

Docket	:	<u>A.17-11-009</u>
Exhibit Number	:	<u>ORA-10</u>
Commissioner	:	<u>C. Rechtschaffen</u>
ALJ	:	<u>S. Roscow</u>
Witness	:	<u>P. Sabino</u>



**OFFICE OF RATEPAYER ADVOCATES**  
**CALIFORNIA PUBLIC UTILITIES COMMISSION**

**The Office of Ratepayer Advocates’  
Report on  
Pacific Gas and Electric Company’s  
Cost of Service and Rates for Gas  
Transmission and Storage  
Services for the Period 2019 - 2021**

Chapter 10  
Gas System Operations

San Francisco, California  
June 29, 2018

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1 **I. INTRODUCTION**

2 This exhibit presents the analyses and recommendations of the Office of  
3 Ratepayer Advocates (“ORA”) regarding Pacific Gas and Electric Company’s (“PG&E”)   
4 “Gas System Operation” (“GSO”) Expenses and Capital Expenditures proposals  
5 associated with its Test Year (“TY”) 2019 Gas Transmission and Storage (“GT&S”) rate  
6 case.

7 Specifically, this exhibit addresses PG&E’s forecasts of GSO expenses and  
8 capital for TY 2019 and capital expenditures for post TY 2020 and 2021. Further, this  
9 exhibit addresses PG&E’s Line 407 compliance filing on reasonableness in this  
10 proceeding. In D.16-06-056, the Commission determined that PG&E provided sufficient  
11 evidence to conclude that the Line 407 project is needed and likely to be completed  
12 within the Rate Case Period.<sup>1</sup> The Commission set a maximum cost of \$157.0 million  
13 for the construction of Line 407 and authorized PG&E’s cost recovery of up to this  
14 amount, subject to true up, beginning when Line 407 is completed and becomes  
15 operational.<sup>2</sup> The Commission decision ordered that “costs exceeding this amount must  
16 be recorded in a separate memorandum account and a review of the reasonableness of  
17 all project costs shall be conducted in PG&E’s next gas transmission and storage  
18 application.”<sup>3</sup> This TY 2019 GT&S is the relevant proceeding for the Line 407  
19 reasonableness review ordered in D.16-06-056.

20 PG&E describes the GSO’s role is “to operate the entire GT&S system safely  
21 and reliably.”<sup>4</sup> In this role, GSO’s forecast expenses and capital expenditures are for  
22 work activities related to ensuring that the gas transmission and storage system has  
23 “sufficient capacity and capabilities to meet real-time customer demands” safely and  
24 reliably.<sup>5</sup>

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<sup>1</sup> D.16-06-056 at p. 227. See also Findings of Fact #127 & 128, D.16-06-056 at p. 427.

<sup>2</sup> Ordering Paragraph 57, D.16-06-056.

<sup>3</sup> Id.

<sup>4</sup> PG&E Prepared Testimony in A.17-11-009 dated November 17, 2017, Volume 1 (Cowsert) at p. 10-6.

<sup>5</sup> PG&E Prepared Testimony, Volume 1 (Cowsert) at p. 10-1.

1 **II. SUMMARY OF RECOMMENDATIONS**

2 The following summarizes ORA’s recommendations regarding the “Gas System  
3 Operations” expenses for TY 2019:

- 4 • Adopt and approve PG&E’s forecast amount of \$52.402 Million for TY 2019  
5 for Gas System Operations total expense which include the following  
6 Maintenance Activity Type (“MAT”): AH4, CMA, CMB, CXA, and JTM as  
7 shown in Table 10-2 of PG&E’s testimony.<sup>6</sup> ORA is not recommending any  
8 adjustments to PG&E’s forecast TY 2019 expenses for GSO as shown in  
9 PG&E’s testimony in Table 10-2.
- 10 • Adopt and approve ORA’s forecast amount of \$22.2 Million for TY 2019 for  
11 GSO capital expenditures as shown and summarized in ORA Table 10-1.  
12 ORA recommends a forecast of \$22.2 Million compared to PG&E’s 2019  
13 forecast of \$80.2 Million, a difference of \$58.0 Million.

14 The following summarizes ORA’s recommendations regarding the GSO capital  
15 expenditures for TY 2019:

- 16 • Adopt and approve ORA’s forecast amount of \$3.0 Million for TY 2019 for  
17 “New Business” capital expenditures (MAT 26A) compared to PG&E’s 2019  
18 forecast of \$4.749 Million, a difference of \$1.744 Million;
- 19 • Adopt and approve ORA’s recommendation on the establishment of a  
20 memorandum account for purposes of TY 2019 for “Large Meter Sets” capital  
21 expenditures (MAT 26B) in the event any expenditures do materialize. ORA  
22 sees little potential expenditures on MAT 26B based on historic expenditures  
23 and status of project implementation and recommends that PG&E instead  
24 establish a memorandum account for this purpose in the event expenditures  
25 for MAT 26B materialize. ORA forecasts from zero to nil on MAT 26B in 2019  
26 compared to PG&E’s forecast amount of \$1.0 Million;
- 27 • Adopt and approve ORA’s forecast amount of \$17.180 Million for TY 2019 for  
28 “Capacity Load Growth” capital expenditures (MAT 73A) compared to PG&E’s  
29 2019 forecast of \$54.696 Million, a difference of \$37.516 Million;
- 30 • Adopt and approve ORA’s forecast amount of \$0.88 Million for TY 2019 for  
31 “Capacity Betterment” capital expenditures (MAT 73B) compared to PG&E’s  
32 forecast of \$1.052 Million, a difference of only \$0.2 Million;
- 33 • Adopt and approve ORA’s recommendation on the establishment of a  
34 memorandum account for purposes of TY 2019 for “Capacity to Support NOP  
35 Reductions” capital expenditures (MAT 73C) in the event any expenditures  
36 materialize as forecast. Similar to MAT 26B, ORA sees little potential  
37 expenditures on MAT 73C based on historic expenditures and status of

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<sup>6</sup> PG&E Prepared Testimony, Volume 1 (Cowser) at p. 10-4.

- 1 project implementation and recommends that PG&E instead establish a  
 2 memorandum account for this purpose in the event expenditures for MAT  
 3 73C do materialize. ORA forecasts from zero to nil on MAT 73C in 2019  
 4 compared to PG&E’s forecast amount of \$12.7 Million;
- 5 • Adopt and approve ORA’s forecast amount of \$0.261Million for TY 2019 for  
 6 “Gill Ranch Capital” capital expenditures (MAT 762) compared to PG&E’s  
 7 forecast of \$2.75 Million, a difference of \$2.49 Million;
  - 8 • Adopt and approve ORA’s forecast amount of \$0.35 Million for TY 2019 for  
 9 “GT SCADA Visibility” capital expenditures (MAT 76M) compared to PG&E’s  
 10 forecast of \$2.74 Million, a difference of \$2.39 Million; and
  - 11 • Adopt and approve PG&E’s forecast amount of \$0.522 for TY 2019 for  
 12 “Capacity Load Growth (Line 407)” remaining Line 407 capital expenditures  
 13 without any ORA recommended adjustments; and
  - 14 • Find PG&E’s costs to complete Line 407 to be reasonable pursuant to D.16-  
 15 06-056 which required PG&E’s showing of reasonableness for all costs  
 16 incurred for the Line 407 project subject to the direct showing on the  
 17 composition of the \$34.8 million in costs over the \$157 million cap as  
 18 discussed in ORA’s review.<sup>1</sup>

19 ORA Table 10-1 incorporates the recommendations described above and  
 20 compares ORA’s and PG&E’s proposed TY 2019 forecasts of “Gas System Operations”  
 21 expenses:

**ORA Table 10-1**  
**Gas System Operations Expenses for TY2019**  
**(In Thousands of US Dollars)**

Line No.	Description (a)	ORA Recommended <sup>2</sup> (b)	PG&E Proposed <sup>2</sup> (c)	Amount PG&E>ORA (d=c-b)	Percentage PG&E>ORA (e=d/b)
1	MAT AH4	\$2,846	\$2,846	0	0%
2	MAT CMA	\$15,877	\$15,877	0	0%
3	MAT CMA	\$796	\$796	0	0%
4	MAT CMB	\$21,199	\$21,199	0	0%
5	MAT CXA	\$5,488	\$5,488	0	0%
6	MAT JTM	\$6,196	\$6,196	0	0%
<b>7</b>	<b>Total Expenses</b>	<b>\$52,402</b>	<b>\$52,402</b>	<b>0</b>	<b>0%</b>

25

<sup>1</sup> Ordering Paragraphs #57 and 58, D.16-06-056. Line 407 was authorized to recover up to a maximum amount of \$157 million subject to a reasonableness review of all costs incurred for the project.

<sup>2</sup> MAT AH4 is subject to Commission approval of the NGSS proposal in Chapter 11.

<sup>3</sup> Table 10-2, PG&E Prepared Testimony, Volume 1 (Cowsert), p. 10-4 and PG&E Workpapers, Chapter 10, p. WP 10-1.

1 ORA Table 10-2 incorporates the recommendations described above and compares  
 2 ORA's and PG&E's proposed 2019 forecasts of "Gas System Operations" capital  
 3 expenditures for TY 2019. Likewise, ORA Tables 10-3 and 10-4 compares ORA's and  
 4 PG&E's proposed post TY 2020 and 2021 forecasts of GSO capital expenditures.

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**ORA Table 10-2**  
**Gas System Operations Capital Expenditures for TY2019**  
**(In Thousands of US Dollars)**

Line No.	Description (a)	ORA Recommended <sup>10</sup> (b)	PG&E Proposed <sup>11</sup> (c)	Amount PG&E>ORA (d=c-b)	Percentage PG&E>ORA (e=d/b)
1	MAT 26A	\$3,005	\$4,749	\$1,744	58%
2	MAT 26B	a/	\$1,052	\$1,052	a/
3	MAT 73A	\$17,180	\$54,696	\$37,516	218%
4	MAT 73B	\$885	\$1,052	\$167	19%
5	MAT 73C	a/	\$12,701	\$12,701	a/
6	MAT 762	\$261	\$2,755	\$2,494	957%
7	MAT 76M	350	\$2,740	\$2,390	683%
8	Line 407	522	\$522	\$0	0%
9	<b>Total CAPEX 2019</b>	<b>\$22,203</b>	<b>\$80,268</b>	<b>\$58,065</b>	<b>262%</b>

10 a/ Memo Account recommendation.

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**ORA Table 10-3**  
**Gas System Operations Capital Expenditures for Post TY2020**  
**(In Thousands of US Dollars)**

Line No.	Description (a)	ORA Recommended (b)	PG&E Proposed <sup>12</sup> (c)	Amount PG&E>ORA (d=c-b)	Percentage PG&E>ORA (e=d/b)
1	MAT 26A	\$3,260	\$4,828	\$1,567	48%
2	MAT 26B	a/	\$1,085	\$1,085	a/
3	MAT 73A	\$18,639	\$55,486	\$36,847	198%
4	MAT 73B	\$960	\$2,170	\$1,210	126%
5	MAT 73C	a/	\$9,232	\$9,232	a/
6	MAT 762	\$261	\$261	\$0	0%
7	MAT 76M	\$380	\$4,285	\$3,906	1029%
8	<b>Total CAPEX 2020</b>	<b>\$23,500</b>	<b>\$77,347</b>	<b>\$53,848</b>	<b>229%</b>

16 a/ Memo Account recommendation.

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<sup>10</sup> MAT 762 is subject to Commission approval of the NGSS proposal in Chapter 11.

<sup>11</sup> Table 10-2, PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-4 and PG&E Workpapers, Chapter 10, p. WP 10-1.

<sup>12</sup> Table 10-2, PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-4 and PG&E Workpapers, Chapter 10, p. WP 10-1.

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**ORA Table 10-4  
Gas System Operations Capital Expenditures for Post TY2021  
(In 000 US Dollars)**

Line No.	Description (a)	ORA Recommended (b)	PG&E Proposed <sup>13</sup> (c)	Amount PG&E>ORA (d=c-b)	Percentage PG&E>ORA (e=d/b)
1	MAT 26A	\$3,641	\$4,467	\$826	23%
2	MAT 26B	a/	\$1,117	\$1,117	a/
3	MAT 73A	\$20,816	\$59,016	\$38,200	184%
4	MAT 73B	\$1,072	\$2,234	\$1,162	108%
5	MAT 73C	a/	\$8,046	\$8,046	a/
6	MAT 762	\$316	\$1,580	\$1,264	400%
7	MAT 76M	\$424	\$3,127	\$2,703	638%
<b>8</b>	<b>Total CAPEX 2021</b>	<b>\$26,268</b>	<b>\$79,586</b>	<b>53,318</b>	<b>203%</b>

5 a/ Memo account recommendation.

6 ORA Table 10-2 indicates that PG&E’s capital expenditures forecast for TY 2019  
7 is 262% greater than ORA’s total capital expenditures recommendation. The difference  
8 between the amount of PG&E’s forecast and ORA’s recommendation shown in column  
9 d of ORA Table 10-2 is approximately \$58 Million and represents more than 200  
10 percent difference, as shown in column e.

11 ORA Tables 10-3 and 10-4 likewise both indicate that PG&E’s forecasts exceed  
12 ORA’s recommendations by at least 200 percent especially when viewed at the MAT  
13 level in the years post TY 2020 and 2021.

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<sup>13</sup> Table 10-2, PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-4 and PG&E Workpapers, Chapter 10, p. WP 10-1.

1           **III.     DISCUSSION / ANALYSIS OF GAS SYSTEM**  
2           **OPERATIONS EXPENSES**

3           **A.   PG&E’s Forecast 2019 Expense and Capital Expenditures**  
4           **Request**

5           In order to better understand the expenses and capital expenditure proposals by  
6 the Gas System Operations group, it is important to have a general understanding of  
7 the functions of the organization and how the gas flows through PG&E’s transmission  
8 system. PG&E describes the “Gas System Operations’ (GSO) role is to operate the  
9 entire GT&S system safely and reliably. The funding for staff to execute these activities  
10 is identified in this chapter.”<sup>14</sup> In performing this function, the GSO includes five  
11 departments: the Gas Transmission Control Center (GTCC), Gas System Planning  
12 (GSP), the Gas Control Strategy & Support (GCS&S), the Wholesale Marketing and  
13 Business Development Department (WM&BD), and Gas Scheduling and Accounting  
14 (GS&A).<sup>15</sup>

15           PG&E describes the GSO staff, specifically those in the GTCC, GCS&S, GS&A,  
16 and GSP to operate the GT&S system, maintain PG&E’s SCADA and other GTCC  
17 systems, support customers in using the system, and plan for capacity and operations  
18 on a daily and longer-term basis.<sup>16</sup> The WM&BD staff are required to market the  
19 various pipeline and storage services to PG&E’s customers.<sup>17</sup>

20           According to PG&E, the GTCC is staffed 24 hours a day/365 days a year and  
21 likens the GTCC’s function to that of an air traffic controller at the airport.<sup>18</sup> PG&E  
22 states that the GTCC operates the GT&S system in real time to route gas for ultimate  
23 consumption by customers as well as monitors the entire system to detect and respond  
24 to abnormal conditions before they develop into safety-related issues.<sup>19</sup>

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<sup>14</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), p. 10-6.

<sup>15</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), p. 10-6.

<sup>16</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), p. 10-16.

<sup>17</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), p. 10-16.

<sup>18</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), p. 10-6.

<sup>19</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), p. 10-6.



