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Admin. Law Judge	:	<u>Elaine Lau</u>
Public Advocates Office	:	_____
Project Mgr.	:	<u>Karl Stellrecht</u>
Public Advocates Office	:	<u>Various</u>
Witnesses	:	_____



**PUBLIC ADVOCATES OFFICE
CALIFORNIA PUBLIC UTILITIES COMMISSION**

**PREPARED TESTIMONY
ON
PACIFIC GAS AND ELECTRIC COMPANY APPLICATION
FOR COMPLIANCE REVIEW OF UTILITY OWNED
GENERATION OPERATIONS, ELECTRIC ENERGY
RESOURCE RECOVERY ACCOUNT ENTRIES,
CONTRACT ADMINISTRATION, ECONOMIC DISPATCH OF
ELECTRIC RESOURCES, UTILITY OWNED GENERATION
FUEL PROCUREMENT, AND OTHER ACTIVITIES FOR THE
PERIOD JANUARY 1 THROUGH DECEMBER 31, 2020 (U 39 E)**

(PUBLIC VERSION)

San Francisco, California
July 12, 2021

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1 **CHAPTER 1 : EXECUTIVE SUMMARY**

2 (Witness: Karl Stellrecht)

3 **I. INTRODUCTION & RECOMMENDATIONS**

4 This testimony presents the Public Advocates Office’s review of Pacific Gas and
5 Electric Company’s (PG&E) Energy Resource Recovery Account (ERRA) Compliance
6 Application for the period from January 1, 2020 through December 31, 2020 (Record
7 Period). PG&E filed its annual ERRA compliance application pursuant to Decision
8 (D.) 02-10-062. In that Decision, the California Public Utilities Commission
9 (Commission or CPUC) required certain utility procurement activities to be reviewed
10 annually in the ERRA proceeding.

11 Pursuant to D.02-10-062, D.02-12-074 and California Public Utilities Code
12 (PU Code) § 454.5(d)(3), the purpose of the ERRA is to record and recover power costs
13 and ensure timely recovery of procurement costs incurred related to an investor-owned
14 utilities’ approved procurement plan.¹ PU Code § 454.5(d)(3) allows the Commission to
15 establish balancing accounts to track the differences between recorded revenues and costs
16 incurred related to the approved procurement plan.²

17 PG&E filed its ERRA compliance application on March 1, 2021 requesting
18 Commission approval for costs associated with activities that occurred during the 2020
19 Record Period. The scope of the Public Advocates Office’s review of PG&E’s
20 application includes a review of utility-owned generation operations, fuel expenses and
21 procurement, contract administration, least-cost dispatch (LCD), demand response,
22 greenhouse gas compliance instrument procurement, and an audit of balancing account
23 entries. In addition, the Public Advocates Office also looked at other ERRA issues
24 summarized below.

¹ D.02-10-062, Finding of Fact (FOF) 23 and 26, pp. 71, 71 – 72.

² PUC Code §454.5(d)(3) states: “The commission shall establish power procurement balancing accounts to track the differences between recorded revenues and costs incurred pursuant to an approved procurement plan. The commission shall review the power procurement balancing accounts, not less than semiannually, and shall adjust rates or order refunds, as necessary, to promptly amortize a balancing account, according to a schedule determined by the commission.”

1 In this testimony the Public Advocates Office presents its analyses and
 2 recommendations associated with PG&E’s request. This testimony focuses exclusively
 3 on the 2020 Record Period and is based on analysis of information submitted by PG&E
 4 that includes, but is not limited to, PG&E’s testimony and workpapers submitted with its
 5 application, responses to data requests, meet-and-confer notes, and field-visit
 6 presentations.

7 The issues that the Public Advocates Office reviewed for the 2020 Record Period
 8 are listed in the table below and summarized in this chapter. For those issues or topic
 9 areas for which no testimony is filed, the Public Advocates Office does not have any
 10 recommendations or disallowances. The qualifications of Public Advocates Office’s
 11 witnesses and their testimony declarations are contained in Appendix A of this report.

List of the Public Advocates Office Witnesses and Respective Chapters

Chapter #	Description	Witness
1	Executive Summary	Karl Stellrecht
2	Least-Cost Dispatch And Economically-Triggered Demand Response	Lina Khoury
3	Utility-Owned Generation – Hydroelectric	Michael Yeo
4	Review Entries Recorded in the Disadvantaged Community – Green Tariff Balancing Account and the Community Solar Green Tariff Balancing Account	Brian Lui
5	Generation Fuel Costs And Electric Portfolio Hedging	Brian Lui
6	Greenhouse Gas Compliance: Procurement of Compliance Instruments and Greenhouse Gas Costs	Tom Gariffo
7	Resource Adequacy	Patrick Cunningham
8	Contract Administration	Kyle Navin

Chapter #	Description	Witness
9	Review Entries Recorded In The Green Tariff Shared Renewables Memorandum Account and Green Tariff Shared Renewables Balancing Account	Brian Lui
10	Summary of Portfolio Allocation Balancing Account Entries for the Record Period	Brian Lui
11	Energy Resource Recovery Account	Brian Lui
12	Review Entries Recorded in the Disadvantaged Community – Single-Family Affordable Solar Homes Balancing Account and the Disadvantaged Community – Single-Family Affordable Solar Homes Memorandum Account	Brian Lui
13	Central Procurement Entity – Entries Recorded in the Centralized Local Procurement Sub-Account	Brian Lui

1

2 **II. SUMMARY OF FINDINGS & RECOMMENDATIONS**

3 The following summary provides an overview of each chapter presented and
4 sponsored by the witnesses for the 2020 Record Period. This summary is provided
5 strictly for the reader’s convenience.

- 6 **1. Executive Summary (Karl Stellrecht)**
- 7 **2. Least-Cost Dispatch And Economically-Triggered Demand**
- 8 **Response (Lina Khoury)**

9 The Public Advocates Office finds that PG&E managed its thermal, hydro, and
10 demand response resources reasonably and does not recommend any disallowances. The
11 Public Advocates Office recommends that the Commission hold a workshop to develop
12 and standardize renewable and storage resource reporting requirements.

13 **3. Utility-Owned Generation – Hydroelectric (Michael Yeo)**

14 The Public Advocates Office finds that PG&E has been able to identify the root
15 cause of the Pit 5, Unit 2 outage and taken actions to correct the problem. The Public
16 Advocates Office concludes that:

1 (a) PG&E personnel was responsible for the Pit 5, Unit 2 outage that
2 occurred on February 11, 2020, because its staff erred in the
3 course of sampling the bearing and governor oil. The Public
4 Advocates Office is not recommending any disallowance because
5 no replacement power costs were incurred during the period of
6 the outage.

7 (b) PG&E’s nine corrective actions instituted to prevent the
8 recurrence of similar outage are reasonable.

9 The Public Advocates Office recommends that the Commission order PG&E to:

10 (c) provide, in a future ERRR Compliance filing, a progress report
11 of its two uncompleted corrective actions; and

12 (d) explain why it replaced the mini-ball valve with a standard fixed
13 valve, and provide the cost associated with the replacement.

14
15 **4. Review Entries Recorded In The Disadvantaged Community –**
16 **Green Tariff Balancing Account And The Community Solar**
17 **Green Tariff Balancing Account (Brian Lui)**

18 The Public Advocates Office found that the 2019 and 2020 DACGTBA/CSGTBA
19 is in compliance with the applicable tariffs and Commission directives.

20 **5. Generation Fuel Costs And Electric Portfolio Hedging (Brian Lui)**

21 The Public Advocates Office has no recommendation or proposed disallowance
22 regarding this issue.

23 **6. Greenhouse Gas (GHG) Compliance: Procurement of Compliance**
24 **Instruments (Tom Gariffo)**

25 For the 2020 Record Period, the Public Advocates Office finds that PG&E
26 accurately recorded and reported its GHG emissions and costs related to compliance with
27 the GHG Cap-and-Trade program.

28 **7. Resource Adequacy (Patrick Cunningham)**

29 The Public Advocates Office finds that PG&E’s efforts to procure and sell RA in
30 its solicitations were in compliance with the requirements of PG&E’s Bundled
31 Procurement Plan (BPP). Additionally, the Public Advocates Office finds that PG&E’s
32 transactions with SCE, outside of the requirements of the BPP, were reasonable and
33 recommends the Commission approve these transactions.

1 **8. Contract Administration (Kyle Navis)**

2 The Public Advocates Office does not object to PG&E’s contract administration
3 activities and practices for Record Period 2020. However, the Public Advocates Office
4 recommends disallowing from consideration the second amendment signed with Crockett
5 Cogeneration Co. that applies to January and February 2021, because this does not fall in
6 the 2020 Record Period. The disallowed amendment should be re-submitted in the 2021
7 Record Period ERRA Compliance filing.

8 **9. Review Entries Recorded In The Green Tariff Shared
9 Renewables Memorandum Account And The Green Tariff
10 Shared Renewables Balancing Account (Brian Lui)**

11 The Public Advocates Office found no required accounting adjustments and does
12 not object to costs recorded in the GTSRMA and GTSRBA. The Public Advocates
13 Office found that the 2020 GTSRMA and GTSRBA entries are appropriate, correctly
14 stated, and in compliance with applicable Commission Decisions.

15 **10. Summary Of Portfolio Allocation Balancing Account Entries
16 For The Record Period (Brian Lui)**

17 The Public Advocates Office finds that the 2020 accounting entries recorded into
18 PABA are appropriate, correctly stated, and in compliance with applicable Commission
19 Decisions.

20 **11. Summary Of Energy Resource Recovery Account Entries For
21 The Record Period (Brian Lui)**

22 The Public Advocates Office found that the 2020 accounting entries recorded into
23 ERRA appropriate, correctly stated, and in compliance with applicable Commission
24 Decisions.

25 **12. Review Entries Recorded In The Disadvantaged Community –
26 Single-Family Affordable Solar Homes Balancing Account And
27 The Disadvantaged Community – Single-Family Affordable
28 Solar Homes Memorandum (Brian Lui)**

29 The Public Advocates Office finds the entries recorded to the DACSASHBA to be
30 appropriate and reasonable.

1 **13. Central Procurement Entity – Entries Recorded in the**
2 **Centralized Local Procurement Sub-Account (Brian Lui)**

3 The Public Advocates Office does not take issue with the CPE administrative costs
4 recorded in the CLPSA for the 2020 Record Period.

1 **CHAPTER 2 : LEAST-COST DISPATCH AND ECONOMICALLY-TRIGGERED**
2 **DEMAND RESPONSE**

3 (Witness: Lina Khoury)

4 **I. INTRODUCTION AND SUMMARY**

5 This chapter of testimony reviews Pacific Gas and Electric Company’s (PG&E)
6 dispatch and demand response³ activities for the Record Period from January 1, 2020,
7 through December 31, 2020, and considers whether PG&E met the Commission’s least-
8 cost dispatch standard. The Public Advocates Office examined Chapter 1 of PG&E’s
9 2020 Energy Resource Recovery Account (ERRA) compliance testimony and
10 workpapers and reviewed past ERRA testimony. Both PG&E’s energy scheduling and
11 demand response dispatch decisions were reviewed using the least-cost dispatch standard
12 of review, as described below.

13 **II. FINDINGS AND RECOMMENDATIONS**

14 **A. Assessment of Overall Forecasting Accuracy**

- 15 • Overall, PG&E’s day-ahead forecasts during Record Period 2020
16 were [REDACTED] those in Record Period 2019. However,
17 the independent review performed in 2018 on PG&E’s load and
18 price forecasting methodologies provided the Public Advocates
19 Office with a baseline for the quality and robustness of PG&E’s
20 forecasting tools and methods.
- 21 • Due to the minimal amount of variation in PG&E’s load and
22 price forecast accuracy over the past few record periods, the
23 Public Advocates Office finds PG&E’s load and price
24 forecasting activities in the 2020 Record Period to be reasonable.

25 **B. Load Bid Calculations**

- 26 • The proportion of load cleared in the real-time market (RTM) in
27 Record Period 2020 was slightly higher than in the 2019 Record
28 Period. The Public Advocates Office finds PG&E has
29 demonstrated that its load bidding calculations are reasonable.

30

³ PG&E manages several types of Demand Response programs, but the LCD chapter, and therefore the Public Advocates Office’s analysis, focuses on demand response resources with economic dispatch triggers.

1 **E. Assessment of Management of Energy Storage and Renewable**
2 **Resources**

- 3 • Public Advocates Office recommends that the Commission hold
4 a workshop with all three investor-owned utilities present to
5 develop and standardize renewable and storage resource
6 management.

7 **F. Assessment of Demand Response Programs**

- 8 • Based on the average hourly price at the Sub-Load Aggregation
9 Point (Sub-LAP) for instances in which a Capacity Bidding
10 Program (CBP) or SmartAC resource was dispatched versus the
11 average hourly Sub-LAP price for all instances wherein the
12 trigger condition was met, PG&E optimized its CBP and
13 SmartAC resources reasonably.

14 **III. BACKGROUND**

15 **A. Standard of Conduct for Least-Cost Dispatch and Demand**
16 **Response**

17 The Commission’s Decision (D.) 02-10-062 instituted rules for the utilities’
18 procurement responsibilities, established ERRAs as the cost recovery mechanism for
19 short-term procurement costs, and set minimum standards of behavior.¹⁴ A subsequent
20 decision, D.02-12-074, described the utilities’ “up-front standard”¹⁵ of least-cost dispatch
21 as a guide for their short-term procurement plans as well as for the Commission to
22 determine compliance. The decision elaborated upon Standard of Conduct #4:

23 Least-cost dispatch refers to a situation in which the most cost-
24 effective mix of total resources is used, thereby minimizing the cost
25 of delivering electric services...[P]ure economic dispatch of
26 resources may need to be constrained to satisfy operational, physical,
27 legal, regulatory, environmental, and safety considerations. The
28 utility bears the burden of proving compliance with the standard set
29 forth in its plan.¹⁶

¹⁴ D.02-10-062, p. 2.

¹⁵ D.02-12-074, p. 54.

¹⁶ D.02-12-074, p. 54.

1 In the settlement agreement resulting from PG&E’s 2014 Record Period ERRA
2 compliance proceeding, the Public Advocates Office, then the Office of Ratepayer
3 Advocates,¹⁷ and PG&E agreed that the Commission would review economically
4 dispatched demand response programs and hold PG&E to the least-cost dispatch standard
5 of review described above.¹⁸

6 **B. Clarification of Least-Cost Dispatch Expectations Following**
7 **PG&E’s 2010 Record Period and Southern California Edison’s**
8 **2012 Record Period ERRA Compliance Proceedings**

9 The Public Advocates Office analysis of each investor-owned utility’s ERRA
10 Record Period 2010 least-cost dispatch testimony concluded that the utilities did not
11 achieve least-cost dispatch and recommended disallowances for each utility. The
12 Commission reviewed PG&E’s least-cost dispatch showing in Application
13 (A.) 11-02-011 and issued D.13-10-041, stating that while the Commission would not
14 approve the disallowance recommendation, the showing was below expectations.¹⁹ The
15 decision served to “ameliorate these shortcomings and provide specific direction to
16 PG&E to improve its showings in the future.”²⁰

17 To improve least-cost dispatch showings, the decision directed PG&E to include
18 “precise numerical calculations that either demonstrate that PG&E achieved least-cost
19 dispatch during the Record Period or quantify the amount of overspending by PG&E” in
20 its 2014 ERRA compliance proceeding (and going forward).²¹ Additionally, the decision
21 directed the Commission’s Energy Division to facilitate a workshop with all investor-
22 owned utilities, wherein a set of proposed criteria would be developed for determining

¹⁷ The Office of Ratepayer Advocates was renamed the Public Advocates Office of the Public Utilities Commission Pursuant to Senate Bill No. 854, which was signed by the Governor on June 27, 2019 (Chapter 51, Statutes of 2019).

¹⁸ D.16-12-045, Conclusion of Law 4, p. 31.

¹⁹ D.13-10-041, p. 14-15.

²⁰ D.13-10-041, p. 15.

²¹ D.13-10-041, p. 43.

