

Exhibit No: \_\_\_\_\_  
Application: A.18-07-  
Witness: Sim-Cheng Fung  
Chapter: 8

**PREPARED DIRECT TESTIMONY OF**  
**SIM-CHENG FUNG**  
**ON BEHALF OF SOUTHERN CALIFORNIA GAS COMPANY**  
**AND SAN DIEGO GAS & ELECTRIC COMPANY**

(EMBEDDED COSTS)

July 2018

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1 **CHAPTER 8**

2 **PREPARED DIRECT TESTIMONY OF SIM-CHENG FUNG**

3 **(EMBEDDED COSTS)**

4 **I. PURPOSE**

5 The purpose of my testimony is to present the embedded transmission and storage costs  
6 for Southern California Gas Company (SoCalGas) and San Diego Gas & Electric Company  
7 (SDG&E) (jointly, Applicants). The embedded cost methodology uses recorded costs to allocate  
8 the backbone and local transmission, and storage costs of providing these services to the utilities'  
9 customers for the purposes of setting transportation rates. Embedded costs include the plant-in-  
10 service, operations and maintenance (O&M), and administrative and general (A&G) expenses  
11 that are needed to provide transmission and storage services to SoCalGas' and SDG&E's  
12 customers.

13 My embedded cost methodology is consistent with the methodology I used in the prior  
14 Triennial Cost Allocation Proceeding (TCAP) Phase 1,<sup>1</sup> the results of which became part of a  
15 settlement agreement which was adopted.<sup>2</sup>

16 After describing my data sources, my testimony will discuss the:

- 17 1. Embedded costs of SoCalGas' transmission and storage functions;  
18 2. Embedded costs of SDG&E's transmission system;  
19 3. Allocation of SoCalGas' and SDG&E's transmission costs between the backbone  
20 and local transmission functions; and

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<sup>1</sup> See Application (A.) 14-12-017.

<sup>2</sup> See Decision (D.) 16-06-039.

1           4.     Allocation of SoCalGas' storage costs among the core, balancing and reliability  
2                   functions.

3     **II.     DATA SOURCE FOR EMBEDDED COST STUDY**

4           The starting point for the embedded cost studies I performed for SoCalGas and SDG&E  
5     is the total recorded costs for calendar year 2016. These costs are presented in SoCalGas' and  
6     SDG&E's *2016 Annual Report to the Commission* (FERC Form 2).<sup>3</sup> These accounts provided  
7     the data I relied upon to determine plant-in-service (capital-related), O&M and A&G expenses  
8     that comprise the cost of service for transmission and storage customers.

9     **III.    SOCALGAS EMBEDDED TRANSMISSION AND STORAGE COST STUDY**

10           Table 1 in Appendix A shows the 2016 SoCalGas Utility Gas Plant in Service by FERC  
11     account, as provided by Plant Accounting.

12           **A.     Capital-Related Costs**

13                   **1.     Depreciation**

14           The first capital-related expense is depreciation. The cost of utility plant is recovered in  
15     rates through an annual depreciation expense over the book life of the investment. The annual  
16     depreciation expense of a utility plant is specific to the type of facility or equipment in service.  
17     Table 1 in Appendix A shows the annual depreciation expense and total accumulated  
18     depreciation by FERC account category for 2016. Total transmission depreciation of \$51.2  
19     million includes \$45.7 million from transmission plant plus \$5.5 million<sup>4</sup> from general plant

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<sup>3</sup> FERC stands for Federal Energy Regulatory Commission. FERC Form 2 for year-end 2016 was the latest available report at the time I prepared my embedded cost studies. Relevant data from the 2016 FERC Form 2 upon which I relied are shown in appendices to my testimony.

<sup>4</sup> See Appendix E, Footnote 4.

1 allocated based on a labor factor, as explained in Section III.B.3 of my testimony. Total  
2 underground storage depreciation of \$33.7 million includes \$28.2 million from storage plant plus  
3 \$5.5 million<sup>5</sup> from general plant allocated based on a labor factor.

## 4 **2. Return on Rate Base**

5 The second capital-related expense is the annual authorized rate of return on rate base.  
6 This charge is associated with the utility's authorized cost of capital, which represents the cost to  
7 finance the investments made in utility plant and equipment, through debt and equity.  
8 SoCalGas' recorded weighted average rate base of \$3.717 billion in 2016 is shown in Appendix  
9 A, Table 1. That rate base figure is multiplied by the authorized 8.02% rate of return (on rate  
10 base), which was adopted in D.12-12-034.<sup>6</sup> This authorized rate of return is used to calculate the  
11 return on rate base for each investment category. The total return (rate base x rate of return)  
12 equals \$298 million ( $\$3.717 \text{ billion} \times 8.02\% = \$298 \text{ million}$ ). Table 1 shows the components of  
13 SoCalGas' rate base based on the percentage of each category's net book value to total  
14 SoCalGas' net book value.

15 Table 2 summarizes the return on rate base for SoCalGas' transmission and storage  
16 assets. Transmission plant, which is recorded in FERC Accounts 365 through 372, represents  
17 \$638 million of rate base, with a return of \$51.2 million ( $\$638 \text{ million} \times 8.02\% = \$51.2 \text{ million}$ ).  
18 An additional \$0.9 million<sup>7</sup> of general plant return (which represents the rate of return on rate  
19 base allocated to general plant) is added to transmission, based on a labor factor, resulting in total  
20 transmission return of \$52.1 million.

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<sup>5</sup> *Id.* at Footnote 5.

<sup>6</sup> See D.12-12-034 at 53, Ordering Paragraph (OP) 3. This is the authorized rate of return for 2016.

<sup>7</sup> See Appendix E at Footnote 7.

Underground storage plant, which is recorded in FERC Accounts 117.1 and 350 through 358, represents \$314 million of rate base, with a return of \$25.2 million (\$314 million x 8.02% = \$25.2 million). An additional \$0.9 million<sup>8</sup> from general plant return is allocated to storage based on a labor factor, resulting in total storage return of \$26.1 million. Table 2 summarizes this information.

<b>Table 2</b>					
<b>2016 SoCalGas Return on Rate Base</b>					
	(A)	(B)	(C)= (A)x(B)	(D)	(E)= (C)+(D)
	Rate Base	Authorized Rate of Return	Return on Rate Base	Allocated General Plant Return	Total Return
	(\$MM)	(%)	(\$MM)	(\$MM)	(\$MM)
Total SoCalGas	3,717	8.02%	298.4	N/A	298.4
Transmission	638	8.02%	51.2	0.9	52.1
Storage	314	8.02%	25.2	0.9	26.1

### 3. Taxes

The third capital-related expense is taxes, and specifically federal and state income taxes, and ad valorem (or property) tax.<sup>9</sup> For taxes related to transmission plant, I used tax data contained in SoCalGas' Test Year 2019 General Rate Case (GRC).<sup>10</sup> SoCalGas' 2016 recorded capital-related taxes (comprised of federal and state income taxes and property taxes) were \$130.7 million.<sup>11</sup> These taxes are allocated to transmission as follows: \$130.7 million x 17.2%<sup>12</sup>

<sup>8</sup> See *Id.* at Footnote 8.

<sup>9</sup> Payroll taxes are included in A&G.

<sup>10</sup> See A.17-10-008, Exhibit SCG-37-2R, Second Revised SoCalGas Direct Testimony of Ragan G. Reeves, April 6, 2018 (relevant excerpts attached in Appendix B).

<sup>11</sup> Federal income taxes = \$66,413K; state income taxes = \$11,866K; ad valorem taxes = \$52,473K. See Appendix B.

<sup>12</sup> Transmission's percent of total SoCalGas net book value from Appendix A, Table 1.

1 = \$22.4 million. In addition, taxes related to general plant of \$0.4 million<sup>13</sup> are allocated to  
2 transmission resulting in a total of \$22.8 million of transmission capital-related taxes.

3 For storage plant, SoCalGas' recorded capital-related taxes are allocated as follows:  
4 \$130.7 million x 8.5%<sup>14</sup> = \$11.0 million. In addition, taxes related to general plant of \$0.4  
5 million<sup>15</sup> are allocated to storage resulting in a total of \$11.4 million of storage capital-related  
6 taxes. Table 3 below summarizes transmission and storage taxes.

<b>Table 3</b>	
<b>2016 SoCalGas Federal and State Income and Property Taxes</b>	
	(\$MM)
Transmission	22.8
Storage	11.4

7 Table 4 shows SoCalGas capital-related costs for transmission and storage plant.

<b>Table 4</b>		
<b>2016 SoCalGas Capital-Related Costs</b>		
	Transmission (\$MM)	Storage (\$MM)
Depreciation <sup>16</sup>	51.2	33.7
Return <sup>17</sup>	52.1	26.1
Taxes <sup>18</sup>	22.8	11.4
Total	126.1	71.2

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<sup>13</sup> See Appendix E, Footnote 13.

<sup>14</sup> Storage's percent of total SoCalGas net book value from Appendix A, Table 1.

<sup>15</sup> See Appendix E, Footnote 15.

<sup>16</sup> See Appendix A, Table 1; Appendix E, Footnotes 4 and 5.

<sup>17</sup> See Table 2.

<sup>18</sup> See Table 3.

1           **B.     Gas O&M and A&G Items**

2                   **1.     Transmission O&M Expenses**

3           SoCalGas' 2016 recorded transmission O&M expenses (recorded in FERC Accounts  
4 850 - 867) totaled \$101.7 million. This total excludes \$222,801 in transmission compressor  
5 station fuel and power in FERC Account 855, since this cost is excluded from authorized base  
6 margin. Details of transmission O&M costs by FERC Account are shown in Table 5 in  
7 Appendix A.

8                   **2.     Storage O&M Expenses**

9           SoCalGas' 2016 recorded storage O&M expenses (recorded in FERC Accounts 814 -  
10 837) were \$45.8 million. This total excludes \$946,166 in storage compressor station fuel and  
11 power in FERC Account 819, and \$137,136 due to gas losses in FERC account 823 since these  
12 costs are excluded from authorized base margin. Details of storage O&M costs by FERC  
13 Account are shown in Table 6 in Appendix A.

14                   **3.     A&G Expenses**

15           SoCalGas' 2016 recorded A&G expenses (recorded in FERC Accounts 920 through 932),  
16 plus payroll taxes,<sup>19</sup> totaled \$448.5 million. This figure excludes \$44 million of franchise fees  
17 recorded in FERC Account 927 because these costs are accounted for in the franchise and  
18 uncollectible factor in the rate design process.<sup>20</sup> Another \$891,213 of regulatory commission  
19 expenses in FERC Account 928 are excluded because these expenses are accounted for outside  
20 of authorized base margin. A&G details are shown in Table 7 in Appendix A.

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<sup>19</sup> Payroll taxes = \$35.2 million. See Appendix B.