1 PG&E explains that GCS&S engineers support the SCADA system and other  
2 technologies that the GTCC uses to control the transmission and storage system.<sup>20</sup>

3 PG&E explains:<sup>21</sup>

4 There is no alternative to staffing these functions at the forecasted levels. They  
5 are commensurate with the forecasted pace and volume of the work the staff is  
6 required to support. Staff work under MAT CMA is driven by the need to operate  
7 the GTCC and the gas system itself, and by other regulatory obligations, such as  
8 to provide adequate capacity, which affect operations and reliability. Staff work  
9 under MAT CXA is driven by the necessity to support customer activity, such as  
10 contract administration, nominations, scheduling, imbalance management, and  
11 billing. Lower levels of staffing would impede PG&E's ability to operate and plan  
12 work for the gas system safely while maintaining reliability and enabling customer  
13 business change:  
14

15 PG&E also states that in the year 2016, PG&E "changed the way it reports  
16 Companywide and business unit overhead costs."<sup>22</sup> According to PG&E, this is a  
17 change which impacts the reporting of overhead costs throughout the different lines of  
18 business and organizations within PG&E, including those under the GSO.<sup>23</sup> Prior to  
19 2016, PG&E explains that the overhead costs were "embedded in the activity prices  
20 used to budget the cost of individual projects and programs. Instead, these overhead  
21 costs are separately identified and managed."<sup>24</sup> PG&E describes this change as "a  
22 change in the cost allocation method, to improve cost visibility and accountability within  
23 PG&E's current SAP system" which does not alter PG&E's overall expenditures.<sup>25</sup>  
24 PG&E's workpapers for Chapter 10 show the conversion factor by planning order for the  
25 detail of expenses and capital expenditures for each year in the period 2012-2015  
26 based both on the old cost model ("OCM") into the new cost model ("NCM").<sup>26</sup>

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<sup>20</sup> PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-7.

<sup>21</sup> PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-17.

<sup>22</sup> PG&E Prepared Testimony, Volume 2 (Marshman), p. 20-3.

<sup>23</sup> PG&E Prepared Testimony, Volume 2 (Marshman), p. 20-2.

<sup>24</sup> PG&E Prepared Testimony, Volume 2 (Marshman), p. 20-3.

<sup>25</sup> PG&E Prepared Testimony, Volume 2 (Marshman), p. 20-2.

<sup>26</sup> Workpaper Table 10-3 for Expenses and Workpaper Table 10-11 for Capital Expenditures, PG&E GT&S 2019 Workpapers in A.17-11-009 at p WP 10-4 and pp. WP 10-16 through WP 10-18, respectively.

1 Likewise, PG&E provided recorded 2017 capital expenditures and expenses in  
2 response to a data request from ORA.<sup>27</sup>

3 Another PG&E clarification relates to the Greenhouse Gas Compliance  
4 Instruments expense which was an expense item within the GSO in the last 2015 GT&S  
5 rate case. PG&E explains:<sup>28</sup>

6 Greenhouse Gas Compliance Instruments expenses were moved  
7 out of GSO as of January 1, 2015, per Advice Letter 3652-G. GHG  
8 compliance expenses are recorded in a subaccount of the Gas  
9 Programs Balancing Account (GPBA), as are revenues from the  
10 sale of GHG allowances allocated to PG&E on behalf of natural gas  
11 end-use customers. Beginning in 2019, annual net negative  
12 balances within this subaccount will be incorporated into rates  
13 through the Annual Gas True-up (AGT) advice letter process, and  
14 net positive imbalances will be returned to customers as part of the  
15 California Climate Credit.

16 No further items have been introduced into the GSO expense  
17 group.  
18

19 PG&E's requests in TY 2019 for expenses in the GSO are summarized in below:

Line No.	MAT	Description	TY 2019 PG&E Forecast Expenses
1	AH4	Gill Ranch Storage Operation and Maintenance	\$2,846,374
2	CMA	Gas System Operations	\$16,672,333
3	CMB	Electric Fuel for Gas Compressors	\$21,199,456
4	CXA	GT&S Marketing/Sales/Strategy	\$5,487,879
5	JTM	Gas Transmission Capacity Uprates	\$6,195,977
6		<b>Total Expenses</b>	<b>\$52,402,019</b>

20

21 PG&E's proposed capital expenditures for TY 2019 for Gas System Operations  
22 are presented in PG&E's Testimony in Table 10-6 related to New Business and Large  
23 Meter Power Plants, in Table 10-7 related to Capacity Uprates and in Table 10-8 related  
24 to Capacity Products.<sup>29</sup> These tables are summarized in PG&E's Workpapers

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<sup>27</sup> PG&E Response to data request Redacted ORA-035 Q01 Atch01.

<sup>28</sup> PG&E Response to data request ORA-032 Q01(c) and (d).

<sup>29</sup> PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-27.

1 supporting Chapter 10, Gas System Operations.<sup>30</sup> PG&E's requests for TY 2019 and  
 2 post TY 2020-2021 capital expenditures are summarized below. PG&E proposes the  
 3 amount of \$80,267,633 in total capital expenditures for TY 2019. The breakdown by  
 4 MAT is shown below:

5 **PG&E CAPEX Request TY 2019 GSO**

Line No.	MAT	Planning Order Description	TY 2019
1	26A	New Business	\$ 4,749,109
2	26B	Large Power Plant Meter Set	\$1,051,851
3	73A	LT Capacity -- Growth 2019	\$54,696,271
4	73B	Capacity Betterment	\$1,051,851
5	73C	Capacity to Support Normal Operating Pressure Reductions	\$12,701,105
6	762	Gill Ranch Storage Capital	\$2,754,927
7	76M	Gas Transmission SCADA Visibility	\$2,740,073
8	73A (Line 407)	Capacity for Load Growth (Line 407)	\$ 522,445
9		<b>Total CAPEX</b>	<b>\$80,267,633</b>

6  
 7 PG&E proposes the amount of \$77,347,362 in total capital expenditures for Post  
 8 TY 2020. The breakdown by MAT is shown below:

9 **PG&E CAPEX Request Post TY 2020 GSO**

Line No.	MAT	Planning Order Description	Post TY 2020
1	26A	New Business	\$ 4,827,714
2	26B	Large Power Plant Meter Set	\$1,084,879
3	73A	LT Capacity -- Growth 2020	\$ 55,486,162
4	73B	Capacity Betterment	\$ 2,169,759
5	73C	Capacity to Support Normal Operating Pressure Reductions	\$9,232,324
6	762	Gill Ranch Storage Capital	\$261,250
7	76M	Gas Transmission SCADA Visibility	\$4,285,274
8	73A (Line 407)	Capacity for Load Growth (Line 407)	-
9		<b>Total CAPEX</b>	<b>\$77,347,362</b>

10  
 11 PG&E proposes the amount of \$79,586,485 in total capital expenditures for Post TY  
 12 2021. The breakdown by MAT is shown below:

13 **PG&E CAPEX Request Post TY 2021 GSO**

Line No.	MAT	Planning Order Description	Post TY 2021
1	26A	New Business	\$ 4,467,100
2	26B	Large Power Plant Meter Set	\$1,116,775
3	73A	LT Capacity -- Growth 2021	\$59,015,972

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<sup>30</sup> PG&E Workpapers, Chapter 10, p. WP 10-1.

4	73B	Capacity Betterment	\$2,233,550
5	73C	Capacity to Support Normal Operating Pressure Reductions	\$8,046,364
6	762	Gill Ranch Storage Capital	\$1,579,755
7	76M	Gas Transmission SCADA Visibility	\$2,740,073
8	73A (Line 407)	Capacity for Load Growth (Line 407)	-
9		<b>Total CAPEX</b>	<b>\$ 79,586,485</b>

## B. ORA Review and Recommendations

### 1. TY 2019 Expenses

The following tables summarize the PG&E proposals and ORA recommendations for the MAT Codes within “Gas System Operations” expenses.

ORA reviewed the recorded expenses for GSO each year in the period 2012 through 2017. The recorded cost data prior to 2016 were translated by PG&E to the “new cost model” data. ORA reviewed both the 5-year average recorded and the most recent 3-year average of expenses. The 2019 forecast by PG&E is higher by approximately 19% than the 3-Yr average recorded expenses below:<sup>31</sup>

Line No.	MAT	5 Yr Average Recorded 2012-2016	3-Yr Average Recorded 2015-2017	Escalation Rate in 2018 & 2019 Applied on 3-Yr Average	PG&E 2019 Forecast	PG&E 2019 > Escalated 3-Yr Ave Recorded
1	AH4	\$ 2,352,194	\$2,004,078	\$2,094,060	\$2,846,374	\$752,314
2	CMA	\$13,841,852	\$13,148,607	\$13,738,975	\$16,672,333	\$2,933,358
3	CMB	\$18,950,625	\$19,371,559	\$20,241,336	\$21,199,456	\$958,120
4	CXA	\$ 4,995,792	\$4,948,062	\$5,170,229	\$5,487,879	\$317,650
5	JTM	\$2,548,339	\$2,707,499	\$2,829,065	\$6,195,977	\$3,366,912
6	<b>Total Expenses</b>	<b>\$42,688,802</b>	<b>\$42,179,805</b>	<b>\$44,073,666</b>	<b>\$52,402,019</b>	<b>\$8,328,354</b>

Source: PG&E Workpaper Table 10-1a and reference to redacted PG&E Response to ORA-35 Q1.

The Electric Fuel for Gas Compressors in MAT CMB is the biggest expense item. According to PG&E’s estimates, the electric power for gas compression in 2019 will cost \$21.2 million.<sup>32</sup> PG&E states that this forecast is based on the recorded cost for electric

<sup>31</sup> The 19% is calculated as follows: Take the difference between PG&E’s 2019 forecast of \$52,402,019 and the escalated average recorded amount of \$44,073,666 to obtain the amount by which PG&E’s forecast exceeds the escalated 3-year average recorded amount. This difference amount divided by the escalated 3-year average recorded amount will result to 19%.

<sup>32</sup> PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-17.

1 power for gas compression in 2016, escalated.<sup>33</sup> According to PG&E, utilization levels  
2 are expected to remain consistent with recent history.<sup>34</sup> The second biggest item is the  
3 GSO staff expenses. This is the group tasked with the responsibility of operating the  
4 entire GT&S system safely and reliably.

5 ORA's review of the expense levels for each of the above MAT categories under  
6 GSO during the period 2012 to 2017 show no set consistent pattern. Expense levels  
7 recorded for each of the MAT categories under the GSO shifts from low in one year and  
8 then to higher levels in the following year, and then back again to lower levels. This is  
9 evident in the recorded expense data in PG&E's Workpaper Table 10-1a.<sup>35</sup>

10 Overall, the total PG&E forecast TY 2019 expenses for the GSO are shown to  
11 exceed the escalated 3-year average recorded expense by approximately 19%. Based  
12 on the foregoing, ORA recommends no adjustment to PG&E's TY 2019 forecast  
13 expenses for the GSO, and the adoption of PG&E's TY 2019 expense forecast.

## 14 **2. CAPITAL EXPENDITURES**

15 PG&E's proposed capital expenditures for TY 2019 for Gas System Operations  
16 are presented in PG&E's Testimony in Table 10-6 related to New Business (MAT 26A)  
17 and Large Power Plant Meter Sets (MAT 26B) and in Table 10-8 related to Capacity  
18 Products (MATs 73A, 73B, and 73C).<sup>36</sup> These tables are summarized in PG&E's  
19 Workpapers supporting Chapter 10, Gas System Operations.<sup>37</sup>

### 20 **a. MAT 26A New Business**

21 ORA's review indicates that MAT 26A provides capital expenditures for New  
22 Business which covers the costs for work that includes "procuring land rights and  
23 easements, facility design (estimating, mapping, and engineering), materials, permitting,  
24 construction, and initial operation of the pipeline system."<sup>38</sup> Four main cost drivers  
25 identified by PG&E for New Business capital expenditures include (1) location of the

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<sup>33</sup> PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-17.

<sup>34</sup> PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-19.

<sup>35</sup> PG&E Response to data request ORA-02 Q1 Atch08.

<sup>36</sup> PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-27.

<sup>37</sup> PG&E 2019 GT&S Workpapers, Chapter 10, p. WP 10-1b.

<sup>38</sup> PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-20.

1 new customer(s) in relation to PG&E’s system; (2) projected gas demand or load; (3)  
2 duty cycle, time of year, and hours of the day that the new customer will operate; and  
3 (4) existing planned investments to serve customer load growth.<sup>39</sup> PG&E’s 2019 capital  
4 expenditure forecast for MAT 26A (New Business) is \$4,749,109.<sup>40</sup>PG&E explains the  
5 nature of planning for New Business MAT category:<sup>41</sup>

6 The forecast for new business has two components. First, it  
7 assumes an annual expenditure of around \$4.0 million for 2019  
8 through 2021 for new residential tract development business based  
9 on a five-year historical average, exclusive of specifically identified  
10 projects. Historical costs are appropriate as a basis for the forecast  
11 because this type of customer-driven work has a history of  
12 emerging with little notice. Second, it provides for the completion in  
13 the 2019-2020 period of two large projects begun in 2017, totaling  
14 \$1.0 million. Historically, meter work of this type often arises after  
15 rate cases have been filed. While no new large meter projects are  
16 known as of this filing, an amount of \$1.0 million for each year has  
17 been forecast against this possibility, based on the approximate 5-  
18 year historical average.  
19

#### 20 **b. MAT 26B Large Meter Sets - Power Plant**

21 PG&E describes Power Plant Large Meter Sets are “essentially stand-alone  
22 projects developed independently of the pipelines that serve them,” and for that reason  
23 these projects are separately tracked from New Business pipeline construction.<sup>42</sup>  
24 PG&E explains that part of the difficulty in forecasting for new industrial projects such as  
25 power plants relate to their timing and the extent of customer discretion (i.e., a go/no go  
26 final decision on the part of the customer).<sup>43</sup> For instance, specific large residential  
27 developments which require transmission extensions could be difficult to forecast  
28 because of fluctuations in the economy in general and in the housing market in  
29 particular.<sup>44</sup> As PG&E explains, similar to the forecast methodology for New Business  
30 MAT 26A, PG&E relies on the historical 5-year recorded capital expenditures as a

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<sup>39</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), pp. 10-20 through 10-21.

<sup>40</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), p. 10-22.

<sup>41</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), pp. 10-21 through 10-22.

<sup>42</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), pp. 10-21 through 10-22.

<sup>43</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), pp. 10-21 through 10-22.

<sup>44</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), pp. 10-21 through 10-22.

1 starting point, exclusive of any specifically identified projects.<sup>45</sup> In this case, PG&E  
2 forecasts based on the 5-year average plus \$1 million each year even if no specific  
3 projects have been identified for the rate case period.<sup>46</sup>

4 PG&E explains that this MAT category on Large Power Plant meters can have  
5 some complexity.<sup>47</sup>

6 Power plant meters can be very complicated and costly to install,  
7 with their own hydraulic, mechanical, and technological constraints  
8 and requirements. They are essentially stand-alone projects  
9 developed independently of the pipelines that serve them.  
10 Therefore, they are tracked separately from New Business pipeline  
11 construction. No specific new large power plant meter installations  
12 have been identified for the 2019-2021 period. However, PG&E  
13 forecasts a minimal amount of funding given the possibility that a  
14 customer-driven need may arise.