1 what constitutes least-cost dispatch compliance and the methodology required to
2 demonstrate this compliance.²²

3 Finally, in response to Southern California Edison’s (SCE) Record Period 2012
4 ERRA reporting, the Public Advocates Office asserted that the utility did not provide
5 adequate proof that it achieved least-cost dispatch.²³ The Commission further clarified
6 least-cost dispatch responsibilities by issuing D.14-05-023 in which it established that,
7 following the Market Redesign Technology Update in 2009, the CAISO is responsible
8 for dispatching energy generation.²⁴ In other words, the regulated utilities are responsible
9 for scheduling and bidding, but the actual dispatch is performed by the CAISO.

10 **C. Joint Proposal, Interim Ruling, and Final Decision for A.11-02-**
11 **011**

12 After the workshops, the utilities and subject matter experts proposed least-cost
13 dispatch criteria and methodologies and submitted them to the Commission in 2014 as
14 the “Joint Proposal for the Demonstration of Least-Cost Dispatch” (Joint Proposal).²⁵
15 The Public Advocates Office reviewed the proposal and provided recommendations, but
16 the utilities and Public Advocates Office disagreed on the format for reporting their
17 demand response programs in ERRA compliance applications.²⁶

18 The Commission issued the “Interim Ruling Providing Guidance for 2014 ERRA
19 Compliance Proceedings,” (Interim Ruling) directing the utilities to comply with the
20 uncontested portions of the Joint Proposal, which are as follows:

- 21 a. The least-cost dispatch Proposal shall be modified to include a
22 background summary table in testimony.
- 23 b. The utilities shall use the 500 instead of 100 highest hourly
24 Locational Marginal Prices in metric 4 of the Joint Proposal.

²² D. 13-10-041, p. 25.

²³ D.14-05-023, p. 9.

²⁴ D.14-05-023, p. 19.

²⁵ D.15-05-006, p. 7.

²⁶ D.15-05-006, pp. 7-11.

- 1 c. The summary reporting of daily self-commitment decisions shall
2 be modified to show both “profit positions” and “loss positions.”
3 d. The utilities shall include a comparison of the accuracy of the
4 utilities’ forecast of prices in the day-ahead market compared to
5 actual CAISO results.²⁷

6 Finally, the Commission’s Interim Ruling addressed the dispute between Public
7 Advocates Office and the utilities by ordering that the utilities show the “metrics for
8 demand response” in the format proposed by the Public Advocates Office in its response
9 to the Joint Proposal.²⁸ The Commission’s Decision affirming the guidance and direction
10 in the Interim Ruling²⁹ was issued on May 7, 2015, and the standards were expanded to
11 apply to all three utilities on December 3, 2015.³⁰

12 **IV. DISCUSSION AND ANALYSIS**

13 The Public Advocates Office’s analysis is organized to assess the following
14 elements of PG&E’s least-cost dispatch and demand response testimony: the accuracy of
15 PG&E’s overall forecasting accuracy and load bid calculations, dispatch of thermal
16 resources, dispatch of hydro resources, and dispatch of demand response programs.

17 **A. Overall Forecasting Accuracy**

18 **1. Overview**

19 PG&E conducts load and price forecasts to support its day-ahead market bidding
20 and to procure fuel to supply its thermal resources. The load forecast is performed seven
21 days in advance and is based on temperatures and actual hourly-updated load data. The
22 price forecast is intended to reflect energy demand given market dynamics of supply,
23 congestion, solar concentration, and transmission-constrained local area differences. This
24 forecast also enables PG&E to evaluate the opportunity costs of use-limited dispatchable
25 resources, such as hydroelectric powerhouses. Finally, PG&E combines the load

²⁷ D.15-05-006, p. 12.

²⁸ D.15-05-006, p. 12.

²⁹ D.15-05-006, pp. 13-14.

³⁰ D.15-12-015.

1 (supply) with the price (demand) forecasts to predict market clearing prices and the
2 marginal cost of providing energy during the optimization process, which informs the
3 price of resources bid into the CAISO’s day-ahead market.³¹

4 PG&E’s day-ahead forecast accuracy can be determined by comparing the load
5 and price forecasts with the actual CAISO load and clearing price to get the average
6 mean absolute percentage error (MAPE), which is a measure of the forecast price
7 deviation from the actual clearing price. This information is provided in PG&E’s
8 testimony in its comparison of forecast and actual price and load for the 100 highest
9 energy value days (ranked based on the total cost of the load cleared in the day-ahead
10 market)³² as well as for every day of the Record Period.³³ In addition to verifying
11 forecast accuracy, the MAPE analysis provides insight into how well PG&E values its
12 dispatchable resources to ensure that they are bid economically consistent with least-cost
13 dispatch principles.

14 **a. Analysis**

15 According to PG&E, a MAPE value of [REDACTED] is “normal” and is more likely
16 to be higher on hotter days with higher energy values.³⁴ In the 2020 Record Period,
17 among the 100 highest energy value days, the median price MAPE was [REDACTED] and the
18 mean was [REDACTED].³⁵ This is [REDACTED] to the 2019 values, when the median price
19 MAPE was [REDACTED] and the mean was [REDACTED].³⁶

20 The mean and median price MAPE values for all 365 days of the year are [REDACTED]
21 than the average MAPE values for the 100 highest energy value days in 2020; for all days

³¹ Trading floor tour during the Public Advocates Office’s site visit to PG&E office on March 16, 2016.

³² A.20-02-009, Chapter 1 Workpapers, 2019_LCD_6_Highest_Energy_Value_Days_and_Price_Forecast_Summary.

³³ A.20-02-009, Chapter 1 Workpapers, 2019_LCD_Workpaper_6_HighestEnergyValueDays.

³⁴ Presentation of LCD chapter and workpapers during the Public Advocates Office’s site visit to PG&E office on March 16, 2016.

³⁵ A.21-03-008, Chapter 1 Workpapers, 2020_LCD_Workpaper_6_HighestEnergyValueDays, Table 6.1.

³⁶ A.20-02-009, Chapter 1 Workpapers, 2019_LCD_Workpaper_6_HighestEnergyValueDays, Table 6.1.

1 in 2020, the median MAPE was [REDACTED] and the mean was [REDACTED].³⁷ In contrast, the
 2 2019 Record Period median MAPE for every day of the year was [REDACTED] than the median
 3 MAPE for the 100 highest energy value days.³⁸ The mean and median price MAPE
 4 values for every day of 2020 are lower than in 2019, when the median MAPE value was
 5 [REDACTED] and the mean was [REDACTED].³⁹ The mean MAPE values for every day of the year
 6 for 2019 and 2020 is higher than what PG&E considers normal ([REDACTED]). Table 1
 7 below presents the data more clearly.

8 **Table 1: Mean and Median Price MAPE Values for 2019 and 2020 (Confidential)**

	2019	2020
Mean MAPE for top 100 energy value days	[REDACTED]	[REDACTED]
Median MAPE for top 100 energy value days	[REDACTED]	[REDACTED]
Mean MAPE for every day of the year	[REDACTED]	[REDACTED]
Median MAPE for every day of the year	[REDACTED]	[REDACTED]

9
 10 There are many reasons why forecasts can be more and less accurate, and, with
 11 utility load departure to community choice aggregation, volatile natural gas prices, and
 12 climate change, the future of California’s electricity market is uncertain. To evaluate and
 13 assess the robustness of PG&E’s load and price forecast models, in 2018 PG&E and
 14 Public Advocates Office agreed to an independent review by a third-party reviewer, Dr.
 15 Derek Bunn of the London Business School. Dr. Bunn determined that PG&E made
 16 “careful use of the external forecasting services,” and PG&E’s choice in vendor for
 17 providing these external forecasting services “was a good one and there is no evidence

³⁷ A.21-03-008, Chapter 1 Workpapers, 2020_LCD_Workpaper_6_HighestEnergyValueDays, Table 6.2.

³⁸ A.20-02-009, Chapter 1 Workpapers, 2019_LCD_Workpaper_6_HighestEnergyValueDays, Table 6.2.

³⁹ A.20-02-009, Chapter 1 Workpapers, 2019_LCD_Workpaper_6_HighestEnergyValueDays, Table 6.2.

1 that a better vendor service could have been procured.”⁴⁰ Further, Dr. Bunn determined
2 that the vendor, Pattern Recognition Technologies (PRT),

3 Has developed a reputable, state-of-the-art methodology and
4 produces robust forecasts, has an active model management process
5 in place and is responsive to client concerns.⁴¹

6 Dr. Bunn’s full report on PG&E’s forecasting models was presented and evaluated
7 by the Public Advocates Office in its 2017 Record Period ERRA Compliance opening
8 testimony.⁴²

9 **2. Summary and Recommendations**

10 Overall, PG&E’s day-ahead forecasts during Record Period 2020 were slightly
11 [REDACTED] those in Record Period 2019. However, the independent review noted
12 earlier provided the Public Advocates Office with a baseline for the quality and
13 robustness of PG&E’s forecasting tools and methods. Given this, and the relatively
14 minimal amount of variation in PG&E’s load and price forecast accuracy over the past
15 few record periods, the Public Advocates Office finds PG&E’s load and price forecasting
16 activities for the 2020 Record Period to be reasonable.

17 **B. Load Bid Calculations**

18 PG&E bids “[REDACTED]
19 [REDACTED]”⁴³ [REDACTED]
20 [REDACTED]. PG&E’s load summary shows the total
21 number of megawatt-hours (MWh) cleared each month in the day-ahead market and
22 actual settled load. The difference indicates the amount of load scheduled in real-time.
23 This information provides a large-scale context for the efficacy of PG&E’s load bidding
24 strategy. A high proportion of load cleared in the day-ahead market indicates that PG&E

⁴⁰ Bunn, Derek, “Independent Review of PG&E’s Load and Price Forecasting Processes and Performance.” June 8, 2018, p.17.

⁴¹ Bunn, Derek, “Independent Review of PG&E’s Load and Price Forecasting Processes and Performance.” June 8, 2018, p.17.

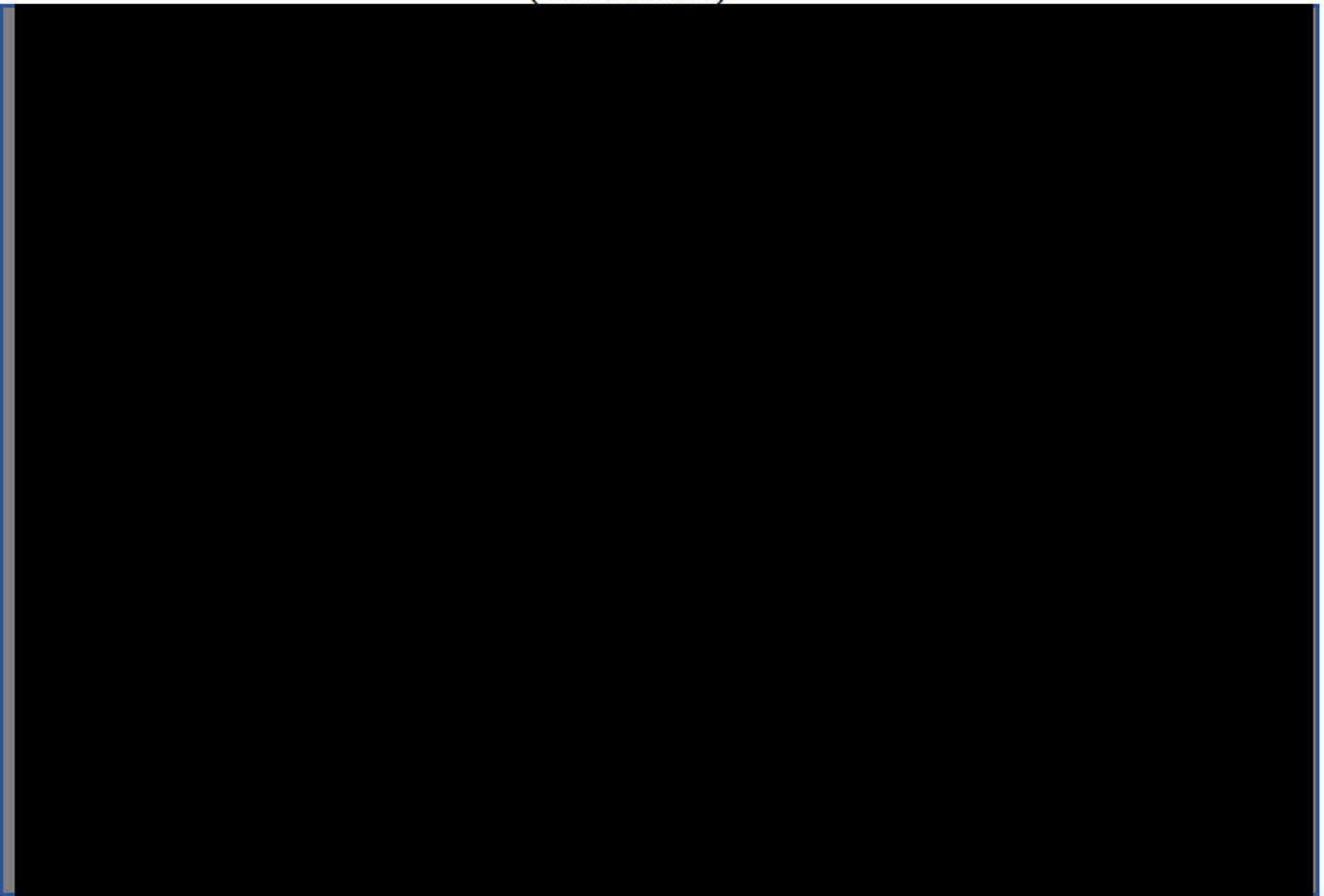
⁴² A.18-02-015, Public Advocates Office Testimony, pp. 2-11- 2-14.

⁴³ A.21-03-008, PG&E Testimony, p. 1-13.

1 forecasted and procured sufficient energy resources relative to consumer demand, and
2 then appropriately calculated the value of its resources and translated these values into
3 bids that would allow the resources to be economically dispatched.

4 Based on this data, [REDACTED] of PG&E's total load was cleared in the day-ahead
5 market, and each month between [REDACTED] cleared in the RTM.⁴⁴ The proportion of
6 load cleared in the RTM in Record Period 2020 is [REDACTED] than in the 2019 Record
7 Period.⁴⁵ Prior to 2018, PG&E typically cleared [REDACTED] of its load in the
8 RTM.⁴⁶ Figure 1 below compares PG&E's real-time load from 2015-2020.

9 **Figure 1: Percent of Load Cleared in the Real-Time market from 2015-2020**
10 **(Confidential)**



11

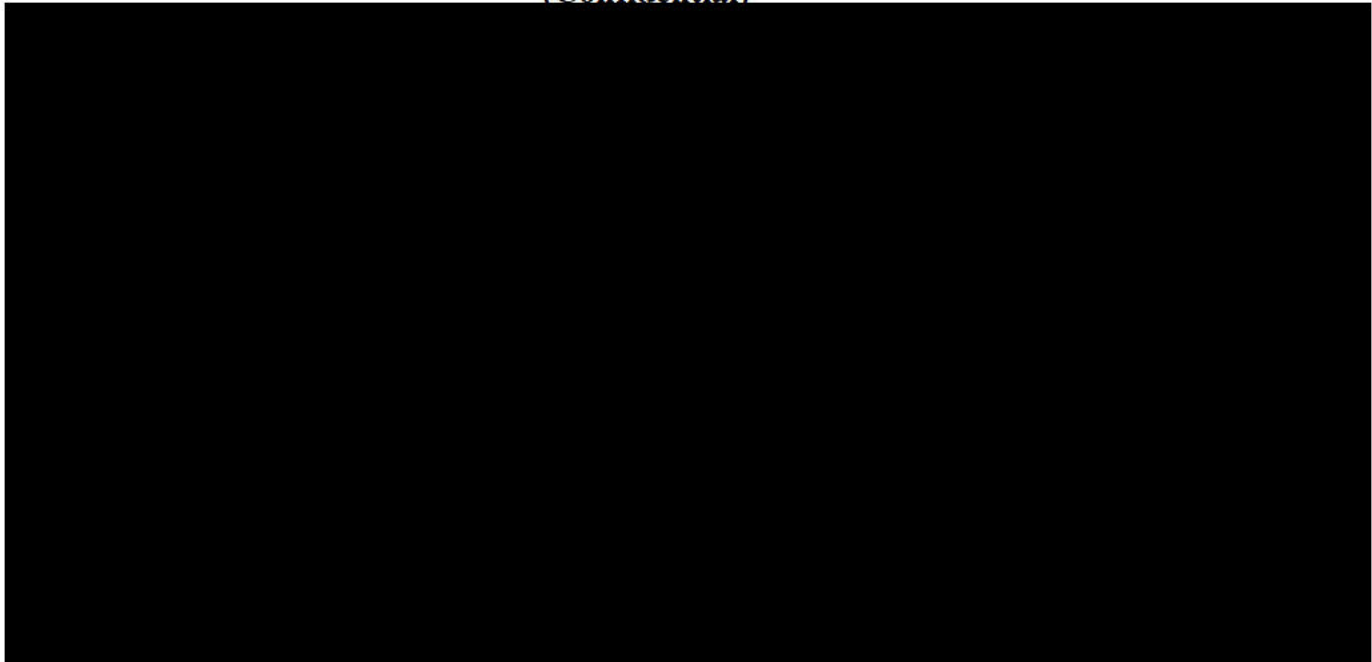
⁴⁴ A.21-03-008, Chapter 1 Workpapers, 2020_LCD_Workpaper_7_Load_Bid.