<sup>20</sup> Witness Sharim Chaudhury (Chapter 12) is the rate design witness in this TCAP.



1 A&G costs are allocated based on the adopted embedded cost results in the last TCAP  
 2 Phase 1 decision.<sup>21</sup> As was done in that embedded cost study, 50% of A&G expenses are  
 3 allocated to end users. Because company labor is a key factor that drives A&G costs, the  
 4 remaining \$224.2 million of A&G is allocated to the storage and transmission functions based on  
 5 labor factors shown in Table 8. Table 8 shows storage has 8.4% of SoCalGas' labor costs,  
 6 therefore \$18.8 million of A&G (0.084 x 224.2 million) are allocated to storage and \$18.8  
 7 million of A&G are also allocated to transmission.

<b>Table 8</b>			
<b>2016 SoCalGas Labor Factors to Allocate A&amp;G</b>			
	Labor Costs <sup>22</sup>	Labor %	Allocated A&G Costs
	(\$MM)		(\$MM)
Storage	33.7	8.4%	18.8
Transmission	33.6	8.4%	18.8
Distribution, Customer Accounts/Service & Information	335.0	83.2%	186.6
Total	402.3	100.0%	224.2

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#### 9 **4. Miscellaneous Revenues**

10 Miscellaneous revenues related to transmission and storage operations are recorded  
 11 primarily in FERC Account 495 such as crude oil sales, storage emission credit revenues, etc.  
 12 These revenues are incorporated as a reduction to costs required to provide utility services,  
 13 thereby lowering embedded costs of transmission and storage. I used data contained in  
 14 SoCalGas' Test Year 2019 GRC.<sup>23</sup> Miscellaneous revenues recorded for 2016, and associated

<sup>21</sup> See D.16-06-039 at 63, OP 5.

<sup>22</sup> Source: 2016 SoCalGas FERC Form 2, p. 355, lines 52-57, col. (b).

<sup>23</sup> See A.17-10-008, Exhibit SCG-41-2R, Second Revised SoCalGas Direct Testimony of Annette M. Steffen, April 6, 2018 (relevant excerpts attached in Appendix B).

1 with the storage function in 2016, were \$4.8 million and were credited directly to storage  
 2 expenses.<sup>24</sup> The other \$55 million<sup>25</sup> of miscellaneous revenues are not directly related to any  
 3 single functional activity. These revenues are credited in the same manner that A&G expenses  
 4 are allocated (see Section III.B.3 of my testimony).

5 Table 9 summarizes the O&M, A&G expenses and miscellaneous revenues for  
 6 SoCalGas' transmission and storage functions.

<b>Table 9</b>		
<b>2016 SoCalGas O&amp;M, A&amp;G, Miscellaneous Rev.</b>		
	Transmission	Storage
	(\$MM)	(\$MM)
O&M Expenses <sup>26</sup>	101.7	45.8
A&G Expenses <sup>27</sup>	18.8	18.8
Miscellaneous Rev.	(2.3)	(7.1)
Total	118.2	57.5

7 Finally, Table 10 summarizes SoCalGas' Embedded Transmission and Storage Costs.

<b>Table 10</b>		
<b>2016 SoCalGas Embedded Transmission and Storage Costs</b>		
	Transmission	Storage
	(\$MM)	(\$MM)
Capital-related Costs <sup>28</sup>	126.1	71.2
O&M, A&G Expenses <sup>29</sup>	118.2	57.5
Total	244.3	128.7

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 24 Crude oil sales, \$3.467 million + Storage emission credit, \$1.023 million + Reclaim, \$306,000 = \$4.796 million. See Appendix B.

25 See *Id.*

26 See Tables 5 and 6.

27 See Table 8.

28 See Table 4.

29 See Table 9.

1 **IV. SDG&E EMBEDDED TRANSMISSION COST STUDY**

2 Table 11 in Appendix C shows 2016 SDG&E Utility Gas Plant in Service by FERC  
3 Account prepared by the Plant Accounting group.

4 **A. Capital-Related Costs**

5 **1. Depreciation**

6 Table 11 shows SDG&E's gas transmission depreciation expense is \$8.3 million. An  
7 additional \$1.3 million<sup>30</sup> from general/common plant is allocated to this for a total of \$9.6  
8 million.

9 **2. Return on Rate Base**

10 The components of SDG&E's weighted average rate base in Table 11 are based on the  
11 percentage of each category's net book value to SDG&E's total gas net book value. Table 11  
12 shows that transmission's rate base is \$130.5 million, or 20.2% of total recorded weighted  
13 average rate base of \$646.9 million.

14 This total rate base of \$646.9 million is multiplied by the authorized rate of return (on  
15 rate base) of 7.79%, as adopted in D.12-12-034.<sup>31</sup> The total return on SDG&E's rate base is  
16 \$50.4 million ( $\$646.9 \text{ million} \times 7.79\% = \$50.4 \text{ million}$ ). Transmission's return on rate base is  
17 \$10.2 million based on transmission's rate base of \$130.5 million shown in Table 12 ( $\$130.5$   
18  $\text{million} \times 7.79\% = \$10.2 \text{ million}$ ). An additional \$0.2 million<sup>32</sup> from general/common plant  
19 return is allocated to transmission based on labor factor (see Section IV.B.2), resulting in total  
20 transmission return of \$10.4 million. Table 12 summarizes SDG&E's return on rate base for gas  
21 operations.

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<sup>30</sup> See Appendix E at Footnote 30.

<sup>31</sup> See D.12-12-034 at 52, OP 2. This is the authorized rate of return for 2016.

<sup>32</sup> See Appendix E at Footnote 32.

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<b>Table 12</b>					
<b>2016 SDG&amp;E Return on Rate Base</b>					
	(A)	(B)	(C) = (A) x (B)	(D)	(E) = (C) +(D)
	Rate Base	Rate of Return	Return on Rate Base	Allocated General Plant Return	Total Return
	(\$MM)	(%)	(\$MM)	(\$MM)	(\$MM)
Total SDG&E	646.9	7.79%	50.4	N/A	50.4
Transmission	130.5	7.79%	10.2	0.2	10.4

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### 3. Taxes

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I used tax data contained in SDG&E's 2019 GRC. SDG&E's 2016 recorded federal and state income taxes for gas operations totaled \$12.6 million.<sup>33</sup> In addition, SDG&E's 2016 recorded ad valorem (i.e., property) taxes were \$10.2 million,<sup>34</sup> resulting in capital-related taxes of \$22.8 million. These taxes are allocated to transmission as follows: \$22.8 million x 20.2%<sup>35</sup> = \$4.6 million. In addition, \$0.1 million<sup>36</sup> of general/common plant taxes are allocated to transmission resulting in total transmission taxes of \$4.7 million. Table 13 shows that SDG&E gas transmission capital-related costs are \$24.7 million.

<b>Table 13</b>	
<b>2016 SDG&amp;E Capital-Related Costs</b>	
	(\$MM)
Depreciation <sup>37</sup>	9.6
Return <sup>38</sup>	10.4
Taxes	4.7
Total	24.7

<sup>33</sup> See A.17-10-007, Exhibit SDG&E-35-2R, Second Revised SDG&E Direct Testimony of Ragan G. Reeves, April 6, 2018 (relevant excerpts attached in Appendix D). Federal income taxes = \$10.658 million, state income taxes = \$1.908 million.

<sup>34</sup> See *Id.*

<sup>35</sup> See Table 11, Transmission net book value = 20.2% of total SDG&E NBV.

<sup>36</sup> See Appendix E at Footnote 36.

<sup>37</sup> See Appendix C, Table 11; Appendix E at Footnote 29.

<sup>38</sup> See Table 12.

1           **B.     Gas O&M and A&G Items**

2                   **1.     Transmission O&M Expenses**

3           SDG&E's 2016 recorded transmission O&M expenses were \$10.5 million as shown in  
4 Table 14 in Appendix C. This excludes \$0.2 million in FERC Account 855 (other fuel and  
5 power for compressor stations) since this cost is excluded from base margin.

6                   **2.     A&G Expenses**

7           SDG&E's 2016 recorded A&G expenses were \$73.8 million as shown in Table 15 in  
8 Appendix C. FERC Account 927 (franchise fees) is excluded because this cost is handled in rate  
9 design, and payroll taxes of \$4.2 million<sup>39</sup> are added. A&G expenses include general  
10 management salaries and expenses; pensions and benefits; insurance expenses and outside  
11 service expenses.

12           SDG&E's A&G expenses are allocated in a manner consistent with the settlement  
13 adopted in D.16-06-039. Since transmission labor costs represent 12.4% of SDG&E's labor  
14 costs, this percentage is applied to half of \$73.8 million ( $\$73.8 \text{ million A\&G} \times 50\% \times 12.4\%$ ) =  
15 \$4.6 million. Table 16 shows the transmission labor factor of 12.4%.

16

<b>Table 16</b>			
<b>2016 SDG&amp;E's Labor Factors to Allocate A&amp;G</b>			
	Labor Costs <sup>40</sup>	Labor %	Allocated A&G Costs
	(\$MM)		(\$MM)
Storage	0.1	0.2%	0.1
Transmission	5.1	12.4%	4.6
Distribution, Customer Accounts/Service & Information	36.4	87.4%	32.2
Total	41.6	100.0%	36.9

<sup>39</sup> See Appendix D.

<sup>40</sup> Source: 2016 SDG&E's FERC Form 2, p. 355, lines 55-59, col. (b).

1                   **3.       Miscellaneous Revenues**

2                   SDG&E’s shared asset portion of gas-related miscellaneous revenues is recorded  
3 primarily in FERC Account 495. I used data contained in SDG&E’s Test Year 2019 GRC.<sup>41</sup>  
4 Miscellaneous revenues recorded for 2016 were \$1.581 million. Applying the labor factor of  
5 12.4% to half of \$1.581 million = \$0.1 million ( $\$1.581 \text{ million} \times 50\% \times 12.4\%$ ).

6                   Table 17 summarizes 2016 recorded O&M, A&G and miscellaneous revenues for  
7 SDG&E’s gas transmission.

<b>Table 17</b>	
<b>2016 SDG&amp;E Transmission O&amp;M, A&amp;G, Miscellaneous Revenues</b>	
	(SMM)
O&M Expenses <sup>42</sup>	10.5
A&G Expenses <sup>43</sup>	4.6
Miscellaneous Revenues	(0.1)
Total	15.0

8                   Finally, Table 18 summarizes SDG&E’s embedded cost for gas transmission.

<b>Table 18</b>	
<b>2016 SDG&amp;E Embedded Transmission Cost</b>	
	(SMM)
Capital-related Costs <sup>44</sup>	24.7
O&M, A&G Expenses <sup>45</sup>	15.0
Total	39.7

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<sup>41</sup> See A.17-10-007, Exhibit SDG&E-40-2R, Second Revised SDG&E Direct Testimony of Eric Dalton, April 6, 2018 (relevant excerpts attached in Appendix D).