15 According to PG&E, these power plant meters “can be very complicated and  
16 costly to install, with their own hydraulic, mechanical, and technological constraints and  
17 requirements.”<sup>48</sup>

18 In data request ORA-032 Q2, ORA asked PG&E to confirm which projects went  
19 forward into implementation for New Business and Meter Sets, and to identify those  
20 projects which did not go forward, but were replaced by other projects.<sup>49</sup> ORA asked  
21 PG&E to identify those projects and corresponding amounts of those projects that went  
22 forward instead to replace the original forecast projects which were included in PG&E’s  
23 adopted 2015 forecast.<sup>50</sup> PG&E provides a list of planning orders as well as an  
24 explanation in response, and states:<sup>51</sup>

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<sup>45</sup> PG&E Prepared Testimony, Volume 1 (Cowser), pp. 10-21 through 10-22.

<sup>46</sup> PG&E Prepared Testimony, Volume 1 (Cowser), pp. 10-21 through 10-22.

<sup>47</sup> PG&E Prepared Testimony, Volume 1 (Cowser), pp. 10-21 through 10-22.

<sup>48</sup> PG&E Prepared Testimony, Volume 1 (Cowser), pp. 10-21 through 10-22.

<sup>49</sup> Data Request ORA-032 Q2 (b).

<sup>50</sup> Data Request ORA-032 Q2 (b).

<sup>51</sup> PG&E Response to data request ORA-032 Q2 (b).

1 Of all the New Business and Large Meter Set projects from our filing in the  
2 2015 GT&S Rate Case, only the Targa project went forward to completion.  
3 Below is a list of orders for other New Business and Large Meter projects  
4 that were active during the 2015-2018 timeframe, with notes as to status,  
5 and expenditures through December 2017.

6 The list provided in the response includes (a) 4 projects on hold per the  
7 user; (b) 13 projects cancelled per the user; (c) 4 projects in progress as of Dec.  
8 31, 2017; (d) 2 projects transferred to a distribution service project; (e) 12  
9 projects completed prior to 2015 and had only close-out costs remaining; (f) one  
10 (1) was reclassified to a MAT 73A capacity project; (g) one was shown as an  
11 emergency repair of a customer service and (h) six (6) projects listed as  
12 completed. Whether the projects were on hold or transferred or cancelled, the  
13 list indicated them as “cancelled.” The combined total cost of the items shown on  
14 the list is approximately \$8.09 million as of December 31, 2017.

15 Under the old cost model (OCM), the forecast 2015 capital expenditures  
16 were in the amount of \$10,177,840 for New Business and Power Plant Large  
17 Meters.<sup>52</sup> Based on the new cost model (NCM), the adopted 2015 capital  
18 expenditures for these two MAT categories were in the amount of \$10,872,000.<sup>53</sup>  
19 These were the forecast and adopted budget amounts. PG&E indicates that  
20 recorded 2015 capital expenditures for these same two MAT categories were  
21 \$5,473,488 (NCM), or approximately half the adopted budget amount in 2015.<sup>54</sup>  
22 In addition, while the imputed adopted 2016 amounts for MATs 26A and 26B  
23 were in the amount of \$11,121,000 (NCM), PG&E indicates the recorded 2016  
24 capital expenditures for these same two MAT categories were only \$2,209,148  
25 (NCM), or less than 20 percent of the budget amount.<sup>55</sup> In 2017, actual recorded  
26 amounts for MATs 26A and 26B at combined basis were lower.<sup>56</sup>

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<sup>52</sup> PG&E Response to data request ORA-032 Q.2(a).

<sup>53</sup> PG&E Response to data request ORA-032 Q.2(a).

<sup>54</sup> PG&E Response to data request ORA-032 Q.2(a).

<sup>55</sup> PG&E Response to data request ORA-032 Q.2(a).

<sup>56</sup> PG&E Response to data request Redacted ORA-035 Q.1 Atch1.



1           ORA's review compared the 5-year average recorded for the New Business  
2 CAPEX for the period 2012 through 2016. The 5-year average recorded for 2012-2016  
3 is \$5,052,615.<sup>57</sup> With the 2017 recorded data available, the 5-year average recorded  
4 data for the 2013-2017 period is \$2,403,616.

5           Similarly, the most recent 3-year average recorded for the 2015-2017 period is  
6 \$2,856,944. As PG&E explains above, it uses the historical 5-year average exclusive of  
7 specifically identified projects. ORA used the most recent 3-year average recorded,  
8 which is slightly above the 5-year 2013-2017 average, and escalated the amount based  
9 on PG&E's compound escalation based on 2017 dollars.<sup>58</sup> ORA recommends an  
10 amount of \$3,005,219 for TY 2019 forecast for New Business (MAT 26A).<sup>59</sup> Given  
11 PG&E's 2019 forecast of \$4.749 million, ORA's capital expenditures forecast for MAT  
12 26A is \$1.743 million lower than PG&E's forecast.

13           Based on a 3-year average, ORA would recommend a forecast TY 2019 capital  
14 expenditure amount of \$30,784 for MAT 26B. But given the historical recorded  
15 expenditures and the status of project implementation, ORA sees little potential  
16 expenditures in MAT 26B. Therefore, ORA recommends that in lieu of a small  
17 expenditure budget for MAT 26B, PG&E should instead establish a memorandum  
18 account for purposes of MAT 26B in the event any expenditures actually materialize.  
19 Like all expenditures recorded into a memorandum account, any potential actual  
20 recorded expenditure amounts into MAT 26B should be subject to reasonableness  
21 review. Given PG&E's TY 2019 forecast of \$1.051 million, ORA recommends an  
22 adjustment for the entire PG&E's 2019 capital expenditures forecast for MAT 26B in the  
23 amount of (\$1.051 million) and allowing PG&E instead a memorandum account for this  
24 purpose that is subject to reasonableness review for actual recorded amounts.

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<sup>57</sup> PG&E Workpaper Table 10-1b and recorded 2017 CAPEX from PG&E response to Redacted ORA-035 Q1.

<sup>58</sup> The escalation rate is 1.0519 for the year 2019 (i.e., 1.0236\*1.0276). Escalation rate shown in PG&E Workpaper WP-19 for Chapter 10 GSO.

<sup>59</sup> Refer to ORA's Workpapers for 2019 GTS for this Chapter.

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**Table 10-7**  
**MAT 26A/26B TY 2019**  
**(in US Dollars)**

MAT	Ave 5-Yr Recorded 2012-2016	Ave 3-Yr Recorded 2015-2017	Ave 3-Yr Recorded Escalated to 2019	PG&E Forecast 2019	ORA Adjustment	ORA Recommendation on TY 2019
26A	\$5,052,694	\$2,856,944	\$3,005,219	\$4,749,109	(\$1,743,889)	\$3,005,219
26B	\$1,157,871	\$29,265	\$30,784	\$1,051,851	(\$1,021,067)	a/

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a/ Memorandum account recommendation.

Source: The recorded 2012-2016 data is from PG&E's 2019 GT&S Workpapers and the redacted PG&E Response to ORA-035 Q1 Atch 1. The above data on average for the period is ORA's calculation. The escalation rate is based on PG&E's assumed escalation rate in PG&E Chapter 10 Workpapers WP -19.

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**Table 10-8**  
**MAT 26A/26B Post TY 2020**  
**(in US Dollars)**

MAT	Ave 5-Yr Recorded 2012-2016	Ave 3-Yr Recorded 2015-2017	Ave 3-Yr Recorded Escalated to 2020	PG&E Forecast 2020	ORA Adjustment to PG&E Fcast 2020	ORA Recommendation on TY 2020
26A	\$5,052,694	\$2,856,944	\$3,260,363	\$4,827,714	\$1,567,351	\$3,260,363
26B	\$1,157,871	\$29,265	\$33,398	\$1,084,879	(\$1,051,482)	a/

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a/ Memorandum account recommendation.

Source: The recorded 2012-2016 data is from PG&E's 2019 GT&S Workpapers and the redacted PG&E Response to ORA-035 Q1. The above data on average for the period is ORA's calculation. The escalation rate is based on PG&E's assumed escalation rate in PG&E Chapter 10 Workpapers WP -19.

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**Table 10-9**  
**MWC 26A/26B Post TY 2021**  
**(in US Dollars)**

MAT	Ave 5-Yr Recorded 2012-2016	Ave 3-Yr Recorded 2015-2017	Ave 3-Yr Recorded Escalated to 2021	PG&E Forecast 2021	ORA Adjustment to PG&E Fcast 2021	ORA Recommendation on TY 2021
26A	\$5,052,694	\$2,856,944	\$3,641,173	\$4,467,100	(\$1,567,351)	\$3,641,173
26B	\$1,157,871	\$29,265	\$37,298	\$1,116,775	(\$1,079,476)	a/

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20  
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24

a/ Memorandum account recommendation.

Source: The recorded 2012-2016 data is from PG&E's 2019 GT&S Workpapers and the redacted PG&E's Response to ORA-035 Q1. The above data on average for the period is ORA's calculation. The escalation rate is based on PG&E's assumed escalation rate in PG&E Chapter 10 Workpapers WP -19.

1           **c. Capacity Projects – MAT 73A/73B/73C**

2           PG&E explains the category called Capacity Projects:<sup>60</sup>

3           Capacity Projects install gas transmission facilities to meet non-  
4           customer-specific demand growth. Examples of capacity projects  
5           include constructing new gas pipelines (including parallel lines),  
6           increasing regulating station capacity, and adding new regulating  
7           stations. A capacity project is undertaken when hydraulic modeling  
8           indicates that demand growth may constrain a local transmission  
9           system such that it may fail to meet APD or CWD service design  
10          standards unless it is reinforced. To address capacity constraints,  
11          PG&E considers a variety of operational and engineering design  
12          alternatives before recommending and implementing the alternative  
13          (or combination of alternatives) with the least cost that is consistent  
14          with safety, operational effectiveness, and a view of probable long-  
15          term needs identified in the relevant network investment plan.  
16

17          PG&E explains the three components under Capacity Projects: (1) customer  
18          demand growth (MAT 73A); (2) capacity betterment (MAT 73B); and (3) restoring  
19          capacity reduced due to Normal Operating Pressure (NOP) reductions (MAT 73C).<sup>61</sup>

20          PG&E explains that these forecasts exclude Line 407, the major capacity project in the  
21          Sacramento Valley that is subject to a separate reasonableness review as part of this  
22          case.<sup>62</sup>

23           **d. MAT 73A**

24          PG&E explains the driver on the need of new transmission capacity projects:<sup>63</sup>

25          The need for new transmission capacity projects is driven by  
26          demand growth (which occurs largely on hydraulically connected  
27          distribution systems) from increasing population, higher commercial  
28          and industrial loads, and increases in gas usage from factors such  
29          as space additions to existing housing. Growth within PG&E's  
30          system can be both general and highly localized. While load  
31          growth typically happens on distribution systems, this growth  
32          affects hydraulically connected transmission capacity both  
33          upstream and downstream.  
34

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<sup>60</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), pp. 10-22 through 10-23.

<sup>61</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), pp. 10-22 through 10-23.

<sup>62</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), pp. 10-22 through 10-23.

<sup>63</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), pp. 10-22 through 10-23.

1 According to PG&E, customer load growth in certain areas could lead to constraints in  
2 the transmission capacity in that area.<sup>64</sup> With constrained areas, PG&E would be  
3 unable to provide sufficient gas to satisfy customer demands that occur under peak  
4 conditions. To plan against this loss of supply due to transmission capacity constraints,  
5 PG&E plans to relieve such constraints by reinforcing the transmission system with new  
6 capacity even before the peak demand day conditions occur.<sup>65</sup> This is achieved by  
7 PG&E through monitoring and forecasting load growth to anticipate such constraints, to  
8 proactively reinforce the transmission system.<sup>66</sup> The planning occurs over several years  
9 to design, permit, and construct, so PG&E initiates well before the forecasted growth  
10 materializes.<sup>67</sup> At the time of PG&E's filing, PG&E forecasts moderate load growth in  
11 highly localized areas and illustrates this with two major projects.<sup>68</sup> PG&E describes  
12 two major projects in areas that have experienced local growth and account for about  
13 three quarters of the \$72.4 million forecast for 2018, namely: the Merced Project and  
14 the Fresno Belt Main Extension.<sup>69</sup> PG&E also describes the San Ramon Valley and the  
15 Bakersfield areas as also experiencing growth that is driving significant capacity  
16 investment.<sup>70</sup>

17 ORA's review of data in PG&E's WP 10-1b reveals that PG&E's 5-year average  
18 recorded capital expenditures for MAT 73A for the 2012-2016 period is in the amount of  
19 \$13,750,965.<sup>71</sup> PG&E's 5-year average recorded capital expenditures for MAT 73A for  
20 the 2013-2017 period is in the amount of \$16,673,386.<sup>72</sup> PG&E's 3-year average  
21 recorded capital expenditures for MAT 73A for the 2015-2017 period is slightly lower in  
22 the amount of \$16,332,611.<sup>73</sup>

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<sup>64</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), pp. 10-22 through 10-23.

<sup>65</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), pp. 10-23 through 10-24.

<sup>66</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), pp. 10-23 through 10-24.

<sup>67</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), pp. 10-23 through 10-24.

<sup>68</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), p. 10-24.

<sup>69</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), p. 10-24.

<sup>70</sup> PG&E Prepared Testimony, Volume 1 (Cowsert), p. 10-24.

<sup>71</sup> PG&E 2019 GT&S Workpaper Table 10-1b.

<sup>72</sup> PG&E Workpaper Table 10-1b and recorded 2017 CAPEX from PG&E response to Redacted ORA-035 Q1.

<sup>73</sup> PG&E Workpaper Table 10-1b and recorded 2017 CAPEX from PG&E response to Redacted ORA-035 Q1.

1 In data request ORA-039, ORA asked PG&E for the status of implementation of  
2 the capacity projects identified in MAT 73A as shown in PG&E's Workpaper 10-14 in  
3 Chapter 10 GSO. ORA asked PG&E for the following:

- 4 (a) the project descriptions for each of the projects;
- 5 (b) the project justification stating the need for the project;
- 6 (c) the current status of project implementation;
- 7 (d) a description of the expected challenges facing the project which could result  
8 in a delay to project implementation; and
- 9 (e) a description of the consequences of a delay in the project's implementation.

10 PG&E provided responses to data request ORA-039 which were designated as  
11 confidential.<sup>74</sup> ORA summarizes the information below from the response in a general  
12 way to avoid disclosing any confidential information.

13 The confidential response had three (3) capacity projects listed as on track.<sup>75</sup>  
14 One had expected completion in 2018, and a minor amount in year 2019.<sup>76</sup> A second  
15 one had construction to commence in summer 2018, and two had most of the project  
16 construction costs shown in the year 2018.<sup>77</sup> The confidential response indicated  
17 significant consequences if these two projects were delayed. ORA does not  
18 recommend any adjustments to capacity projects with capital expenditures in the year  
19 2018 that are shown to be on track and with significant consequences if delayed. A  
20 third relatively smaller capacity project is shown as on track for a 2021 operational date.  
21 This third project was shown in the forecast for CAPEX with \$200,000 in TY 2019, \$2.0  
22 million in year 2020, and \$150,000 in year 2021.

23 Twelve (12) capacity projects on the list were shown with status as "cancelled."  
24 The response indicates that other smaller projects on the distribution side are required  
25 to mitigate the constraint.<sup>78</sup> Some showed that projects can be postponed until growth

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<sup>74</sup> PG&E provided an attached Declaration Supporting Confidential Designation and there is no public version available of the Response attachments.

<sup>75</sup> PG&E Response to data request ORA-039 Q1 Atch 1CONF.

<sup>76</sup> PG&E Response to data request ORA-039 Q1 Atch 1CONF.

<sup>77</sup> PG&E Response to data request ORA-039 Q1 Atch 1CONF.

