expected Return on Post Tax VEBAs (PBOP)	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
SoCalGas 401(f)	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
Assumed Actual Return on SoCalGas 401(f)	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Assumed Actual Return on Post Tax VEBAs (PBOP)	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
Assumed Return other than from unrealized and realized gains / (losses) for MRYA purposes	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Healthcare Cost Trend (Pre-age 65)	8.00%	7.00%	6.50%	6.00%	5.50%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Healthcare Cost Trend (Post-age 65)	5.50%	5.00%	4.75%	4.75%	4.75%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
Salary Scale - Qualified plans, excluding SoCalGas Union	Age Based	Age Based	Age Based	Age Based	Age Based	Age Based	Age Based	Age Based	Age Based	Age Based	Age Based
Salary Scale - SoCalGas Union	Service Based	Service Based	Service Based	Service Based	Service Based	Service Based	Service Based	Service Based	Service Based	Service Based	Service Based
Salary Scale - Nonqualified plans, Executive Life Insurance	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
Cash Balance Crediting Rate/Interest Crediting Rate for HRA	2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	2.86%	2.86%
Pre-retirement Mortality											
Post-retirement Mortality											
Retirement/Termination/Participation Rates and Marital Status											
	RP-2016 Employee table with MP-2016 generational projection scale										
	Sempra specific table, base year of 2011, with MP-2016 generational projection scale from 2011										
	Same as those used for 2016 year-end disclosures										
Number of projected headcount (provided by Sempra on July 26, 2017) <sup>(1)</sup>	12/31/2016	12/31/2017	12/31/2018	12/31/2019	12/31/2020	12/31/2021	12/31/2022	12/31/2023	12/31/2024	12/31/2025	12/31/2026
SoCalGas	8,042	7,900	8,142	8,624	8,624	8,624	8,624	8,624	8,624	8,624	8,624
SDG&E	4,134	4,215	4,315	4,515	4,515	4,515	4,515	4,515	4,515	4,515	4,515

<sup>(1)</sup> The count does not reflect employees on leave of absence. The number of employees on leave is assumed to remain level throughout the forecast period based on number of employees on leave as of January 1, 2016.

Refer to September 22, 2016 with updates through December 19, 2016 Assumptions Review sent on January 7, 2017 and provided with December 31, 2016 discount rate analyses for assumptions not shown above.

**Methodology**

- Reflects trust information through December 31, 2016
- Data and Demographics
  - January 1, 2016 participant census, except Executive Life Insurance and Directors' pension plans which are as of December 31, 2016. Assumed level headcount unless otherwise stated
- Plan Design
  - Includes all plan changes described with December 31, 2016 disclosure
- Contribution Amounts
  - Contributions for PBOPs equal to sum of contributions to trusts plus expected benefit payments from general assets
- Contribution Policy
  - SoCalGas and SDG&E PBOP: equal to smaller of postretirement benefit costs or maximum tax deductible contributions plus key employee benefit payments paid
  - Sempra PBOP: expected benefit payments or premiums per current pay-as-you-go policy



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

Area: CORP CTR - PENSION & PBOPs  
Witness: Debbie S. Robinson

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

<b>Cost Center</b>	<b>Sub</b>	<b>Description</b>
2100-0375	000	EMPLOYEE PENSION