

Docket : A.17-11-009
Exhibit Number : ORA-07
Commissioner : C. Rechtschaffen
ALJ : S. Roscow
Witnesses : Kelly Lee
Crystal Yeh



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**

Asset Family - Facilities

San Francisco, California
June 29, 2018

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	SUMMARY OF RECOMMENDATIONS	1
	A. Facilities Asset Family Expenses.....	1
	B. Facilities Family Asset Capital Expenditures	2
III.	GENERAL OVERVIEW	5
IV.	COMPRESSION AND PROCESSING (C&P) ASSETS	5
	A. C&P Routine Expenditures	5
	1. Overview of PG&E's Request.....	5
	2. ORA's Analysis	7
	B. GT Electrical Upgrades Hinkley and Topock	8
	1. Overview of PG&E's Request.....	8
	2. ORA's Analysis	9
	C. Upgrade Station Control	10
	1. Overview of PG&E's Request.....	10
	2. ORA's Analysis	11
V.	MEASUREMENT AND CONTROL (M&C) ASSETS.....	12
	A. M&C Routine Expenditures	12
	1. Overview of PG&E's Request.....	12
	2. ORA's Analysis	13
	B. M&C Station Rebuilds.....	14
	1. Overview of PG&E's Request.....	14
	2. ORA's Analysis	16
	C. M&C Terminal Upgrades	17
	1. Overview of PG&E's Request.....	17
	2. ORA's Analysis	17
	D. M&C Gas Quality Assessment.....	18
	1. Overview of PG&E's Request.....	18
	2. ORA's Analysis	19
	E. M&C Station Over Pressure Protection (OPP) Enhancements.....	20

1. Overview of PG&E’s Request.....	20
2. ORA’s Analysis.....	21
VI. PROGRAMS RELATED TO BOTH C&P AND M&C	22
A. Critical Documents, ECA 1 and ECA 2, and Station Strength Testing.....	22
1. Overview of PG&E’s Request.....	22
2. ORA’s Analysis.....	22
WITNESS QUALIFICATIONS OF K. LEE.....	24
WITNESS QUALIFICATIONS OF C. YEH.....	25

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 Facilities Asset Family proposals associated with its Test Year (TY) 2019 Gas
5 Transmission and Storage (GT&S) rate case. Specifically, this exhibit addresses
6 PG&E's forecasts of Facilities Asset Family operation and maintenance (O&M)
7 expenses for 2019 and capital expenditures for 2017 through 2019.

8 Facilities Asset Family expenses and capital expenditures are for work
9 activities related to the upgrade and maintenance of PG&E's Compression and
10 Processing (C&P) and Measurement and Control (M&C) Stations.

11 This exhibit only addresses the program areas in the Facilities Asset Family in
12 which ORA recommends adjustment to the PG&E's proposed expenditures, and
13 where ORA makes other recommendations in these areas. These programs areas
14 in C&P include Routine Expenditures, GT Electrical Upgrades Hinkley and Topock,
15 and Upgrade Station Control. In M&C, these program areas are Routine
16 Expenditures, Station Rebuilds, Terminal Upgrades, Gas Quality Assessment,
17 Station Over Pressure Protection (OPP) Enhancements. Program areas that are
18 related to both C&P and M&C are Critical Documents, Engineering Critical
19 Assessment Phase 1 (ECA 1) and Phase 2 (ECA 2), and Station Strength Testing.
20 In program areas for which ORA does not make recommendations, it does not
21 necessarily imply that ORA supports PG&E's proposals in these areas.

22 **II. SUMMARY OF RECOMMENDATIONS**

23 **A. Facilities Asset Family Expenses**

24 The following summarizes ORA's recommendations regarding Facilities Asset
25 Family O&M expenses:

- 26 • ORA recommends that the California Public Utilities Commission
27 (Commission) adopt for Routine C&P expenses of \$7.399 million
28 instead of PG&E's proposed \$11.259 million, a forecast reduction
29 of \$3.860 million.

- 1 • ORA recommends that the Commission adopt for Routine M&C
2 expenses of \$3.760 million instead of PG&E's proposed \$6.451
3 million, a forecast reduction of \$2.691 million.
- 4 • ORA recommends that the Commission adopt for Gas Quality
5 Assessment expenses of \$0.450 million instead of PG&E's
6 proposed \$1.040 million, a forecast reduction of \$0.590 million.
- 7 • ORA recommends that the Commission require PG&E to set up a
8 memorandum account to track the expenses for the Station Over
9 Pressure Enhancements Program.
- 10 • ORA recommends that the Commission order PG&E to continue to
11 track the expenses for ECA 1 and ECA 2 with balancing accounts
12 and Critical Documents and Station Strength Testing with
13 memorandum accounts.

14 Table 7-1 compares ORA's recommendation and PG&E's 2019 Facilities
15 Family Asset expense requests:

16 **Table 7-1**
17 **Facilities Family Asset O&M Expenses for 2019**
18 **(in Thousands of Dollars)**

Description (a)	ORA Recommended (b)	PG&E Proposed ¹ (c)	Amount PG&E>ORA (d=c-b)
Routine C&P	\$7,399	\$11,259	\$3,860
Routine M&C	\$3,760	\$6,451	\$2,691
M&C Gas Quality Assessment	\$450	\$1,040	\$590
M&C Station OPP Enhancements	\$1,561	\$1,561	\$0
FIMP Risk Management	\$2,752	\$2,752	\$0
Critical Documents	\$3,143	\$3,143	\$0
ECA Phase I	\$4,612	\$4,612	\$0
ECA Phase II	\$1,835	\$1,835	\$0
Station Strength Testing	\$1,014	\$1,014	\$0
Total Facilities Expenses	\$26,526	\$33,667	\$7,141

19 **B. Facilities Family Asset Capital Expenditures**

20 The following summarizes ORA's recommendations regarding Facilities Asset
21 Family capital expenditures:

¹ PG&E Prepared Testimony, Chapter 7 (White), page 7-4, Table 7-2.

- 1 • ORA recommends the Commission adopt the 2017 adjusted-
2 recorded capital expenditures for the Facilities Family Asset areas.
- 3 • ORA recommends that the Commission adopt for Electrical
4 Upgrades capital expenditures of \$4.270 million for 2019 instead of
5 PG&E's proposed \$7.000 million, a forecast reduction of \$2.730
6 million.
- 7 • ORA recommends the Commission require PG&E to set up a one-
8 way balancing account to track the capital expenditures for the GT
9 Electrical Upgrades to balance ratepayer protection with the
10 uncertainty in PG&E's work plans.
- 11 • ORA recommends that the Commission adopt a forecast for
12 Upgrade Station Control of \$2.000 million for 2018 instead of
13 PG&E's proposed \$5.300 million, a forecast reduction of \$3.300
14 million.
- 15 • ORA recommends that the Commission require PG&E to set up a
16 one-way balancing account to track the capital expenditures of
17 Station Rebuilds because of the uncertainty with priority between
18 simple station rebuilds and complex station rebuilds.
- 19 • ORA recommends that the Commission adopt for Terminal
20 Upgrades capital expenditures a forecast of \$3.750 million per year
21 over the GT&S Rate Case period instead of about \$7.500 million
22 per year by extending the program past 2021, a reflecting a
23 forecast reduction of \$3.750 million per year due to the change in
24 pace of work.
- 25 • ORA recommends that the Commission require PG&E to set up a
26 memorandum account to track the capital expenditures for the
27 Station Over Pressure Enhancements Program.
- 28 • ORA recommends that the Commission order PG&E to continue to
29 track the capital expenditures for ECA 1 and ECA 2 with balancing
30 accounts and Critical Documents and Station Strength Testing with
31 memorandum accounts.