<sup>78</sup> PG&E Response to data request ORA-039 Q1 Atch 1CONF.

1 warrants it post-2021, or that project is not needed at this time, or that a more economic  
2 solution was identified.<sup>79</sup>

3 Based on ORA’s review, PG&E’s 3-year average recorded capital expenditures  
4 for MAT 73A for the 2015-2017 period is in the amount of \$16,332.611 and ORA  
5 escalates that amount for TY 2019 using PG&E’s escalation rates.<sup>80</sup> ORA recommends  
6 a forecast TY 2019 capital expenditure in the amount of \$17,180,273 for MAT 73A.  
7 Given PG&E’s 2019 forecast of \$54,696,271 for MAT 73A and the status of project  
8 implementation as described above, ORA’s 2019 capital expenditures forecast for MAT  
9 73A in the amount \$17,180,273, which is \$37,515,997 lower than PG&E’s forecast.

10 **e. MAT 73B**

11 PG&E explains a capacity betterment project as:<sup>81</sup>  
12 Betterment projects increase capacity by leveraging a planned  
13 “like-for-like” replacement of an existing pipeline. They typically  
14 involve up-sizing the diameter or length of the planned replacement  
15 to reduce the risk of having to perform incremental capacity  
16 projects in the future. These projects aim to conserve costs by  
17 opening the ground less frequently. Generally, while larger-  
18 diameter pipe is somewhat more expensive, and longer pipe  
19 increases cost, upsizing is less costly over the longer term than a  
20 second excavation in the near to medium term. This “betterment”  
21 of an existing project results in cost savings compared to the total  
22 costs of the “like-for-like” project plus the future incremental project.  
23

24 PG&E further explains its forecasting for Capacity Betterment:<sup>82</sup>  
25 Capacity betterment (73B) is forecast as a program, rather than as  
26 a series of system-specific projects, because betterment leverages  
27 opportunities in other pipeline projects to add capacity. Hydraulic  
28 modeling is performed for betterment only after the opportunity is  
29 identified, not before, as it is for projects under 73A and 73C. To  
30 forecast betterment costs for 2019-2021, PG&E used the average  
31 actual betterment costs from the three-year period of 2014-2016,  
32 escalated.  
33

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<sup>79</sup> PG&E Response to data request ORA-039 Q1 Atch 1CONF.

<sup>80</sup> PG&E Workpaper Table 10-1b and recorded 2017 CAPEX from PG&E response to Redacted ORA-035 Q1.

<sup>81</sup> PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-24.

<sup>82</sup> PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-26.

1 Table 10-8 of PG&E's testimony does not show much capacity betterment capital  
 2 expenditure amounts in MAT 73B for the period 2019-2021 compared to those shown in  
 3 MAT 73A.

4 **Table 10-10**  
 5 **MAT 73A/73B/73C TY 2019**  
 6 **(in US Dollars)**

MAT	Ave 5-Yr Recorded 2012-2016	Ave 3-Yr Recorded 2015-2017	Ave 3-Yr Recorded Escalated to 2019	PG&E Fcast 2019	ORA Adjustment to PG&E Fcast 2019	ORA Recommendation on TY 2019
73A	\$13,750,965	\$16,332,611	\$17,180,273	\$54,696,271	(\$37,515,997)	\$17,180,273
73B	\$4,679,491	\$840,861	\$884,502	\$1,051,851	(\$167,350)	\$884,502
73C	\$545	\$2,526	\$2,657	\$12,701,105	(\$12,698,448)	a/

7 a/ Memorandum account recommendation.

8 Source: The recorded 2012-2016 data is from PG&E's 2019 GT&S Workpapers and the redacted PG&E Response to ORA-035  
 9 Q1. The above data on average for the period is ORA's calculation. The escalation rate is based on PG&E's assumed escalation  
 10 rate in PG&E Chapter 10 Workpapers WP -19.  
 11

12 **f. MAT 73C - Capacity to Support NOP Reductions**

13 PG&E describes the capital expenditures for capacity to support Normal  
 14 Operating Pressure (NOP) reductions:<sup>83</sup>

15 In order to minimize instances of incidental over-pressurizations,  
 16 most of which have historically been less than one percent above  
 17 MAOP, PG&E is programmatically lowering regulator and  
 18 overpressure protection set points. While we have already reduced  
 19 the set points of a number of systems that had sufficient capacity to  
 20 absorb the change without affecting our ability to meet service  
 21 design standards, the projects in this category are required to retain  
 22 service design capacity standards at the reduced pressure set  
 23 points. If these projects are not performed, we cannot lower the  
 24 relevant set points because the resultant capacity reductions would  
 25 risk customer outages on the applicable design day (CWD or APD).  
 26

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<sup>83</sup> PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-25.

1 To understand MAT 73C capital expenditures better, ORA revisited PG&E’s 2015  
2 GT&S filing where the capital expenditures for NOP reductions first began as part of  
3 PG&E’s then new NOP policy. The capital expenditures are for projects to support the  
4 implementation of the NOP<sup>84</sup> reductions involving the installation of pipe to support  
5 programmatic reductions of the normal operating pressures of the transmission system  
6 so that the pressure of a line is maintained below the Maximum Allowable Operating  
7 Pressure (MAOP) at all times.<sup>85</sup> These projects were in line with the implementation of  
8 the then new NOP policy of PG&E, which is described as a risk-reduction strategy.<sup>86</sup>  
9 According to PG&E, the NOP policy “creates an extra margin of safety” and is said to be  
10 consistent with SB 705 and its mandate to engage in best practices in the industry for  
11 safety.<sup>87</sup> The capital expenditure requests were to be used to install pipe to support  
12 programmatic reductions of the normal operating pressures of the transmission system  
13 so that pipeline pressures are kept below MAOP at all times, while maintaining levels of  
14 pipeline capacity to support customer service at the appropriate design standard.<sup>88</sup>  
15 PG&E explained the NOP/OPP policy is an extension of PG&E’s Gas Safety Plan,  
16 which is required by SB 705, Public Utilities Code §961(a) (1).<sup>89</sup>

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<sup>84</sup> PG&E defines “Normal operating pressure of the transmission system” as the set point of the primary regulator or pressure limiting station serving the system. On the backbone transmission system, the normal operating pressure (NOP) is sometimes determined by the discharge pressure of a compressor station. PG&E Response to ORA-DR-4 Q1b in A.13-12-012.

<sup>85</sup> PG&E explains the phrase “Below MAOP at all times” to mean that all primary regulators, overpressure protection devices, and compressor discharges are set to keep system pressure at less than MAOP (maximum allowable operating pressure) at all times. PG&E Response to ORA DR-4 Q1b in GT&S 2015 A.13-12-012.

<sup>86</sup> PG&E Prepared Testimony in 2015 GT&S A.13-12-012, Volume 2 (Christopher), p. 10-12.

<sup>87</sup> PG&E Prepared Testimony in 2015 GT&S A.13-12-012, Volume 2 (Christopher), p.10-12.

<sup>88</sup> PG&E GT&S 2015 Workpapers in A.13-12-012, Chapter 10, p. WP 10-21.

<sup>89</sup> PG&E Response to ORA-DR-76-Q2 in A.13-12-012 defines “Regulator Set Point” as the normal operating pressure (NOP) and “OP Set Point” represents the pressure at which overpressure protection (OP or OPP) takes control. In same Response, PG&E defines the “Maximum Allowable Operating Pressure for a segment of pipe, as prescribed by 49 CFR 192.105, 192.611 and 192.619.” PG&E states that “Maximum Operating Pressure (MOP) applies to an entire hydraulically independent pressure system rather than solely to a segment of pipe. It is determined by the MAOP of the weakest pipe segment in a given system.” Further, PG&E states it “is in the process of eliminating the MOP definition and replacing it with a new definition, High Operating Pressure Limit (HOPL), which is defined as the operating pressure limit at a measurement point that if exceeded indicates that operating pressure is exceeding the MAOP of the associated subsystem or any other imposed pressure limitation.



1 PG&E filed its first Gas Safety Plan on June 29, 2012, and the Commission  
2 approved it in D.12-12-009. A revised Gas Safety Plan was filed on June 28, 2013  
3 where the revised filing describes PG&E's analysis of its transmission system "to  
4 determine the feasibility of reducing normal operating pressure on systems identified by  
5 the PSEP Pipeline Modernization Program Decision Tree by as much as 20.0 pounds  
6 per square inch gauge (psig) below the Maximum Operating Pressure (MOP), and  
7 reducing over-pressure protection by as much as 5.0 psig below MOP, to create a  
8 margin of safety against overpressure events."<sup>90</sup> PG&E's plan then was to complete  
9 these NOP projects by the end of 2017.<sup>91</sup> According to PG&E, "The Commission  
10 authorized \$43 million to perform 15 pressure reduction capacity projects."<sup>92</sup>

11 In this 2019 GT&S, PG&E explains in testimony what happened to MAT 73C  
12 projects:<sup>93</sup>

13 No 73C project completions are expected in 2015-2018. However,  
14 during that period, we installed or plan to install capacity under  
15 another program, 73A, that allows NOP to be reduced on five local  
16 transmission systems, including several connected to Line 407.  
17 PG&E also expects to spend \$0.7 million in 2018 under the 73C  
18 program for the preliminary engineering of three projects to be  
19 constructed in 2019-2021. Some work under the 73C program was  
20 able to be safely deferred or cancelled for the same reasons as  
21 73A projects. Another factor, unique to the 73C program, allowed  
22 several projects to be safely deferred. In 2016, PG&E revised  
23 Utility Standard TD-4125P-07, "Establishing Set Points on Over-  
24 Pressure Protection Devices," after determining that the operating  
25 margin between the pressure set points of certain types of working  
26 regulators and their monitors did not need to be as wide as the  
27 standard formerly required. That allowed the set point of such  
28 working regulators to be raised, providing more system capacity.  
29

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The limit takes into account subsystem characteristics such as elevation, temperature, etc. Use of the MOP definition is expected to be phased out beginning in July 2014."

<sup>90</sup> PG&E Response to ORA-DR-4-Q2c, PG&E's 2015 GT&S in A.13-12-012.

<sup>91</sup> PG&E Response to ORA-DR-21-Q2j, PG&E's 2015 GT&S in A.13-12-012.

<sup>92</sup> PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-30

<sup>93</sup> PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-30.

1 PG&E further explains why MAT 73C remains important in the new  
2 2019 GT&S:

3 The 73C program remains necessary for safety and reliability, since  
4 it is driven by the need to prevent the loss of supply due to  
5 inadequate capacity, which has been identified as one of the top  
6 risks facing Gas Operations.  
7

8 ORA does not oppose the continued implementation of the NOP policies on  
9 PG&E's gas transmission system. But ORA notes that PG&E's Workpaper Table 10-1b  
10 shows no significant recorded amount of capital expenditures for NOP reductions in the  
11 3-year period 2015-2017 nor in the 5-year period 2013-2017. ORA would recommend  
12 the adoption of a very limited forecast amount of 2019 capital expenditures for NOP  
13 reduction projects in the amount of in line with the 3-year average recorded spending in  
14 MAT 73C. The forecast 2018 amount of \$726,347 shown in PG&E Workpaper Table  
15 10-1b is assumed by ORA to be part of the GT&S 2015-2018 adopted budget amounts  
16 and no adjustments are made here. In TY 2019, PG&E forecasts the amount of  
17 \$12,701,105 for NOP reduction projects.<sup>94</sup> Given the status of the NOP reduction  
18 implementation as described above, it would be appropriate to adjust PG&E's forecast  
19 downwards. Similar to the case of MAT 26B, ORA sees little potential expenditures for  
20 MAT 73C. ORA recommends that PG&E instead establish a memorandum account for  
21 purposes of MAT 73C in the event that any expenditures actually materialize.  
22 Therefore, ORA recommends that PG&E's TY 2019 forecast of capital expenditures for  
23 MAT 73C be adjusted downward by removing the entire PG&E forecast amount of  
24 (\$12,701,105) and allowing PG&E a memorandum account that will be subject to  
25 reasonableness review for actual recorded amounts.

26  
27

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<sup>94</sup> See PG&E Workpaper Table 10-1b.

1 **g. MAT JTM – GT Capacity Uprates**

2 PG&E explains GT Capacity Uprates:<sup>95</sup>

3 Sometimes, it is more cost-effective to increase capacity by  
 4 increasing a system’s pressure rather than installing additional  
 5 pipe. A typical situation involves a system with several segments,  
 6 one of which has an MAOP that is below the MAOP of the others.  
 7 If the low MAOP can be raised to increase capacity to meet growth  
 8 projections, then a potentially more expensive capital project can  
 9 be avoided. The main expense of an uprate is a hydrotest of the  
 10 segment. Uprates may also require some capital investment to  
 11 replace pipeline segments or equipment that cannot be raised to a  
 12 higher MAOP. Any capital required to increase capacity is tracked  
 13 under Major Work Category 73, Transmission Capacity.

14 PG&E’s Table 10-7 shown in testimony presents the expense 2019 forecast for  
 15 MAT JTM in the amount of \$6.196 million. No separate capital expenditures were  
 16 indicated for GT Capacity Uprates. ORA’s recommendation on MAT JTM is shown in  
 17 ORA Table 10-1 at line 6 on forecast TY 2019 expenses for GSO.

18  
 19 **ORA Table 10-1**  
 20 **Gas System Operations Expenses for TY2019**  
 21 **(In 000 US Dollars)**

Line No.	Description (a)	ORA Recommended (b)	PG&E Proposed <sup>96</sup> (c)	Amount PG&E>ORA (d=c-b)	Percentage PG&E>ORA (e=d/b)
1	MAT AH4	\$2,846	\$2,846	0	0%
2	MAT CMA	\$15,877	\$15,877	0	0%
3	MAT CMA	\$796	\$796	0	0%
4	MAT CMB	\$21,199	\$21,199	0	0%
5	MAT CXA	\$5,488	\$5,488	0	0%
6	MAT JTM	\$6,196	\$6,196	0	0%
7	<b>Total Expenses</b>	<b>\$52,402</b>	<b>\$52,402</b>	<b>0</b>	<b>0%</b>

22  
 23  
 \_\_\_\_\_  
<sup>95</sup> PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-25.

<sup>96</sup> Table 10-2, PG&E Prepared Testimony, Volume 1 (Cowser), p. 10-4 and PG&E Workpapers, Chapter 10, p. WP 10-1.

1           **h. Reasonableness Review of Line 407**

2           ORA reviewed PG&E’s showing for the approved Line 407 construction for  
3 reasonableness, in this 2019 GT&S rate case. Based on ORA’s review and analysis,  
4 ORA recommends that the Commission find PG&E’s showing on the Line 407 project  
5 costs reasonable subject to PG&E providing a direct showing of the composition of the  
6 amount in excess of the \$157 million discussed in paragraph 20 of ORA’s review. The  
7 ORA reasonableness review of Line 407 is included in Appendix 1 to this Exhibit ORA-  
8 10.

9

10           **IV. CONCLUSION**

11           Overall, ORA recommends the Commission find PG&E’s showing on the Line  
12 407 project costs reasonable subject to PG&E providing a direct showing of the  
13 composition of the amounts in excess of the authorized cap. In addition, ORA also  
14 recommends that PG&E’s full request on the Gas System Operations forecast  
15 expenses for TY 2019 of \$52.4 million be adopted. However, on the Gas System  
16 Operations capital expenditures request for TY 2019, ORA recommends only \$22.2  
17 million in capital expenditures compared to PG&E’s request of \$80.2 million in capital  
18 expenditures, or a difference of \$58 million, including ORA’s recommendation of a  
19 memorandum account for certain GSO expenditures at the MAT level as discussed  
20 herein.