⁴⁵ Public Advocates Office Workpapers, 2015-2020 Load Bid.

⁴⁶ Public Advocates Office Workpapers, 2015-2020 Load Bid.

1 Because PG&E’s load and price forecasting methodologies were independently
2 reviewed, deemed “reputable,” and found to produce “robust” outcomes, the Public
3 Advocates Office cannot attribute the [REDACTED] in 2020 to PG&E’s forecasting models.
4 It is notable that between 2015 and 2020, PG&E served a decreasing amount of day-
5 ahead market load.⁴⁷ Figure 2 below illustrates this decreasing trend.

6 **Figure 2: Total Load Served in Day-Ahead and Real-Time Markets from 2015-2020**
7 **(Confidential)**



8
9 Although PG&E cleared an [REDACTED] of its load in the RTM, in
10 absolute terms, the variance between 2019 and 2020 is [REDACTED]. Therefore, the
11 Public Advocates Office finds PG&E’s load bidding calculations reasonable, resulting in
12 a reliable grid for ratepayers.

13 **C. Management of Thermal Resources**

14 PG&E is required to bid its utility-retained and contracted thermal resources at
15 their incremental (marginal) costs, subject to safety, regulatory, legal, operational, and
16 financial requirements. PG&E is prohibited from taking any actions that result in a

⁴⁷ Public Advocates Office Workpapers, 2015-2020 Load Bid.

1 preference for its utility-retained thermal generation resources relative to those under
2 contract with outside counterparties.⁴⁸

3 **1. Commitment Cost Decisions**

4 Prior to April 1, 2019, if the utilities believed that the proxy bids did not
5 adequately reflect the true costs of running a resource, like a facility’s non-fuel related
6 costs, they could use the registered cost option. However, beginning on April 1, 2019,
7 the CAISO “retired” the registered cost option,⁴⁹ except for “resources that have less than
8 12 months of 15-minute [locational marginal price] data.”⁵⁰ The reason the CAISO
9 eliminated proxy bids and enhanced the registered bids is to provide the CAISO market
10 support for bidding flexibility to incentivize flexible resources participation during times
11 of tight fuel supply, reduce the risk of insufficient cost recovery, and require support for
12 verified costs of energy bids above \$1,000/MWh.⁵¹ This results in more flexible
13 resources participating in the market during tight supplies and reduces the risk of
14 insufficient cost recovery. In the 2020 Record Period, none of PG&E’s thermal resources
15 met the exception (resources that have less than 12 months of 15-minutes data).⁵²

16 Therefore, due to the retirement of registered cost option, PG&E did not use the
17 registered cost option for any of its resource in 2020,⁵³ which eliminated the need for
18 PG&E to make a Proxy/Registered cost determination for thermal resources during the
19 2020 Record Period. It also eliminated the need for Workpaper 1- Commitment Cost
20 Decisions.⁵⁴

21

⁴⁸ D.02-12-069, pp. 62-63.

⁴⁹ CAISO Commitment Cost Enhancements Phase 3 initiative implemented on April 1, 2019.

⁵⁰ A.21-03-008, PG&E Testimony, p. 1-14.

⁵¹ [Stakeholdercenter.caiso.com/stakeholderinitiatives/Commitment-costs-and-default-energy-bid-enhancements](https://stakeholdercenter.caiso.com/stakeholderinitiatives/Commitment-costs-and-default-energy-bid-enhancements).

⁵² A.21-03-008, PG&E Testimony, p. 1-15.

⁵³ A.21-03-008, Chapter 1 Workpapers, 2020_LCD_Workpaper_1_CommitmentCostDecisions, Table 1.1.

⁵⁴ A.21-03-008, PG&E Testimony, p. 1-30.

1 **2. Incremental Bid Cost Calculations**

2 PG&E schedules or bids⁵⁵ resources that have dispatch flexibility into the CAISO
3 markets at the incremental cost of providing energy, considering the variable resource
4 operating cost and the most current market price forecast.⁵⁶ Resource costs that increase
5 or decrease with resource output are properly treated as incremental costs.⁵⁷ Incremental
6 energy bid costs include costs that vary directly with the generation of each additional
7 megawatt-hour (MWh) above the minimum operating point such as fuel costs,
8 greenhouse gas (GHG) costs, and variable operations and maintenance (VOM) costs.⁵⁸
9 Optimally, PG&E submits its calculated bids to the CAISO’s day-ahead market, and the
10 CAISO will dispatch the resource if the bid price is less than or equal to the locational
11 marginal price (LMP) that the CAISO calculated for the node at which the resource is
12 located. If PG&E’s bid is higher than the LMP at a resource’s node, the CAISO does not
13 dispatch the resource.⁵⁹

14 PG&E submitted [REDACTED] day-ahead hourly bids to the CAISO for its thermal
15 resources.⁶⁰ [REDACTED]⁶¹ of its submitted bids had a significant variance between the
16 calculated and correct bids of greater than \$0.10.⁶² The Public Advocates Office finds
17 PG&E’s bid cost calculation activities to be reasonable.

18 **3. Bidding Activity**

19 As stated above, PG&E bids all available resources into the market at their
20 incremental cost, and if the LMP is greater than or equal to the bid price, the CAISO will

⁵⁵ Schedules commonly refer to self-schedules whereas bids refer to price-quantity offers to sell or buy in the CAISO Market. (A.21-03-008, PG&E Testimony, p. 1-7, footnote 12).

⁵⁶ A.21-03-008, PG&E Testimony, p. 1-7.

⁵⁷ A.21-03-008, PG&E Testimony, p. 1-7.

⁵⁸ A.21-03-008, PG&E Testimony, p. 1-8.

⁵⁹ Caveat: CAISO has the discretion to dispatch or not dispatch a resource regardless of the bid price if CAISO determines it is necessary based on its exclusive information about the grid.

⁶⁰ A.21-03-008, Chapter 1 Workpapers, 2020_LCD_2_Bid_Cost_Calculation_Summary.

⁶¹ A.21-03-008, Chapter 1 Workpapers, 2020_LCD_2_Bid_Cost_Calculation, “CLEAN_VS_CALC” tab.

⁶² A.21-03-008, Chapter 1 Workpapers, 2020_LCD_2_Bid_Cost_Calculation_Table 2.1.2-Annual Comparison.

1 dispatch the resource. PG&E’s testimony and workpapers detail instances when
2 resources were not bid into the CAISO markets or, if bid, were not awarded despite the
3 bid price falling below the LMP.

4 Among the [REDACTED] hourly bids that PG&E submitted to the CAISO for its
5 thermal resources, [REDACTED] were “flagged,” meaning that they were not dispatched
6 although the incremental bid cost was lower than the LMP.⁶³ For all instances, the non-
7 award was justifiable because the resource was providing ancillary services, was
8 receiving regulation awards, was a multi-stage generator, and was in process of
9 transitioning from one configuration to another, or all or part of the resource had an
10 outage card,⁶⁴ limiting its available capacity.

11 In the 2020 Record Period, there were three⁶⁵ “bidding and scheduling events” that
12 resulted in cost impacts.⁶⁶ The first event was the result of a “[REDACTED]”⁶⁷ [REDACTED]
13 [REDACTED]⁶⁸ which [REDACTED]
14 [REDACTED].⁶⁹ The second event was the result of “[REDACTED]”⁷⁰ where
15 [REDACTED]
16 [REDACTED]⁷¹ [REDACTED].⁷² The third event
17 was the result of [REDACTED]

⁶³ A.21-03-008, Chapter 1 Workpapers, 2020_LCD_2_Bid_Cost_Calculation_Table 2.2-Annual Non-Award.

⁶⁴ PG&E submits bids for resources even during outage periods to prevent traders from forgetting to bid the resource once it is operational again. The outage card communicates to the CAISO that although a bid has been submitted, the resource is either fully or partially unavailable. (A.16-02-019, PG&E response to the Public Advocates Office Data Request 012, Question 3)

⁶⁵ A.21-03-008, PG&E Testimony, p. 1-28.

⁶⁶ A.21-03-008, PG&E Testimony, p. 1-28.

⁶⁷ A.21-03-008, PG&E Testimony, p. 1-28.

⁶⁸ A.21-03-008, PG&E Testimony, p. 1-28.

⁶⁹ A.21-03-008, PG&E Testimony, Table 1-5, p. 1-28.

⁷⁰ A.21-03-008, PG&E Testimony, p. 1-28.

⁷¹ A.21-03-008, PG&E Testimony, p. 1-28.

⁷² A.21-03-008, PG&E Testimony, Table 1-5, p. 1-28.

1 [REDACTED] ⁷³ [REDACTED]

2 [REDACTED] ⁷⁴ [REDACTED]

3 [REDACTED]

4 [REDACTED]

5 [REDACTED] ⁷⁵ To remedy these events, [REDACTED]

6 [REDACTED]

7 [REDACTED]

8 [REDACTED]

9 [REDACTED] ⁷⁶ Because these events were remedied and did

10 not reoccur, PG&E mitigated potentially higher cost impacts. Therefore, the Public

11 Advocates Office finds that PG&E acted as a reasonable manager and does not

12 recommend a disallowance.

13 Additionally, PG&E states that [REDACTED]

14 [REDACTED]

15 [REDACTED] ⁷⁷ [REDACTED]

16 [REDACTED]

17 [REDACTED] ⁷⁸ [REDACTED]

18 [REDACTED] ⁷⁹ The

19 Public Advocates Office analyzed this event and determined that PG&E remedied⁸⁰ the

20 erroneous order in a prudent manner, and therefore does not recommend a disallowance.

⁷³ A.21-03-008, PG&E Testimony, p. 1-28.

⁷⁴ A.21-03-008, PG&E Testimony, Table 1-5, p. 1-28.

⁷⁵ [REDACTED]

⁷⁶ A.21-03-008, PG&E Testimony, p. 1-28.

⁷⁷ A.21-03-008, PG&E Testimony, p. 1-28.

⁷⁸ A.21-03-008, PG&E Testimony, p. 1-28.

⁷⁹ A.21-03-008, PG&E Testimony, pp. 1-28-29.

⁸⁰ [REDACTED]

1 Finally, during the 2020 Record Period, PG&E did not have any resources that did
2 not bid into the CAISO markets at times when they were available,⁸¹ which indicates that
3 PG&E bid all of its available resources into the market, alleviating possible outages and
4 contractual constraints.

5 **4. Must-Take Resource Bidding and Scheduling**

6 Part of PG&E’s supply portfolio comprises must-take resources,⁸² which are
7 subject to safety, environmental, licensing, regulatory, or contractual constraints.⁸³
8 Rather than submit hourly economic bids to the CAISO for these resources, as is the case
9 with most of the dispatchable thermal and hydro resources discussed in this chapter,
10 PG&E self-schedules the “inflexible” generation (must-take) supply in the day-ahead
11 market based on its forecast of their generation, and then modifies these self-schedules in
12 real-time if the forecast of generation changes.⁸⁴ In the 2020 Record Period, PG&E had a
13 one-time IT error that resulted in self-commitment of 2 units that totaled 581.7 megawatt-
14 hour (MWh) and did not result in any cost impacts.^{85 86} All other instances of self-
15 commitment were for non-discretionary purposes (e.g., testing).⁸⁷ Therefore, the Public
16 Advocates Office finds PG&E’s management of must-take resources reasonable.
17

⁸¹ A.21-03-008, Chapter 1 Workpapers, 2020_LCD_2_Bid_Cost_Calculation, “Table 2.5 _Annual Non-Bid” tab.

⁸² PG&E’s must-take resources include (i.) existing Qualifying Facilities, (ii.) Combined Heat and Power facilities, (iii.) renewable energy contracts and resources without bidding rights for economic dispatch, (iv.) Diablo Canyon nuclear power plant, (v.) legacy contracts, and (vi.) must-run hydro generation. (A.21-03-008, PG&E Testimony, pp.1-22-23).

⁸³ A.21-03-008, PG&E Testimony, p. 1-9.

⁸⁴ A.21-03-008, PG&E Testimony, p. 1-9.

⁸⁵ A.21-03-008, PG&E Testimony, p. 1-27.

⁸⁶ A.21-03-008, Chapter 1 Workpapers, 2020_LCD_3_SelfCommitment_CONF.

⁸⁷ A.21-03-008, PG&E Testimony, p. 1-27.

1 **D. Management of Hydro Resources**

2 **1. Overview**

3 In general, hydro generation is use-limited due to the limited availability of
4 water.⁸⁸ While water in reservoirs from natural inflows may be considered a zero-cost
5 fuel (except in the case of pumped storage hydro), the availability of this zero-cost fuel
6 may be limited.⁸⁹ While some hydro resources cannot be controlled at all, such as run-of-
7 river resources, other hydro resources can be stored behind a dam and are bid into the
8 CAISO markets at their incremental costs. Hydro resources do not have explicit fuel
9 costs as thermal resources do, and so, while the incremental cost of providing
10 hydropower does not include fuel, utilities must consider the opportunity costs of
11 utilizing the resource at a future time when it may be more valuable.

12 Least-cost dispatch of hydro resources must take into consideration the uncertainty
13 of weather conditions such as the likelihood of precipitation and high temperatures, the
14 future availability of water, and any potential operating constraints. Hydro resources
15 have the highest value to customers when the limited amount of water is utilized during
16 high market prices⁹⁰ to offset or suppress high costs. PG&E utilizes three hydro models
17 (PLEXOS, TESS, and Xpress) for forecasting and optimizing hydropower generation.⁹¹

18 **2. Analysis**

19 PG&E’s hydro resources were, on average, dispatched during █████ of the 500
20 highest energy value hours, as determined by ranking the highest hourly locational
21 marginal price values.⁹² This is █████ than the previous record year when
22 hydro resources were dispatched during █████ of the 500 highest energy value hours.⁹³

⁸⁸ A.21-03-008, PG&E Testimony, p. 1-14.

⁸⁹ A.21-03-008, PG&E Testimony, p. 1-14-15.

⁹⁰ A.21-03-008, PG&E Testimony, p. 1-15.

⁹¹ A.21-03-008, Chapter 1 Workpapers, 2020_LCD_4_Hydro_Resources_Summary.

⁹² A.21-03-008, Chapter 1 Workpapers, 2020_LCD_4_Hydro_Top_500, “Table 4.3 Hydro Stat” tab.

⁹³ A.20-02-009, Chapter 1 Workpapers, 2020_LCD_4_Hydro_Top_500, “Table 4.3 Hydro Stat” tab.