32 Table 7-2 compares ORA's recommendations and PG&E's 2017-2019 capital
33 expenditure forecasts:

34
35
36
37
38
39

1
2
3

**Table 7-2
Facilities Family Asset Capital Expenditures for 2017-2019
(in Thousands of Dollars)**

Description	ORA Recommended			PG&E Proposed ²		
	2017 ³	2018	2019	2017	2018	2019
Routine C&P	\$40,351	\$41,727	\$38,535	\$42,257	\$41,727	\$38,535
Emergency Shutdown System Upgrade	\$4,468	\$3,820	\$3,843	\$2,516	\$3,820	\$3,843
Install Active Fire Suppression Systems	\$407	\$1,650	\$0	\$339	\$1,650	\$0
GT Electrical Upgrades - Hinkley and Topock	-\$19	\$4,270	\$4,270	\$1,085	\$7,000	\$4,270
Compressor Unit Control Replacements	\$108	\$2,000	\$3,268	\$774	\$2,000	\$3,268
Upgrade Station Controls	\$825	\$2,000	\$2,014	\$508	\$5,300	\$2,014
Compressor Stations	\$0	\$0	\$0	\$1,619	\$0	\$0
Station Other	\$0	\$0	\$0	\$28	\$0	\$0
Compressor Replacement	\$22,997	\$12,140	\$21,530	\$30,050	\$12,140	\$21,530
Compressor Retrofit Projects	-\$18	\$0	\$0	\$50	\$0	\$0
Routine M&C	\$23,252	\$13,149	\$18,192	\$17,484	\$13,149	\$18,192
Becker System Upgrades	\$2,412	\$1,434	\$325	\$2,751	\$1,434	\$325
Replace Obsolete Bristol Controllers	-\$205	\$0	\$0	\$107	\$0	\$0
Perform Simple Station Rebuilds	\$1,854	\$5,000	\$6,223	\$5,109	\$5,000	\$6,223
Perform Complex Station Rebuilds	\$34,953	\$49,004	\$32,311	\$37,887	\$49,004	\$32,311
Perform Transmission Terminal Upgrades	\$1,250	\$350	\$3,750	\$449	\$350	\$7,436
Station Over Pressure Protection Enhancements	\$413	\$3,983	\$6,139	\$431	\$3,983	\$6,139
Engineering Critical Assessment Phase 1	\$0	\$0	\$0	-\$115	\$0	\$0
Engineering Critical Assessment Phase 2	-\$160	\$272	\$287	\$0	\$272	\$287
Station Strength Testing	\$0	\$48	\$102	\$0	\$48	\$102
Physical Security	\$6,853	\$10,310	\$9,392	\$7,504	\$10,310	\$9,392
Total Facilities	\$139,742	\$151,157	\$150,181	\$150,833	\$157,188	\$153,868

4

² PG&E Prepared Testimony, Chapter 7 (White), page 7-5, Table 7-3.

³ ORA recommends the Commission adopt these 2017 adjusted-recorded capital expenditures.

1 **III. GENERAL OVERVIEW**

2 PG&E forecasts total expenses of \$33.667 million for 2019, and total capital
3 expenditures of \$150.833 million in 2017, \$157.188 million in 2018, and \$153.868
4 million in 2019⁴ for programs proposed in both the C&P and M&C areas of the
5 Facilities Asset Family.

6 ORA recommends total expenses of \$26.526 million for 2019, and total
7 capital expenditures of \$139.742 million for 2017, \$151.157 million for 2018, and
8 \$150.181 million for 2019.

9 The PG&E C&P assets include the compressor units and the associated
10 equipment installed at the nine gas transmission compressor stations as well as the
11 compressor units and gas processing equipment installed at PG&E's three
12 underground storage facilities. This asset family also includes the gas processing
13 and conditioning equipment installed at transmission dehydrator stations and all the
14 gas odorizers in PG&E's system.

15 The M&C assets include both Gas Transmission and Distribution regulating
16 and metering stations and associated equipment. The M&C assets also include
17 large customer meter sets and gas quality monitoring equipment.

18 **IV. COMPRESSION AND PROCESSING (C&P) ASSETS**

19 **A. C&P Routine Expenditures**

20 **1. Overview of PG&E's Request**

21 The routine expenses C&P program includes expense projects within the
22 C&P asset family such as equipment leases, service contracts, maintenance
23 agreements, equipment overhauls and other expense related repairs.⁵ Figure 7-1

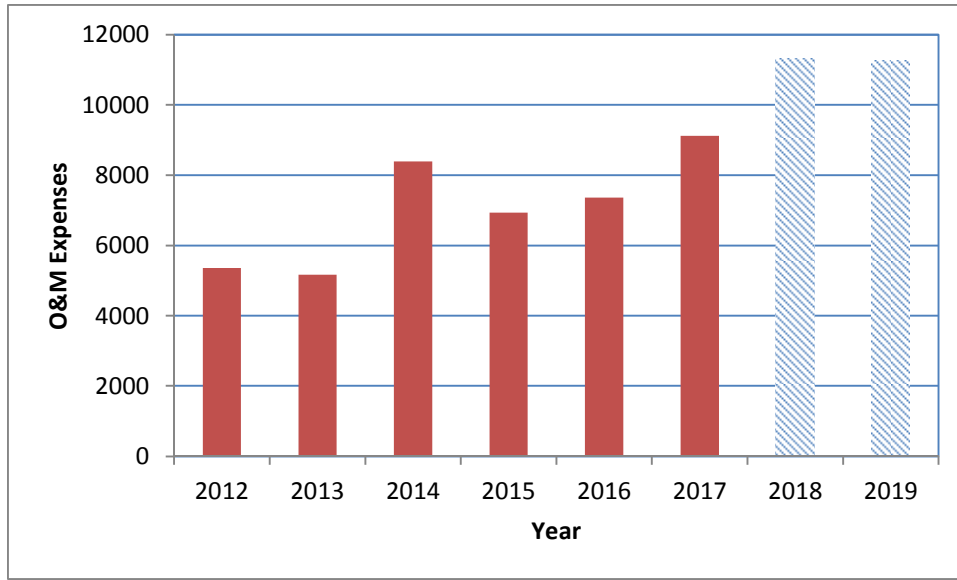
⁴ PG&E Prepared Testimony, Chapter 7 (White), page 7-4, Table 7-2, and page 7-5,
Table 7-3.

⁵ PG&E Prepared Testimony, Chapter 7 (White), page 7-30, lines 15 to 18.

1 below shows the 2012-2017 Recorded and 2018-2019 Forecast for C&P Routine
2 Expenses.

3
4
5
6

Figure 7-1
C&P Routine Expenses
2012-2017⁶ Recorded and 2018-2019 Forecast
(in Thousands of Dollars)



7

8 The routine capital C&P program includes a range of capital projects within
9 the C&P Asset Family. The types of work included in this program are Compression,
10 Station Auxiliary, Station Electrical/Instrumentation/Control projects, and Valve and
11 Actuator replacement projects.⁷ Figure 7-2 below shows the 2012-2017 Recorded
12 and 2018-2019 Forecast for C&P Capital Expenditures.