21

## WITNESS QUALIFICATIONS

1

2 **Q.1:** Please state your name and address.

3 **A.1:** My name is Pearlie Sabino. My business address is 505 Van Ness Avenue, San  
4 Francisco, California, 94102.

5

6 **Q.2:** By whom are you employed and in what capacity?

7 **A.2:** I am employed by the Office of Ratepayer Advocates as a Public Utilities  
8 Regulatory Analyst V in the Energy Cost of Service and Natural Gas Branch.

9

10 **Q.3:** Briefly describe your educational background and work experience.

11 **A.3:** I have a Bachelor of Science in Business Economics from the University of the  
12 Philippines and a Master of Arts in Economics from the Ateneo de Manila University. As  
13 a United States Agency for International Development (USAID) scholar, I obtained  
14 Executive training on Energy Planning and Policy from the University of Pennsylvania.

15 Prior to joining ORA, I worked in various positions from Research Analyst to  
16 Corporate Planning Analyst to Chief Economist with the National Power Corporation  
17 (Philippines).

18 Since joining the ORA in 1997, I have worked on a number of electric and gas  
19 rate cases, including but not limited to: the review of SoCalGas' Gas Cost Incentive  
20 Mechanism; the review of Biennial Cost Allocation Proceeding (BCAP) applications for  
21 PG&E, SoCalGas, and SDG&E; various gas transportation contracts (such as  
22 Guardian, Ruby, US Gypsum); various applications pertaining to the grant of Certificate  
23 of Public Convenience and Necessity (CPCN) for gas storage contracts, including  
24 amendments; SoCalGas/SDG&E System Integration (SI) and Firm Access Rights (FAR)  
25 proceedings, including the FAR Update proceeding, the Joint SCE/SoCalGas/SDG&E  
26 Omnibus proceeding, the Joint PG&E/SoCalGas/SDG&E Application for Public Purpose  
27 Program (PPP) Cost Reallocation proceeding, the PG&E BCAP in 2005 and 2009, the  
28 SoCalGas SDG&E BCAP in 2009, the PG&E Gas Transmission & Storage (GT&S) rate  
29 cases in A.13-12-012 and A.09-09-013 (Gas Accord V Settlement), the PG&E Pipeline  
30 Safety Enhancement Plan (PSEP) Phase 1 in R.11-02-019 and San Bruno Investigation

1 cases, the SoCalGas/SDG&E Pipeline Safety Enhancement Plan (PSEP) in A.11-11-  
2 002 Phase 1 &2, the Southwest Gas 2014 GRC in A.12-12-024, the SoCalGas/SDG&E  
3 North-South Project in A.13-12-013, the Liberty GRC in A.15-05-008, the  
4 SoCalGas/SDG&E Triennial Cost Allocation Proceeding (TCAP) in A.15-07-014, the  
5 SoCalGas/SDG&E Phase 1 Issues in A.15-09-013 (Line 1600/Line 3602), the Joint Wild  
6 Goose/Lodi Request for Encumbrance of Assets in A.17-01-024, and the SoCalGas  
7 Customer Incentive Program (CIP) in A.16-12-010.

8

9 **Q.4:** What is your area of responsibility in this proceeding?

10 **A.4:** I am responsible for addressing PG&E's proposals in Chapters 10, 16A, and 19  
11 for ORA's testimony in this 2019 GT&S proceeding.

12

13 **Q.5:** Does that complete your prepared testimony?

14 **A.5:** Yes, it does.

15

16

**APPENDIX 1**  
**ORA LINE 407 REASONABLENESS REVIEW**

1 This section describes PG&E's submission in this 2019 GT&S rate case on the  
2 Line 407 Reasonableness for purposes of complying with D.16-06-056, the Commission  
3 decision which authorized the Line 407 project. ORA first reviews the relevant  
4 provisions in D.16-06-056 relating to Line 407. ORA next examines the supporting  
5 information that validates PG&E's claims about the forecast and actual cost in the  
6 Report. Finally, ORA reviews the cost per mile and determines whether the asserted  
7 cost per mile of Line 407 is comparable with known information on comparable pipeline  
8 projects on a cost per mile basis. PG&E asserts the cost per mile of Line 407 is \$7.45  
9 million based on a project length of 26 miles and the project cost to completion of \$191  
10 million.<sup>97</sup>

11 The Commission states in D.16-06-056:<sup>98</sup>

12 We find that PG&E has provided sufficient evidence to conclude that  
13 the Line 407 project is needed and likely to be completed within the  
14 Rate Case Period. As such, we do not agree with Indicated  
15 Shippers that Line 407 should be treated as an adder project.

16 The Commission further adds:<sup>99</sup>

17 The stipulation between PG&E and ORA regarding the Post Test  
18 Year Cost Recovery Mechanism includes a provision for a  
19 balancing account of up to \$7 million in revenue requirements for  
20 Line 407, if the project is completed in 2017. Because we are  
21 adding a third attrition year to this GT&S rate case cycle, it is  
22 necessary to address how to include revenue requirements  
23 associated with Line 407 into rates once it is operational. PG&E  
24 requests funding of \$157 million (nominal dollars) for Line 407 in  
25 this rate case. Based on an in-service date of August 2017, the  
26 stipulation between PG&E and ORA regarding the Post Test Year  
27 Cost Recovery Mechanism includes a provision for a balancing  
28 account of up to \$7 million in revenue requirements for Line 407, if  
29 the project is completed in 2017. In light of this stipulation, and to  
30 account for an additional attrition year, we modify the stipulation to  
31 allow PG&E to incorporate the associated revenue requirement in  
32 rates once Line 407 is operational, subject to refund upon a review

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<sup>97</sup> PG&E Line 407 Reasonableness Report submitted in A.17-11-009 dated April 30, 2018 at p.32.

<sup>98</sup> D.16-06-056 at p.227. See also Findings of Fact #127 & 128, D.16-06-056 at p.427.

<sup>99</sup> D.16-06-056 at pp.227-228. See also Findings of Fact #129, 130, and 131, D.16-06-056 at p.427.C



1 of the reasonable of all costs in PG&E's next GT&S application.  
2 This will ensure that ratepayers will not pay for this project until it is  
3 used and useful, while allowing PG&E to recover any revenue  
4 requirements associated with Line 407 resulting from the additional  
5 attrition year.

6 Accordingly, we set the total project cost of Line 407 at \$157  
7 million. PG&E is authorized cost recovery of up to this amount  
8 beginning when Line 407 is placed in service, with rates subject to  
9 true-up. PG&E is authorized to establish a memorandum account  
10 to track any costs exceeding \$157 million. All project costs for Line  
11 407 shall be subject to a reasonableness review in PG&E's next  
12 GT&S application.

13 Conclusions of Law #166, 167, and 168 state:<sup>100</sup>

14 166. The total project cost of Line 407 should be set at \$157 million,  
15 with any costs above this amount tracked in a memorandum  
16 account.

17 167. All project costs for Line 407 should be subject to a  
18 reasonableness review in PG&E's next GT&S application.

19 168. PG&E should be allowed to incorporate the associated  
20 revenue requirement for Line 407 in rates, subject to true-up, once  
21 Line 407 is operational.

22 Ordering Paragraphs (O.P.) #57 and 58 ordered:<sup>101</sup>

23 57. A maximum cost of \$157.0 million is set for the construction of  
24 Line 407. Pacific Gas and Electric Company (PG&E) is authorized  
25 cost recovery of up to this amount, subject to true up, beginning  
26 when Line 407 is completed and becomes operational. Costs  
27 exceeding this amount must be recorded in a separate  
28 memorandum account and a review of the reasonableness of all  
29 project costs shall be conducted in PG&E's next gas transmission  
30 and storage application. PG&E is authorized to file a Tier 2 advice  
31 letter to establish the memorandum account no later than 10 days  
32 after the effective date of this decision.

33  
34 58. After Line 407 is completed and becomes operational, Pacific  
35 Gas and Electric Company (PG&E) may request to incorporate the  
36 associated revenue requirement into rates by a Tier 2 advice letter.  
37 PG&E must use the actual project costs to develop the revenue  
38 requirement for the advice letter if the costs to PG&E incurred to  
39 complete Line 407 are less than \$157.0 million. All costs incurred  
40 for Line 407 are subject to a reasonableness review in PG&E's next

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<sup>100</sup> D.16-06-056 at p.457.

<sup>101</sup> D.16-06-056 at pp. 489-490.

1 gas transmission and storage application and rates associated with  
2 Line 407 are subject to true-up. PG&E bears the burden to show  
3 that all the costs are reasonable and the reasonableness review  
4 could result in disallowances and refunds to ratepayers of collected  
5 amounts.  
6

7 For purposes of compliance with O.P.57 and 58, PG&E submitted the Line 407  
8 Reasonable Report in the 2019 GT&S in both redacted and confidential versions.<sup>102</sup>

### 9 **PG&E's Report**

10 PG&E reports that the construction of Line 407 (both pipeline and associated  
11 stations) are complete and became operational on October 31, 2017.<sup>103</sup> Further, PG&E  
12 informs that it has already included \$157 million in capital expenditures in the revenue  
13 requirements of the 2019 GT&S.<sup>104</sup> PG&E expects to continue to incur some remaining  
14 costs in year 2018 and beyond for Line 407.<sup>105</sup> PG&E states that all costs in the Line  
15 407 Report includes recorded costs as of December 31, 2017 plus remaining forecast  
16 cost as part of closing out the project.<sup>106</sup>

17 PG&E clarifies that the maximum project cost of \$157 million authorized in D.16-  
18 06-056 did not include the costs forecast for 2013 and 2014 nor did the maximum  
19 authorized amount include the actual costs incurred from 2006 through 2012.<sup>107</sup> PG&E  
20 states:<sup>108</sup>

21 Thus, while PG&E's 2015 GT&S Rate Case referenced a "forecast"  
22 of \$157 million for the 3-year 2015 GT&S Rate Case cycle (2015-  
23 2017), Section C.2.a., "Summary of 2015 GT&S Forecast," shows  
24 that the overall forecast supported by the 2015 GT&S Rate Case is  
25 \$175 million. Actual costs for the project through December 31,  
26 2017, are \$180.8 million and remaining forecast costs are  
27 estimated at \$11.0 million, which produces a total project cost of

---

<sup>102</sup> PG&E Line 407 Reasonableness Report submitted in PG&E 2019 GT&S in A.17-11-009 dated April 30, 2018 at p.1

<sup>103</sup> PG&E Line 407 Reasonableness Report submitted in PG&E 2019 GT&S in A.17-11-009 dated April 30, 2018 at p.1.

<sup>104</sup> Id.

<sup>105</sup> Id.

<sup>106</sup> Id. at p.2.

<sup>107</sup> Id. at p.2.

<sup>108</sup> Id. at p.2.

1           \$191.8 million (actual and forecast). This report compares actual  
2           costs to the forecast from the 2015 GT&S Rate Case.

3           PG&E asserts that the Report demonstrates that all recorded and forecast costs  
4           for the Line 407 project are reasonable on the basis of the following:<sup>109</sup>

- 5           1. The Commission determined the project was necessary in the 2015  
6           GT&S Rate Case;
- 7           2. The project is now operational and serving customers;
- 8           3. Two separate competitive bidding processes were used to award the  
9           construction contracts for both phases of the project;
- 10          4. Actual project costs will be similar to forecast and PG&E explains the  
11          reasonableness of the variation herein; and
- 12          5. The cost per mile for the Line 407 project is reasonable when  
13          compared to other PG&E gas transmission pipeline projects.

14          PG&E’s overview of the Line 407 project shows the project components which  
15          include:<sup>110</sup>

- 16                   i. 26 miles of 30-inch transmission main from Yolo County to the  
17                   Sierra foothills in Placer County;
  - 18                   ii. A controlled pressure limiting station (Station “1”); and
  - 19                   iii. Two main line valve stations (Stations “2” and “3”).
- 20

21          PG&E explains that the scope of the final project exclude two facilities that were  
22          part of the original scope described in the 2015 GT&S Rate Case, namely: the 10-inch  
23          distribution feeder main (DFM) and the Powerline Station.<sup>111</sup> PG&E explains that the  
24          drivers for these two elements were put on hold, hence, these components were  
25          removed from the project scope in June 2015.<sup>112</sup> PG&E made adjustments to its Line  
26          407 forecast costs to remove the two elements which were put on hold.<sup>113</sup>

27          ORA describes below PG&E’s brief account on the timeline of the work on Line  
28          407 project as presented in the Report.<sup>114</sup>

- 29           1. Work on Line 407 started in 2006.

---

<sup>109</sup> Id. at p.3.

<sup>110</sup> Id. at p.3.

<sup>111</sup> Id. at p.3.

<sup>112</sup> Id. at pp.3-4.

<sup>113</sup> Table 2, PG&E Line 407 Reasonableness Report submitted in PG&E 2019 GT&S in A.17-11-009 dated April 30, 2018 at p.10.

<sup>114</sup> Id. at pp.5-6.

- 1 2. Initial significant expenditures started in 2009 as work determining a route
- 2 was underway.
- 3 3. PG&E determined in 2010 that construction would start in 2012, end in 2013,
- 4 with project close out in 2014.
- 5 4. But in 2012, PG&E decided to put the project on hold because of economic
- 6 slowdown in the Sacramento region.
- 7 5. PG&E's system planning studies in 2013 determined that APD would not be
- 8 met after 2017. PG&E set an operational date of December 2017.
- 9 6. Line 407 was constructed in two phases.
- 10 7. Construction on Phase II started in May 2016, and completed in November
- 11 2016.
- 12 8. Construction on Phase I started on May 2017 until the line became
- 13 operational October 31, 2017.
- 14

15 Following the timeline account since project inception, PG&E's Report next  
16 explains the Project Need as determined in D.16-06-056.<sup>115</sup> The Commission  
17 concludes in D.16-06-056 that Line 407 is needed and likely to be completed within the  
18 rate case period.<sup>116</sup>

19 PG&E provides a comparison of the Line 407 actual cost in Table 5 of the Report  
20 against the summary of the adjusted forecast Line 407 project cost presented in the  
21 2015 GT&S filing as shown in Table 3 of the Report.<sup>117</sup>

22 PG&E's Table 1 in the Report presents the summary of forecast project cost as  
23 shown in the 2015 GT&S filing in A.13-12-012 before any project scope adjustments.<sup>118</sup>  
24 The amounts shown in PG&E's Table 1 were expressed in 000 nominal \$. For  
25 instance, Table 1 at line 1 in the December 2012 CWIP column shows the amount of  
26 \$4,783 (in 000 nominal \$) recorded in CWIP as of December 2012 for Line 407 Phase  
27 II.<sup>119</sup> In addition, the forecast amount in 2013 is shown to be \$1,623 and the forecast

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<sup>115</sup> Id. at p.8.

<sup>116</sup> D.16-06-056 at p.227. See also Findings of Fact #127 & 128, D.16-06-056 at p.427.

<sup>117</sup> Table 5, Line 407 Reasonableness Report Public Version at p.13.

<sup>118</sup> Id., at p.9.

<sup>119</sup> Note (a) at the bottom of Table 1 in the Report indicates that CWIP stands for Construction Work In Progress. Note "a" explains "This is the account in which all costs associated with the construction of new facilities are recorded until the facilities are placed in-service (i.e., become operational). The source of the CWIP values is the workpapers supporting Chapter 15, WP 15-3, lines 63 and 65 (dated 12/19/13). It reflects spending from project inception through December 2012.