1 Most of PG&E’s 44 dispatchable hydro units were individually dispatched between [REDACTED]
2 and [REDACTED] of the 500 highest energy value hours.²⁴

3 The Helms Pumped Storage Plant has three units that were dispatched during
4 [REDACTED], [REDACTED], and [REDACTED] of the 500 highest energy value hours, respectively.²⁵ Because
5 Helms has different operational constraints due to its pumped storage capacity, it is
6 dispatched differently from other hydro facilities. For example, because the CAISO
7 relies on Helms for grid stability, its dispatch can change many times throughout the
8 day.²⁶ Helms’s operations are discussed further in the following section.

9 As with the load and price forecasting models, PG&E engaged an independent
10 reviewer, Dr. Jery Stedinger of Cornell University, to evaluate its hydro forecast models
11 to determine their robustness and consistency with industry standards. In his review, Dr.
12 Stedinger stated that PG&E’s hydro model “does as well or better at meeting PG&E’s
13 needs compared to other utilities with complicated hydropower systems.”²⁷ Further, Dr.
14 Stedinger assessed that, “PG&E’s hydro scheduling and dispatch models and processes
15 are doing a very good job of representing operating opportunities and the ability to
16 schedule hydro resources so as to obtain maximum value from energy and payments for
17 regulation-up and -down and other reserves.”²⁸ Dr. Stedinger’s full report on PG&E’s
18 forecasting models was presented and evaluated by the Public Advocates Office in its
19 2017 Record Period ERRA Compliance opening testimony.²⁹

20 For all the reasons described above, the Public Advocates Office determined that
21 PG&E [REDACTED]

22 [REDACTED]

²⁴ A.21-03-008, Chapter 1 Workpapers, 2020_LCD_4_Hydro_Top_500, “Table 4.3 Hydro Stat” tab.

²⁵ A.21-03-008, Chapter 1 Workpapers, 2020_LCD_4_Hydro_Top_500, “Table 4.3 Hydro Stat” tab.

²⁶ A.21-03-008, PG&E Testimony, p. 2-17.

²⁷ Stedinger, Jery, “Independent review of PG&E’s hydro scheduling and dispatch models and processes.” April 26, 2019, p. 1.

²⁸ Stedinger, Jery, “Independent review of PG&E’s hydro scheduling and dispatch models and processes.” April 26, 2019, p. 6.

²⁹ A.18-02-015, Public Advocates Office Testimony, p. 2-25-27.

3. Helms Pumped Storage Facility

PG&E's Helms Pumped Storage Facility has a generation capacity of 1,218 MW and a pump capacity of 1,020 MW.¹⁰⁰ Its three generators are located between two reservoirs, one of which is at a higher altitude than the other. Water from the lower altitude afterbay can be pumped into the forebay for use at a time when hydropower is more economical to dispatch. However, due to the energy required to pump water upstream,¹⁰¹ PG&E must evaluate the opportunity costs of the hydro resource during generation time less the cost of pumping.¹⁰²

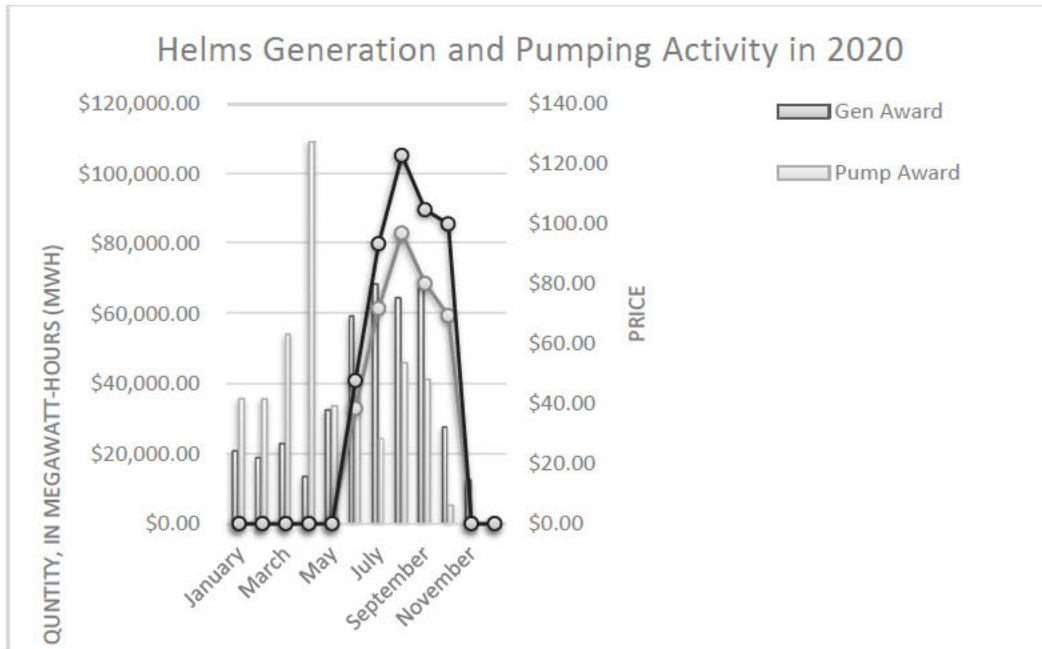
Helms can provide the highest value while minimizing total cost to customers when energy is dispatched at times when market prices are high, and water is pumped when market prices are low.¹⁰³ The Public Advocates Office determined that PG&E applied the least-cost principle when bidding and scheduling Helms' energy and pumped storage. As figure 3 below shows, for each month of 2020, the average generation market price when Helms was generating energy was \$71.29.

¹⁰⁰ A.21-03-008, PG&E Testimony, p. 1-19.

¹⁰¹ Upstream pumping takes more than one MWh of energy to pump water upstream than the MWh of energy generated through turbines.

¹⁰² A.21-03-008, PG&E Testimony, p. 1-19.

¹⁰³ A.21-03-008, PG&E Testimony, p. 1-19.



1

4. Summary and Recommendations

2

3

Overall, PG&E demonstrated that it is bidding its hydro resources for dispatch according to least-cost dispatch principles, during times when the price and value of energy is high. PG&E also demonstrated that it is bidding the hydro resources, such as those in the Helms Pumped Storage facility, for generation according to least-cost dispatch principles, when the price and value of energy is high and pumping when prices are lower.

8

E. Management of Dispatchable Renewable Resources and Energy Storage

9

10

1. Overview

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12

PG&E contracts with and owns renewable resources with economic bidding rights.¹⁰⁴ The economic bidding of these resources captures the incremental and the opportunity costs associated with contractual and operational constraints.¹⁰⁵ In addition to calculating the cost components making up the bid cost for the economic dispatch of renewable energy in the day-ahead market, PG&E evaluates market prices and

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¹⁰⁴ A.21-03-008, PG&E Testimony, p. 1-23.

¹⁰⁵ A.21-03-008, PG&E Testimony, p. 1-23.

1 opportunity costs associated with the curtailment of renewables. For example, sometimes
2 the CAISO-reported net energy demand approaches the minimum must-offer threshold
3 and increases the risk of overgeneration. Overgeneration can overburden distribution and
4 transmission lines and lead to surges and outages. At these times, energy prices are often
5 negative to provide a financial incentive for generators to “turn off” and reduce the
6 amount of energy flowing into the grid. This scenario typically occurs midday when
7 solar generation is at its peak. Much like hydro resources, renewables do not have
8 explicit fuel costs, but, unlike hydro resource, renewables can be economically curtailed
9 at times when the CAISO system is approaching overgeneration conditions and energy
10 costs are negative.

11 By the time scheduling coordinators consider curtailing renewable resources, other
12 thermal resources with flexible operating protocols have already been turned off, so
13 renewables are the next type of energy resource that can be curtailed to prevent energy
14 overgeneration. However, to ensure compliance with California’s Renewable Portfolio
15 Standard (RPS), the utilities assess the opportunity cost of not generating the Renewable
16 Energy Credits (RECs) associated with renewable generation when determining their
17 curtailment bids.

18 The opportunity costs associated with renewable resources are [REDACTED]
19 [REDACTED].¹⁰⁶ It is only
20 economical for renewable resource to be curtailed when the negative price at the
21 resource’s LMP is lower than the cost of a REC.¹⁰⁷ Some of PG&E’s renewable
22 resources also have operational constraints such as a limit on the number of curtailment
23 hours per year. This presents an additional opportunity cost where PG&E must reserve
24 renewable economic curtailment during the lowest LMPs in the year without exceeding
25 the allowable curtailment hours to maximize the value of renewable resources.¹⁰⁸

¹⁰⁶ A.21-03-008, PG&E Testimony, p. 1-23.

¹⁰⁷ A.21-03-008, PG&E Testimony, p. 1-24.

¹⁰⁸ A.21-03-008, PG&E Testimony, p. 1-24.

1 Battery storage has the potential to provide similar cost-mitigating services
2 (optimization model) as hydro storage¹⁰⁹ by charging during times of the day when
3 energy is least expensive and generating the stored energy at times when energy is most
4 expensive. Batteries must be optimized according to their unique opportunity cost; the
5 incremental cost of providing either energy or ancillary services (A/S) from a battery is
6 “based on the cost of maintaining the State of Charge (SOC) at a level permitting
7 provision of energy or A/S, considering the charging efficiency.”¹¹⁰ PG&E owns two
8 dispatchable battery resources that it bid into the CAISO market during Record Period
9 2020.¹¹¹ PG&E is still testing out “new approaches that might yield new sources of value
10 or have application to future operations of batteries in the CAISO markets.”¹¹²

11 2. Summary and Recommendation

12 In its 2017 Record Period ERRA testimony, the Public Advocates Office
13 attempted to analyze PG&E’s renewable and energy storage dispatch data to determine
14 whether PG&E had economically curtailed its renewable resources responsibly and
15 optimized its battery storage.¹¹³ However, without discrete Commission-directed
16 reporting guidelines, it is not possible to assess PG&E’s renewable and storage resource
17 management. The Public Advocates Office recommends that the Commission hold a
18 workshop with all three investor-owned utilities present to develop and standardize
19 renewable and storage resource reporting requirements.

20 F. Management of Demand Response Programs

21 1. Overview

22 PG&E manages several types of demand response (DR) programs, but the least-
23 cost dispatch chapter, and therefore the Public Advocates Office’s analysis, focuses on

¹⁰⁹ A.21-03-008, PG&E Testimony, p. 1-20.

¹¹⁰ A.21-03-008, PG&E Testimony, p. 1-20.

¹¹¹ A.21-03-008, PG&E Testimony, p. 1-20.

¹¹² A.21-03-008, PG&E Testimony, p. 1-20.

¹¹³ A.18-02-015, Public Advocates Office Testimony, pp. 2-27-30.

1 demand response resources with economic triggers. Of the different types of demand
2 response programs with economic triggers, PG&E manages the Capacity Bidding
3 Program (CBP) and the SmartAC Program.¹¹⁴ Both of these DR programs are
4 “represented as Proxy Demand Response (PDR) resources in PG&E’s portfolio and bid
5 into the day-ahead markets based on calculated availabilities and dispatch trigger
6 prices.”¹¹⁵

7 **2. Capacity Bidding Program (CBP)**

8 The CBP is a “voluntary DR program that offers customers capacity and energy
9 payments for being on standby to reduce load and for reducing energy consumption when
10 requested by PG&E.”¹¹⁶ Program participants enroll through a third-party aggregator
11 who receives the capacity payments and awards the payments to subscribing
12 customers.¹¹⁷ The CBD is available from May to October of each year.¹¹⁸ There are
13 three CBP program options. The first is the Prescribed option, which most closely
14 resembled the CBP programs of past years. The Prescribed CBP option is available
15 between 1:00 PM and 9:00 PM, Monday through Friday, with a maximum dispatch of
16 five events and 30 hours per month.¹¹⁹ A CBP event is triggered when:

- 17 a) The CAISO day-ahead price exceeds \$95/MWh;
- 18 b) PG&E receives a market award or dispatch instruction from the
19 CAISO for a PDR that is part of CBP;
- 20 c) When PG&E, in its sole opinion, forecasts that generation
21 resources or electric system capacity may not be adequate; or
- 22 d) Forecasted temperature for a Sub-LAP exceeds the temperature
23 threshold for the Sub-LAP.¹²⁰

¹¹⁴ A.21-03-008, PG&E Testimony, p. 1-31.

¹¹⁵ A.21-03-008, PG&E Testimony, p. 1-31

¹¹⁶ A.21-03-008, PG&E Testimony, p. 1-32.

¹¹⁷ PG&E Electric Bidding Schedule E-CBP, July 23, 2018. Accessed at http://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_SCHEDULES_E-CBP.pdf.

¹¹⁸ A.21-03-008, PG&E Testimony, p. 1-33.

¹¹⁹ A.21-03-008, PG&E Testimony, p. 1-33.

¹²⁰ A.21-03-008, PG&E Testimony, p. 1-33.

1 The CBP Elect option is available between 1:00 PM and 9:00 PM.¹²¹ The CBP
2 Elect Plus option allows participation in the CAISO market for “additional hours outside
3 the standard program hours.”¹²² Unlike the Prescribed CBP, the tariff price trigger for
4 CBP Elect and Elect Plus is bid at the price chosen by the aggregator.¹²³

5 There are opportunity costs associated with demand response dispatch. In addition
6 to the opportunity cost of dispatching a resource at a future time, PG&E considers
7 customer fatigue, or when a demand response customer experiences frequent dispatch
8 and, as a result, does not believe that the value of the dispatch outweighs the burden
9 placed on their own operations and may be less likely to participate in the demand
10 response program in the future.¹²⁴ To avoid customer fatigue and subsequent customer
11 attrition, per customer feedback, PG&E does not dispatch a demand response resource
12 more than three business days in a row.¹²⁵

13 3. SmartAC Program

14 The SmartAC Program was first integrated into the CAISO day-ahead market in
15 2019.¹²⁶ In 2020, SmartAC continued to be integrated into the CAISO day-ahead energy
16 as a PDR,¹²⁷ and it is still available to residential customers.¹²⁸ Under this program,
17 PG&E “installs a load control device at a customer’s premise that can temporarily
18 disengage the customer’s primary central Air Conditioning (A/C) unit or raise the
19 temperature at the thermostat when the device is remotely activated.”¹²⁹ Like the CBP,
20 the SmartAC Program is available from May 1 through October 31 of each year

¹²¹ A.21-03-008, PG&E Testimony, p. 1-33.

¹²² A.21-03-008, PG&E Testimony, p. 1-33.

¹²³ A.21-03-008, PG&E Testimony, p. 1-33.

¹²⁴ A.21-03-008, PG&E Testimony, p. 1-38.

¹²⁵ A.21-03-008, PG&E Testimony, p. 1-38.

¹²⁶ A.20-02-009, PG&E Testimony, p. 1-38.

¹²⁷ A.21-03-008, PG&E Testimony, p. 1-32.

¹²⁸ A.21-03-008, PG&E Testimony, p. 1-40.

¹²⁹ A.21-03-008, PG&E Testimony, p. 1-40.

1 consistent with times of high A/C usage, up to a 100 hours of cycling per customer per
2 year.¹³⁰

3 SmartAC is both a reliability program used during emergencies and an economic
4 program based on wholesale energy prices which can be dispatched.¹³¹

5 a) Upon the CAISO's order:

6 i. After the dispatch of Condition 2 Reliability Must-Run
7 (RMR) units and prior to canvassing other entities and
8 Balancing Authorities for available Manual Dispatch
9 Energy/Capacity on interties;

10 ii. Based on its forecasted system conditions and operating
11 procedures; or

12 iii. During emergency or near-emergency situations;

13 b) At the discretion of PG&E's energy operations center in response
14 to a CAISO economic award in the wholesale market or high
15 wholesale energy prices; or

16 c) During program testing.¹³²

17 When used as a reliability program, [REDACTED]

18 [REDACTED]

19 [REDACTED] ¹³³

20 **4. Analysis**

21 During the 2020 Record Period, PG&E dispatched CBP resources on 28 occasions
22 for a total of 60 events hours as compared to 13 occasions and 20 events hours in 2019,
23 and 47 occasions and 114 event hours in 2018.¹³⁴ PG&E attributed the increase in
24 dispatch frequency and dispatch duration between 2019 and 2020 to the significant heat
25 storms California faced in the Fall season and the market awards CBP resources

¹³⁰ A.21-03-008, PG&E Testimony, p. 1-40.