<sup>42</sup> See Table 14.

<sup>43</sup> See Table 16.

<sup>44</sup> See Table 13.

<sup>45</sup> See Table 17.

1 **V. BACKBONE AND LOCAL TRANSMISSION COSTS**

2 **A. Embedded Transmission Costs**

3 Pipelines are classified as backbone transmission if they receive gas from receipt points  
4 and are used to transport gas to SoCalGas' storage fields and local transmission system. Local  
5 transmission pipelines transport gas from backbone pipelines and storage fields to the  
6 distribution system. All of SoCalGas' and SDG&E's compressor stations are classified as  
7 backbone transmission facilities. SDG&E's gas transmission pipelines are classified as  
8 backbone pipelines, but a significant number of SoCalGas' transmission pipelines perform a  
9 local transmission function. Appendix F identifies SoCalGas' backbone and local transmission  
10 pipelines by line number.

11 Table 19 shows that SoCalGas' embedded transmission cost is \$244.3 million,<sup>46</sup>  
12 comprised of \$126.1 million capital-related costs and \$118.2 million O&M and A&G expenses.  
13 The embedded cost of SDG&E's gas transmission system is \$39.7 million,<sup>47</sup> comprised of \$24.7  
14 million capital-related costs and \$15.0 million O&M and A&G expenses. The embedded cost of  
15 the integrated transmission system is \$284.0 million as shown in Table 19. SoCalGas and  
16 SDG&E recommend that the total transmission cost be maintained at the level shown in Table 19  
17 until another embedded cost study is performed for the next TCAP, which is consistent with  
18 prior TCAP decisions, D.14-06-007 and D.16-10-004.

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<sup>46</sup> See Table 10.

<sup>47</sup> See Table 18.

<b>Table 19</b>			
<b>2016 SoCalGas &amp; SDG&amp;E Transmission Costs</b>			
	(A)	(B)	(C) = (A) + (B)
	SoCalGas	SDG&E	Total
	(\$MM)	(\$MM)	(\$MM)
Capital-related Costs	126.1	24.7	150.8
O&M, A&G Expenses	118.2	15.0	133.2
Total	244.3	39.7	284.0

1 Table 4 (presented earlier) shows SoCalGas' transmission capital-related cost of \$126.1  
2 million. The backbone portion of capital-related costs is calculated from the transmission net  
3 book value and transmission depreciation expense of SoCalGas' backbone facilities. The net  
4 book values of these backbone transmission lines and compressor stations represent 71.2% of  
5 SoCalGas' transmission net book value. The depreciation expenses of these backbone lines and  
6 compressor stations represent 70.8% of SoCalGas' transmission depreciation expense. These  
7 percentages result in a weighted average of backbone capital-related cost of 71.1% or \$89.6  
8 million relative to SoCalGas' total transmission capital-related cost of \$126.1 million.

9 SoCalGas' transmission O&M and A&G expenses are \$118.2 million.<sup>48</sup> Pipeline  
10 mileage is used to allocate O&M and A&G costs between the backbone (71%)<sup>49</sup> and local  
11 (29%)<sup>50</sup> transmission pipelines. The resulting backbone transmission portion of O&M and A&G  
12 expenses is \$83.9 million. The embedded cost of backbone transmission for SoCalGas is  
13 therefore \$173.5 million, and \$213.2 million for the two utilities combined, as shown in  
14 Table 20.

<sup>48</sup> See Table 9.

<sup>49</sup> Backbone transmission = 2,101 miles.

<sup>50</sup> Local transmission = 858 miles.



<b>Table 20</b>					
<b>Total Backbone Transmission Costs</b>					
	(A)	(B)	(C) = (A) x (B)	(D)	(E) = (C) + (D)
	SoCalGas Transmission	Backbone Transmission	SoCalGas Backbone	SDG&E Transmission <sup>51</sup>	Combined Backbone Transmission
	(\$MM)	(\$MM)	(\$MM)	(\$MM)	(\$MM)
Capital-related Costs	126.1	71.1%	89.6	24.7	114.3
O&M, A&G Expenses	118.2	71.0%	83.9	15.0	98.9
Total	244.3		173.5	39.7	213.2

In addition to the backbone transmission cost of \$213.2 million, SoCalGas and SDG&E are adding 2018 backbone transmission balancing cost related to Pipeline Safety Enhancement Plan (PSEP) and Transmission Integrity Management Program (TIMP) of \$49.2 million.<sup>52</sup> Therefore, the total backbone transmission cost is \$262.4 million (\$213.2 million + \$49.2 million).

**B. Straight Fixed-Variable (SFV), Modified Fixed-Variable (MFV) and Interruptible Rates**

Applicants do not propose any changes to the current calculation of the SFV rate, which is calculated by dividing total backbone costs of \$262.4 million by 2,690 thousand decatherms per day (MDth/d), resulting in a Backbone Transportation Service (BTS) rate of \$0.267/Dth. The illustrative denominator of 2,690 MDth/d represents the average BTS subscription/utilization from October 1, 2016 through September 30, 2017, which is consistent with the methodology approved in the most recent TCAP decision.<sup>53</sup> Prior to implementation of

<sup>51</sup> See Table 18.

<sup>52</sup> See SoCalGas AL 5202, SoCalGas AL 5238, and SDG&E AL 2619-G.

<sup>53</sup> See D.16-10-004, Appendix A, p. A-8, II.C.4.b.

1 | BTS rates in 2020, this throughput denominator will be updated to reflect average BTS  
2 | contracts/utilization for the 12 months of the prior October through September.<sup>54</sup>

3 |         Although the proposed BTS rate of \$0.267/Dth would be adjusted to account for any  
4 | backbone transmission-related under/over-collection recorded in the Backbone Transmission  
5 | Balancing Account (BTBA),<sup>55</sup> and other backbone transmission-related costs such as PSEP,  
6 | SoCalGas and SDG&E recommend that the \$213.2 million embedded backbone transmission  
7 | cost remain fixed until another embedded cost study is performed for the next TCAP period.<sup>56</sup>

8 |         Applicants do not propose any changes to the current calculation of the MFV rate, which  
9 | is a two-part rate consisting of a reservation charge and a usage charge that will recover the  
10 | backbone transmission cost as well as amortizations of the BTBA and PSEP balancing accounts,  
11 | with 80% being recovered through the reservation charge and the remaining 20% being  
12 | recovered through the usage charge. The denominator for MFV is identical to that of SFV, and  
13 | the MFV rate is set at 100% load factor of the SFV rate.

14 |         Applicants propose no changes to the current method for determining BTS interruptible  
15 | rate which is a one-part volumetric rate, which is equal to the daily SFV rate at a 100% load  
16 | factor for SFV rates.<sup>57</sup>

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<sup>54</sup> See D.11-04-032, Attachment 2, Exhibit JRR-1, Section 3; D.14-06-007, Attachment III, Settlement Agreement, Section II. B.4.a.

<sup>55</sup> See *Id.*, Attachment 2, Exhibit JRR-1, Section 3; D.14-06-007, Attachment III, Settlement Agreement, Section II. B.4.b.

<sup>56</sup> Consistent with prior TCAP decisions, D.14-06-007 and D.16-10-004.

<sup>57</sup> See D.11-04-032, Attachment 2, Exhibit JRR-1, Section 2.c.; D.14-06-007, Attachment III, Settlement Agreement, Section II. B.4.c.

<b>Table 21</b>			
<b>Proposed Firm BTS Rate</b>			
Total Backbone Costs	Proposed Throughput Assumption	Proposed Annual Throughput Assumption	Proposed BTS Rate
(\$MM)	MDth/d	MDth	\$/Dth
262.4	2,690	981,800	0.267

1

2 **VI. STORAGE COSTS**

3 **A. Aliso Canyon Turbine Replacement**

4 In addition to the embedded storage cost shown earlier in Table 10, SoCalGas and  
5 SDG&E will recover additional costs as authorized by the Commission. The Aliso Canyon  
6 Turbine Replacement (ACTR) was placed in service on May 17, 2018. The Commission  
7 authorized SoCalGas to recover revenue requirement associated with \$200.9 million, per  
8 D.13-11-023. As shown in Table 22, from 2020-2022 incremental annual revenue requirement  
9 (associated with ACTR) will be recovered per D.13-11-023.<sup>58</sup> The incremental \$32.9 million  
10 shown in Table 22 is the average of the 2020-2022 revenue requirements<sup>59</sup> based on ACTR cost  
11 of \$275.5 million.<sup>60</sup> SoCalGas and SDG&E recommend that the total storage cost be maintained  
12 at the level shown in Table 22 until another embedded cost study is performed for the next  
13 TCAP, which is consistent with prior TCAP decisions D.14-06-007 and D.16-06-039.

<sup>58</sup> See D.13-11-023, p. 72, OPs 9 and 10.

<sup>59</sup> 2020 = \$31.7 million; 2021 = \$32.9 million; 2022 = \$34 million.

<sup>60</sup> See A.17-10-008, Exhibit SCG-11, SoCalGas Direct Testimony of David L. Buczkowski, October 6, 2017 (relevant portion of this GRC testimony is attached in Appendix B).

<b>Table 22</b>	
<b>SoCalGas Embedded Storage Cost</b>	
	<b>(\$MM)</b>
	<b>2020-2022</b>
Capital-related Cost	71.2
O&M, A&G Expenses	57.5
Total Existing Storage	128.7
ACTR	32.9
Total Embedded Storage Cost	161.6

1           **B.       Underground Storage Cost Allocation**

2           As agreed to in the TCAP Phase 1 Settlement Agreement approved by D.16-06-039,  
3 SoCalGas performed a storage functionalized cost causation study of injection, inventory, and  
4 withdrawal functions for this TCAP.<sup>61</sup> Appendix G presents that cost causation study, and shows  
5 the result and explanation for the percentage allocation for injection, inventory, and withdrawal  
6 of 44.6%, 29.2%, and 26.2%, respectively. I relied on these percentages to allocate the  
7 embedded storage cost of \$161.6 million into the injection, inventory, and withdrawal functions.  
8 Storage costs allocated to the injection, inventory, and withdrawal functions are subsequently  
9 allocated to core, load balancing, and reliability based on the seasonalized capacities, where  
10 injection and withdrawal capacities are weighted by the relative number of days in the winter or  
11 summer seasons.

12           Table 23 summarizes the allocation of the total storage cost of \$161.6 million to core,  
13 load balancing, and reliability categories.

---

<sup>61</sup> See D.16-06-039 at 67 OPs 31 and 32.