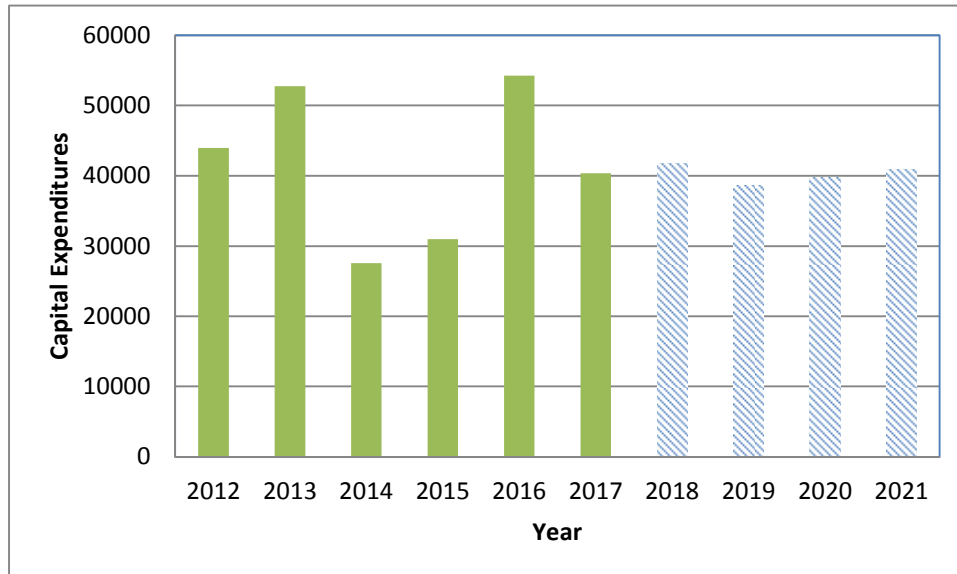
13

⁶ Adjusted-recorded 2012 to 2016 values from PG&E Workpapers Supporting Chapter 7 Public Version, page WP 7-1, Table 7-1. For adjusted-recorded 2017 value, see PG&E Response to ORA Data Request ORA_035-Q01, April 19, 2018.

⁷ PG&E Prepared Testimony, Chapter 7 (White), page 7-30, lines 19 to 26.

1
2
3
4

Figure 7-2
C&P Capital Expenditures
2012-2017⁸ Recorded and 2018-2021 Forecast
(in Thousands of Dollars)



5

2. ORA's Analysis

6

7 PG&E based its O&M and capital forecasts on a historical 3-year average
8 from 2014 to 2016 and adjusted the average for large one-time projects and projects
9 required for new regulation.⁹ ORA recommends that an average derived from five
10 years (2012 to 2016) of adjusted-recorded data is a better representation of the
11 trend. Each year, large one-time projects due to operational needs and new
12 regulation are added to the annual expenditures, and many of these projects are
13 completed in the subsequent years. Therefore, the effects of these additional
14 projects are already captured in the annual recorded data.

15 Based on the 5-year average of the adjusted-recorded data, ORA
16 recommends the O&M expenses to be \$7.399 million for each of 2018 and 2019, a
17 downward adjustment of about \$4 million per year. ORA does not recommend

⁸ Adjusted-recorded 2012 to 2016 values from PG&E Workpapers Supporting Chapter 7 Public Version, page WP 7-1, Table 7-1. For adjusted-recorded 2017 value, see PG&E Response to ORA Data Request ORA_035-Q01, April 19, 2018.

⁹ PG&E Prepared Testimony, Chapter 7 (White), page 7-31, lines 28 to 30.

1 adjustment to PG&E’s proposed capital expenditures of \$41.727 million for 2018 and
2 \$38.535 million for 2019, but recommends the Commission adopt the adjusted-
3 recorded 2017 capital expenditures of \$40.351 million. These forecasts for 2018
4 and 2019 and the adjusted-recorded for 2017 are comparable with the average
5 annual expenditures of the past few years.
6

7 **B. GT Electrical Upgrades Hinkley and Topock**

8 **1. Overview of PG&E’s Request**

9 This program upgrades the electrical equipment for Hinkley and Topock. The
10 electrical equipment targeted by this program includes power distribution system
11 Switch Gear (SWGR) sections and Motor Control Center (MCC) sections. The
12 purpose of a SWGR section is to protect the electrical generation and associated
13 equipment and circuits. PG&E proposes to upgrade the 480 volt electrical systems
14 at its Hinkley compressor station during the 2019 GT&S Rate Case period.¹⁰

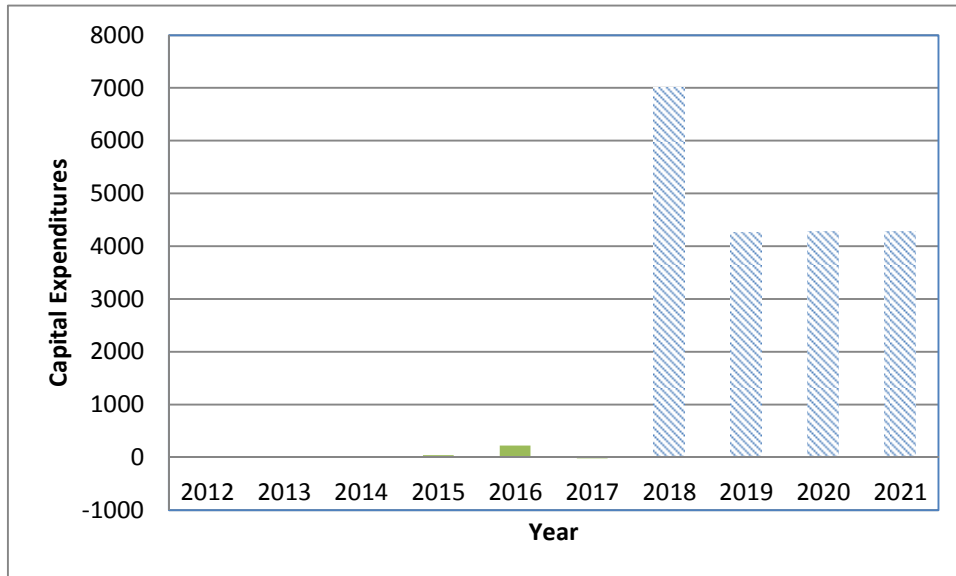
15 PG&E’s forecast for this section is based on a cost estimate developed by an
16 engineering and construction firm.¹¹ Figure 7-3 below shows the 2012-2017
17 Recorded and 2018-2019 Forecast for Electrical Upgrades Capital Expenditures.
18

¹⁰ PG&E Prepared Testimony, Chapter 7 (White), page 7-36, lines 7-17.

¹¹ PG&E Prepared Testimony, Chapter 7 (White), page 7-36, lines 26-29.

1
2
3
4

Figure 7-3
Electrical Upgrades Capital Expenditures
2016-2017¹² Recorded and 2018-2019 Forecast
(in Thousands of Dollars)



5

2. ORA's Analysis

6

7

PG&E forecasted a significant jump in capital expenditures for 2018 to 2021 in this area after almost no activity from 2012 to 2017. PG&E requested \$7 million in 2018, about \$5.8 million is for Topock electrical upgrades and about \$1.2 million for other work.¹³ It also requested about \$12.5 million for Hinkley electrical upgrades over the GT&S Rate Case period.¹⁴ The large discrepancy between the \$5.8 million for Topock upgrades and \$12.5 million for Hinkley upgrades is inconsistent with PG&E's testimony that "Both Hinkley and Topock stations have similar designs, were constructed in the 1950s and contain the originally installed electrical equipment."¹⁵

10

11

12

13

14

15

¹² Adjusted-recorded 2012 to 2016 values from PG&E Workpapers Supporting Chapter 7 Public Version, page WP 7-1, Table 7-1. For adjusted-recorded 2017 value, see PG&E Response to ORA Data Request ORA_035-Q01, April 19, 2018.