¹³¹ A.21-03-008, PG&E Testimony, p. 1-40.

¹³² A.21-03-008, PG&E Testimony, p. 1-40.

¹³³ A.21-03-008, PG&E Testimony, p. 1-41.

¹³⁴ A.21-03-008, PG&E Testimony, p. 1-34.

1 received.¹³⁵ Fifteen of the 2020 CBP events were triggered by the market award,
2 meaning that the CAISO day-ahead market price exceeded the trigger price of
3 \$95/MWh.¹³⁶ There were nine occasions in which the trigger conditions were met, but
4 the CBP resources were not dispatched.¹³⁷ On four occasions, PG&E dispatched CBP
5 resources for testing purposes.¹³⁸

6 During the times that the CBP trigger conditions were met, and the resources were
7 dispatched,¹³⁹ the average hourly net cost was [REDACTED].¹⁴⁰ By comparison, the
8 average hourly potential price for the times that the CBP trigger conditions were forecast,
9 whether they were dispatched, was [REDACTED].¹⁴¹ The [REDACTED].¹⁴² difference between
10 the two values is minimal considering the increased number of times CBP events were
11 triggered and dispatched in 2020.

12 PG&E provided the data for all the instances that the economic trigger was met,
13 but the CBP resource was not dispatched. During the 2019 Record Period, the two
14 occasions that the CBP trigger was not met without the resources being dispatched were a
15 result of customers being simultaneously affected by a Public Safety Power Shutoff

¹³⁵ A.21-03-008, PG&E Testimony, p. 1-34.

¹³⁶ A.21-03-008, Chapter 1 Workpapers, ERRA_2020_PGE_Compliance_Test_PGE_Chp1Workpaper_DR2_Confidential.

¹³⁷ A.21-03-008, Chapter 1 Workpapers, ERRA_2020_PGE_Compliance_Test_PGE_Chp1Workpaper_DR2_Confidential.

¹³⁸ A.21-03-008, Chapter 1 Workpapers, ERRA_2020_PGE_Compliance_Test_PGE_Chp1Workpaper_DR2_Confidential.

¹³⁹ This is also known as an “actual” dispatch. (A.21-03-008, PG&E Testimony, p. 1-34).

¹⁴⁰ A.21-03-008, Chapter 1 Workpapers, ERRA_2020_PGE_Compliance_Test_PGE_Chp1Workpaper_DR1_Confidential.

¹⁴¹ A.21-03-008, Chapter 1 Workpapers, ERRA_2020_PGE_Compliance_Test_PGE_Chp1Workpaper_DR1_Confidential.

¹⁴² A.21-03-008, Chapter 1 Workpapers, ERRA_2020_PGE_Compliance_Test_PGE_Chp1Workpaper_DR2_Confidential.

1 (PSPS)¹⁴³ event.¹⁴⁴ By contrast, during the 2020 Record Period, PG&E attributed the
2 nine occasions that the economic trigger was met, but the CBP resource was not
3 dispatched to the following reasons: 1) deadline was missed for dispatch, 2) tariff
4 monthly event cap was met, 3) advisory schedule received after dispatch deadline, and
5 4) resources had three consecutive events.¹⁴⁵

6 In the 2020 Record Period, PG&E dispatched its SmartAC resources on fifteen
7 occasions, and all events were dispatched because of market awards or a CAISO
8 emergency apart from one test event.¹⁴⁶ Thirteen of the dispatches were triggered by the
9 market award, and one was for PG&E testing purposes.¹⁴⁷ There were three occasions in
10 which SmartAC resources were triggered but were not dispatched: twice due to PSPS
11 events, and once due to an operations mistake.¹⁴⁸

12 During actual SmartAC dispatch events, the average hourly net cost was
13 [REDACTED].¹⁴⁹ By comparison, the average hourly potential price for all times that the
14 SmartAC trigger conditions were forecasted, whether they were dispatched or not, was
15 [REDACTED].¹⁵⁰ The [REDACTED]¹⁵¹ difference between the two values is very small. The

¹⁴³ PG&E did not dispatch CBP resources during PSPS events “in order to minimize [customer] confusion” from the “multiple and potentially contradictory messages (e.g. receiving both notice of an impending PSPS event, and instructions to drop load [for a DR event]...).” (A.20-02-009, PG&E Testimony, p. 1-44.)

¹⁴⁴ A.20-02-009, Chapter 1 Workpapers, ERRA_2019_PGE_Compliance_Test_PGE_Chp1Workpaper_DR2_Confidential.

¹⁴⁵ A.21-03-008, Chapter 1 Workpapers, ERRA_2020_PGE_Compliance_Test_PGE_Chp1Workpaper_DR2_Confidential.

¹⁴⁶ A.21-03-008, PG&E Testimony, p. 42.

¹⁴⁷ A.21-03-008, Chapter 1 Workpapers, ERRA_2020_PGE_Compliance_Test_PGE_Chp1Workpaper_DR2_Confidential.

¹⁴⁸ A.21-03-008, Chapter 1 Workpapers, ERRA_2020_PGE_Compliance_Test_PGE_Chp1Workpaper_DR2_Confidential.

¹⁴⁹ A.21-03-008, Chapter 1 Workpapers, ERRA_2020_PGE_Compliance_Test_PGE_Chp1Workpaper_DR1_Confidential.

¹⁵⁰ A.21-03-008, Chapter 1 Workpapers, ERRA_2020_PGE_Compliance_Test_PGE_Chp1Workpaper_DR1_Confidential.

¹⁵¹ A.21-03-008, Chapter 1 Workpapers, ERRA_2020_PGE_Compliance_Test_PGE_Chp1Workpaper_DR2_Confidential.

1 difference between these values usually indicates that PG&E optimized its demand
2 response resources during the hours with higher energy values. However, as previously
3 described, PG&E’s demand response programs were triggered more frequently in 2020
4 due the heat storm in California.

5 **5. Summary and Recommendations**

6 Due to the limitations presented during Record Period 2020, including heat storms
7 and simultaneous PSPS events, PG&E had higher demand response events than 2019.
8 The Public Advocates Office finds that PG&E managed its CBP and SmartAC resources
9 reasonably.

10 **V. CONCLUSION**

11 Overall, the Public Advocates Office finds that PG&E managed its thermal, hydro,
12 and demand response resources reasonably and does not recommend any disallowances.
13 The Public Advocates Office reiterates its recommendation that the Commission hold a
14 workshop to develop and standardize renewable and storage resource reporting
15 requirements.

16

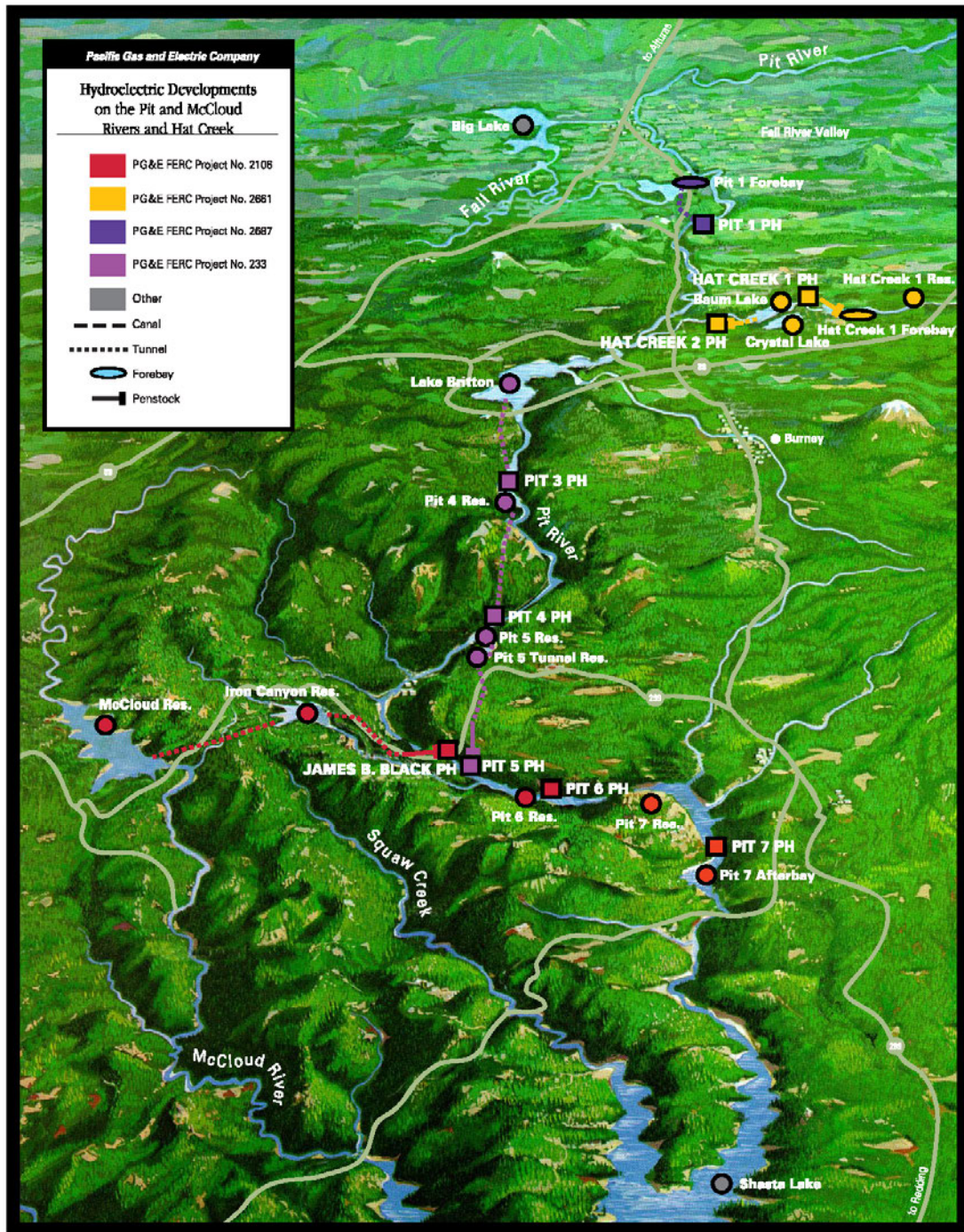
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LIST OF ATTACHMENTS FOR CHAPTER 2

#	Attachment	Description
1	2.01	PG&E 2020_LCD_Workpaper 6 Highest Energy Value Days and Price Forecast Summary (CONFIDENTIAL)
2	2.02	PG&E 2020_LCD_Workpaper 6 Highest Energy Value Days (CONFIDENTIAL, Available Email)
3	2.03	PG&E 2020_LCD_Workpaper 7 Load Bid (CONFIDENTIAL, Available Email)
4	2.04	Public Advocates Office Workpapers 2015-2020 Load Bid (CONFIDENTIAL, Available Email)
5	2.05	PG&E 2020_LCD_Workpaper 1 Commitment Cost Decisions (CONFIDENTIAL, Available Email)
6	2.06	PG&E 2020_LCD_Workpaper Fuel Price VOM IHR GHG (CONFIDENTIAL, Available Email)
7	2.07	PG&E 2020_LCD_Workpaper 2 Bid Cost Calculation (CONFIDENTIAL, Available Email)
8	2.08	PG&E 2020_LCD_Workpaper 2 Bid Cost Calculation Summary (CONFIDENTIAL)
9	2.09	PG&E Response to Public Advocates Office Data Request #16, Question 1 (CONFIDENTIAL)
10	2.10	PG&E 2019_LCD_Workpaper 3 Self Commitment (CONFIDENTIAL, Available Email)
11	2.11	PG&E 2019_LCD_Workpaper 3 Self Commitment Summary (CONFIDENTIAL)
12	2.12	PG&E 2019_LCD_Workpaper 4 Hydro Resources Summary (CONFIDENTIAL)
13	2.13	PG&E 2019_LCD_Workpaper 4 Hydro Top 500 (CONFIDENTIAL, Available Email)
14	2.14	Public Advocates Office Workpapers 2020 Helms Pump Gen (CONFIDENTIAL, Available Email)
15	2.15	PG&E 2020_LCD_Workpaper DR 2 (CONFIDENTIAL, Available Email)
16	2.16	PG&E 2020_LCD_Workpaper DR 1 (CONFIDENTIAL, Available Email)

3

Figure 3-1 Pit River System Powerhouses¹⁵³



¹⁵³ PG&E Chapter 2 Workpapers.

1 Pit 5, Unit 2 is a 40.0 MW¹⁵⁴ generating facility and is one of 19 units¹⁵⁵ in the Pit
 2 River system; each unit can operate independently.¹⁵⁶ All eight Pit River Powerhouses
 3 are managed by the Shasta Area hydro operations and maintenance team.¹⁵⁷

4 The Pit River powerhouses consist of the following:

5 **Table 3-1 Pit River Powerhouses¹⁵⁸**

Pit River Powerhouses	MW	Number of dams	Number of generating units	COD*	Comments
Pit 1	61	2	2	2/28/1922	1 Forebay Dam and 1 Diversion Dam
Pit 3	70	1	3	7/15/1925	1 Diversion Dam
Pit 4	95	1	2	10/1/1955	1 Diversion Dam
Pit 5	160	2	4	4/29/1944	1 Conveyance-related Dam and 1 Diversion Dam
Pit 6	80	1	2	8/14/1965	1 Diversion Dam
Pit 7	112	2	2	9/10/1965	1 Afterbay Dam and 1 Diversion Dam
James B Black	172	2	2	Unit 1 - 2/17/1966 Unit 2 - 12/17/1965	1 Storage Dam and 1 Storage/Diversion Dam
Hat Creek 1	8.5	2	1	8/22/1921	1 Forebay Dam and 1 Diversion Dam
Hat Creek 2	8.5	1	1	9/28/1921	1 Diversion Dam
Total	767	14	19		

6 * COD = Commercial Operation Date

¹⁵⁴ PG&E Testimony, Chapter 2, Attachment A, page 2-AtchA-2.

¹⁵⁵ PG&E response to Cal Advocates Data Request 2, Question 4.

¹⁵⁶ PG&E response to Cal Advocates Data Request 2, Question 6.

¹⁵⁷ PG&E response to Cal Advocates Data Request 2, Questions 1 and 5.

¹⁵⁸ PG&E response to Cal Advocates Data Request 2, Question 4.

1 The Pit Powerhouses are used for base load, ancillary services, and peaking; when
2 and how each is used depends on the reservoir storage capacity, time of year, and market
3 dynamics at that time.¹⁵⁹

4 PG&E’s Energy Policy and Procurement organization determines how to schedule
5 the hydroelectric powerhouses within PG&E’s broader electric supply operations to meet
6 customer demand.¹⁶⁰

7 **III. PIT 5 POWERHOUSSRE, UNIT 2 OUTAGE – FEBRUARY 11,**
8 **2020 AT 12:03 P.M., TO FEBRUARY 14, 2020 AT 2:12 P.M.**
9 **(3.09 DAYS)¹⁶¹**

10 On February 11, 2020, at 12:03 p.m., Pit 5, Unit 2 tripped offline while PG&E
11 personnel – an Asset Management (AM) Engineer and an Applied Technology Services
12 (ATS) Technician – were conducting bearing and governor oil sample collection.¹⁶² The
13 PG&E personnel were removing a plug from a mini-ball valve at a non-standard location
14 and the internal valve bushing inadvertently came out with the plug, resulting in an oil
15 release and tripping the unit offline.¹⁶³

16 The AM Engineer went to the Control Room and alerted the operator of the
17 incident.¹⁶⁴ Because the operator put Unit 2 in manual control before the oil sample was
18 taken, the automatic trips for low oil pressure and low oil level were disabled.¹⁶⁵ Had
19 Unit 2 been in automatic mode, the Unit would have automatically shut down due to low
20 oil pressure or low oil level indication.¹⁶⁶

¹⁵⁹ PG&E response to Cal Advocates Data Request 2, Question 7.

¹⁶⁰ PG&E response to Cal Advocates Data Request 2, Question 7.