1 amount in 2014 is \$9,200 for Phase II.<sup>120</sup> These Phase II costs are shown in a  
2 combined total amount of \$15,606 at line 1 in the “Total” column of PG&E’s Table 1.<sup>121</sup>

3 For Phase I, the PG&E Table 1 at line 2 in the third column shows that the  
4 amount of \$5,863 was included in CWIP as of December 2012 for Line 407 Phase I.<sup>122</sup>  
5 Also at line 2, the forecast amount in 2013 is shown as \$2,031 and the forecast in 2014  
6 is shown as \$2,000.<sup>123</sup> These Phase I costs are shown in a combined total amount of  
7 \$9,894 in PG&E’s Table 1.

8 For the 2015 through 2017 forecast period, PG&E’s Table 1 (in \$000) shows the  
9 amounts of \$8,900 in 2015, \$58,800 in 2016, and \$89,300 in 2017, or a combined total  
10 amount of \$157,000 submitted in the forecast 2015-2017 period.<sup>124</sup>

11 As reported by PG&E in describing the Project Scope, there were two project  
12 components that were removed from the Project Scope originally presented in the 2015  
13 GT&S.<sup>125</sup> PG&E shows in Table 2 of the Report the two components that were  
14 removed, leaving the adjusted forecast value shown in PG&E’s Table 2 at  
15 approximately \$175 million.<sup>126</sup> PG&E asserts that this is the appropriate adjusted  
16 forecast value to compare against the actual costs.<sup>127</sup>

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<sup>120</sup> Note (b) at the bottom of Table 1 in the Report states “The source of the 2013 and 2014 capital expenditure values is the workpapers supporting Chapter 15, WP 15-3, lines 63 and 65. The totals on line 4 of \$3,654 for 2013 and \$11,200 for 2014 also appear in the workpapers supporting Chapter 10, p.10-29 (dated 1/23/15).

<sup>121</sup> Id. at p.9.

<sup>122</sup> Id. at p.9.

<sup>123</sup> Id. at p.9.

<sup>124</sup> Note (c) at the bottom of Table 1 in the Report states “The source of the 2015 through 2017 capital expenditure forecast values is the workpapers supporting Chapter 15, p.15-4, line 96 (dated 12/19/13). These capital expenditure values also appear in the workpapers supporting Chapter 10, WP 10-29.” ORA review of the 2015 GT&S Workpapers for Chapter 10 shows these same forecast cost estimates for Line 407, as presented in PG&E’s Line 407 Reasonableness Report.

<sup>125</sup> PG&E Line 407 Reasonableness Report Public Version submitted in PG&E 2019 GT&S in A.17-11-009 at p.9.

<sup>126</sup> Note (a) at the bottom of Table 2 in the Report states “The source of the 10-inch DFM and Powerline Station values is the 2015 GT&S workpapers supporting Chapter 10, WP 10-31, lines 51 and 57 (dated 1/23/15). From the \$182,500 Forecast total of Line 407, the amount of \$5,133 is removed for the 10-inch DFM and the amount of \$2,390 is removed for the Powerline Station, leaving the amount of \$174,997 as the adjusted forecast amount in Table 2.

<sup>127</sup> PG&E Line 407 Reasonableness Report Public Version submitted in PG&E 2019 GT&S in A.17-11-009 at p.10.

1            Having obtained the adjusted total forecast value of the Line 407 project, PG&E  
2 then realigns and categorizes all the remaining major components of the project. The  
3 two items taken out of project scope were dropped by PG&E from the cost categories  
4 while the engineering and permitting costs were reported as largely recorded as part of  
5 the actual costs for the pipeline work.<sup>128</sup> Likewise, PG&E separates the Allowance for  
6 Funds Used During Construction (AFUDC) costs into a single cost category in the  
7 Report.<sup>129</sup> ORA notes that in the 2015 GT&S workpapers, the estimated AFUDC of the  
8 project was not shown as a separate single cost category but were embedded as  
9 capital expenditure cost items within the different cost categories rather than a single  
10 cost category itself.<sup>130</sup> The resulting realigned categories are then shown to include the  
11 following cost categories:<sup>131</sup>

- 12            1. 30-inch Pipeline
- 13            2. Land Acquisition
- 14            3. Station 1
- 15            4. Station 2
- 16            5. Station 3
- 17            6. AFUDC

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19            PG&E then aligns the adjusted forecast cost of Line 407 in Table 2 with the  
20 above cost categories which allows PG&E to arrive at the amounts shown in Table 3.  
21 Table 3 presents the adjusted Line 407 forecast costs in this Report based on the above  
22 cost categories developed by PG&E.  
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<sup>128</sup> Id. at pp.10-11.

<sup>129</sup> Id. at p.11.

<sup>130</sup> PG&E 2015 GT&S Workpapers in A.13-12-012 dated December 19, 2013 at WP 10-33 which are included in Line 407 Workpapers Redacted.

<sup>131</sup> PG&E Line 407 Reasonableness Report Public Version submitted in PG&E 2019 GT&S in A.17-11-009 at p.11.

**PG&E's TABLE 3**  
**LINE 407 ADJUSTED FORECAST ALIGNED WITH COST CATEGORIES**  
(THOUSANDS OF NOMINAL DOLLARS)

Line No.	Cost Category	Forecast
1	30-inch Transmission Pipe	\$140,501
2	Land Acquisition	\$15,769
3	Station 1	\$4,380
4	Station 2	\$986
5	Station 3	\$4,380
6	AFUDC	\$8,980
7	Total	\$174,996

Source: Table 3, Line 407 Reasonableness Report.

Below PG&E presents the summary of Line 407 actual costs in Table 4 of the Report as of yearend 2017 and in the succeeding Table 5 presents the total Line 407 costs at completion.

PG&E's Table 4  
Line 407 Summary of Actual Costs  
(Thousands of Nominal Dollars)

Line No.	Scope Item	Actual Costs Through December 31,2017	Forecasts of Remaining Costs - 2018	Forecasts of Remaining Costs- 2019 - 2021	Total Costs at Project Completion
1	30-inch Transmission Pipe	\$136,822			
2	Station 1	6,591			
3	Station 2	2,538			
4	Station 3	3,755			
5	Land Acquisition	16,136			
6	AFUDC	14,989	-	-	\$14,989
7	Total	\$180,830	\$10,278	\$714	\$191,823

Source: Table 4, Line 407 Reasonableness Report.

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PG&E's Table 5  
Line 407 Adjusted Forecast Compared to Total Cost at Completion  
(Thousands of Nominal Dollars)

Line No.		(a) 2015 Adjusted GT&S Forecast (From Table 3)	(b) Total Costs at Project Completion (From Table 4)	(c) = (b) - (a) Difference
1	30-inch Transmission Pipe	\$140,609		
2	Station 1	4,367		
3	Station 2	983		
4	Station 3	4,367		
5	Land Acquisition	15,720		
6	AFUDC	8,952	14,989	(6,037)
7	Total	\$174,998	\$191,823	\$(16,825)

4 Source: Table 5, Line 407 Reasonableness Report.

5 PG&E further states:<sup>132</sup>

6 Table 5 shows that the cost of the Line 407 project will be  
7 approximately \$16.8 million more than what was included in the  
8 2015 GT&S Rate Case. Table 5 also shows:

- 9 • The cost to construct the 30-inch transmission pipe is consistent  
10 with the value from Table 3;
- 11 • The total cost to construct all three stations is \$13.2 million while  
12 the corresponding forecast value from Table 3 is \$9.7 million;  
13 and
- 14 • Actual land acquisition and AFUDC costs are higher than  
15 anticipated.

16

17 Table 4 above indicates approximately \$180.8 million spent as of yearend 2017,  
18 with a little over \$10 million expected in year 2018, and the remaining less than \$1  
19 million expected in 2019. PG&E's Response to ORA-019 Q02(c) states that Line 407  
20 was actually completed on October 30, 2017, with only \$0.5 million expected to be  
21 spent in 2019, with no further forecasted expenditures.<sup>133</sup> According to PG&E's Line  
22 407 Report, it is now projecting a lower total cost at completion of \$191.8 million  
23 compared to the forecast cost at completion amount filed in the 2019 GT&S Rate Case  
24 of \$205.4 million.<sup>134</sup> The projected total cost at completion amount of \$191.8 million is  
25 shown in Table 5 of the Report at line 7 in column b. Table 5 thus indicates that the

<sup>132</sup> Id. at p.13.

<sup>133</sup> PG&E Response to ORA-019 Q.2(c).

<sup>134</sup> PG&E Line 407 Reasonableness Report Public Version submitted in PG&E 2019 GT&S in A.17-11-009 dated April 30, 2018 at p.14.



1 amount in excess of the D.16-06-056 established maximum authorized amount of \$157  
2 million is approximately \$35 million (i.e., \$191.8 million less \$157 million). PG&E’s  
3 response to ORA-057 Q.1(a) provided on May 30, 2018 confirms the forecast  
4 expenditure amount of \$191.8 million to complete the Line 407 project.<sup>135</sup>

## 5 **ORA’s Review and Analysis**

- 6 1. Line 407 was among the designated local transmission “adder projects” in  
7 PG&E’s Gas Accord V (GA V) Settlement Agreement (SA) dated August 20,  
8 2010 and adopted in D.11-04-031 in PG&E’s 2011 GT&S rate case.<sup>136</sup> The two  
9 Major Business Case (MBC) reports dated February 27, 2014 and February 25,  
10 2016, respectively, for the Line 407 project shows project start date of  
11 03/09/2005.<sup>137</sup> The GA V SA showed the dates November 2012 and November  
12 2013 estimated operation dates for Phase 1 and Phase 2, respectively.<sup>138</sup> As  
13 stated in the timeline, PG&E chose to place the Line 407 project on hold,  
14 although work on the Line 407 project was initiated since start on 03/09/2005.<sup>139</sup>
- 15 2. PG&E’s timeline account indicates it had already started incurring initial  
16 significant expenditures on work associated with determining a route in 2009.<sup>140</sup>  
17 The Line 407 Workpapers indicate expenditures on land acquisition expenditures  
18 on support activities and PG&E labor starting in year 2008.<sup>141</sup> Pipeline

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<sup>135</sup> PG&E Response to ORA-057 Q1.(a).

<sup>136</sup> Refer to Section 7.4 of the GA V Settlement Agreement which defines an “Adder” project as a capital project that will be included in rates only if the project is actually built and only starting on the January 1 following the project’s in-service date. There were 8 Adder projects in the GA V, and among them, were Line 407 Phase 1 and 2.

<sup>137</sup> The MBC report dated February 27, 2014 was provided in the Redacted Line 407 Workpapers. The MBC report is a submission to the PG&E Executive Project Committee (EPC) made by the PG&E project managers sponsoring the Line 407 project who request EPC approval and recommendation to PG&E’s Chairman and Board of Directors for approval of capital expenditures. In this instance, the MBC report was requesting for Line 407 reauthorization.

<sup>138</sup> This confirms PG&E’s brief timeline account.

<sup>139</sup> PG&E Line 407 Reasonableness Report Public Version submitted in PG&E 2019 GT&S in A.17-11-009 dated April 30, 2018 at p.6.

<sup>140</sup> Line 407 Reasonableness Report Public dated April 30, 2018 in A.17-11-009 at pp.5-6.

<sup>141</sup> Table 5, Line 407 Confidential Workpapers in Excel file. In an email exchange on June 27, 2018, PG&E confirmed to ORA they expect to introduce the Line 407 Confidential Workpapers into the record.

1 expenditures are shown starting in year 2008 with significant amounts starting in  
2 year 2009.<sup>142</sup> Initial AFUDC amounts are shown starting in year 2006 with  
3 significant amounts starting in year 2009 associated with engineering and  
4 permitting.<sup>143</sup> Initial expenditures for Stations 1-3 are shown to start in year 2011  
5 for all 3 stations.<sup>144</sup> The Line 407 Workpapers show that expenditures in the  
6 different cost categories from 2006 through 2013 add up to \$14,786,694.<sup>145</sup>

7 3. The MBC report dated February 27, 2014 provided in the Line 407 Workpapers  
8 state that “since inception, the project has incurred \$14.2 million in costs for the  
9 majority of engineering, permitting and a portion of land acquisition, and has  
10 entered into an additional \$0.4M of contractual commitments for ongoing land  
11 acquisition, permitting, re-routing and developer negotiations.”<sup>146</sup> The MBC  
12 report is corroborated by the Line 407 Workpapers.

13 4. ORA’s review focuses on the reported actual costs that would be recovered from  
14 ratepayers compared to the forecast of costs for the Line 407 project. ORA’s  
15 review includes the PG&E GT&S 2015 Workpapers in A.13-12-012 presented in  
16 Chapter 10 on Gas System Operations on Line 407. ORA also reviewed the  
17 detail of capital expenditures on Line 407 provided in discovery in PG&E’s  
18 response to ORA-044 Q.3 Atch1 in GT&S 2015 in A.13-12-012. The information  
19 on the table provided in the response is reproduced below. The information  
20 includes recorded capital expenditures in years 2011 through 2013, the forecast  
21 2013 and 2014 capital expenditures, and the GT&S 2015 forecast for years 2015  
22 through 2017.

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<sup>142</sup> Table 4, Line 407 Confidential Workpapers in Excel file. In an email exchange on June 27, 2018, PG&E confirmed to ORA they expect to introduce the Line 407 Confidential Workpapers into the record.

<sup>143</sup> Tables 3 and 9, Line 407 Confidential Workpapers in Excel file. In an email exchange on June 27, 2018, PG&E confirmed to ORA they expect to introduce the Line 407 Confidential Workpapers into the record.

<sup>144</sup> Shown in Tables 6 through 8, Line 407 Confidential Workpapers in Excel file. In an email exchange on June 27, 2018, PG&E confirmed to ORA they expect to introduce the Line 407 Confidential Workpapers into the record.

<sup>145</sup> Summed from years 2006-2013 from the last row of Table 6, Line 407 Redacted Workpapers.

<sup>146</sup> The MBC report dated February 27, 2014 was provided in the Redacted Line 407 Workpapers.

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Pacific Gas and Electric Company 2015 Gas Transmission and Storage Rate Case Work Papers Supporting Chapter 10, Gas System Operations Detail of Capital Expenditures										
Order Description	MAT	Operative Date	2011 Recorded	2012 Recorded	2013 Forecast	2013 Recorded	2014 Forecast	2015 Forecast	2016 Forecast	2017 Forecast
P.02696-L-407 Ph.2	73A	8/1/2017	726,159	26,240	-	-	-	-	-	-
L407 Phase 2	73A	8/1/2017	-	-	1,623,350	-	9,200,000	-	-	-
P.02696-L-407 Ph.2	73A	8/1/2017	-	-	-	1,175,208	-	-	-	-
P.02695-L-407 Ph.1	73A	8/1/2017	2,715,028	(3,520,541)	-	-	-	-	-	-
L407 Phase 1	73A	8/1/2017	-	-	2,030,736	-	2,000,000	-	-	-
P.02695-L-407 Ph.1	73A	8/1/2017	-	-	-	1,190,713	-	-	-	-
L-407	73A	8/1/2017	-	-	-	-	-	8,900,000	58,800,000	89,300,000
L-407			3,441,187	(3,494,301)	3,654,086	2,365,921	11,200,000	8,900,000	58,800,000	89,300,000

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In addition, PG&E's response to ORA-044 Q03b) in the 2015 GT&S also provided information on the actual capital expenditures for Line 407 as of the date of the response (which was June 2, 2014). The actual Line 407 capital expenditures amount shown in the response below from 2005-2013 is in the total amount of \$15.2 million, which is not too far off from the \$14.78 million shown in the Line 407 workpapers and the \$14.2 million and \$0.4 million reported amounts in the MBC in February 2014.