¹³ PG&E Response to ORA Data Request ORA_037-Q01, April 19, 2018.

¹⁴ PG&E Workpapers Supporting Chapter 7, page WP 7-54.

¹⁵ PG&E Prepared Testimony, Chapter 7 (White), page 7-35, lines 24 to 26.

1 ORA recommends adjusting the 2018 capital expenditures down to \$4.27
2 million from \$7 million to be more consistent with the annual proposals for 2019 to
3 2021. PG&E's forecasted expenditures of slightly over \$4 million a year to perform
4 the Hinkley upgrade is an indication of possible resource limitation to do the work.
5 ORA makes no adjustment to PG&E's forecast for 2019. However, because of the
6 discrepancy in the estimates for the Topock and Hinkley upgrades, ORA
7 recommends the Commission require PG&E to set up a one-way balancing account
8 to track the expenditures for the GT Electrical Upgrades to balance the ratepayers
9 protection with the uncertainty in PG&E's work plans

10 **C. Upgrade Station Control**

11 **1. Overview of PG&E's Request**

12 Each compressor station is integrated with a process control system
13 that allows operators to control the downstream pressure of incoming natural gas,
14 and eliminate any deviations in normal operation. Two components make up the
15 station control system: (1) a Programmable Logic Circuit (PLC) that interfaces with a
16 compressor unit controller; and (2) a PLC input/output (I/O) interface module that
17 receives information about the current operating conditions of the station, translates
18 that information, and makes it available to other devices for data transmission or
19 control.¹⁶ PG&E plans to replace outdated station PLCs and associated hardware
20 with new hardware.

21 PG&E forecasts completing one station control upgrade per year. The costs
22 for the upgrade are based on a cost estimate developed by an engineering and
23 construction firm.¹⁷ Figure 7-4 below shows the 2012-2017 Recorded and 2018-
24 2019 Forecast for Upgrade Station Control Capital Expenditures.

25

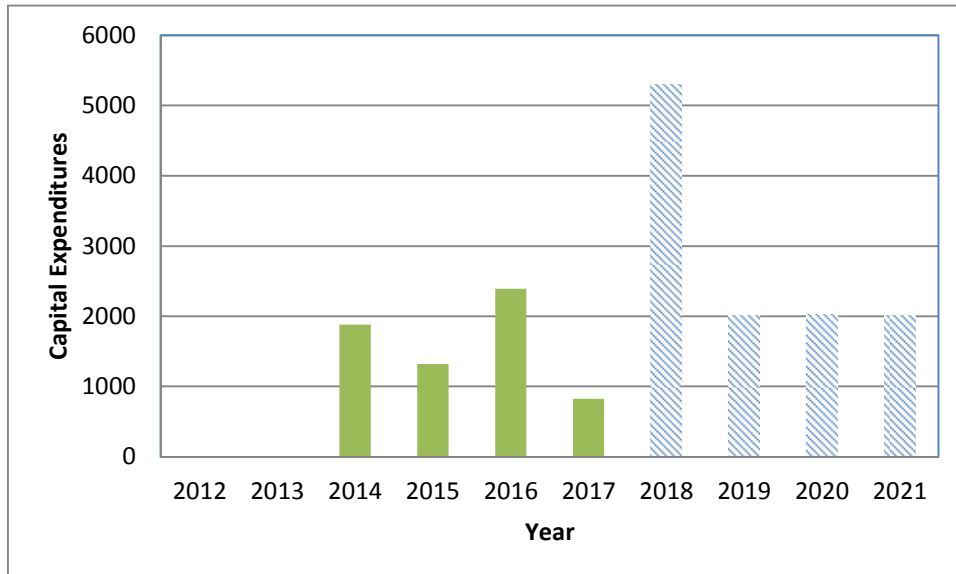
26

¹⁶ PG&E Workpapers Supporting Chapter 7, page WP 7-40, lines 5-9.

¹⁷ PG&E Prepared Testimony, Chapter 7 (White), page 7-41, lines 24 to 28.

1
2
3
4

Figure 7-4
Upgrade Station Control Capital Expenditures
2014-2017¹⁸ Recorded and 2018-2021 Forecast
(in Thousands of Dollars)



5

2. ORA's Analysis

6

7

PG&E plans to perform one Station Control upgrade per year at the cost of about \$2 million per station.¹⁹ However, PG&E's forecast for 2018 includes \$3.5 million to upgrade its Gerber station and almost \$2 million to upgrade other stations.²⁰ The total of \$5.3 million is more than double PG&E's annual plan for the GT&S years and higher than the previous years. ORA recommends that the 2018 capital expenditures should be adjusted down to \$2.0 million, similar to the forecasted annual expenditures during the GT&S Rate Case years.

10

11

12

13

¹⁸ Adjusted-recorded 2012 to 2016 values from PG&E Workpapers Supporting Chapter 7 Public Version, page WP 7-1, Table 7-1. For adjusted-recorded 2017 value, see PG&E Response to ORA Data Request ORA_035-Q01, April 19, 2018.

¹⁹ PG&E Workpapers Supporting Chapter 7, page WP 7-58.

²⁰ PG&E Response to ORA Data Request ORA_037-Q01, April 19, 2018.

1 **V. MEASUREMENT AND CONTROL (M&C) ASSETS**

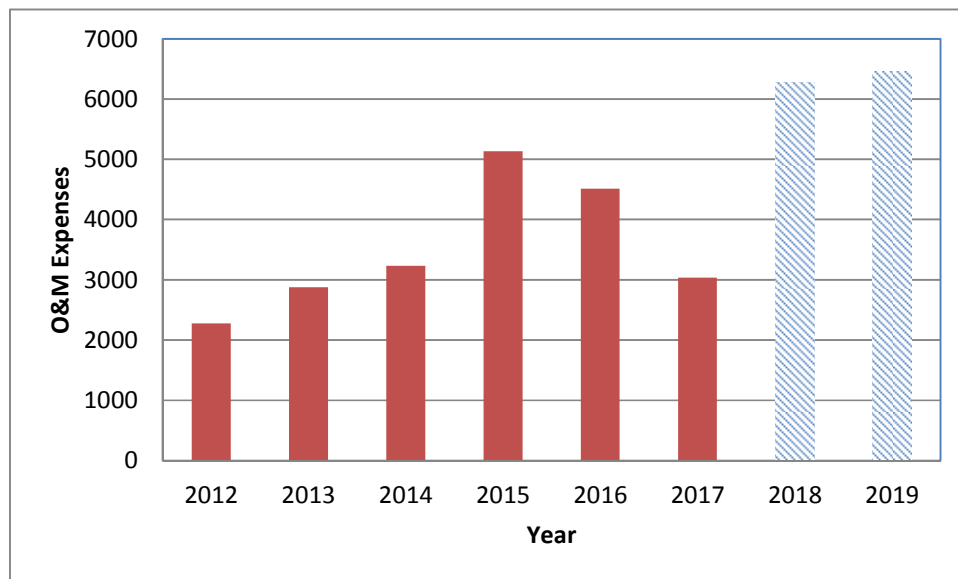
2 **A. M&C Routine Expenditures**

3 **1. Overview of PG&E's Request**

4 The routine expense and capital spending M&C programs include projects
5 that arise in the course of normal operation of M&C facilities. They include a broad
6 range of expense projects within the M&C asset family such as assessment and
7 repair of valves, actuators, monitors and controllers, electrical circuits, grounding
8 grids, SCADA units, and meter repairs.²¹ Figure 7-5 below shows the 2012-2017
9 Recorded and 2018-2019 Forecast for M&C Routine Expenses.