¹⁶¹ PG&E Testimony, page 2-33, line 1 to 19; page 2-13, Table 2-6; and PG&E response to Cal Advocates Data Request 2, Questions 8 and 9.

¹⁶² PG&E Testimony, page 2-33, line 2 to 3. PG&E response to Cal Advocates Data Request 14, Question 9 identifies the two PG&E personnel who performed the oil sample collection.

¹⁶³ PG&E Testimony, page 2-33, line 3 to 7.

¹⁶⁴ PG&E response to Cal Advocates Data Request 14, Question 57.

¹⁶⁵ PG&E response to Cal Advocates Data Request 14, Question 59.

¹⁶⁶ PG&E response to Cal Advocates Data Request 14, Questions 59, 60 and 61.

1 The operator manually shut down Unit 2 after being alerted to the oil discharge
2 that led to the loss of oil pressure in the governor system.¹⁶⁷ PG&E would not be able to
3 continue to operate the Unit when an oil discharge occurred on any part of the Unit,
4 including the governor or turbine bearings.¹⁶⁸

5 The Unit remained out of service for repair and cleanup of the Unit 2 governor
6 system.¹⁶⁹ Thereafter, PG&E tested the Unit to confirm that the governor system held oil
7 pressure, and returned it to service on February 14, 2020, at 2:12 p.m.¹⁷⁰

8 The functions and descriptions of the activities, parts, personnel and systems
9 affected and/or referenced in the forced outage are as follows:

- 10 a) Bearing: a machine element that constrains relative motion to
11 only the desired motion and reduces friction between moving
12 parts.¹⁷¹ (see Figure 3.2 for the photo of the bearing used in the
13 bearing oil system.)

14

¹⁶⁷ PG&E response to Cal Advocates Data Request 14, Questions 58, 59 and 63.

¹⁶⁸ PG&E response to Cal Advocates Data Request 14, Question 64.

¹⁶⁹ PG&E Testimony, page 2-33, lines 7 to 9.

¹⁷⁰ PG&E Testimony, page 2-33, lines 9 to 10, and PG&E response to Cal Advocates Data Request 14, Question 62.

¹⁷¹ PG&E response to Cal Advocates Data Request 14, Question 28.

1

Figure 3-2 Pit 5, Unit 2 Bearing¹⁷²



2

3

¹⁷² PG&E response to Cal Advocates Data Request 14, Question 28.

- 1 b) Bearing Oil: the lubrication to separate metal surfaces, support
2 loads, and eliminate or minimize wear in bearings.¹⁷³ By
3 developing a layer of oil between the rollers and raceways, oil
4 can separate the moving components, fully support the bearing
5 loads, and minimize wear.¹⁷⁴
- 6 c) Bearing Oil Sampling: routine maintenance integral to on-going
7 maintenance of power generation plants, including hydro
8 generating units.¹⁷⁵ It provides the necessary information to
9 determine the condition of various equipment.¹⁷⁶ By following
10 the trends of the oil analysis data, PG&E can monitor equipment
11 condition and take corrective actions before equipment failure.¹⁷⁷
- 12 PG&E classifies the test results of the bearing oil sampling as
13 “monitor”, “abnormal” or “critical”.¹⁷⁸ It then performs the
14 appropriate corrective actions in accordance with Sections 6 and
15 7 of its procedure PG-1330S, *Lubricating Oil for Mechanical*
16 *Systems*.¹⁷⁹ PG&E staff creates the work notification to filter
17 and/or replace the oil through its work control software, SAP,
18 where maintenance tasks are managed, such as automatically
19 creating a work order.¹⁸⁰
- 20 All lubrication oils must be sampled at least annually, or more
21 frequently based on system conditions, manufacturer’s
22 specifications, or operating experience.¹⁸¹ Additional sampling
23 requirements are specified in PG-1330S.¹⁸²
- 24 d) Governor: the main controller of the hydraulic turbine.¹⁸³ The
25 governor, also known as the governing system, varies the water
26 flow through the turbine to control its speed or power output.¹⁸⁴

¹⁷³ PG&E response to Cal Advocates Data Request 14, Question 29.

¹⁷⁴ PG&E response to Cal Advocates Data Request 14, Question 29.

¹⁷⁵ PG&E response to Cal Advocates Data Request 14, Question 30.

¹⁷⁶ PG&E response to Cal Advocates Data Request 14, Question 30.

¹⁷⁷ PG&E response to Cal Advocates Data Request 14, Question 30.

¹⁷⁸ PG&E response to Cal Advocates Data Request 14, Question 31.

¹⁷⁹ PG&E response to Cal Advocates Data Request 14, Question 31.

¹⁸⁰ PG&E response to Cal Advocates Data Request 14, Questions 32 and 95.

¹⁸¹ PG&E response to Cal Advocates Data Request 14, Question 33.

¹⁸² PG&E response to Cal Advocates Data Request 14, Question 33.

¹⁸³ PG&E response to Cal Advocates Data Request 14, Question 34.

¹⁸⁴ PG&E response to Cal Advocates Data Request 14, Question 34.

1 governor system.¹⁸⁹ If an oil sample suggests that the oil is
2 getting dirty, the oil is cleaned or replaced.¹⁹⁰
3 PG&E classifies the test results of the governor oil sampling as
4 “monitor,” “abnormal” or “critical”.¹⁹¹ It then performs the
5 appropriate corrective actions in accordance with Sections 6 and
6 7 of its procedure PG-1330S.¹⁹² PG&E staff creates the work
7 notification to filter and/or replace the oil through its work
8 management software, SAP.¹⁹³
9 All lubrication oils must be sampled at least annually, or more
10 frequently based on system conditions, manufacturer’s
11 specifications, or operating experience.¹⁹⁴ Additional sampling
12 requirements are specified in PG-1330S.¹⁹⁵
13 g) Mini-Ball Valve: a 1/4" maintainable ball valve that was used to
14 take the oil sample.¹⁹⁶ Its function is to restrict flow when
15 required.¹⁹⁷
16

¹⁸⁹ PG&E response to Cal Advocates Data Request 14, Question 36.

¹⁹⁰ PG&E response to Cal Advocates Data Request 14, Question 36.

¹⁹¹ PG&E response to Cal Advocates Data Request 14, Question 37.

¹⁹² PG&E response to Cal Advocates Data Request 14, Question 37.

¹⁹³ PG&E response to Cal Advocates Data Request 14, Question 38.

¹⁹⁴ PG&E response to Cal Advocates Data Request 14, Question 39.

¹⁹⁵ PG&E response to Cal Advocates Data Request 14, Question 39.

¹⁹⁶ PG&E response to Cal Advocates Data Request 14, Question 40.

¹⁹⁷ PG&E response to Cal Advocates Data Request 14, Question 40.

1

Figure 3-4 Pit 5, Unit 2 – Min-Ball Valve Location¹⁹⁸



3 The internal valve is part of the mini-ball valve.¹⁹⁹ The mini-ball
4 valve is a three-part maintainable valve which can be
5 disassembled by removing a threaded bushing that holds the ball
6 in place with a plug connected to it.²⁰⁰ The internal valve is
7 synonymous with the threaded bushing that holds the ball in
8 place (see Figure 3.6).²⁰¹

- 9 h) Mini-Ball Valve Plug: a stop that was screwed into the end of
10 the valve to prevent any leakage should any occur due to valve
11 failure or inadvertent operation of the valve handle.²⁰² Figure 3.5
12 shows a photo of the mini-ball valve with the plug partially
13 reinstalled and removed. Figure 3.6 is a close-up view of the
14 valve and the plug partially reinstalled.

¹⁹⁸ PG&E response to Cal Advocates Data Request 14, Question 34.

¹⁹⁹ PG&E response to Cal Advocates Data Request 14, Questions 44 and 45.

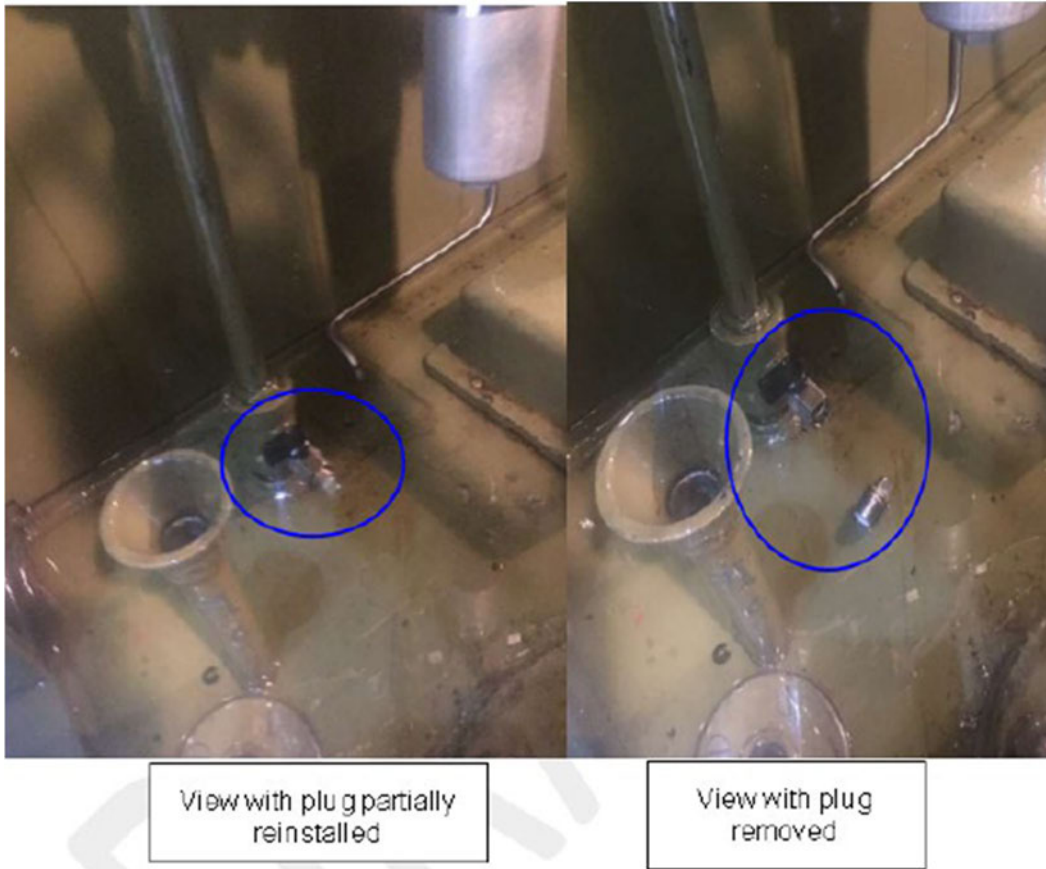
²⁰⁰ PG&E response to Cal Advocates Data Request 14, Questions 44 and 46.

²⁰¹ PG&E response to Cal Advocates Data Request 14, Question 44.

²⁰² PG&E response to Cal Advocates Data Request 14, Question 41.

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Figure 3-5 Pit 5, Unit 2 – Mini-Ball Valve Plug²⁰³



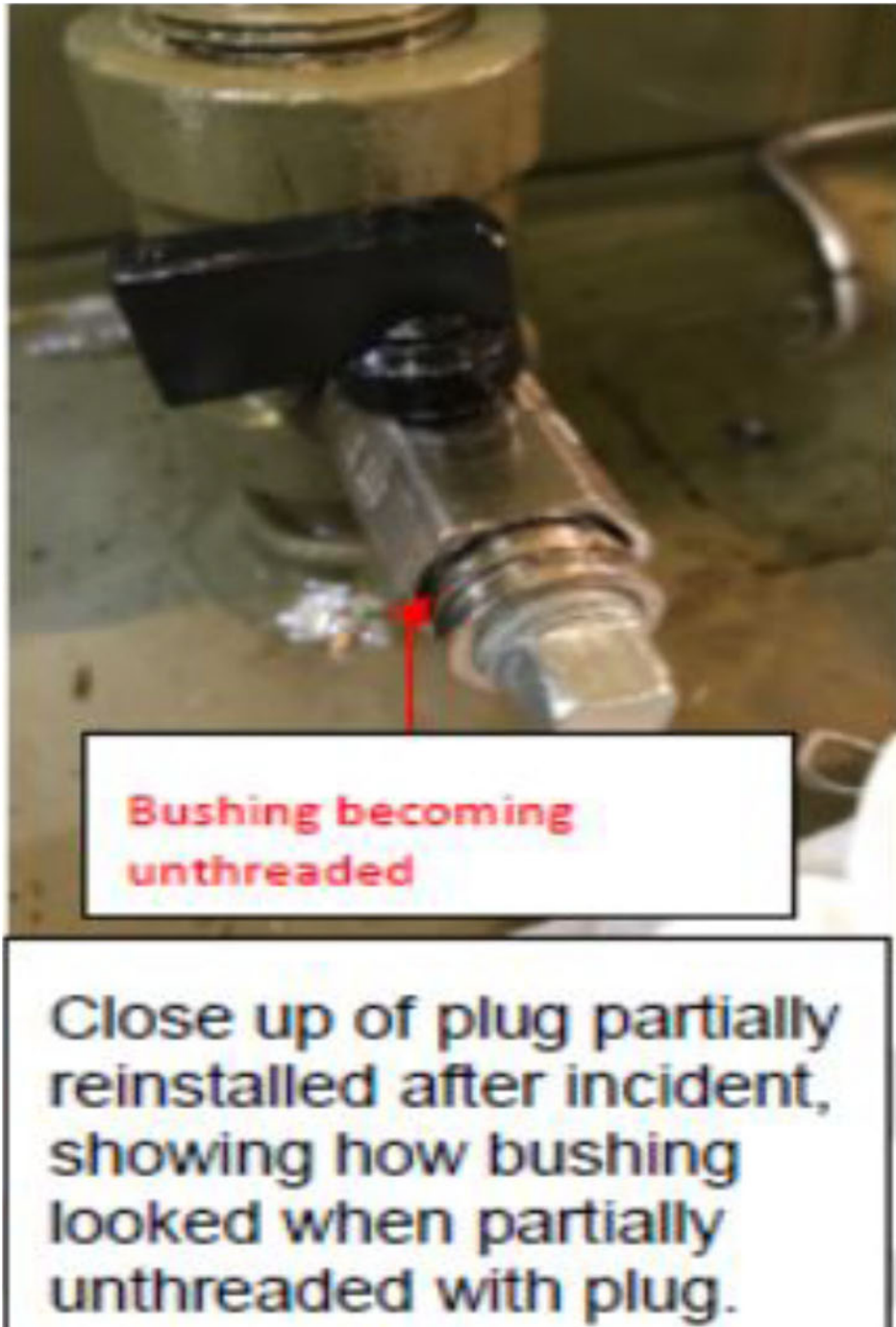
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²⁰³ PG&E response to Cal Advocates Data Request 14, Question 40.

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Figure 3-6 Pit 5, Unit 2 – Close-up View of Min-Ball Valve and Plug²⁰⁴



2

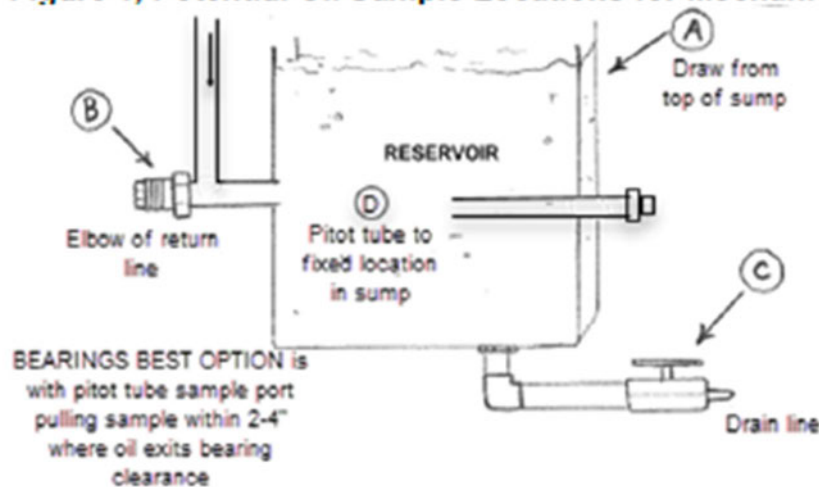
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²⁰⁴ PG&E response to Cal Advocates Data Request 14, Question 40.