Table 23					
	Injection	Inventory	Withdrawal	Total Storage	
Storage Service Allocation	44.6%	29.2%	26.2%	100.0%	
<u>2020-22 Storage Embedded Cost Allocation</u>					
	Allocation Volume	Total	Units	Costs(\$MM)	
<b>Core Reservation</b>					
Inventory	82.5	120	Bcf	\$ 32.6	
Injection(summer)	445	790	MMcfd	\$ 33.0	
Injection(winter)	155	500	MMcfd		
Withdrawal(winter)	2,000	2,400	MMcfd	\$ 22.6	
Withdrawal(summer)	400	1,240	MMcfd		
Total Core				\$ 88.2	
<b>Load Balancing</b>					
Inventory	16	120	Bcf	\$ 6.3	
Injection(summer)	345	790	MMcfd	\$ 39.0	
Injection(winter)	345	500	MMcfd		
Withdrawal(winter)	400	2,400	MMcfd	\$ 19.7	
Withdrawal(summer)	840	1,240	MMcfd		
Total Load Balancing				\$ 65.1	
<b>Reliability</b>					
Inventory	21	120	Bcf	\$ 8.3	
Injection(summer)	0	790	MMcfd	\$ -	
Injection(winter)	0	500	MMcfd		
Withdrawal(winter)	0	2,400	MMcfd	\$ -	
Withdrawal(summer)	0	1,240	MMcfd		
				\$ 8.3	
Total Storage Cost				\$161.6	

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The allocation of storage capacities is proposed and presented by witness Michelle Dandridge (Chapter 1). Accordingly, 82.5 billion cubic feet (Bcf) of underground storage inventory will be allocated to the core function. In addition, 445 million cubic feet per day (MMcfd) of summer injection, 155 MMcfd of winter injection, 2,000 MMcfd of winter withdrawal capacity, and 400 MMcfd of summer withdrawal will also be allocated to core customers, at a total cost of \$88.2 million. I use these storage capacities to allocate the

1 embedded storage cost to the storage functions being proposed in this application. Load  
2 balancing costs of \$65.1 million, with 8% monthly balancing, are based on 16 Bcf of inventory,  
3 345 MMcfd of injection, 400 MMcfd of winter withdrawal, and 840 MMcfd of summer  
4 withdrawal capacities. The remaining storage inventory capacity of 21 Bcf is allocated for  
5 reliability at \$8.3 million.

6 This concludes my prepared direct testimony.

1 **VII. QUALIFICATIONS**

2 My name is Sim-Cheng Fung. My business address is 555 West Fifth Street, Los  
3 Angeles, California, 90013-1011. I am employed by SoCalGas as a Senior Market Advisor II in  
4 the Transmission and Storage Strategy group.

5 I graduated with a Bachelor of Arts degree from Wellesley College and a Master of  
6 Business Administration degree in Finance from the University of California, Los Angeles. I  
7 have been employed by SoCalGas since 1981, and have held positions of increasing  
8 responsibility in the Treasury, Strategic Planning, Gas Supply, Operations Staff, Gas Acquisition  
9 and Energy Markets & Capacity Products departments. I am currently responsible for providing  
10 analytical support to the Transmission and Storage Strategy group.

11 I have previously testified before the California Public Utilities Commission.

# **APPENDIX A**

## SoCalGas Embedded Cost Tables





A Sempra Energy utility

**Table 1**  
**SOUTHERN CALIFORNIA GAS COMPANY**  
**2016 Utility Gas Plant in Service**  
**By FERC Account for FERC Form 2**  
**(Thousands of Dollars)**

		As of December 31, 2016			12/31/16		For the Year Ended 2016
ACCOUNT	ACCT NO.	INVESTMENT	ACCUM DEP	NET BOOK VALUE	BOOK Value Allocator	Weighted Avg Rate Base	DEPRECIATION EXPENSE
<b>Intangible</b>							
	301	76	-	76			-
	302	575	-	575			-
Total Intangible		651	-	651	0.0%	308	-
<b>Gas Production</b>							
	325						-
	330						-
	331						-
	332						-
	334						-
	336						-
Total Gas Prod		-	-	-	0.0%	-	-
<b>Underground Storage</b>							
	117.1	61,422	-	61,422			-
	350	22,501	(4)	22,496			(0.45)
	351	67,419	(20,622)	46,797			(1,918)
	352	387,908	(159,656)	228,253			(11,636)
	353	115,564	(96,028)	19,535			(1,998)
	354	162,905	(63,778)	99,127			(3,605)
	355	7,965	(2,542)	5,422			(314)
	356	151,579	(73,042)	78,537			(4,387)
	357	48,456	(12,628)	35,828			(2,986)
	358	48,860	17,164	66,024			(1,321)
Total Underground Storage		1,074,579	(411,137)	663,442	8.5%	314,248	(28,164)
<b>Transmission</b>							
	365	24,338	(14,738)	9,600			1,218
	366	47,806	(21,115)	26,691			(1,139)
	367	1,519,213	(638,268)	880,946			(37,072)
	368	229,722	(104,763)	124,959			(4,040)
	369	91,510	(25,635)	65,875			(2,719)
	370	7,088	(657)	6,431			(147)
	371	5,585	(3,220)	2,365			(219)
	372	110,649	118,834	229,484			(1,625)
Total Transmission		2,035,910	(689,560)	1,346,350	17.2%	637,716	(45,743)
<b>Distribution</b>							
	374	31,862	(2,007)	29,855			(1,994)
	375	270,254	(81,890)	188,364			(7,082)
	376	3,875,553	(2,212,560)	1,662,994			(92,655)
	378	105,866	(71,017)	34,848			(3,534)
	380	2,487,750	(1,996,849)	490,902			(65,463)
	381,382	840,641	(267,426)	573,215			(31,607)
	383	153,575	(63,943)	89,633			(4,418)
	387	44,701	(23,298)	21,404			(1,014)
	388	592,876	1,589,069	2,181,945			(9,934)
Total Distribution		8,403,079	(3,129,919)	5,273,160	67.2%	2,497,702	(217,701)
<b>General Plant</b>							
	389	1,417	(35)	1,382			(35)
	390	198,429	(186,185)	12,244			(3,619)
	391	1,008,409	(546,899)	461,511			(110,920)
	392	253	(286)	(33)			(38)
	393	99	(68)	31			(2)
	394	62,020	(24,856)	37,164			(2,566)
	395	4,732	(2,542)	2,189			(220)
	396	12	3	15			(3)
	397	67,446	(24,205)	43,241			(12,266)
	398	3,145	(976)	2,169			(392)
	399.1	4,988	(1,416)	3,572			(1,637)
Total General Plant		1,350,950	(787,464)	563,485	7.2%	266,902	(131,697)
<b>Other Storage Plant</b>							
		-	-	-			-
Total Utility Gas Plant In Service		12,865,170	(5,018,081)	7,847,089	100.0%	3,716,877	(423,306)

<b>Table 5</b>	
<b>2016 SoCalGas Transmission O&amp;M Expenses</b>	
Transmission	(\$MM)
850 Tran Op-Supervision & Engineering	26.331
851 Tran Op-System Control & Load Dispatching	2.788
852 Tran Op-Communication System Expenses	0.020
853 Tran Op-Compressor Station Labor & Expenses	3.316
854&855 Tran Op-Gas From Comp Sta Fuel (Excluded from base margin)	0.000
856 Tran Op-Mains Expenses	9.315
857 Tran Op-Measuring & Regulating Station Expenses	2.424
858 Tran Op-Transmission & Compression Of Gas By Other	0.000
859 Tran Op-Other Expenses (Excl Haz Waste from base margin)	2.232
860 Tran Op-Rents	5.092
861 Maintenance Supervision & Engineering	0.000
862 Tran Mnt-Structures & Improvements	0.000
863 Tran Mnt-Mains	42.697
864 Tran Mnt-Compressor Station Equipment	7.007
865 Tran Mnt-Measuring & Regulating Station Equipment	0.278
866 Tran Mnt-Communication Equipment	0.070
867 Tran Mnt-Other Equipment	0.129
Total	101.701

Source: FERC Form 2

<b>Table 6</b>	
<b>2016 SoCalGas Storage O&amp;M Expenses</b>	
Storage	(\$MM)
814 UndStr Op-Supervision & Engineering	13.664
815 UndStr Op-Maps & Records	0.041
816 UndStr Op-Wells Expenses	6.526
817 UndStr Op-Lines Expense	0.274
818 UndStr Op-Compressor Station Expense	3.393
819 UndStr Op-Compress Station Fuel & Power (Excluded from base margin)	0.000
820 UndStr Op-Meas & Reg Station Expenses	0.009
821 UndStr Op-Purification Expenses	0.727
823 UndStr Op-Gas Losses (Excluded from base margin)	0.000
824 UndStr Op-Other Expenses	9.114
825 UndStr Op-Storage Well Royalties	0.651
826 UndStr Op-Rents	0.186
830 Maintenance Supervision & Engineering	0.000
831 UndStr Mnt-Structures & Improvements	1.823
832 UndStr Mnt-Reservoirs & Wells	0.928
833 UndStr Mnt-Lines	0.205
834 UndStr Mnt-Compressor Station Equipment	4.952
835 UndStr Mnt-Meas & Reg Station Equipment	0.965
836 UndStr Mnt-Purification Equipment	0.735
837 UndStr Mnt-Other Equipment	1.649
	45.842

Source: FERC Form 2

<b>Table 7</b>	
<b>2016 SoCalGas A&amp;G Expenses</b>	
A&G FERC Account	(\$MM)
920 AdmGen Op-Salaries (Incl. Payroll Taxes)	77.573
921 AdmGen Op-Office Supplies & Expenses	15.051
922 AdmGen Op-(Less) Administrative Exp Transferred	(6.444)
923 AdmGen Op-Outside Services Employed – General	114.478
924 AdmGen Op-Property Insurance	4.767
925 AdmGen Op-Injuries & Damages	37.627
926 AdmGen Op-Employee Pensions & Benefits	144.270
927 AdmGen Op-Franchise Requirements	0.000
928 AdmGen Op-Regulatory Commission Expenses	5.102
930.2 A&G Op-MiscGen Exp(Exclude Public Purpose RDD)	12.070
931 AdmGen Op-Rents	24.070
932 AdmGen Mnt-General Plant	19.890
	448.452

Source: FERC Form 2

# **APPENDIX B**

Excerpts of Referenced SoCalGas GRC Testimonies

Company: Southern California Gas Company (U 904 G)  
Proceeding: 2019 General Rate Case  
Application: A.17-10-008  
Exhibit: SCG-37-2R

**SECOND REVISED**

**SOCALGAS**

**DIRECT TESTIMONY OF RAGAN G. REEVES**

**(TAXES)**

**April 6, 2018**

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**



1 base cap are subject to the tax. Wages above the wage base cap for any particular type of payroll  
2 tax were derived from multiplying the number of employees in each stratum above the cap by the  
3 wage base cap. The resulting taxable wages for each tax type were totaled and the applicable  
4 statutory tax rate was then applied to the total taxable wages. The Medicare portion of the FICA  
5 tax is computed without respect to a wage base since all wages are subject to that tax. A  
6 companywide composite tax rate was computed based on total forecasted payroll taxes using the  
7 above methodology divided by total forecasted wages. The composite payroll tax rate for each  
8 year was applied to labor dollars applicable to this filing to determine the employer's payroll tax  
9 expense.