10
11
12
13
14

Figure 7-5
M&C Routine Expenses
2012-2017²² Recorded and 2018-2019 Forecast
(in Thousands of Dollars)



15

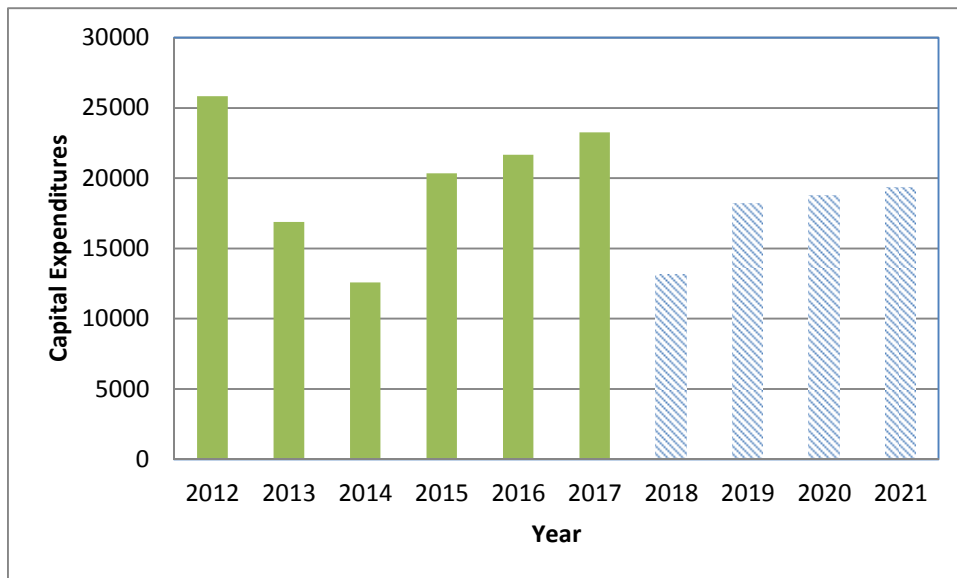
16 The Routine Capital M&C program includes a wide assortment of capital
17 projects within the M&C asset family that are unique occurrences that do not qualify

²¹ PG&E Prepared Testimony, Chapter 7 (White), page 7-46, lines 17-21.

²² Adjusted-recorded 2012 to 2016 values from PG&E Workpapers Supporting Chapter 7 Public Version, page WP 7-1, Table 7-1. For adjusted-recorded 2017 value, see PG&E Response to ORA Data Request ORA_035-Q01, April 19, 2018.

1 for another capital M&C program. The types of projects included in this program are
2 grounding grids; heating, ventilation and air conditioning systems, retirements,
3 station electrical/instrumentation/control projects; and valve and actuator
4 replacement projects at M&C stations.²³ Figure 7-6 below shows the 2012-2017
5 Recorded and 2018-2019 Forecast for M&C Routine Capital Expenditures.

6
7 **Figure 7-6**
8 **M&C Routine Capital Expenditures**
9 **2012-2017²⁴ Recorded and 2018-2021 Forecast**
10 **(in Thousands of Dollars)**



11
12 **2. ORA's Analysis**

13 Similar to C&P Routine Expenditures, PG&E based its M&C Routine
14 Expenditures O&M and capital forecasts on a historical 3-year average from 2014 to
15 2016 and adjusted the average for large one-time projects and projects required for
16 new regulation.²⁵ Based on its analysis, ORA recommends an average derived

²³ PG&E Prepared Testimony, Chapter 7 (White), page 7-46, lines 22-28.

²⁴ Adjusted-recorded 2012 to 2016 values from PG&E Workpapers Supporting Chapter 7 Public Version, page WP 7-1, Table 7-1. For adjusted-recorded 2017 value, see PG&E Response to ORA Data Request ORA_035-Q01, April 19, 2018.

²⁵ PG&E Prepared Testimony, Chapter 7 (White), page 7-47, lines 29 to 31.

1 from five years (2012 to 2016) of adjusted-recorded data as a better representation
2 of the trend. Each year, large one-time projects due to operational needs and new
3 regulation are added to the annual expenditures, and many of these projects are
4 completed in the subsequent years. Therefore, the effects of these additional
5 projects are already captured in the annual recorded data.

6 Based on the 5-year average of the adjusted-recorded data, ORA
7 recommends O&M expenses of \$3.760 million for each of 2018 and 2019, a
8 downward adjustment of about \$2.7 million per year. ORA does not recommend
9 adjustment to PG&E's proposed capital expenditures of \$13.149 million for 2018 and
10 \$18.192 million for 2019, but recommends the Commission adopt the adjusted-
11 recorded 2017 capital expenditures of \$23.252 million.

12 **B. M&C Station Rebuilds**

13 **1. Overview of PG&E's Request**

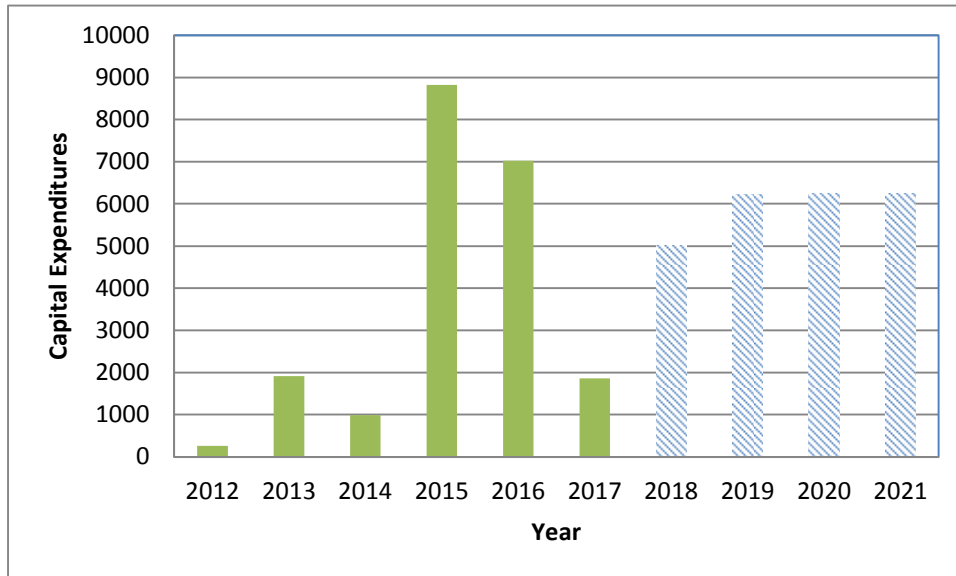
14 This category involves the complete rebuild of the station (above and below
15 ground) to replace old and obsolete equipment, valves and piping, upgrade
16 configuration to meet current system needs, and address any outstanding issues
17 with station maintenance and operations.²⁶ Stations are separated into two
18 categories: Simple and Complex. Simple stations have simple control and
19 operations, where instrumentation and Remote Terminal Units (RTUs) are installed
20 for monitoring and data transmission only. Complex stations have complex control
21 and operations and either PLCs or RTUs to provide control and data transmission.
22 Simple and Complex stations are each designed to different Design Standards.²⁷
23 Figure 7-7 below shows the 2012-2017 Recorded and 2018-2019 Forecast for
24 Simple Station Rebuilds Capital Expenditures.

²⁶ PG&E Prepared Testimony, Chapter 7 (White), page 7-50, lines 2 to 6.

²⁷ PG&E Prepared Testimony, Chapter 7 (White), page 7-50, lines 8-26.