1 i) Non-Standard vs. Standard Oil Sampling Location: A standard
 2 location means a location that is considered a "desired or
 3 preferred location" as specified in the bearing and governor oil
 4 sample collection procedure, PG-1330P-01, *Oil Sampling of*
 5 *Mechanical Systems*.²⁰⁵ Non-standard would be an acceptable
 6 location but less preferred.²⁰⁶ For example, for bearing oil
 7 sampling, a pitot tube location is considered a standard or desired
 8 sampling location.²⁰⁷ A non-standard location is considered a
 9 sump drain line or a sight glass location.²⁰⁸ These are acceptable,
 10 but not the preferred locations, for bearing oil sampling.²⁰⁹
 11 Figure 3.7 shows the desired or preferred locations for oil
 12 sampling on mechanical systems.

13
 14 **Figure 3-7 – Preferred Oil Sampling Locations²¹⁰**

Figure 1, Potential Oil Sample Locations for Mechanical Systems



15
 16 Desired sampling locations do not always have a sampling port
 17 and could require sampling from a valve connection.²¹¹ In the Pit
 18 5, Unit 2 February 11, 2020 outage, the AM Engineer selected

²⁰⁵ PG&E response to Cal Advocates Data Request 14, Question 42.

²⁰⁶ PG&E response to Cal Advocates Data Request 14, Question 42.

²⁰⁷ PG&E response to Cal Advocates Data Request 14, Question 42.

²⁰⁸ PG&E response to Cal Advocates Data Request 14, Question 42.

²⁰⁹ PG&E response to Cal Advocates Data Request 14, Question 42.

²¹⁰ PG&E response to Cal Advocates Data Request 14, Question 42.

²¹¹ PG&E response to Cal Advocates Data Request 14, Question 42.

- 1 the non-standard location because an oil sampling port was not
2 available and he wanted to ensure a high quality oil sample.²¹²
- 3 j) Oil Sampling Port: a check valve that can be opened using a
4 special adapter to allow flow of fluid through it.²¹³ Oil sampling
5 ports make for fast and accurate samples, without a lot of
6 waste.²¹⁴ To guard against contaminating the sample and add a
7 measure of leak protection, sample ports are equipped with a
8 check valve.²¹⁵ Port adapters mate to the port and provide easy
9 access to the sample.²¹⁶ Typically, each bearing or governor
10 system would have one sample location per asset.²¹⁷
- 11 k) Plant Personnel:
- 12 1) Applied Technology Services (ATS) Technician – his/her
13 duties can vary depending on the engineering discipline. In
14 this case, the ATS Engineering Technician provides
15 mechanical engineering services which includes²¹⁸
- 16 i.) Assessments and Corrective Actions for Mechanical,
17 Structural and Rotating Machinery Systems;
- 18 ii.) Mechanical Testing and Analysis (including oil
19 sampling);
- 20 iii.) Hydroelectric Condition Assessment and Efficiency
21 Evaluation;
- 22 iv.) Finite Element Analysis (FEA);
- 23 v.) Vibration Testing and Analysis;
- 24 vi.) Noise Measurement and Analysis; and
- 25 vii.) Machinery Alignment Services.
- 26 2) Engineering Technician II – This is the fully-experienced,
27 skilled level of the ATS Technician.²¹⁹

²¹² PG&E response to Cal Advocates Data Request 14, Question 43.

²¹³ PG&E response to Cal Advocates Data Request 14, Question 94.

²¹⁴ PG&E response to Cal Advocates Data Request 14, Question 94.

²¹⁵ PG&E response to Cal Advocates Data Request 14, Question 94.

²¹⁶ PG&E response to Cal Advocates Data Request 14, Question 94.

²¹⁷ PG&E response to Cal Advocates Data Request 14, Question 94.

²¹⁸ PG&E response to Cal Advocates Data Request 14, Question 9.

²¹⁹ PG&E response to Cal Advocates Data Request 14, Question 9.

1 Under the direction or supervision of an employee in a higher
2 classification, an Engineering Technician II (Technician II)
3 performs all laboratory and field assignments, maintenance
4 and repairs, calibrations, and investigations of a difficult
5 nature on a wide variety of materials and equipment.²²⁰
6 He/she performs other investigative work as directed, and
7 prepares reports on results of investigations.²²¹ The
8 Technician II may be required to perform tests in the field,
9 including dielectric testing, without direct supervision and
10 may direct the work of other employees.²²²

11 The Technician II requires an Association of Arts (AA)
12 degree in the appropriate field of technology and two to three
13 years of experience in the classification of Engineering
14 Technician I or equivalent education and experience with
15 emphasis on laboratory procedures, techniques, equipment,
16 and materials involved.²²³

17 Progression to this classification requires satisfactory work
18 performance and six months at the top of Engineering
19 Technician.²²⁴

20 Prior to performing oil sampling work in the field, ATS
21 technicians receive classroom-based training followed by on-
22 the-job training (OJT) in the field supervised by more
23 experienced technician or qualified engineer.²²⁵ For several
24 years, ATS has been supporting Power Generation to conduct
25 oil sampling, a routine service and specialty that ATS is well
26 equipped to provide.²²⁶

27 3) Asset Management (AM) Engineer – An Asset Management
28 Engineer (AM Engineer) performs functions of Associate and
29 Journey level Project Engineers, but for more complex, larger

²²⁰ PG&E response to Cal Advocates Data Request 14, Question 9.

²²¹ PG&E response to Cal Advocates Data Request 14, Question 9.

²²² PG&E response to Cal Advocates Data Request 14, Question 9.

²²³ PG&E response to Cal Advocates Data Request 14, Question 9.

²²⁴ PG&E response to Cal Advocates Data Request 14, Question 9.

²²⁵ PG&E response to Cal Advocates Data Request 14, Question 9.

²²⁶ PG&E response to Cal Advocates Data Request 14, Question 9.

1 budget, and higher profile projects.²²⁷ Job duties, varying by
2 assignment, include, but are not limited to:²²⁸

- 3 i.) Leads and applies extensive knowledge in the design
4 and/or project management efforts for multiple
5 complex and/or large generation projects that can be
6 discipline specific, multi-discipline, or programmatic
7 in nature.
- 8 ii.) Provides leadership, coaching, technical direction,
9 oversight, and quality control for assigned projects and
10 technical work done in discipline, knowledge transfer,
11 and assistance to many technical and/or project
12 management employees and teams; some technical
13 services often overlap with those provided by
14 operations & maintenance specialists, but from a
15 design perspective; may act as an engineering and/or
16 project management mentor.
- 17 iii.) Proactively controls scope, schedule, cost, and quality
18 of a large portfolio of projects throughout project life
19 cycle; may oversee the work of other project managers
20 and engineers.
- 21 iv.) Approves, leads, and/or performs extensive complex
22 risk management and engineering analyses & studies
23 of generation assets, including dynamic and static
24 modeling of structural, hydraulic, and electrical
25 systems and as assigned, water rights. Leads the
26 development and/or presentation of findings to both
27 internal and external organizations, including
28 regulatory bodies, contractors and outside vendors.
- 29 v.) Interprets, applies, and educates others in applicable
30 industry standards, and regulatory codes and
31 regulations. Develops and/or evolves standards and
32 specifications.
- 33 vi.) Works with supervisor and others to manage
34 relationships with external stakeholders; develop
35 regulatory and facility safety strategies; and negotiate
36 with regulatory agencies and third parties on complex

²²⁷ PG&E response to Cal Advocates Data Request 14, Question 10.

²²⁸ PG&E response to Cal Advocates Data Request 14, Question 10.

1 project and facility safety issues and as assigned, water
2 rights.

- 3 vii.) Provides extensive knowledge and guidance to others
4 in start-up testing, inspections, and condition
5 assessment; actively supports complex and/or large
6 project start-up tests and field inspections, and as
7 assigned, water rights. As assigned, may perform
8 water rights management, including interpreting,
9 preserving, investigating, tracking, records
10 management, permitting, licensing, filing and
11 responding to protests and complaints, reviewing and
12 responding to water right applications and other filings
13 by entities other than PG&E, providing expertise,
14 representing PG&E in regulatory and other
15 proceedings, providing internal expert counsel and
16 direction, reviewing and payment of water right fees,
17 and other tasks related to water rights.

18 Based on the certification he held, his previous job experience, and the OJT he
19 received throughout his career, the AM Engineer, in the February 11, 2020 outage, was
20 trained to perform bearing and governor oil sample collection.²²⁹

21 Prior to the February 11, 2020 outage, the AM Engineer trained the ATS
22 Technician on how to perform the bearing and governor oil sample collection.²³⁰ The
23 OJT occurred as the ATS Technician observed the AM Engineer obtain samples on Pit 5,
24 Unit 1.²³¹ The OJT for the governor oil sample on Pit 5, Unit 1, included the following
25 steps:²³²

- 26 i.) the sample location was identified;
27 ii.) awareness of oil pressure was discussed;
28 iii.) valve was confirmed in the closed position;
29 iv.) plug was slowly removed (initially loosened by wrench, then
30 by hand);

²²⁹ PG&E response to Cal Advocates Data Request 14, Question 12.

²³⁰ PG&E response to Cal Advocates Data Request 14, Question 13.

²³¹ PG&E response to Cal Advocates Data Request 14, Question 13.

²³² PG&E response to Cal Advocates Data Request 14, Question 13.

- 1 v.) verified that no oil was leaking as plug removed;
2 vi.) plug was removed;
3 vii.) waste bottle was put in place;
4 viii.) valve was slowly opened;
5 ix.) closely monitored pressure to ensure no drop as waste bottle
6 was filled;
7 x.) valve was closed;
8 xi.) waste bottle lid was restored;
9 xii.) sample bottle was put in place;
10 xiii.) valve was slowly opened;
11 xiv.) closely monitored pressure to ensure no drop as sample bottle
12 was filled;
13 xv.) valve was closed;
14 xvi.) sample bottle lid was restored;
15 xvii.) plug was reinstalled on end of valve;
16 xviii.) waste bottle was placed in proper oil disposal area with
17 proper label; and
18 xix.) sample bottle was retained and labeled as required to be sent
19 to the lab for sample analysis.

20 The bearing and governor oil sample collection procedure, PG-1330P-01, *Oil*
21 *Sampling of Mechanical Systems*, describes the proper way to perform the bearing and
22 governor oil sample collection without causing oil to spill.²³³ The procedure was
23 available to both the AM Engineer and the ATS Technician at the time of the outage
24 event.²³⁴

25 The oil sample collection procedure was approved by PG&E Power Generation
26 Operations and Maintenance (O&M) Directors and the Hydro O&M Managers.²³⁵

²³³ PG&E response to Cal Advocates Data Request 14, Questions 13, 15 and 16.

²³⁴ PG&E response to Cal Advocates Data Request 14, Question 13.

²³⁵ PG&E response to Cal Advocates Data Request 14, Question 22.

1 The ATS Technician performed all steps correctly up until moments before the
2 incident.²³⁶ Due to the unique construction of this particular mini-ball valve, the ATS
3 Technician inadvertently removed the internal bushing during removal of the plug.²³⁷
4 The ATS Technician was unaware that he was removing the bushing because it appeared
5 that the threads showing were from the plug not the bushing.²³⁸ As the ATS Technician
6 removed the plug by hand, the internal components no longer had the bushing to hold
7 them in place.²³⁹ Once the internal valve components were removed, the valve was
8 unable to be closed and oil flowed freely through the valve.²⁴⁰

9 The AM Engineer was not aware of how the ATS Technician was performing the
10 bearing and governor oil sample collection because the access area was only large
11 enough for one person.²⁴¹ After confirming the correct valve to use, the ATS Technician
12 removed the plug while the AM Engineer stood directly behind him.²⁴² However, the
13 AM Engineer was not able to see his movements, recognize the error, or stop the ATS
14 Technician.²⁴³ Even if the AM Engineer had been able to see everything clearly, it is
15 unlikely this would have changed the outcome because the difference between the plug
16 and bushing threads was very small, and therefore difficult for the AM Engineer to see
17 from a couple of feet away.²⁴⁴

²³⁶ PG&E response to Cal Advocates Data Request 14, Question 17.

²³⁷ PG&E response to Cal Advocates Data Request 14, Question 17.

²³⁸ PG&E response to Cal Advocates Data Request 14, Question 17.

²³⁹ PG&E response to Cal Advocates Data Request 14, Question 17.

²⁴⁰ PG&E response to Cal Advocates Data Request 14, Question 17.

²⁴¹ PG&E response to Cal Advocates Data Request 14, Question 18.

²⁴² PG&E response to Cal Advocates Data Request 14, Questions 18 and 19.

²⁴³ PG&E response to Cal Advocates Data Request 14, Questions 18 and 19.

²⁴⁴ PG&E response to Cal Advocates Data Request 14, Question 20.

1 The subsequent oil released, approximately 250-275 gallons, came from the
2 governor and soaked the turbine deck.²⁴⁵ The oil pressure was 300 psi and it was slightly
3 above room temperature.²⁴⁶

4 There are protective signs throughout each of PG&E's hydro powerhouses for
5 various hazards.²⁴⁷ Furthermore, the personnel who work on plant equipment are trained
6 professionals and are also escorted by dedicated O&M personnel.²⁴⁸ According to
7 PG&E, hazards are evident to the personnel working on the hydro equipment when the
8 unit is online and equipment is pressurized.²⁴⁹

9 As PG&E described in the Cause Evaluation Report (CAR), the AM Engineer and
10 the ATS Tech did not comply with PG-1404P-02, *Power Generation Application for*
11 *Work [AFW] Instructions*, when they requested to take samples.²⁵⁰ Additionally, the
12 Operator likewise did not comply with PG-1404P-02 when he understood there was no
13 AFW, but 'allowed' sampling.²⁵¹ The Operator enabled the AFW process to be
14 circumvented by identifying sampling locations and cutting out bearing protection to
15 prevent tripping.²⁵² The AM Engineer and the ATS Tech did not comply with the Code
16 of Safe Practices when they performed this work.²⁵³ The AM Engineer (and the ATS
17 Technician) did not comply with PG-1404P-01, *Power Generation Clearance and*
18 *Tagging – Lockout Tagout*, when they failed to follow the Operator's direction on where
19 to obtain samples.²⁵⁴

²⁴⁵ PG&E response to Cal Advocates Data Request 14, Questions 48 and 50.

²⁴⁶ PG&E response to Cal Advocates Data Request 14, Question 51.

²⁴⁷ PG&E response to Cal Advocates Data Request 14, Question 54.

²⁴⁸ PG&E response to Cal Advocates Data Request 14, Question 54.

²⁴⁹ PG&E response to Cal Advocates Data Request 14, Question 54.

²⁵⁰ PG&E response to Cal Advocates Data Request 14, Question 9.

²⁵¹ PG&E response to Cal Advocates Data Request 14, Question 9.

²⁵² PG&E response to Cal Advocates Data Request 14, Question 9.

²⁵³ PG&E response to Cal Advocates Data Request 14, Question 9.

²⁵⁴ PG&E response to Cal Advocates Data Request 14, Question 9.

1 ATS Technicians are aware of potential hazards of working on this type of
2 equipment.²⁵⁵ PG&E states that it provided additional training with a goal to incorporate
3 lessons learned and avoid future spills in January 2021.²⁵⁶

4 Prior to the February 11, 2020 outage, there was no similar event related to oil
5 leakage in the area of the governor and bearing.²⁵⁷

6 According to PG&E, this forced outage event was classified as a North American
7 Electric Reliability Corporation (NERC) Event Type U1.²⁵⁸ The NERC Generation
8 Availability Data System (GADS) defines a U1 outage as an immediate unplanned, or
9 forced outage that requires immediate removal of the unit from service or a change to
10 another outage state or a reserve shutdown state.²⁵⁹

11 GADS is the official reporting system for collecting information on the
12 performance of electric generating equipment.²⁶⁰ For this outage, the GADS Cause Code
13 is 7050, which is described as “Turbine Governor.”²⁶¹ Even though the outage was due
14 to oil release from both the bearing and governor, PG&E used the Cause Code, 7050,
15 because it best represented the cause of the outage.²⁶²

16 PG&E reports the NERC Event Types and GADS Cause Codes each quarter to
17 NERC consistent with the NERC GADS Data Reporting Instructions.²⁶³

18 The Public Advocates Office asked PG&E to provide the schedule/timeline of the
19 various milestone activities during the outage to account for the time spent to perform the
20 repair.²⁶⁴ PG&E provided the following response:

²⁵⁵ PG&E response to Cal Advocates Data Request 14, Question 9.