10 **C. Summary of Estimated Payroll Taxes**

11 Table SCG-RGR-1 below summarizes the amount of payroll taxes on all non-capitalized  
12 wages applicable to this filing.

13 **Table SCG-RGR-1**  
14 **Summary of Estimated Payroll Taxes**  
15 **(\$ in Thousands)**

<i>Line No.</i>	<i>2016 Recorded</i>	<i>2017 Forecast</i>	<i>2018 Forecast</i>	<i>2019 Test Year</i>
1	35,165	41,706	43,448	48,831

16 **D. Results**

17 The increase in payroll taxes from 2016 to 2019 reflects the impacts of staffing level  
18 changes presented by other witnesses in their direct testimonies, the impact of labor cost  
19 escalation on those changes, and the increase in the composite payroll tax rate resulting from the  
20 OASDI wage base increase as discussed above.

21 **III. AD VALOREM TAXES**

22 **A. Introduction**

23 The purpose of this section is to provide an estimate of SoCalGas' ad valorem taxes that  
24 will be incurred during TY 2019, and to describe the methodology used to develop the estimate.

25 **B. Discussion**

26 Ad valorem taxes are a function of the assessed value of property and a tax rate applied to  
27 that value. Property owned and used by public utilities as of January 1 (the lien date) each year  
28 is re-assessed to its full market value by the California State Board of Equalization (SBE). By

**TABLE SCG-RGR-2**  
**Southern California Gas Company**  
**Summary of Estimated Ad Valorem Tax Expenses**  
**(\$ in Thousands)**

<i>Line No.</i>	<i>Description</i>	<i>2016 Recorded</i>	<i>2017 Estimated</i>	<i>2018 Estimated</i>	<i>2019 Test Year</i>
1	Taxable Plant in Service	12,457,129	13,187,985	14,445,660	15,588,980
2	Taxable Reserve for Depreciation	(6,167,078)	(6,434,066)	(6,736,636)	(7,106,825)
3	Taxable Net Plant	6,290,051	6,753,919	7,709,024	8,482,155
4	Taxable Reserve for Def. Inc. Tax	(1,208,446)	(1,281,395)	(1,407,614)	(793,425)
5	Adjustment for Income Approach	(24,653)	(26,550)	(30,571)	(37,301)
6	Assessed Value - Non-Unitary	41,632	44,835	51,625	62,991
7	Net Assessable Value	5,098,584	5,490,809	6,322,465	7,714,421
8	Ad Valorem Tax Rate	1.2876686%	1.2966182%	1.3055679%	1.3145176%
9	Ad Valorem Tax - Fiscal Year	65,653	71,195	82,544	101,407
10	Other Adjustments	3	3	3	3
<u>Fiscal Year</u>					
11	Total Operating Ad Valorem Tax	65,656	71,198	82,547	101,410
12	Capitalized Ad Valorem Tax	(7,695)	(6,967)	(7,752)	(8,627)
13	Net Operating Ad Valorem Tax	57,961	64,231	74,795	92,783
<u>Calendar Year (Note 1)</u>					
14	Total Operating Ad Valorem Tax	59,509	68,141	76,286	91,393
15	Capitalized Ad Valorem Tax	(7,036)	(6,457)	(6,304)	(8,027)
16	Net Operating Ad Valorem Tax	52,473	61,684	69,982	83,366

(Note 1) - Calendar year total operating ad valorem tax = ½ of the current fiscal year total ad valorem tax plus ½ of the prior fiscal year total ad valorem tax.

**D. Results**

The changes from 2016 to 2019 are the result of changes in plant and depreciation balances presented by other witnesses in their direct testimonies and the expected escalation in the tax rate for local assessments as discussed above.

1 the Commission believes it is necessary, SoCalGas could request its own private letter ruling  
 2 from the IRS on this issue. SoCalGas proposes to reflect any such revised calculation of the  
 3 ARAM adjustment in its Update Testimony, or, alternatively, to track the impact of the revised  
 4 calculation in its TMA, depending on the timing of when such IRS or Treasury guidance is  
 5 issued.

6 **D. Summary Tables**

7 The following summary tables reflect the federal and state income taxes applicable to this  
 8 filing.

9 **TABLE SCG-RGR-3-1**  
 10 **Southern California Gas Company**  
 11 **Calculation of Federal & State Income Taxes**  
 12 **(\$ in Thousands)**

<i>Line No.</i>	<i>Description</i>	<i>2016 Recorded</i>	<i>2017 Estimated</i>	<i>2018 Estimated</i>	<i>2019 Test Year</i>
1	Total Operating Revenue	2,109,948	2,366,433	2,497,535	2,930,792
2	O&M Expenses	(1,113,196)	(1,280,211)	(1,376,994)	(1,630,042)
3	Taxes Other than Income Taxes	(87,638)	(103,390)	(113,430)	(132,197)
4	Book Income Before Depr. & Income Taxes	909,113	982,833	1,007,112	1,168,553
5	State Tax Adjustments	(774,880)	(934,803)	(956,889)	(1,088,221)
6	Taxable Income	134,234	48,030	50,223	80,332
7	CCFT Rate	8.84%	8.84%	8.84%	8.84%
8	<b>California Corporate Franchise Tax</b>	<b>11,866</b>	4,246	4,440	7,101
9	Book Income Before Depr. & Income Taxes (Line 4, above)	909,113	982,833	1,007,112	1,168,553
10	Federal Tax Adjustments	(707,225)	(754,438)	(773,857)	(898,911)
11	Taxable Income	201,888	228,395	233,255	269,642
12	Federal Income Tax Rate	35%	35%	21%	21%
13	Federal Income Tax Before Credits	70,661	79,938	48,984	56,625
14	Investment Tax Credit Amortization	(1,945)	(1,813)	(1,677)	(1,448)
15	Average Rate Assumption Method (ARAM)	(564)	(621)	(12,599)	(14,060)
16	Other	(1,739)	(190)	(79)	(46)
17	<b>Total Federal Income Tax</b>	<b>66,413</b>	77,314	34,628	41,071



Company: Southern California Gas Company (U 904 G)  
Proceeding: 2019 General Rate Case  
Application: A.17-10-008  
Exhibit: SCG-41-2R

**SECOND REVISED**

**SOCALGAS**

**DIRECT TESTIMONY OF ANNETTE M. STEFFEN**

**(MISCELLANEOUS REVENUES)**

**April 6, 2018**

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**



1 work requirements for Pipeline Services work, averaging the costs over a five-year period best  
2 reflects a reasonable estimate of the future annual revenues.

3 **9. Late Payment Charges (\$000's)**

2016 Recorded	2019 Test Year	Net Change
510	521	11

4  
5 SoCalGas' Commission-authorized Tariff Rule 12, Rendering and Payment of Bills,  
6 section D. includes a late-payment charge for non-residential customers. The monthly charge is  
7 equal to 1/12 of SoCalGas' authorized rate of return on rate base applied to the unpaid balance.  
8 The TY 2019 forecast reflects the five-year average booked revenue (2012-2016). This forecast  
9 methodology utilizes the available historical data. This is an established service with no  
10 significant changes; therefore, averaging the costs over a five-year period best reflects a  
11 reasonable estimate of the future annual revenues.

12 **10. Other Customer Service Revenues - Net**

2016 Recorded	2019 Test Year	Net Change
555	639	84

13  
14 Other Customer Service revenues consist of miscellaneous programs including timed  
15 appointments, seismic and non-seismic restores and other service offerings. The TY 2019  
16 forecast is based on the five-year average number of sales order per CSF order type, multiplied  
17 by the five-year average of recorded miscellaneous revenue per sales order, multiplied by the  
18 forecasted CSF order volumes. This forecast methodology best represents the future annual  
19 revenues and aligns with the activity forecast presented in Ms. Marelli's testimony (Ex. SCG-  
20 18).

21 **B. Rents from Gas Property – Account 493**

22 These revenues reflect payments received by the utility for the rental of gas property.

23 **1. Rent from Property Used in Operations (\$000's)**

2016 Recorded	2019 Test Year	Net Change
471	489	18

1 SoCalGas receives rent from outside parties for use of utility-owned properties. The  
2 TY 2019 forecast is based on the rents received from existing lease agreements adjusted for  
3 applicable escalation clauses.

4 **C. Other Gas Revenue – Account 495**

5 Other gas revenues include the provision of various goods and services to other parties,  
6 including shared asset charges to affiliates, crude oil sales, returned check charges, training  
7 programs, line item billing, and other items.

8 **1. Shared Assets (\$000's)**

2016 Recorded	2019 Test Year	Net Change
54,576	54,398	(178)

9  
10 Revenue from shared assets reflects the use of SoCalGas assets, primarily hardware,  
11 software, and communication equipment, by San Diego Gas & Electric Company (SDG&E) and  
12 Sempra Energy Corporate Center (SECC) and its unregulated affiliates. On an ongoing basis,  
13 SoCalGas and SDG&E follow a Shared Asset Policy whereby the company that receives the  
14 majority of the benefits from the shared assets shall own such assets and bill the affiliates for  
15 their use. This policy was implemented for new shared assets acquired or constructed on or after  
16 November 1, 2002.

17 The forecast of the TY 2019 charges billed to affiliates reflects the development of a  
18 revenue requirement associated with these assets, including depreciation, property taxes, federal  
19 and state income taxes, and a return on rate base. The portion of the shared asset costs allocated  
20 to SDG&E, SECC, and its unregulated affiliates is based on methodologies used to measure  
21 utilization. For each type of shared asset, an assignment of a causal/beneficial relationship is  
22 determined (e.g., number of users, square footage, etc.). The asset is then allocated to affiliates  
23 based on their share of the benefit from that asset according to the applicable utilization  
24 methodology. More detailed information on the nature of the shared assets, including the  
25 methodology used to allocate the charges between SDG&E, SECC, and its unregulated affiliates,  
26 is presented in Mr. Vanderhye's testimony (Ex. SCG-34-2R). The amounts billed to the  
27 affiliates are recorded as SoCalGas miscellaneous revenue and are net of the billings to SECC  
28 charged back to SoCalGas. Since these assets are established on SoCalGas' financial records, a  
29 significant revenue requirement is allocated back to SDG&E.



1 For Test Year 2019 and beyond, SoCalGas proposes to extend the FERP program  
2 offering to Commercial/Industrial customers and other government and municipal entities.  
3 SoCalGas anticipates that contracts will not be executed under this expanded program until 2020  
4 or 2021, and any additional revenues realized from this expansion will be reported in the next  
5 GRC.