1
2
3
4

Figure 7-7
Simple Station Rebuilds Capital Expenditures
2012-2017²⁸ Recorded and 2018-2021 Forecast
(in Thousands of Dollars)



5
6
7
8
9
10
11
12

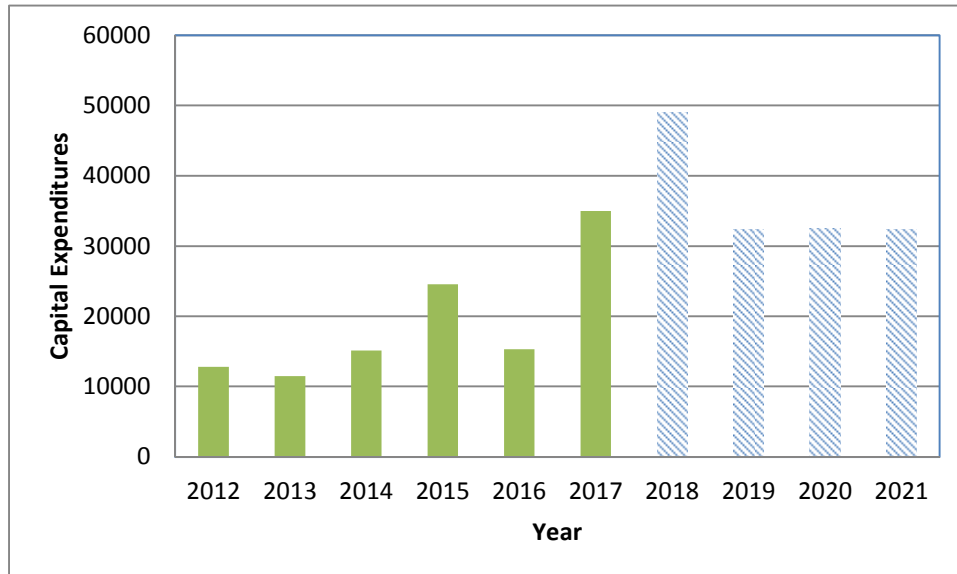
PG&E forecasts two simple station rebuilds and three complex station rebuilds per year during the rate case period.²⁹ Figure 7-8 below shows the 2012-2017 Recorded and 2018-2021 Forecast for Complex Station Rebuilds Capital Expenditures.

²⁸ Adjusted-recorded 2012 to 2016 values from PG&E Workpapers Supporting Chapter 7 Public Version, page WP 7-1, Table 7-1. For adjusted-recorded 2017 value, see PG&E Response to ORA Data Request ORA_035-Q01, April 19, 2018.

²⁹ PG&E Prepared Testimony, Chapter 7 (White), page 7-51, lines 16-20.

1
2
3
4

Figure 7-8
Complex Station Rebuilds Capital Expenditures
2012-2017³⁰ Recorded and 2018-2021 Forecast
(in Thousands of Dollars)



5

2. ORA's Analysis

6

7 PG&E is proposing to rebuild two simple stations and three complex stations
8 per year during this rate period. The actual numbers will depend on prioritization

8

9 between the simple and complex stations.³¹ The forecasts in the 2015 GT&S Rate
10 Case period were reprioritized during the rate period from emphasis on simple

10

11 stations to complex stations.³² There will be uncertainty as to what will be the

11

12 priority after the start of the current rate period. Therefore, ORA recommends a one-

12

13 way balancing account treatment for Station Rebuilds. ORA does not recommend

13

14 any other adjustments to PG&E's forecast of capital expenditures for Station

14

15 Rebuilds.

15

³⁰ Adjusted-recorded 2012 to 2016 values from PG&E Workpapers Supporting Chapter 7 Public Version, page WP 7-1, Table 7-1. For adjusted-recorded 2017 value, see PG&E Response to ORA Data Request ORA_035-Q01, April 19, 2018.

³¹ PG&E Prepared Testimony, Chapter 7 (White), page 7-51, lines 9 to 12.

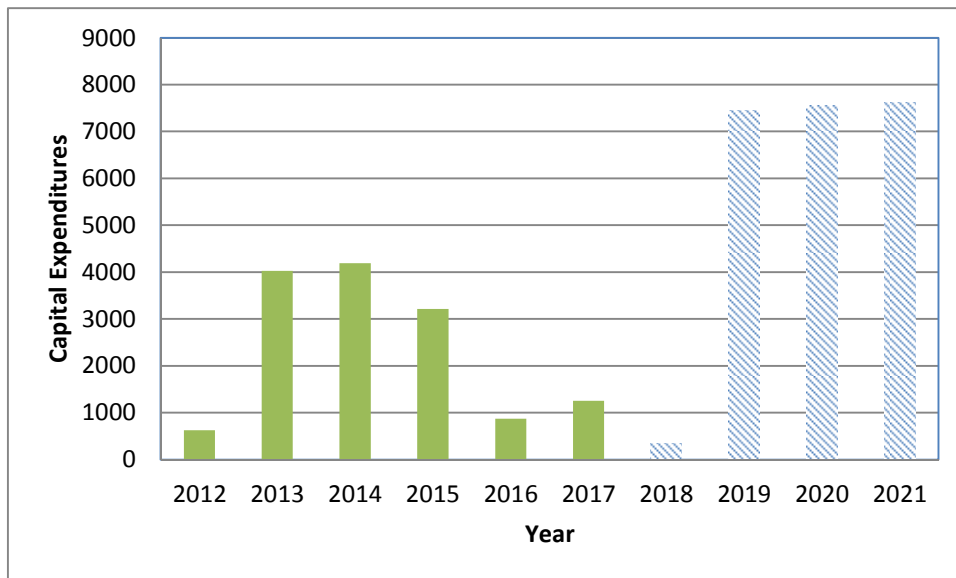
³² PG&E Prepared Testimony, Chapter 7 (White), page 7-52 to 53.

1 **C. M&C Terminal Upgrades**

2 **1. Overview of PG&E’s Request**

3 The Terminal Upgrade and Rebuild Program addresses equipment aging and
4 obsolescence for the three gas terminals at Milpitas, Antioch and Brentwood. PG&E
5 plans to perform selected equipment upgrades at all three existing transmission
6 terminals. PG&E is also proposing a phased-rebuild at Brentwood.³³ Figure 7-9
7 below shows the 2012-2017 Recorded and 2018-2019 Forecast for Terminal
8 Upgrades Capital Expenditures.

9 **Figure 7-9**
10 **Terminal Upgrades Capital Expenditures**
11 **2012-2017³⁴ Recorded and 2018-2021 Forecast**
12 **(in Thousands of Dollars)**



13
14 **2. ORA’s Analysis**

15 PG&E proposed annual capital expenditures of over \$7 million in the Rate
16 Case period after spending around \$1 million a year in 2016 and 2017 (the forecast

³³ PG&E Prepared Testimony, Chapter 7 (White), page 7-54, lines 5 to 23.

³⁴ Adjusted-recorded 2012 to 2016 values from PG&E Workpapers Supporting Chapter 7 Public Version, page WP 7-1, Table 7-1. For adjusted-recorded 2017 value, see PG&E Response to ORA Data Request ORA_035-Q01, April 19, 2018.