Line 407 Actual Capital Expenditures (\$000's)

Actual 2005	Actual 2006	Actual 2007	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Actual 2013
151	(147)	(4)	26	6,730	6,129	3,441	(3,494)	2,366

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- ORA verified the CWIP values for Line 407 Phases 1 and 2 as shown in Table 1 of the Report based on the CWIP values shown in Chapter 15 WP 15-PS3 of the PG&E 2015 GT&S Workpapers.<sup>147</sup> ORA's review shows the CWIP amounts at yearend 2012 were not included in the calculation of the \$157 million authorized amount in D.16-06-056 in the 2015 GT&S rate case. ORA's review likewise shows that the forecast 2013 and 2014 values which were shown in the 2015 GT&S workpapers as forecast amounts were likewise not included in the \$157 million maximum amount authorized in D.16-06-056.<sup>148</sup> The PG&E 2015 GT&S Workpapers for Chapter 10 show that the only amounts included in the \$157

<sup>147</sup> This Chapter 15 Workpaper is also included in the PG&E Redacted Workpapers Supporting Line 407 Reasonableness Report.

<sup>148</sup> Chapter 10 Workpapers at WP 10-29, PG&E 2015 GT&S in A.13-12-012 dated December 19,2013 also included in the PG&E Redacted Workpapers Supporting Line 407 Reasonableness Report.

1 million authorized amount are the forecast project expenditure amounts to be  
2 spent in years 2015, 2016, and 2017.<sup>149</sup> The \$157 million authorized cap amount  
3 excludes from the total amount the project costs prior to the year 2015. If the  
4 comparison of project forecast amounts against recorded project costs were  
5 merely on the basis of spending during the 2015-2017 period, then Line 407  
6 Workpapers show the actual recorded project expenditures just in the 2015-2017  
7 period were approximately \$159 million.<sup>150</sup>

8 6. PG&E provided errata in October 3, 2014 in the 2015 GT&S rate case that  
9 showed the Line 407 forecast total costs will amount to \$171.8 million, which  
10 amount includes both the 2011 and 2012 recorded expenditures and the forecast  
11 expenditures for years 2013 through 2017. The \$171.8 million total cost amount  
12 did not show inclusion of the CWIP prior to 2011.

13 7. The forecast amounts shown in Table 1 (in \$000) of PG&E's Line 407 Report,  
14 namely, the total amounts of \$15,606 for Phase II costs, the \$9,894 for Phase I  
15 costs, and the forecast amount of \$157,000 presented in the GT&S 2015 rate  
16 case result in a combined total forecast amount of \$182,500, which confirm  
17 PG&E's Table 1 of the Report in the rightmost "Total" column at line 4.<sup>151</sup> Based  
18 on the foregoing, ORA finds support for the Table 1 Line 407 Report forecast  
19 given that it corresponds to the forecast amounts presented in the GT&S 2015  
20 rate case as shown in the workpapers at the time of filing before D.16-06-056.

21 8. ORA's review of the PG&E 2015 Workpapers at WP 10-31 indicates a match to  
22 the amounts shown as removed for the 10-inch DFM and the Powerline Station  
23 components in Table 2 of the Report. Based on the foregoing, ORA finds

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<sup>149</sup> Chapter 10 Workpapers at WP 10-29 and WP 10-33, PG&E 2015 GT&S in A.13-12-012 dated December 19, 2013, also included in the PG&E Redacted Workpapers Supporting Line 407 Reasonableness Report.

<sup>150</sup> Table 3, Line 407 Confidential Workpapers in Excel file. In an email exchange on June 27, 2018, PG&E confirmed to ORA they expect to introduce the Line 407 Confidential Workpapers into the record.

<sup>151</sup> PG&E Line 407 Reasonableness Report Public Version submitted in PG&E 2019 GT&S in A.17-11-009 dated April 30, 2018 at p.9.

1 support for the project scope amounts removed the Table 1 forecast and shown  
2 in Table 2 of the Report showing the adjusted forecast total project cost.

3 9. The six cost categories in PG&E's Table 3 correspond to the Line 407 major cost  
4 categories presented in the 2015 GT&S workpapers in Chapter 10 except in  
5 three respects.<sup>152</sup> The source of difference is that the latter (a) does not identify  
6 the AFUDC as a separate single cost category, (b) shows Engineering and  
7 Permitting as a separate cost category from the 30" pipeline, and (3) includes the  
8 two original items eventually removed from the project scope. PG&E's Line 407  
9 Workpapers at Table 3 provide summary details of the cost categories.<sup>153</sup> Table  
10 4 of the Line 407 workpapers show the details of the cost items each year during  
11 the period 2006 – 2017 for Engineering and Permitting expenditures included into  
12 the pipeline transmission cost total category.<sup>154</sup> It often takes years to permit,  
13 engineer, design, procure, construct, and finally put a new pipe into service.  
14 Table 9 of the Line 407 workpapers show the details of the cost items each year  
15 during the period 2006 – 2017 for AFUDC.<sup>155</sup> ORA notes that both Major  
16 Business Case (MBC) reports which show the basis of the cost categories in  
17 Table 3 of the Line 407 Report, included AFUDC as a separate cost category.  
18 The six cost categories of the project scope are the (1) 30-inch transmission pipe  
19 (including the engineering and permitting), (2) land acquisition, (3) Station 1, (4)  
20 Station 2, (5) Station 3, and finally (6) AFUDC. Thus, ORA does not take issue  
21 with the six cost categories.

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<sup>152</sup> PG&E Workpapers shown in WP 10-33, PG&E 2015 GT&S, also included in the PG&E Redacted Workpapers Supporting Line 407 Reasonableness Report.

<sup>153</sup> Table 3, Line 407 Confidential Workpapers in Excel file. In an email exchange on June 27, 2018, PG&E confirmed to ORA they expect to introduce the Line 407 Confidential Workpapers into the record.

<sup>154</sup> Table 4, Line 407 Reasonableness Report Confidential Workpapers in Excel. In an email exchange on June 27, 2018, PG&E confirmed to ORA they expect to introduce the Line 407 Confidential Workpapers into the record.

<sup>155</sup> Table 9, Line 407 Reasonableness Report Workpapers in Excel. In an email exchange on June 27, 2018, PG&E confirmed to ORA they expect to introduce the Line 407 Confidential Workpapers into the record.

- 1 10. The forecast amount of the 30” pipeline expenditures is shown in PG&E’s Table  
2 3 of Report in the amount of \$140,501 on an adjusted forecast basis.<sup>156</sup> ORA’s  
3 review from PG&E’s 2015 GT&S forecast filing in WP 10-31 to 10-32 and WP 10-  
4 33 shows that the Line 407 forecast for the 30” pipeline is in the amount of  
5 \$126,718.5 for the 2015-2017 period. But review of the workpapers in the 2015  
6 GT&S shows that this latter amount does not include the portion of the 2013 and  
7 2014 forecast amounts and the CWIP as of yearend 2012 that were attributable  
8 to the pipeline expenditures.<sup>157</sup>
- 9 11. Station 1 and 3 expenditures are shown in Table 3 of the Report at the adjusted  
10 forecast amount of \$4,380 (in \$000) each, while the WP 10-33 in the 2015 GT&S  
11 show them at slightly higher amounts at \$4,823 each. These station costs are  
12 5% to 6% of the total adjusted forecast project cost in Table 3 of the Report. The  
13 2015 GT&S workpapers indicate that the station costs forecast for Line 407 are  
14 based off actual Line 406 construction costs for two stations.<sup>158</sup> The station cost  
15 reported actual costs are slightly higher than forecast at approximately 7% of the  
16 total project actuals shown in Table 4 of the Report and through completion in  
17 Table 5.
- 18 12. ORA’s review of PG&E’s confidential workpapers supporting the Line 407  
19 Reasonableness Report indicates how PG&E arrived at the cost categories for  
20 the Line 407 adjusted forecast shown in Table 3 of the Report.<sup>159</sup>
- 21 13. The Line 407 workpaper shows use of data from the February 27, 2014 Major  
22 Business Case (MBC) to support Table 2 and Table 3 in the Report. In the first  
23 step of aligning the forecast cost into the six cost categories in the Report, PG&E

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<sup>156</sup> Line 407 Reasonableness Report Public Version at p.12.

<sup>157</sup> PG&E Workpapers shown in WP 10-33 through WP 10-35, PG&E 2015 GT&S. The amount includes escalation up to year 2017 also included in the PG&E Redacted Workpapers Supporting Line 407 Reasonableness Report.

<sup>158</sup> PG&E Workpaper shown in WP 10-32, PG&E 2015 GT&S, also included in the PG&E Redacted Workpapers Supporting Line 407 Reasonableness Report.

<sup>159</sup> PG&E Redacted Workpapers Supporting Line 407 Reasonableness Report dated May 10, 2018 at p.1.

1 first shows the recreation of the Cost Assumption table from the 2014 MBC  
2 report and identifies the cost category used in the report. PG&E provides a copy  
3 of the 2014 MBC report (called Gate 1 reauthorization) as well as the 2016 MBC  
4 report (called Gate 2 authorization) as part of the Line 407 workpapers. The cost  
5 assumptions table lays out the cost estimates by cost categories of Line 407  
6 when it was presented in the MBC reports to PG&E's Executive Project  
7 Committee (EPC). The MBC reports had cost assumptions by major scope item  
8 category based on scenarios for an Expected Case, a Best Case, and a Worst  
9 Case.<sup>160</sup> As shown, a Best Case would have cost less than an Expected Case,  
10 while a Worst Case would have cost more than an Expected Case.<sup>161</sup> A Best  
11 Case is approximately 9 percent less than an Expected Case while a Worst Case  
12 is approximately 20 percent more than an Expected Case.<sup>162</sup>

13 14. In the Line 407 workpapers, PG&E provides the same cost assumptions under  
14 both an Expected Case and a Best Case scenario from the MBC reports.<sup>163</sup> The  
15 Line 407 actual costs through year end 2017 are closer to the estimated costs  
16 under an Expected Case scenario, and hence it would be reasonable to use the  
17 best case and expected case scenarios for comparison. In PG&E's analysis to  
18 realign the forecast costs into cost categories, PG&E shows the different major  
19 scope cost categories in the first column. The second column shows the  
20 different estimated cost amounts based on the project scope under an Expected  
21 Case scenario, and a total project cost estimated amount at the bottom. The  
22 third column shows the differential estimated cost amounts based on the project  
23 scope under a Best Case scenario and a total project cost amount at the bottom.  
24 Finally, in the fourth column, PG&E takes the difference between the two  
25 scenarios and a total project cost amount at the bottom. The difference in the  
26 fourth column represents the estimated costs under a Best Case scenario. In the

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<sup>160</sup> PG&E Redacted Workpapers Supporting Line 407 Reasonableness Report dated May 10, 2018 at p.32.

<sup>161</sup> PG&E Redacted Workpapers Supporting Line 407 Reasonableness Report dated May 10, 2018 at p.32.

<sup>162</sup> PG&E Redacted Workpapers Supporting Line 407 Reasonableness Report dated May 10, 2018 at p.32.

<sup>163</sup> The Line 407 Workpapers cost assumptions match those in the MBC report scenarios.

1 second step of aligning the forecast into the six cost categories in the Report,  
2 PG&E takes the cost amounts from the fourth column by cost categories  
3 (excluding the 10-inch DFM and the Powerline Station) and fits them into the six  
4 cost categories. Based on the resulting values in the fourth column which are  
5 now shown in the six cost categories, PG&E takes the percentage share of the  
6 total for each cost category. The percentages obtained are applied to the total  
7 adjusted forecast amount of \$174,997 shown in Table 2 of the Report, and based  
8 on this adjusted forecast amount realigned into six categories, PG&E arrives at  
9 the numbers shown in Table 3 of the Report. ORA finds support for PG&E's  
10 Table 3 of the Report as shown.

- 11 15. The land acquisition cost category is shown in Table 3 of the Report at \$15,769  
12 (in \$000) representing approximately 9% of adjusted forecast. On the other  
13 hand, WP 10-31 through WP 10-32 in the 2015 GT&S shows Land Acquisition at  
14 only \$1,810 (in \$000) in the forecast period 2015-2017. That low forecast  
15 amount in the 2015 GT&S is understated to the extent it did not include the land  
16 acquisition expenditures prior to 2015. Table 3 Line 407 adjusted forecast  
17 amount for land acquisition shows it was approximately 9 percent of the total  
18 project adjusted forecast cost. The Line 407 Workpapers show itemized Land  
19 Acquisition expenditures initially occurring in the year 2008, with significant  
20 amounts starting in years 2009 through 2014.<sup>164</sup> In Table 4 which show Line 407  
21 summary of actual costs, through yearend 2017, the amount of actual costs for  
22 land acquisition remains at approximately 9 percent of the total actual project  
23 costs through December 31 2017. However, the confidential version of Line 407  
24 Report shows a slight bump up in the percentage share of some project  
25 categories when based on the total costs at project completion of \$191, 823 (in  
26 \$000).<sup>165</sup> This is because based on the forecast remaining costs in 2018, there

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<sup>164</sup> Table 5, Line 407 Confidential Workpapers in Excel file. In an email exchange on June 27, 2018, PG&E confirmed to ORA they expect to introduce the Line 407 Confidential Workpapers into the record.

<sup>165</sup> Line 407 Reasonableness Report Public Version at p, 12.



1 remain three eminent domain cases still pending financial compensation.<sup>166</sup> The  
2 land acquisition total cost at project completion is expected to exceed the  
3 forecast adjusted amount. PG&E however states that it is possible that the final  
4 values can be more or less than the estimate.<sup>167</sup> ORA notes that at the time Line  
5 407 was presented for authorization in the MBC reports, land rights acquisition  
6 was already identified as a persistent issue causing delay in project  
7 implementation.<sup>168</sup> Land acquisition was listed as a persistent issue in the MBC  
8 reports.<sup>169</sup>

- 9 16. ORA's review shows that the project delays stemming from either land  
10 acquisition issues or some other project-related implementation delays which  
11 brought the project on hold did not bring along increases in the AFUDC.<sup>170</sup> Line  
12 407 Workpapers indicate that AFUDC does not accrue to land acquisition  
13 orders.<sup>171</sup> On a forecast basis, the AFUDC is shown at approximately 5% of the  
14 Line 407 adjusted forecast total project cost in Table 3 of the Report. By the time  
15 Line 407 actual costs were reported through December 31, 2017, AFUDC had  
16 increased to a little over 8% of the total project cost as of that date. The Line 407  
17 Workpapers show that approximately 75 percent or the bulk of the AFUDC  
18 expenditures occurred during the years 2015-2017.<sup>172</sup> The AFUDC is not  
19 expected to further increase from the amount reported at yearend 2017 level.<sup>173</sup>
- 20 17. ORA's review of the Line 407 summary of actual costs shown on Table 4 of the  
21 Report indicate actual costs through December 31, 2017 at the total amount of  
22 \$180.83 million. The amount on Table 4 is supported by the Line 407

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<sup>166</sup> Line 407 Reasonableness Report Public Version at p, 13.

<sup>167</sup> Line 407 Reasonableness Report Public Version at p, 26.

<sup>168</sup> Line 407 Redacted Workpapers which include the MBC Reports.

<sup>169</sup> Id.