6 **9. Miscellaneous Other Gas Revenues (\$000's)**

2016 Recorded	2019 Test Year	Net Change
306	875	569

7  
8 Miscellaneous other gas revenues consist of items not reflected in any other  
9 miscellaneous revenue section and include revenues from the South Coast Air Quality  
10 Management District (SCAQMD) Regional Clean Air Incentives Market (RECLAIM) credits,  
11 mapping services, land and right of way revenue, and Aliso Canyon property revenue.<sup>3</sup>  
12 Forecasts for these revenues are based on available historical information and any unique  
13 circumstances of the particular activity.

14 RECLAIM credit revenue is the largest driver in the increase of Miscellaneous Other Gas  
15 Revenues reflected above. The RECLAIM program is a market-based program similar to cap  
16 and trade. In recent years, SoCalGas has had little to no company-wide surplus Reclaim Trading  
17 Credits (RTCs) available to sell. However, as Mr. Buczkowski's (Ex. SCG-11) testimony  
18 discusses, the Aliso Canyon Turbine Replacement project will reduce SoCalGas' demand for  
19 RTCs because the project substantially reduces the nitrogen dioxide emissions at the site and, as  
20 such, will reduce SoCalGas' need for offsetting credits. The forecast projects the company-wide  
21 surplus RTCs and assumes they will be sold at market value.

22 **10. Microwave Bandwidth Revenue**

2016 Recorded	2019 Test Year	Net Change
31	30	(1)

23  
24 This revenue is for leasing excess capacity on the Company's microwave network to a  
25 third party. This lease has a right-to-terminate clause if the capacity is needed for internal use by

---

<sup>3</sup> Gas land services right of way revenue is included in this section. It is not new but was not included in the last rate case. The average revenue over the past 3-years is \$14,000.

Company: Southern California Gas Company (U 904 G)  
Proceeding: 2019 General Rate Case  
Application: A.17-10-\_\_\_\_  
Exhibit: SCG-11

**SOCALGAS**

**DIRECT TESTIMONY OF DAVID L. BUCZKOWSKI  
(ALISO CANYON TURBINE REPLACEMENT PROJECT)**

**October 6, 2017**

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**



**Table DLB-1**  
**Planned versus Estimate at Completion (EAC) Cost Comparison**  
*(In Millions)*

Scope	Application (2009 \$)	EAC	Variance
Central Compressor Station	\$166.0	\$146.6	-\$19.4
Environmental	\$1.0	\$13.0	\$12.0
Substation & Electrical Infrastructure	\$10.2	\$23.9	\$13.7
Buildings	\$0.9	\$13.5	\$12.6
Other	\$0.2	\$8.4	\$8.2
Company Labor	\$0.0	\$7.2	\$7.2
Indirects	\$22.6	\$62.9	\$40.3
<b>Total</b>	<b>\$200.9</b>	<b>\$275.5</b>	<b>\$74.6</b>

**A. CENTRAL COMPRESSOR STATION**

The Central Compressor Station is the largest component of the overall Project and accounts for approximately 70% of the direct costs of the entire Project. The Central Compressor Station is on a 2.21-acre site and consists of a 26,500 square foot prefabricated enclosure housing three new electric-driven, variable-speed compressors, along with scrubbers, piping, coolers, and electrical equipment. The scope of work under the Central Compressor Station category includes construction of a 500-foot aboveground pipeline to connect the existing blow down header and an 18-inch pipeline to connect to an existing discharge header for moving compressed gas into the storage field. Construction activities for the Central Compressor Station include clearing and grading; construction of building and equipment foundations; ground surface preparation at access points within the equipment area; erection of steel structures to house the compressors, associated control equipment, and air cooled heat exchangers; installation of equipment and piping; and cleanup and restoration of the site.

The costs of the Central Compressor Station are summarized in Table DLB-2 below. As discussed further below, SoCalGas' efforts to optimize the scope of Central Compressor Station activities to minimize the costs of the Project reduced the overall costs of the Central Compressor Station by approximately \$19.4 million below the initial estimate of \$166.0 million in the 2009 Application.

# **APPENDIX C**

## **SDG&E Embedded Cost Tables**



**Table 11**  
**SAN DIEGO GAS & ELECTRIC COMPANY**  
**2016 Utility Gas Plant in Service**  
**By FERC Account for FERC Form 2**  
**(\$000)**

ACCOUNT	As of December 31, 2016			12/31/2016	For the Year Ended 2016	
	INVESTMENT	ACCUM DEP	NET BOOK VALUE	Book Value Allocator	Weighted Average Rate Base	DEPRECIATION EXPENSE
0						
<b>Transmission</b>						
365.1- Land	4,649	-	4,649			
365.2- Rights-of-way	2,218	(1,387)	831			
366- Structures & Improvements	17,454	(10,014)	7,441			
367- Mains	229,038	(75,310)	153,728			
368- Compressor Station Eq	90,196	(68,614)	21,582			
369- Meas & Reg Station Eq	22,004	(16,694)	5,310			
371- Other Equipment	-	-	-			
372- Asset Retirement Costs for Transmission Plant	10,955	(220)	10,736			
<b>Total Transmission</b>	<b>376,515</b>	<b>(172,239)</b>	<b>204,276</b>	<b>20.2%</b>	<b>130,511</b>	<b>8,290</b>
<b>Distribution</b>						
374.2- Land and Land Rights	8,255	(6,895)	1,360			
374.1- Land and Land Rights	102	-	102			
375- Structures & Improvements	43	(61)	(18)			
376- Mains	682,441	(365,832)	316,609			
378- Meas & Reg Stations	18,056	(8,040)	10,016			
380- Services	266,982	(296,360)	(29,378)			
381- Meters & Regulators	157,500	(54,694)	102,806			
382- Meter Installations	95,781	(39,314)	56,467			
385- Industrial Meas & Reg Station Eq	1,517	(1,200)	317			
387.11- Other Equipment	994	(799)	195			
387- CNG Sta on SDGE Property	3,571	(3,499)	73			
388- Asset Retirement Costs for Distribution Plant	60,113	209,640	269,754			
<b>Distribution Net Plant Total</b>	<b>\$1,295,356</b>	<b>(\$567,053)</b>	<b>\$728,303</b>	<b>71.9%</b>	<b>465,309</b>	<b>28,716</b>
<b>General Plant</b>						
392- Transportation Eq	75	(100)	(26)			
394- Tools, Shop, & Garage Eq	10,149	(4,110)	6,039			
395- Laboratory Eq	283	(275)	8			
396- Power Operated Eq	16	(8)	8			
397- Communication Eq	2,705	(1,085)	1,620			
398- Misc Equipment	473	(72)	401			
<b>General Plant Total</b>	<b>13,701</b>	<b>(5,650)</b>	<b>8,051</b>			<b>593</b>
Common plant			\$71,889	7.9%	51,074	\$19,719
<b>Total Utility Gas Plant In Service</b>	<b>1,685,572</b>	<b>(744,942)</b>	<b>1,012,520</b>	<b>100.0%</b>	<b>646,894</b>	<b>57,318</b>

<b>Table 14</b>	
<b>2016 SDG&amp;E Gas Transmission Expenses</b>	
	(SMM)
850- Oper Supervision & Eng	2.950
851- Sys Control & Load Dispatching	0.674
852- Communication Sys Exp	0.00
853- Compr Station Labor & Exp	2.496
854- Gas Comp Sta Fuel-excl	0
855- Other Fuel & Power for Compr Stations	0
856- Mains Expenses	0.974
857- Meas & Reg Station Exp	0.253
858- Trans & Compression of Gas by Others	0
859- Other Expenses	0.098
860- Rents	0.003
861- Maint Supervision & Eng	0.123
862- Maint Structure & Improvements	0
863- Maint of Mains	2.208
864- Maint of Compr Station Eq	0.609
865- Maint of Meas & Reg Station Eq	0.138
866- Maint Comm Equip	0
867- Maint of Other Eq	0
Total	10.526

Source: FERC Form 2

<b>Table 15</b>	
<b>2016 SDG&amp;E A&amp;G Expenses</b>	
	(SMM)
920- A&G Salaries (Incl. Payroll Taxes)	14.230
921- Office Sply & Exp	2.992
922- Transferred Admin Exp	(2.498)
923- Outside Services Employed	28.550
924- Property Insurance	3.611
925- Injuries & Damages	4.916
926- Employee Pensions	10.589
928- Reg Commission Exp	3.739
930.1- Gen Advr Exp	\$0
930.2- Misc General Exp	1.657
931- Rents	3.210
932- Maint.of General Plant	2.799
Total A&G	73.794

Source: FERC Form 2

# **APPENDIX D**

Excerpts of Referenced SDG&E GRC Testimonies

Company: San Diego Gas & Electric Company (U 902 M)  
Proceeding: 2019 General Rate Case  
Application: A.17-10-007  
Exhibit: SDG&E-35-2R

**SECOND REVISED**

**SDG&E**

**DIRECT TESTIMONY OF RAGAN G. REEVES**

**(TAXES)**

**April 6, 2018**

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**



1 increments. The annual wage base in effect for the year for each type of payroll tax was applied  
 2 to total wages to ensure that wages up to, but not exceeding, the wage base cap were subject to  
 3 the tax. Thus, wages up to the salary increment where the annual wage is closest to the wage  
 4 base cap are subject to the tax. Wages above the wage base cap for any particular type of payroll  
 5 tax were derived from multiplying the number of employees in each stratum above the cap by the  
 6 wage base cap. The resulting taxable wages for each tax type were totaled and the applicable  
 7 statutory tax rate was then applied to the total taxable wages. The Medicare portion of the FICA  
 8 tax is computed without respect to a wage base since all wages are subject to that tax. A  
 9 companywide composite tax rate was computed based on total forecasted payroll taxes using the  
 10 above methodology divided by total forecasted wages. The composite payroll tax rate for each  
 11 year was applied to labor dollars applicable to this filing to determine the employer's payroll tax  
 12 expense.

13 **C. Summary of Estimated Payroll Taxes**

14 Table SDG&E-RGR-1 below summarizes the amount of payroll taxes on all non-  
 15 capitalized wages applicable to this filing.

16 **Table SDG&E-RGR-1**  
 17 **Summary of Estimated Payroll Taxes**  
 18 **(\$ in Thousands)**

	<i>Line No.</i>	<i>2016 Recorded</i>	<i>2017 Estimated</i>	<i>2018 Estimated</i>	<i>2019 Test Year</i>
<b>Electric Distribution</b>	1	9,005	10,409	10,857	11,518
<b>Gas Distribution</b>	2	4,176	5,258	5,577	5,942
<b>Electric Generation</b>	3	0	958	963	978

19 **D. Results**

20 The increase in payroll taxes from 2016 to 2019 reflects the impacts of staffing level  
 21 changes presented by other witnesses in their direct testimonies, the impact of labor cost  
 22 escalation on those changes, and the increase in the composite payroll tax rate resulting from the  
 23 OASDI wage base increase as discussed above.