1 for those two years was over \$2 million a year in the 2015 GT&S),³⁵ and forecasting
2 an expenditure of about \$0.350 million for 2018. This increase in capital
3 expenditures for this Rate Case period reflects a 7-fold increase in forecast spending
4 relative to the 2016 and 2017 actuals. PG&E derived these expenditures by using
5 the historical 3-year average (2014 to 2016) and the forecast for Brentwood Phase 1
6 rebuild.³⁶ The historical capital expenditure trend in Figure 7-9 shows many
7 fluctuations over the years. This trend indicates uncertainty in PG&E's planning
8 process and/or ability to provide the resources needed to handle the work load.
9 ORA recommends extending the Terminal Upgrades into the next GT&S period by
10 adjusting the annual expenditures downward by fifty percent to \$3.750 million per
11 year during this Rate Case period, but ORA does not oppose the overall concept of
12 the Rebuild. In addition, ORA recommends one-way balancing account treatment to
13 track the expenditures for Terminal Upgrades during this Rate Case period.

14 **D. M&C Gas Quality Assessment**

15 **1. Overview of PG&E's Request**

16 PG&E's Gas Quality Assessment Program addresses gas quality issues
17 such as particulate and liquids. The expense forecast for this program is based on
18 the costs for the various activities included in the scope for probe and filter
19 replacements, research and analysis, development of various heat maps and tools.
20 The estimated costs are then escalated for 2019.³⁷ Figure 7-10 below shows the
21 2012-2017 Recorded and 2018-2019 Forecast for Gas Quality Assessment
22 Expenses.
23

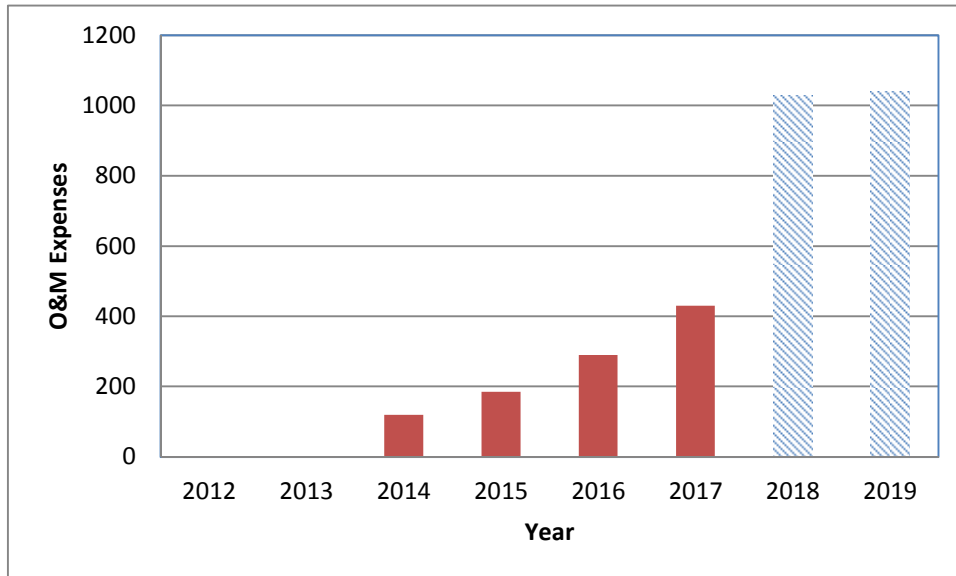
³⁵ PG&E Prepared Testimony for the 2015 GT&S, Chapter 6 (White), page 6-49, Table 6-29.

³⁶ PG&E Workpapers Supporting Chapter 7, page WP 7-69.

³⁷ PG&E Prepared Testimony, Chapter 7 (White), page 7-56, lines 12-23, page 7-57, lines 1-20.

1
2
3
4

Figure 7-10
Gas Quality Assessment Expenses
2012-2017³⁸ Recorded and 2018-2019 Forecast
(in Thousands of Dollars)



5

2. ORA's Analysis

6

7

PG&E had forecasted the same O&M expenses for 2017 as for 2018 and 2019 at about \$1 million a year. The adjusted-recorded O&M for 2017 for Gas Quality Assessment is \$0.430 million, which is less than half of the forecasted \$1.028 million, or \$0.598 million lower. ORA recommends O&M expenses of \$0.450 million for 2019 Gas Quality Assessment instead of the forecasted \$1.040 million, similar the adjusted-recorded amount of \$0.430 million for 2017, an adjustment of \$0.590 million downward.

11
12
13
14

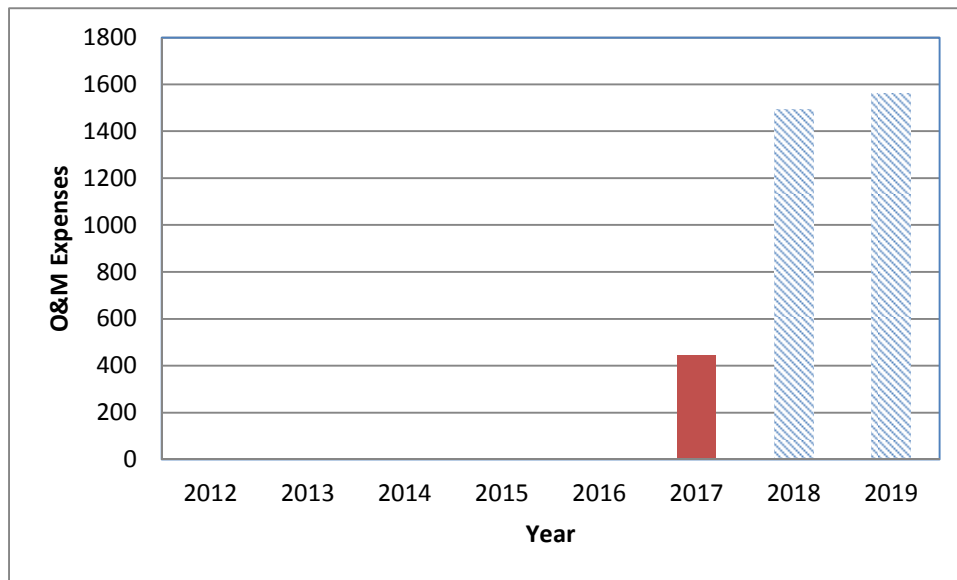
³⁸ Adjusted-recorded 2012 to 2016 values from PG&E Workpapers Supporting Chapter 7 Public Version, page WP 7-1, Table 7-1. For adjusted-recorded 2017 value, see PG&E Response to ORA Data Request ORA_035-Q01, April 19, 2018.

1 **E. M&C Station Over Pressure Protection (OPP) Enhancements**

2 **1. Overview of PG&E’s Request**

3 The station Over Pressure Protection (OPP) Enhancements Program is
4 a new program to prevent Over Pressure events due to equipment failure at
5 regulator stations. This is a secondary level of overpressure protection (thus
6 “enhancements”) to manage the occurrence of an overpressure event. The expense
7 forecast for the transmission facilities is based on the performance of system studies
8 for pilot-operated regulator stations, the installation of Sulfur-Gon filters at pilot
9 operated regulator stations, system planning studies, and pilot programs for new
10 technologies during the rate case period.³⁹ Figure 7-11 below shows the 2012-2017
11 Recorded and 2018-2019 Forecast for Station OPP Enhancements Expenses.