<sup>170</sup> Table 9, Line 407 Confidential Workpapers in Excel file. In an email exchange on June 27, 2018, PG&E confirmed to ORA they expect to introduce the Line 407 Confidential Workpapers into the record. Table 9 summarizes AFUDC expenditures over the life of the project for all orders numbers.

<sup>171</sup> Shown at the bottom of Table 3, Line 407 Confidential Workpapers in Excel file. In an email exchange on June 27, 2018, PG&E confirmed to ORA they expect to introduce the Line 407 Confidential Workpapers into the record.

<sup>172</sup> Id.

<sup>173</sup> As shown in Table 4, Line 407 Reasonableness Report Public Version at p.12.

1 confidential excel workpapers that show an annual breakdown of the  
2 expenditures from 2006 through 2017 which amount to a total of \$180.83  
3 million.<sup>174</sup> Table 4 also shows in redacted format the forecast remaining costs in  
4 years 2018 and the period 2019-2021 (i.e., the 2019 GT&S period). The total  
5 amounts in the two forecast columns of Table 4 sum up to approximately \$11  
6 million of remaining costs until completion. PG&E identified the items included in  
7 remaining work in 2018 and beyond.<sup>175</sup> By the term “2018 and beyond,” the  
8 PG&E Report refers to the year 2018 and the years 2019-2021 shown in Table 4  
9 with remaining forecast amounts. PG&E explains in the Report that the Pipeline  
10 work shown at line 1 of Table 4 includes a multi-year environmental restoration  
11 plan and includes remaining work for the ILI work.<sup>176</sup> There are small amounts  
12 remaining on station work which includes final commissioning and security  
13 features.<sup>177</sup> ORA does not oppose the identified expenditure items on remaining  
14 work. Table 4 of the Report indicates the total costs at project completion in the  
15 amount of \$191.823 million based on the \$180.83 million of actual costs at the  
16 end of 2017 and the forecast remaining work of approximately \$11 million in the  
17 period 2018 and beyond.

- 18 18. Table 5 of the Report shows the comparison of the Line 407 adjusted forecast  
19 presented in Table 3 of the Report (in column “a”) and the Line 407 total costs at  
20 project completion presented in Table 4 of the Report (in column “b”). PG&E  
21 states that “Table 5 shows that the cost of the Line 407 project will be  
22 approximately \$16.8 million more than what was included in the 2015 GT&S Rate  
23 Case.”<sup>178</sup> The \$16.8 million pertains to the difference between the amount in  
24 column “a” and those in column “b,” which represents a difference of  
25 approximately 9.6% by which the Line 407 total costs at completion would

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<sup>174</sup> Shown in Table 4, Line 407 of the Reasonableness Report Public Version and the same amount is shown in the Line 407 Confidential Workpapers in Excel file. In an email exchange on June 27, 2018, PG&E confirmed to ORA they expect to introduce the Line 407 Confidential Workpapers into the record.

<sup>175</sup> Line 407 Reasonableness Report Public Version at pp.12-13.

<sup>176</sup> Line 407 Reasonableness Report Public Version at p. 13. ILI stands for in-line inspection.

<sup>177</sup> Line 407 Reasonableness Report Public Version at p. 13

<sup>178</sup> Line 407 Reasonableness Report Public Version at p.13.

1 exceed the 2015 adjusted GT&S forecast amount. The \$16.8 million excess cost  
2 above the 2015 adjusted GT&S forecast is made up of approximately \$11 million  
3 of remaining work until completion (described in the foregoing) and  
4 approximately \$5.8 million of actual costs incurred through year end 2017.  
5 Actual costs shown in Table 4 of the Report indicates that the excess \$5.8 million  
6 is mostly made up of AFUDC costs which exceed the adjusted forecast amounts  
7 shown in Table 3 of the Report. That is, actual AFUDC shown in Table 4 is  
8 \$14,989 while forecast AFUDC shown in Table 3 is \$8,980, or a difference of \$6  
9 million. The AFUDC expenditures are associated with both the pipeline and  
10 station work.

- 11 19. Pursuant to the Commission Ordering Paragraph in D.16-06-056, a maximum  
12 cost of \$157 million was set and PG&E is authorized cost recovery of up to this  
13 amount. The reasonableness review covers all project costs. Based on PG&E's  
14 Report submission, PG&E has shown that it incurred project costs in excess of  
15 the maximum authorized amount of \$157 million. The total cost at project  
16 completion of \$191.823 million presented in Table 5 of the Report shows that  
17 PG&E's Line 407 actual costs has exceeded the set cap by the amount of  
18 \$34.823 million. PG&E's response to ORA-057 Q.2 confirms this amount.<sup>179</sup>  
19 Even with the two project components removed from the original scope, PG&E  
20 still exceeded the maximum cap of \$157 million.
- 21 20. ORA's review shows several items of expenditures which comprised the amounts  
22 that is in excess of the \$157 million cap. The \$34.823 million of excess costs  
23 likely includes the amounts recorded in CWIP as of December 2012 (i.e, \$10.646  
24 million), which were shown as excluded in the total amount of \$157 million. There  
25 are remaining project costs to completion of about \$11 million based on Tables 4  
26 and 5 of the PG&E Report. These two items already make up \$21 million that  
27 were not included in the \$157 million. Based on the difference between Table 3  
28 and Table 4, one can see that PG&E's actual recorded cost for AFUDC  
29 exceeded its forecast on AFUDC by approximately \$6 Million. Those tables also

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<sup>179</sup> PG&E Response to ORA-057 Q.2(a).

1 show that PG&E's actual recorded cost for all 3 stations combined exceeded the  
2 combined forecast for those 3 stations by about \$3.5 million total. The recorded  
3 spending in 2013 and 2014 which were forecasts at the time, were both shown  
4 as not included in the \$157 million cap calculation, and the remaining work until  
5 completion described in the foregoing.

6 ORA shows the items on amounts in excess of the \$157 million below:

CWIP as of Dec 2012	\$10.646 Million
AFUDC Actual recorded Excess over Forecast	\$6.0
Station Actual recorded Excess over Forecast	\$3.5
Land Acquisition Actual recorded Excess over Forecast	\$0.4
Forecast Cost to Project Completion	\$11
CWIP Recorded in 2014 & 2014 not included in Fcast	\$3.3
Total Excess Over the Cap	\$34.8

7  
8 There is no direct showing in the Report on the items that comprise the excess  
9 amounts over the \$157 million cap. ORA gathered the information based on  
10 what has been presented by PG&E in the Report but PG&E itself should be  
11 required by the Commission to provide a direct showing on the composition of  
12 the amounts in excess of the \$157 million and cite reference to the Report.

- 13 21. PG&E employed two separate competitive bidding processes for the Line 407  
14 construction contracts.<sup>180</sup> PG&E's Report describes the basic competitive  
15 bidding process employed for the Line 407 project (construction and materials),  
16 including the bid evaluation criteria, number of bidders, and the contract amount  
17 awarded.<sup>181</sup> In Table 7 of the Report, PG&E also provides additional detail on  
18 the different cost components of the transmission pipeline costs for the total  
19 actual cost amount of \$136.822 million.<sup>182</sup> Table 7 shows also that the  
20 transmission pipeline expenditures will amount to \$139.653 million at project  
21 completion.<sup>183</sup> The 30-inch transmission pipe is the largest Line 407 cost  
22 component. As forecast, it was 80% of the total forecast adjusted cost.<sup>184</sup> At

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<sup>180</sup> PG&E Response to ORA-057 Q.3(a).

<sup>181</sup> Line 407 Reasonableness Report Public Version starting at p.17.

<sup>182</sup> Table 7, Line 407 Reasonableness Report Public Version at p.16.

<sup>183</sup> Id.

<sup>184</sup> Table 3, Line 407 Reasonableness Report Public Version at p.12.

1 actual through the end of December 2017, the 30-inch pipe is at 75.6% of the  
2 total actual at yearend 2017.<sup>185</sup> At project completion, the 30-inch pipe is  
3 expected to be at 72.8% of the total cost at project completion.<sup>186</sup>

4 22. The Report indicates the benchmarking of the Line 407 project against the  
5 Pipeline Safety Enhancement Plan (PSEP) large diameter gas transmission  
6 projects constructed in 2012 and 2013. According to PG&E, these projects were  
7 24" diameter transmission that fell into two categories: one category involving  
8 Bay Area and Central Coast region projects with relatively short sections installed  
9 mostly in paved areas with significant substructures present had costs ranging  
10 between \$5 to \$14 million per mile<sup>187</sup> and the other category involving Central  
11 Valley projects with somewhat longer sections were installed mostly in farm land  
12 areas with limited substructures present had costs ranging from \$3.4 million to  
13 \$5.2 million per mile.<sup>188</sup> PG&E states that the Line 407 project is similar to the  
14 latter category in the Central Valley but with a longer length.<sup>189</sup> However, PG&E  
15 points out that the Line 407 project is a 30-inch diameter pipeline compared to  
16 the Central Valley projects which are 24-inch diameter pipes.<sup>190</sup> In addition,  
17 PG&E points out that Line 407 project includes the construction of multiple  
18 stations which other projects did not include.<sup>191</sup> Line 407 has 3 stations. Based  
19 on the project cost at completion of \$191.8 million and the pipe length of 26  
20 miles, the cost per mile for the Line 407 project is \$7.45 million per mile, unless  
21 PG&E unexpectedly incurs substantially more costs in the year 2018 and  
22 beyond.<sup>192</sup>

23 23. ORA's review of the 2015 GT&S workpapers for the Line 407 project shows that  
24 PG&E had done external benchmarking of Line 407 Gate 1 estimate against the

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<sup>185</sup> Table 4, Line 407 Reasonableness Report Public Version at p.12.

<sup>186</sup> Table 4, Line 407 Reasonableness Report Public Version at p.12.

<sup>187</sup> Line 407 Reasonableness Report Public Version at p.33.

<sup>188</sup> Id.

<sup>189</sup> Id.

<sup>190</sup> Id.

<sup>191</sup> Id.

<sup>192</sup> Id, at p.32.

1 PSEP large diameter gas transmission projects constructed in 2012 and 2013.  
2 <sup>193</sup> But as PG&E points out, these are not comparable projects. PG&E explains  
3 that their “benchmarking effort did not compare other attributes of any individual  
4 project to Line 407, because of the significantly larger scope and scale of Line  
5 407. Benchmarking was performed at a high level, using location and diameter  
6 only.”<sup>194</sup> PG&E’s responses to ORA-072 shows that the Central Coast, Central  
7 Valley, and Northern Regions projects were 24-inch diameter pipelines of much  
8 shorter length than the Line 407, with an average cost per mile range from \$6.7  
9 million up to \$14.9 million.<sup>195</sup> Similarly, the PSEP replacement projects  
10 constructed in 2012 and 2013 were 24-inch diameter pipelines of much shorter  
11 length than the Line 407, with a total project cost per mile of as low as \$4 million  
12 per mile to as high as \$13.2 million per mile.<sup>196</sup>

13 24. ORA’s review includes another possible project for comparison with the Line 407  
14 project. ORA refers to the Line 406 project which was one of the projects  
15 designated as an “Adder” project as defined in the Gas Accord V Settlement  
16 Agreement.<sup>197</sup> PG&E’s response to ORA-072 Q1 indicates that similar to Line  
17 407, the Line 406 project is a 30-inch diameter pipeline and both are located in  
18 Yolo County.<sup>198</sup> Line 406 was 14.39 miles in length while Line 407 is 26.65  
19 miles.<sup>199</sup> Like Line 407, the Line 406 project had a number of project  
20 substructures which includes valve, regulator, and pressure-limiting stations  
21 constructed. Line 406 had 2 while Line 407 had 3.<sup>200</sup> According to PG&E, the  
22 cost per mile of Line 406 at project completion was approximately \$4.188 million  
23 based on the actual recorded cost of Line 406 as of year-end 2010.<sup>201</sup> This

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<sup>193</sup> 2015 PG&E GT&S Workpapers at WP 10-32 included in Line 407 Workpapers Redacted.

<sup>194</sup> PG&E Response to ORA-072 Q2 and Q3.

<sup>195</sup> PG&E Response to ORA-072 Q2.

<sup>196</sup> PG&E Response to ORA-072 Q3.

<sup>197</sup> Refer to Section 7.4 of the Gas Accord Settlement Agreement shown as an Attachment to D.11-04-031 which adopted the GA V.

<sup>198</sup> PG&E Response to ORA-072 Q1. In addition to Yolo County, Line 407 had some located in Sutter and Placer Counties.

<sup>199</sup> PG&E Response to ORA-072 Q1.

<sup>200</sup> PG&E Response to ORA-072 Q1.

<sup>201</sup> PG&E Response to ORA-072 Q1.

1 actual cost is slightly higher than the forecast cost cap of Line 406 approved in  
2 D.11-04-031 of \$4.072 million.<sup>202</sup> PG&E states that if total recorded costs  
3 through 2017 were to be used, the cost per mile of Line 406 was \$3.829.<sup>203</sup> The  
4 Line 406 cost per mile is significantly lower compared to Line 407 cost at project  
5 completion of \$7.4 million per mile. Notwithstanding the similarities just  
6 described, ORA's discovery review shows significant differences between the  
7 two projects as explained next.

8 25. PG&E's responses to ORA-072 Q1, which will be included as an attachment to  
9 this exhibit, indicates that there were significant differences between Line 407  
10 and Line 406 pipeline construction efforts. PG&E explains a difference in the  
11 terrain. Whereas the Line 406 was predominantly flat farm land with gently  
12 rolling hills, low water table with no groundwater produced, very little rock, and  
13 with several small irrigation canals and ditches crossed using the hammer bore  
14 method, PG&E indicated the Line 407 project showed quite the opposite  
15 characteristics. The Line 407 terrain was flat farm land with no elevation  
16 changes, with very high water table requiring trench dewatering measures in  
17 several segments in Yolo County, Sutter County, and Placer County, with no rock  
18 but encountered one instance of calcified material damaging equipment during a  
19 horizontal drilling operation, and with multiple rice field traversed for several  
20 miles.

21 26. In addition, PG&E's response to ORA-072 Q1 indicate significant differences in  
22 construction conditions. Line 406 had the standard 4 feet minimum cover while  
23 Line 407 had 10 to 20 feet cover for more than 25% of open cut mileage to  
24 accommodate planned adjacent real estate developments. Line 406 had two  
25 interstate highway or railroad crossing requiring horizontal drilling and had non-  
26 union labor. On the other hand, Line 407 had the Orchard irrigation system west  
27 of Sacramento requiring relocation at substantial additional cost. Line 407

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<sup>202</sup> PG&E Response to ORA-072 Q1.

<sup>203</sup> PG&E Response to ORA-072 Q1.

1 encountered 17 interstate highway or railroad crossings requiring horizontal  
2 drilling and had union labor.

3 27. In terms of land acquisition issues, PG&E's response to ORA-072 Q1 indicates  
4 that Line 406 had mildly contested land acquisition issues with \$4.5 million in  
5 total cost and with moderate legal support. On the other hand, Line 407 had  
6 highly contested land acquisition issues requiring significant legal support and at  
7 a total cost of \$24 million.

8 28. And finally, PG&E's response to ORA-072 Q1 indicates significant differences  
9 between Line 406 and Line 407 in terms of environmental remediation. Based  
10 on the foregoing, ORA finds that although Line 406 has basic project features  
11 more similar to Line 407 than the PSEP or 2015 GT&S projects, there is  
12 sufficient basis provided by PG&E to explain and account for the significantly  
13 lower cost per mile of Line 406 compared to Line 407. ORA's review has not  
14 found any other project that is exactly like Line 407 which could be compared on  
15 a cost per mile basis.

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