**Table SDG&E-RGR-2-2**  
**San Diego Gas & Electric Company**  
**Summary of Estimated Ad Valorem Tax Expenses**  
**Gas Distribution**  
**(\$ in Thousands)**

<i>Line No.</i>	<i>Description</i>	<i>2016 Recorded</i>	<i>2017 Estimated</i>	<i>2018 Estimated</i>	<i>2019 Test Year</i>
1	Taxable Plant in Service	1,927,644	2,033,578	2,257,267	2,450,178
2	Taxable Reserve for Depreciation	(978,555)	(1,016,097)	(1,053,910)	(1,092,449)
3	Taxable Net Plant	949,089	1,017,481	1,203,357	1,357,729
4	Taxable Reserve for Def. Inc. Tax	(105,175)	(119,410)	(137,364)	(82,835)
5	Adjustment for Income Approach	(30,887)	(32,869)	(39,015)	(46,661)
6	Assessed Value - Non-Unitary	2,764	2,942	3,492	4,176
7	Net Assessable Value	815,791	868,144	1,030,470	1,232,408
8	Ad Valorem Tax Rate	1.4986482%	1.5385850%	1.5785218%	1.6184586%
9	Ad Valorem Tax - Fiscal Year	12,226	13,357	16,266	19,946
10	Other Adjustments	6	6	6	6
	<u>Fiscal Year</u>				
11	Total Operating Ad Valorem Tax	12,232	13,363	16,272	19,952
12	Capitalized Ad Valorem Tax	(728)	(880)	(1,430)	(1,914)
13	Net Operating Ad Valorem Tax	11,504	12,484	14,842	18,038
	<u>Calendar Year (Note 1)</u>				
14	Total Operating Ad Valorem Tax	10,998	12,737	14,758	18,052
15	Capitalized Ad Valorem Tax	(809)	(742)	(897)	(1,843)
16	Net Operating Ad Valorem Tax	10,189	11,996	13,860	16,209

(Note 1) - Calendar year total operating ad valorem tax = ½ of the current fiscal year total ad valorem tax plus ½ of the prior fiscal year total ad valorem tax.

1

**Table SDG&E-RGR-3-2**  
**Gas Distribution**  
**Calculation of Federal & State Income Taxes**  
**(\$ in Thousands)**

<i>Line No.</i>	<i>Description</i>	<i>2016 Recorded</i>	<i>2017 Estimated</i>	<i>2018 Estimated</i>	<i>2019 Test Year</i>
1	Total Operating Revenue	292,361	348,949	364,814	435,236
2	O&M Expenses	(156,791)	(188,773)	(197,854)	(233,568)
3	Taxes Other than Income Taxes	(14,365)	(17,254)	(19,437)	(22,151)
4	Book Income Before Depr. & Income Taxes	121,205	142,922	147,523	179,517
5	State Tax Adjustments	(99,625)	(114,015)	(123,650)	(125,748)
6	Taxable Income	21,581	28,907	23,873	53,768
7	CCFT Rate	8.84%	8.84%	8.84%	8.84%
8	<b>California Corporate Franchise Tax</b>	<b>1,908</b>	2,555	2,110	4,753
9	Book Income Before Depr. & Income Taxes (Line 4, above)	121,205	142,922	147,523	179,517
10	Federal Tax Adjustments	(89,144)	(94,928)	(106,001)	(118,948)
11	Taxable Income	32,061	47,994	41,521	60,569
12	Federal Income Tax Rate	35%	35%	21%	21%
13	Federal Income Tax Before Credits	11,221	16,798	8,720	12,719
14	Investment Tax Credit Amortization	(513)	(513)	(513)	(209)
15	Average Rate Assumption Method (ARAM)	-	-	(1,343)	(1,508)
16	Other	(51)	(17)	(3)	-
17	<b>Total Federal Income Tax</b>	<b>10,658</b>	16,268	6,860	11,003

2

Company: San Diego Gas & Electric Company (U 902 M)  
Proceeding: 2019 General Rate Case  
Application: A.17-10-007  
Exhibit: SDG&E-40-2R

**SECOND REVISED**

**SDG&E**

**DIRECT TESTIMONY OF ERIC DALTON**

**(MISCELLANEOUS REVENUES)**

**April 6, 2018**

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**



A  Sempra Energy utility®



1

**26. Shared Assets (\$000s)**

2016 Recorded	2019 Test Year	Net Change
1,581	1,342	(239)

2

Revenue from shared assets are allocated to both electric and gas departments. The

3

nature of these charges and the methodology used to develop the TY 2019 forecast are described

4

above.

5

**IV. CONCLUSION**

6

This concludes my prepared direct testimony.

# **APPENDIX E**

## Testimony Footnotes

### Testimony Footnotes

General/Common Plant are primarily comprised of office furniture & equipment, structures & improvement, tools and communication equipment, all of which are directly linked to labor. As such, allocation of general/common plant costs is consistent with that of administrative and general (A&G) expenses described in Section III.B.3.

Footnote		General Plant Depreciation (\$MM)	50% Labor	Allocated General Plant Depreciation (\$MM)
4	SoCalGas Transmission	\$131.7	4.2	\$5.5
5	SoCalGas Storage	\$131.7	4.2	\$5.5
30	SDG&E Transmission	\$20.3	6.2	\$1.3

Footnote		General Plant Return (\$MM)	50% Labor	Allocated General Plant Return (\$MM)
7	SoCalGas Transmission	\$21.4	4.2	\$0.9
8	SoCalGas Storage	\$21.4	4.2	\$0.9
32	SDG&E Transmission	\$4.0	6.2	\$0.2

Footnote		General Plant Taxes (\$MM)	50% Labor	Allocated General Plant Taxes (\$MM)
13	SoCalGas Transmission	\$9.4	4.2	\$0.4
15	SoCalGas Storage	\$9.4	4.2	\$0.4
36	SDG&E Transmission	\$1.8	6.2	\$0.1

# **APPENDIX F**

## **Classification of SoCalGas' Backbone and Local Transmission Pipelines**

## Classification of SoCalGas' Backbone and Local Transmission Pipelines

SoCalGas' Backbone Pipelines		SoCalGas' Local Pipelines		
53	2000	12	1029	3004
85	2001	104	1129	3005
103	2005	115	1132	3007
119	2051	133	1167	6000
127	3000	145	1170	6001
169	3003	160	1171	6902
174	3006	173	1172	6903
203	3008	202	1173	6911
225	3009	214	1174	6912
235	3011	222	1175	6913
245	3012	317	1176	6914
247	3600	321	1200	6915
293	4000	324	1202	7000
294	4002	325	1203	7025
300	5000	404	1205	7038
303	5002	406	1207	7042
309	5010	407	1209	7043
324	5012	408	1211	7044
335	5015	512	1218	7049
404	5034	765	1219	7051
406	5036	767	1230	7052
963	5041	775	1233	7054
1004	5043	800	1234	7055
1005	6900	1003	1236	7056
1027	6901	1010	1241	7058
1028	6904	1011	1242	7059
1030	6905	1013	1243	7067
1031	6906	1014	1244	8019
1180	6907	1015	1246	8032
1181	6916	1016	1249	8038
1185	7039	1017	2000	8045
1186	7053	1018	2001	8115
1187	7200	1019	2002	8116
1192	8100	1020	2003	8118
1201	8105	1021	2006	8119
1215	8106	1022	2007	
1216	8107	1023	3000	
1220	8108	1024	3001	
1221	8109	1025	3002	
1229	8110	1026	3003	

# **APPENDIX G**

## Storage Allocation by Function

		<b>Table 1: Storage Allocation by Function</b>									
FERC Account		NBV (\$000)	INJ %	WD %	INV %		INJ (\$000)	WD (\$000)	INV (\$000)	Capital-Rel Cost(\$000)	
350	Land/Rights-of-Way	22,496	0%	0%	100%	100%	\$0	\$0	\$22,496	\$ 97,344	
351	Structures & Improvements	46,797	0%	0%	100%	100%	\$0	\$0	\$46,797		
352	Wells	228,253	25%	50%	25%	100%	\$57,063	\$114,126	\$57,063		
353	Lines	19,535	25%	50%	25%	100%	\$4,884	\$9,768	\$4,884		
354	Compressor Station Equipment	374,627	100%	0%	0%	100%	\$374,627	\$0	\$0		
355	Meas. & Reg Equipment	5,422	25%	25%	50%	100%	\$1,356	\$1,356	\$2,711		
356	Purification Equipment	78,537	0%	100%	0%	100%	\$0	\$78,537	\$0		
357	Other Equipment	35,828	0%	0%	100%	100%	\$0	\$0	\$35,828		
117.1	Cushion Gas	61,422	0%	67%	33%	100%	\$0	\$41,153	\$20,269		
	<b>Total</b>	872,918					\$437,930	\$244,939	\$190,049	\$ 872,918	
	Capital-Related Costs %						50%	28%	22%	100%	
	Capital-Related Costs						\$48,836	\$27,315	\$21,193	\$97,344	
		<b>O&amp;M (\$000)</b>	<b>INJ %</b>	<b>WD %</b>	<b>INV %</b>		<b>INJ (\$000)</b>	<b>WD (\$000)</b>	<b>INV (\$000)</b>		
814	Operation Supervision & Engineering	13,664	33%	33%	34%	100%	\$4,509	\$4,509	\$4,646		
815	Maps & Records	41	0%	0%	100%	100%	\$0	\$0	\$41		
816	Wells Expenses	6,526	25%	50%	25%	100%	\$1,632	\$3,263	\$1,632		
817	Line Expenses	274	25%	50%	25%	100%	\$68	\$137	\$68		
818	Compressor Station Expenses	3,393	100%	0%	0%	100%	\$3,393	\$0	\$0		
820	Measuring & Regulating Station Expenses	9	25%	25%	50%	100%	\$2	\$2	\$4		
821	Purification Expenses	727	0%	100%	0%	100%	\$0	\$727	\$0		
824	Other Expenses	9,114	0%	0%	100%	100%	\$0	\$0	\$9,114		
825	Storage Well Royalties	651	0%	0%	100%	100%	\$0	\$0	\$651		
826	Rents	186	0%	0%	100%	100%	\$0	\$0	\$186		
	<b>Total Operation</b>	34,585					\$ 9,605	\$ 8,639	\$ 16,342	\$ 34,585	
							<b>INJ (\$000)</b>	<b>WD (\$000)</b>	<b>INV (\$000)</b>		
830	Maintenance Supervision & Engineering	0	33%	33%	34%	100%	\$0	\$0	\$0		
831	Maintenance of Structures & Improvements	1,823	0%	0%	100%	100%	\$0	\$0	\$1,823		
832	Maintenance of Reservoirs & Wells	928	25%	50%	25%	100%	\$232	\$464	\$232		
833	Maintenance of Lines	205	25%	50%	25%	100%	\$51	\$102	\$51		
834	Maintenance of Compressor Station Equipment	4,952	100%	0%	0%	100%	\$4,952	\$0	\$0		
835	Maintenance of Measuring & Regulating Station Equipment	965	25%	25%	50%	100%	\$241	\$241	\$482		
836	Maintenance of Purification Equipment	735	0%	100%	0%	100%	\$0	\$735	\$0		
837	Maintenance of Other Equipment	1,649	0%	0%	100%	100%	\$0	\$0	\$1,649		
	<b>Total Maintenance</b>	11,257					\$5,476	\$1,543	\$4,238	\$ 11,257	
	<b>Storage O&amp;M Excl. Fuel</b>	45,842					\$ 15,081	\$ 10,182	\$ 20,579	\$ 45,842	
							<b>INJ (\$000)</b>	<b>WD (\$000)</b>	<b>INV (\$000)</b>	<b>Total (\$000)</b>	
	Capital and O&M Costs						\$ 63,917	\$ 37,496	\$ 41,773	\$ 143,186	
							<b>INJ</b>	<b>WD</b>	<b>INV</b>		
	<b>% Allocation Inj, WD, Inv.</b>						<b>44.64%</b>	<b>26.19%</b>	<b>29.17%</b>	100%	

In compliance with Ordering Paragraphs 31 and 32 of TCAP Phase 1, D.16-06-039, SoCalGas performed a storage functionalized cost causation study of injection, withdrawal and inventory functions for this TCAP filing, such as was similarly performed by SoCalGas in 2008.