12 **Figure 7-11**
13 **Station OPP Enhancements Expenses**
14 **2012-2017⁴⁰ Recorded and 2018-2019 Forecast**
15 **(in Thousands of Dollars)**

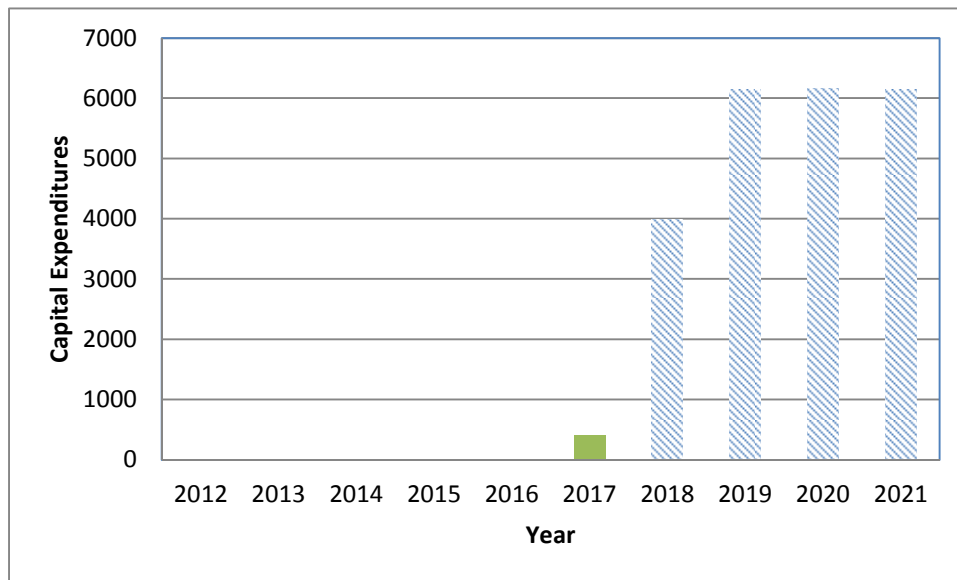


16 ³⁹ PG&E Prepared Testimony, Chapter 7 (White), page 7-60, lines 16-21.

⁴⁰ Adjusted-recorded 2012 to 2016 values from PG&E Workpapers Supporting Chapter 7 Public Version, page WP 7-1, Table 7-1. For adjusted-recorded 2017 value, see PG&E Response to ORA Data Request ORA_035-Q01, April 19, 2018.

1
2 The capital forecast for the transmission facilities is based on the use of various
3 technologies that can be applied as additional overpressure protection.⁴¹ Figure 7-
4 12 below shows the 2012-2017 Recorded and 2018-2019 Forecast for Station OPP
5 Enhancements Capital Expenditures.

6
7 **Figure 7-12**
8 **Station OPP Enhancements Capital Expenditures**
9 **2012-2017⁴² Recorded and 2018-2021 Forecast**
10 **(in Thousands of Dollars)**
11



12
2. ORA's Analysis

13
14 The Station OPP Enhancements Program is a new program. PG&E's
15 forecasted O&M expenses for 2019 are about \$1.5 million, and the forecasted
16 capital expenditures for 2019 to 2021 is over \$6 million a year. ORA does not
17 recommend any adjustment to these forecasts. However, as PG&E states in the
18 testimony, "the project costs vary by technology application and are based on

⁴¹ *Ibid.*

⁴² Adjusted-recorded 2012 to 2016 values from PG&E Workpapers Supporting Chapter 7 Public Version, page WP 7-1, Table 7-1. For adjusted-recorded 2017 value, see PG&E Response to ORA Data Request ORA_035-Q01, April 19, 2018..

1 estimates from preliminary study.”⁴³ ORA believes that it is more appropriate to
2 track the costs of the program with a memorandum account because all the
3 unknowns. Therefore, ORA recommends the Commission require PG&E to set up a
4 memorandum account to track the costs for the Station OPP Enhancements
5 Program.
6

7 **VI. PROGRAMS RELATED TO BOTH C&P AND M&C**

8 **A. Critical Documents, ECA 1 and ECA 2, and Station Strength** 9 **Testing**

10 **1. Overview of PG&E’s Request**

11 PG&E proposes to eliminate the balancing account for Engineering Critical
12 Assessment Phase 1 and Phase 2 (ECA1 and ECA2) and the memorandum
13 accounts for Critical Documents and Station Strength Testing ordered in Decision
14 (D.) 16-06-056. The Decision ordered PG&E to track costs for ECA 1 and ECA 2
15 with balancing accounts and Critical Documents and Station Strength Testing with
16 memorandum accounts.⁴⁴

17 **2. ORA’s Analysis**

18 Comparison of PG&E’s 2017 forecasts and adjusted-recorded actual O&M
19 shows that for Critical Documents, PG&E’s forecast is \$1.887 million versus
20 negative \$1.698 million actual, for ECA 1, it is \$5.570 million forecast versus \$7.718
21 million actual, and for ECA 2, it is \$1.930 million forecast versus \$0.198 million
22 actual. The discrepancies in this comparison of 2017 forecasts versus actuals show
23 that this is not the time to eliminate the balancing accounts and memorandum
24 accounts. Therefore, ORA recommends the Commission requires PG&E continue

⁴³ PG&E Prepared Testimony, Chapter 7 (White), page 7-60, lines 20 to 21 and 26 to 27.

⁴⁴ PG&E Prepared Testimony, Chapter 7 (White), page 7-7, lines 3 to 5.

- 1 to track the costs in these four areas with the existing balancing accounts and
- 2 memorandum accounts as these programs are winding down.⁴⁵
- 3

⁴⁵ These programs are accounted for in the balancing accounts for ECA 1 and 2, and memorandum accounts for Critical Documents and Station Strength Testing.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

WITNESS QUALIFICATIONS OF K. LEE

My name is Kelly C. Lee. My business address is 505 Van Ness Avenue, San Francisco, California. I am employed by the Office of Ratepayer Advocates (ORA) as a Senior Utilities Engineer in the Energy Safety and Infrastructure Branch.

I received a Bachelor of Science degree in Mechanical Engineering from San Jose State University, a Master of Science degree and a Master of Engineering degree from the University of California, Berkeley, and a Master of Business Administration degree from the University of San Francisco. I am a registered Professional Engineer in Mechanical Engineering in the State of California.

Before joining the Commission, I worked in the private industry performing engineering research and analysis, managing programs, and supervising engineers in the aerospace and alternate energy fields. Since joining the Commission in 1999, I have worked as an analyst and project coordinator on various gas, electric, and telecommunication cases.

This completes my prepared testimony.

1 **WITNESS QUALIFICATIONS OF C. YEH**

2 My name is Crystal Yeh. My business address is 505 Van Ness Avenue, San
3 Francisco, California. I am employed by the Office of Ratepayer Advocates (ORA)
4 as a Public Utilities Regulatory Analyst I in the Energy Cost of Service and Natural
5 Gas (ECOSNG) Branch.

6 I received a Bachelor of Arts degree in Environmental Studies and Public
7 Policy from Hunter College, the City University of New York.

8 Prior to joining the Commission, I served as an Analyst at a consulting firm,
9 Monitor 360, where I performed analysis on large datasets and provided actionable
10 recommendations for a variety of private and nonprofit sector clients. Prior to that, I
11 interned at a think tank and at a consulting firm where I analyzed large energy-
12 related datasets and prepared summary reports.

13 I joined the Commission in August 2016. As part of the Natural Gas section
14 within the ECOSNG Branch, I participate in core gas supply meetings with the
15 Sempra Utilities and Pacific Gas and Electric Company (PG&E). I have worked on
16 the following General Rate Cases (GRC): (1) the SCE 2018 GRC, where I was
17 responsible for Customer Service costs; (2) the Bear Valley Electric Service 2018
18 GRC, where I was responsible for Administrative & General expenses; (3) the
19 SDG&E 2019 GRC, where I was responsible for Customer Service costs; and (4) the
20 SoCalGas 2019 GRC, where I was responsible for Customer Service costs.

21
22 This completes my prepared testimony.