The starting point for conducting this cost causation study was the annual recorded storage costs for calendar year 2016, consistent with Appendix A, Tables 1 and 6.

SoCalGas relied upon its storage operations experts to thoroughly evaluate the various activities and compiled the detailed information required to form the basis for the functionalization and allocation of the 2016 recorded costs to reflect cost causation concepts. The results of this study are summarized in Appendix G, Table 1 above.

### **Storage Capital Cost Allocations**

Storage Capital-Related costs (FERC Accounts 350-357, 117.1) were assessed based on a determination of the asset's functions, then assigned an allocation percentage based on the categories of injection, withdrawal and inventory. In many instances, these functional allocations remain unchanged from the 2008 study, as the allocation percentages are still accurate. In other instances, these functional allocations are adjusted to reflect their current and anticipated future operational use. The determinations for each FERC Account category are as follows:

- FERC Account 350 – Land/Rights-of-Way: This account includes the cost of all interests in land on which are located underground lines, telephone poles, their associated lines, and like property used in connection with underground gas storage operations. Gas storage fields occupy large open areas of land, and these costs are incurred to secure the surface and subsurface areas. Subsequently, this account remains 100% allocated to the “inventory” function.
- FERC Account 351 – Structures & Improvements: These consist of the offices and associated buildings required for personnel and equipment. Besides long-lived assets such as buildings, this account consists of many short-lived assets such as roofs, generators, fencing, lightings, fixtures, and other items. It is reasonable to allocate 100% of FERC Account 351 to the “inventory” function.
- FERC Account 352 – Wells: This account includes the cost of wells used for withdrawal, injection, and observation into the storage field which correlates with inventory in the storage fields. A 2:1 allocation was approximated for the use of wells for withdrawal/injection as typically a higher ratio of wells is required to meet withdrawal rate demands for the gas system in contrast to the number of wells required to meet rates for injection. A remaining quarter of this account allocation is designated to the inventory function.
- FERC Account 353 – Lines: This account includes gas pipelines used for conveying gas from point of connection with transmission or field lines to underground storage wells



and from underground storage wells to the point where the gas enters the transmission or distribution system. The gas pipelines serve both withdrawal and injection activities, and as such, it is reasonable to apply the same allocation used for wells for gas lines at: 50% withdrawal, 25% injection, and 25% inventory.

- FERC Account 354 – Compressor Station Equipment: The purpose of compressor station equipment is to increase the pressure of natural gas so it can be injected into the underground reservoirs, and as such, continues to be 100% allocated to the “injection” category. Examples of equipment include turbines, engines, high pressure gas compressors, compressed air system equipment, fire suppression systems, gas scrubbers, and related control instruments. Aliso Canyon Turbine Replacement (ACTR) cost of \$275.5 million is added to existing net book value of FERC Account 354 to reflect higher percentage allocation to injection function. Similarly, incremental average three-year ACTR revenue requirement of \$32.9 million from 2020-2022 is added to capital-related costs of existing storage assets (resulting in total capital-related cost of \$97.344 million shown in row 3 of Appendix G, Table 1) to reflect a higher percentage allocation to injection function. See footnote 58 and Table 22 in my testimony regarding incremental cost of ACTR.
- FERC Account 355 – Measuring & Regulating Equipment: This account includes installed gas pipelines used for the purposes of measuring and regulating deliveries of gas to underground storage, and withdrawals of gas from underground storage. As such, allocations are weighted heavier to support inventory functions, with an equal allocation between injection and withdrawal functions.
- FERC Account 356 – Purification Equipment: This equipment is used primarily for the removal of impurities from, or the conditioning of, natural gas withdrawn from storage and as such, continues to be 100% allocated to the “withdrawal” category. Examples of equipment included in this account would include dehydrators, coolers, scrubbers, boilers, pumps, valves, piping, power supply, controls, and instrumentation.
- FERC Account 357 – Other Equipment: This account includes installed storage equipment not assignable to any of the foregoing accounts and typically excludes equipment associated with injection or withdrawal functions. Subsequently it is reasonable to assume an allocation of 100% to the “inventory” function.
- FERC Account 117.1 – Cushion Gas: Cushion gas is the volume of gas intended to serve as the permanent inventory within a storage reservoir that is required to maintain adequate pressure for deliverability rates throughout the withdrawal season. Cushion gas is related to inventory in that total working gas capacity is the sum of cushion gas and working gas. Subsequently, the 2/3 allocation to the “withdrawal” function and a 1/3 allocation to the “inventory” function is maintained as a reasonable proxy allocation.

### **Storage Operations and Maintenance (O&M) Cost Allocations**

Storage Operation costs (FERC Accounts 814-826) were assigned an allocation percentage based on the categories of injection, withdrawal, and inventory. Where appropriate, these functional allocations mirror the storage capital percentage allocation. The determinations for each FERC Account category are as follows:

- FERC Account 814 – Operation Supervision & Engineering: Personnel resources were allocated equally among all three functions of injection, withdrawal, and inventory as a reasonable proxy.
- FERC Account 815 – Maps & Records: These costs are similarly associated with FERC Account 350, and excludes well records which are charged to FERC Account 832. Therefore, FERC Account 815 is allocated 100% to inventory.
- FERC Account 816 – Wells Expenses: Percentage allocations for this FERC account mirror FERC Account 352. Wells are used for withdrawal, injection, and observation into the storage field which also correlates with maintaining inventory in the storage fields. A 2:1 allocation was approximated for well operations expenses for withdrawal/injection as typically a higher ratio of wells is required to meet withdrawal rate demands for the gas system in contrast to the number of wells required to meet rates for injection. A remaining quarter of this account allocation is designated to the inventory function.
- FERC Account 817 – Lines Expenses: Percentage allocations for this FERC Account mirror FERC Account 353.
- FERC Account 818 – Compressor Station Expenses: The purpose of compressor stations and their operation in underground storage is to increase the pressure of natural gas so it can be injected into the underground reservoirs, and as such, continues to be 100% allocated to the “injection” category.
- FERC Account 820 – Measuring & Regulating Station Expenses: This account includes the operational costs of components used for measuring and regulating deliveries of gas to underground storage and withdrawal of gas from underground storage. As such, allocations are weighted heavier to support inventory functions, with an equal allocation between injection and withdrawal functions.
- FERC Account 821 – Purification Expenses: The operation of purification is used primarily for the removal of impurities from, or the conditioning of, natural gas withdrawn from storage and as such, continues to be 100% allocated to the “withdrawal” category.

- FERC Account 824 – Other Expenses: This account includes operational expenses not assignable to any of the foregoing accounts and typically excludes functions associated with injection or withdrawal. Subsequently it is reasonable to assume an allocation of 100% to the “inventory” function.
- FERC Account 825 – Storage Well Royalties: This account includes royalty payments associated with gas wells and land acreage located at underground storage properties and typically is representative of 100% “inventory” functions.
- FERC Account 826 – Rents: Property rental costs for land acreage associated with maintaining underground storage properties is reasonably allocated 100% to the “inventory” function.
- FERC Account 830 – Maintenance Supervision & Engineering: Maintenance expenses were allocated equally among all three functions of injection, withdrawal, and inventory as a reasonable proxy.
- FERC Account 831 – Maintenance of Structures & Improvements: These costs are for maintenance of the offices and associated buildings required for personnel and equipment. Withdrawal and injection structures and improvements are contained in other FERC accounts, and it is reasonable to allocate 100% of these costs to the “inventory” function.
- FERC Account 832 – Maintenance of Reservoirs & Wells: Percentage allocations for this FERC account mirrors FERC Accounts 352 and 816. Wells are used for withdrawal, injection, and observation into the storage field which also correlates with maintaining inventory in the storage fields. A 2:1 allocation was approximated for well maintenance expenses for withdrawal/injection as typically a higher ratio of wells is required to meet withdrawal rate demands for the gas system in contrast to the number of wells required to meet rates for injection. A remaining quarter of this account allocation is designated to the inventory function.
- FERC Account 833 – Maintenance of Lines: Percentage allocations for this FERC Account mirror FERC Account 353 and 817.
- FERC Account 834 – Maintenance of Compressor Station Equipment: The purpose of compressor stations and their operation and maintenance in underground storage is to increase the pressure of natural gas so it can be injected into the underground reservoirs, and as such, continues to be 100% allocated to the “injection” category.
- FERC Account 835 – Maintenance of Measuring & Regulating Station Equipment: This account includes the maintenance costs for components used for measuring and regulating deliveries of gas to underground storage and withdrawal of gas from

underground storage. As such, allocations are weighted heavier to support inventory functions, with an equal allocation between injection and withdrawal functions.

- FERC Account 836 – Maintenance of Purification Equipment: The maintenance of purification equipment is used primarily for the removal of impurities from, or the conditioning of, natural gas withdrawn from storage and as such, continues to be 100% allocated to the “withdrawal” category.
- FERC Account 837 – Maintenance of Other Equipment: This account includes maintenance expenses not assignable to any of the foregoing accounts and typically excludes functions associated with injection or withdrawal. Subsequently it is reasonable to assume an allocation of 100% to the “inventory” function.

Combining the percentage allocation of capital-related and O&M costs of existing storage assets with ACTR’s capital-related cost resulted in the percentage allocation of injection, withdrawal and inventory functions of 44.6%, 26.2%, 29.2% respectively, shown in Appendix G, Table 1. These percentages are used to allocate SoCalGas’ embedded storage cost shown in Table 23 of my direct testimony.