²⁵⁶ PG&E response to Cal Advocates Data Request 14, Question 9.

²⁵⁷ PG&E response to Cal Advocates Data Request 14, Questions 47, 71 and 72.

²⁵⁸ PG&E response to Cal Advocates Data Request 14, Question 01.

²⁵⁹ PG&E response to Cal Advocates Data Request 14, Question 01.

²⁶⁰ PG&E response to Cal Advocates Data Request 14, Question 03.

²⁶¹ PG&E response to Cal Advocates Data Request 14, Question 02.

²⁶² PG&E response to Cal Advocates Data Request 14, Question 02.

²⁶³ PG&E response to Cal Advocates Data Request 14, Question 05.

²⁶⁴ PG&E response to Cal Advocates Data Request 14, Question 55.

1 [T]he list of events that occur[r]ed ... in the oil discharge that took
2 the unit offline.

- 3 1. AM engineer and ATS technician performed oil sample on Pit
4 5 Unit 1 (2 hours)
- 5 2. AM engineer and ATS technician started to perform oil
6 sample on Pit 5 Unit 2. With AM engineer oversight, ATS
7 technician loosened the plug from the mini-ball valve at a
8 non-standard location to take an oil sample. During this step,
9 the ... plug disengaged from the valve body and the pressure
10 behind the valve dislodged the internal components of the
11 valve and an uncontrolled release of oil began. AM engineer
12 notified the Operator to shut down unit (1 hour)
- 13 3. Operations secured the unit and made safe (ensured all
14 systems are shutdown, isolated, the oil spill was contained,
15 and clearances were in place) (12 hours)
- 16 4. Dismantled the governor cabinet (panels, motors, relays, and
17 other electrical equipment contaminated with oil) (12 hours)
- 18 5. Cleaned the governor cabinet equipment and wash non-
19 electrical equipment, floors, walls, stairways (36 hours)
- 20 6. Reassembled governor cabinet, test and start-up unit (14
21 hours).²⁶⁵

22 During the testing, PG&E restored and energized the systems that had been
23 cleared, visually inspected for leaks or signs of problems, verified that instrumentation
24 reads were within normal range and that all alarms were cleared.²⁶⁶ In addition, PG&E
25 inspected the replacement valve and piping to confirm that the governor system held oil
26 pressure.²⁶⁷ The restoration time (including removal of clearances and final inspections
27 and start-up) was approximately 4 hours.²⁶⁸

28 Given PG&E's explanation of the activities cited above, the Public Advocates
29 Office finds the Pit 5, Unit 2 outage time as reasonable.

²⁶⁵ PG&E response to Cal Advocates Data Request 14, Questions 55 and 92.

²⁶⁶ PG&E response to Cal Advocates Data Request 14, Question 56.

²⁶⁷ PG&E response to Cal Advocates Data Request 14, Question 56.

²⁶⁸ PG&E response to Cal Advocates Data Request 14, Question 56.

1 Corrective Action

2 No parts or components failed.²⁶⁹ This forced outage was caused by an oil
3 discharge from the unit while attempting to perform oil sample testing.²⁷⁰

4 (a) PG&E’s contractor, HydroChem PSC, cleaned up the oil
5 spill.²⁷¹ The scope of work included preparation for pressure
6 washing, covering of all electrical components and fixtures
7 with the plastic sheeting Visqueen, pressure washing floors,
8 walls, and pipes, and pumping out the sump pit.²⁷²

9 Its crews installed Lockout Tagout (LOTO) clearances on
10 each system affected by the oil spill.²⁷³ Then, the piping,
11 instrumentation, governor pump motor and other electrical
12 components within the governor cabinet and underneath it
13 were disassembled and cleaned.²⁷⁴ The powerhouse floors,
14 walls, and sumps that had been exposed to oil were steam
15 cleaned, waste pumped and removed from the powerhouse.²⁷⁵
16 The station sump was then pumped out.²⁷⁶

17 The oil contaminated wastewater was pumped out of the
18 facility into drums and removed using hazardous waste
19 storage, transportation, and disposal protocols.²⁷⁷ The oil
20 spill response team successfully prevented release of oil to the
21 environment.²⁷⁸

22 (b) PG&E's maintenance team dismantled the governor cabinet
23 (panels, motors, relays, and other electrical equipment
24 contaminated with oil), cleaned the components, and
25 reassembled them.²⁷⁹

²⁶⁹ PG&E response to Cal Advocates Data Request 14, Questions 66 to 70, and 79.

²⁷⁰ PG&E response to Cal Advocates Data Request 14, Questions 66 to 70.

²⁷¹ PG&E response to Cal Advocates Data Request 14, Questions 83 to 85. The address for HydroChem PSC is 5780 Obata Way, Suite A, Gilroy, CA, 95020.

²⁷² PG&E response to Cal Advocates Data Request 14, Question 84.

²⁷³ PG&E response to Cal Advocates Data Request 14, Question 81.

²⁷⁴ PG&E response to Cal Advocates Data Request 14, Question 81.

²⁷⁵ PG&E response to Cal Advocates Data Request 14, Question 81.

²⁷⁶ PG&E response to Cal Advocates Data Request 14, Question 81.

²⁷⁷ PG&E response to Cal Advocates Data Request 14, Question 82.

²⁷⁸ PG&E response to Cal Advocates Data Request 14, Question 82.

²⁷⁹ PG&E response to Cal Advocates Data Request 14, Question 86.

1 The CAR listed nine corrective actions (CAs).²⁸⁰ The purpose of these CAs is to
2 prevent the recurrence of a similar outage that occurred on February 11, 2020.²⁸¹ The
3 confidential details of the actions and the outage are described in the CAR. The summary
4 of the CAs are as follows:²⁸²

- 5 1. Create and disseminate Final Incident Communication to
6 Hydro O&M, Engineering, and ATS employees.
- 7 2. Use accountability processes per Human Resources and Labor
8 Relations guidance to administer appropriate measures to
9 reinforce expectations to the four employees involved in this
10 event.
- 11 3. Review and reinforce expectations for compliance and
12 consequences for non-compliance to Power Gen personnel.
- 13 4. Use PG-2498S ‘Hydro Work Management Process’ to install
14 dedicated oil sampling port(s) at Pit 5. Sampling Ports should
15 be accompanied by signage indicating ‘Sampling Port’.
- 16 5a. Identify locations in Hydro powerhouses that need dedicated oil
17 sampling ports.
- 18 5b. Create H1 or HA Notifications for installation of dedicated
19 sampling ports. Based on inventory and priority of SAP
20 Notifications, install dedicated, inherently safe oil sampling
21 ports at locations where sampling is required.
22 Pit 5 Powerhouse has a total of four units. One oil sampling
23 port will be installed for each bearing and there are three
24 bearings on each unit. One oil sampling port will be installed
25 for each governor and there is one governor for each unit.
26 All the oil sampling ports on Pit 5 Unit 4 have been installed.
27 The ports for the other three units will be installed during the
28 planned outages scheduled in the Fall of 2021.
- 29 5c. Where dedicated sample ports cannot be installed before next
30 samples are required, O&M and AM collaboratively identify
31 improvised sample locations. If hazardous energy is a factor (as
32 determined by Authorized Person), write and approve Special
33 Work Procedure per PG-1404P-01 for samples.

²⁸⁰ PG&E Testimony, p. 2-33, line 11 to 13.

²⁸¹ PG&E response to Cal Advocates Data Request 14, Questions 91 and 96.

²⁸² PG&E response to Cal Advocates Data Request 14, Questions 91, 93 and 94.

- 1 6. Revise PG-1330P- 01: ‘Oil Sampling of Mechanical Systems’
2 so that it requires a Journeyman Electrical Machinist to provide
3 a powerhouse-specific orientation/walkdown for any persons
4 performing oil sampling in Hydro powerhouses.
- 5 7a. Align Power Gen Leadership on prioritization of Lubricating
6 Oil Program in relation to other preventative maintenance and
7 corrective maintenance work given resource limitations.
- 8 7b. Upon alignment, communicate with a 5 Minute Meeting
9 (5MM) to Asset Management and Operations & Maintenance
10 teams, and ATS.
- 11 8a. Revise PG- 1330P-01: ‘Oil Sampling of Mechanical Systems’.
- 12 8b. Develop and implement a process for assigning oil sampling
13 from O&M to AM Engineering or ATS. Process should
14 specify: when oil sampling may be handed off due to resource
15 availability and constraints, which powerhouses, duration, and
16 documentation requirements.
- 17 8c. Develop and implement a Change Management plan to
18 communicate changes to PG- 1330P-01: ‘Oil Sampling of
19 Mechanical Systems’.
- 20 9. Review and reinforce expectations with Asset Management
21 employees on PG- 2498S, ‘Hydro Work Management Process’,
22 to ensure understanding of work initiation and prioritization
23 processes.

24 Two of the above corrective actions, items 4 and 5b, are scheduled to be
25 completed in the Fall of 2021 during the next Planned Outage.²⁸³

26 Even though no parts failed²⁸⁴ during the outage, PG&E did not explain, in its data
27 request response²⁸⁵, why the mini-ball valve needed to be replaced with a standard fixed
28 valve. Also, PG&E did not provide the cost associated with the replacement.

29

²⁸³ PG&E Testimony, p. 2-33, lines 13 to 15.

²⁸⁴ PG&E response to Cal Advocates Data Request 14, Questions 66 to 70, and 79.

²⁸⁵ PG&E response to Cal Advocates Data Request 14, Question 97.

1 Cost of Outage

2 The cost of the outage consists of two components: the cost of energy purchased
3 to replace the unavailable generation facility and the cost of the repair work at Pit 5, Unit
4 2.

5 The February 11, 2020, Pit 5 Unit 2 forced outage did not result in any
6 replacement power cost to ratepayers.²⁸⁶ This is because during the outage period, there
7 was no spilled water and no applicable CAISO settlement charges attributable to the
8 outage.²⁸⁷

9 The direct cost to PG&E for the oil clean-up was \$55,000.²⁸⁸ No parts or
10 components failed.²⁸⁹ PG&E adds that the above direct cost of \$55,000 is recovered in
11 rates established in PG&E’s General Rate Case (GRC).²⁹⁰ PG&E maintains that it could
12 not ask any vendors for compensation because the outage was caused by an oil discharge
13 from the unit while attempting to perform oil sample testing, and because no parts or
14 components failed.²⁹¹

15 The total cost of this outage from both replacement power and PG&E’s direct cost
16 is \$55,000 (\$0 plus \$55,000).

17 **IV. CONCLUSIONS AND RECOMMENDATIONS**

18 After reviewing PG&E’s testimony and responses to data requests, the Public
19 Advocates Office finds that PG&E has been able to identify the root cause of the Pit 5,
20 Unit 2 outage and taken actions to correct the problem. The Public Advocates Office
21 concludes that:

- 22 (e) PG&E personnel was responsible for the Pit 5, Unit 2 outage that
23 occurred on February 11, 2020, because its staff erred in the
24 course of sampling the bearing and governor oil. The Public

²⁸⁶ PG&E response to Cal Advocates Data Request 14, Question 73.

²⁸⁷ PG&E response to Cal Advocates Data Request 14, Question 73.

²⁸⁸ PG&E response to Cal Advocates Data Request 14, Question 79.

²⁸⁹ PG&E response to Cal Advocates Data Request 14, Questions 66 to 70, and 79.

²⁹⁰ PG&E response to Cal Advocates Data Request 14, Question 73.

²⁹¹ PG&E response to Cal Advocates Data Request 14, Questions 66, 74 to 76, and 80.

1 Advocates Office is not recommending any disallowance because
2 there was no replacement power cost during the period of the
3 outage.

4 (f) PG&E's nine corrective actions instituted to prevent the
5 recurrence of similar outage are constructive and prudent.

6 The Public Advocates Office recommends that the Commission order PG&E to:

7 (g) provide, in a future ERRRA Compliance filing, a progress report
8 of its two uncompleted corrective actions; and

9 (h) explain why it replaced the mini-ball valve with a standard fixed
10 valve, and provide the cost associated with the replacement.

11

1
2

LIST OF ATTACHMENTS FOR CHAPTER 3

#	Attachment	Description
	3.1	PG&E Responses to Data Request 2 Questions 1 to 9
	3.2	PG&E Responses to Data Request 2 Question 10 (CONFIDENTIAL) (Available via email)
	3.3	PG&E Responses to Data Request 2 Questions 11 to12
	3.4	PG&E Responses to Data Request 14 Questions 1 to 8
	3.5	PG&E Responses to Data Request 14 Questions 9 to 13 (CONFIDENTIAL)
	3.6	PG&E Responses to Data Request 14 Questions 14 to 16
	3.7	PG&E Responses to Data Request 14 Questions 17 to 20 (CONFIDENTIAL)
	3.8	PG&E Responses to Data Request 14 Questions 21 to23
	3.9	PG&E Responses to Data Request 14 Questions 24 to 26 (CONFIDENTIAL)
	3.10	PG&E Responses to Data Request 14 Questions 27 to 103
	3.11	PG&E Responses to Data Request 14 Question 73 to SCE Response (CONFIDENTIAL) (Available via email)

3
4

1 Table 4-1 below reflects DACGTBA’s accounting entries for the 2019 Record
 2 Period and the 2020 Record Period.

3 **Table 4-1**
 4 **DAC-GT Expense Activity²⁹⁴**
 5 **Record Period 2019 and 2020**

Line No.	Description	2019 Amount	2020 Amount
1	Revenue Shortfall Based on 20% discount		\$744,979
	<u>Administrative Costs</u>		
	DAC-GT Information Technology (IT)/(IT/ Billing System)	\$1,161,165	\$922,830
	Program Management	97,022	96,239
	Contact Center Operations		9,210
	Energy Procurement	25,001	68,756
2	Subtotal – Administrative Costs	\$1,283,188	\$1,097,035
3	Marketing	8,836	1,365
4 (Line 1+2+3)	Total DAC-GT Expense Activity	\$1,292,025	\$1,843,379

6
 7 The CSGTBA tracks the annual funding of the program through GHG and public
 8 policy revenues compared to costs incurred to implement, operate, maintain, and
 9 administer the program.²⁹⁵

10 Table 4-2 below reflects CSGTBA’s accounting entries for the 2019 and 2020
 11 Record Period.

12

²⁹⁴ PG&E Direct Testimony, p. 5-4, Table 5-1.

²⁹⁵ PG&E Electric Preliminary Statement Part HM, p. 1. Available at: https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_PRELIM_HM.pdf. Accessed June 4, 2021.

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Table 4-2
CS-GT Expense Activity²⁹⁶
Record Period 2019 and 2020

Line No.	Description	2019 Amount	2020 Amount
	<u>Administrative Costs</u>		
	CS-GT IT (IT/Billing System)	\$96,515	\$744,805
	Program Management	26,747	112,295
	Energy Procurement	44,810	48,101
1	Subtotal – Administrative Costs	\$168,072	\$905,201
2	Marketing	7,406	1,007
3 (Line 1+2)	Total CS-GT Expense Activity	\$175,477	\$906,208

IV. PUBLIC ADVOCATES OFFICE ANALYSIS

The Public Advocates Office reviewed PG&E’s testimony, workpapers, and PG&E’s responses to data requests. The Public Advocates Office also reviewed a sampling of source documents that support the expenses and revenues recorded in the DACGTBA and CSGTBA. The Public Advocates Office selected a sample of monthly line items to determine whether there is adequate support for those transactions. The Public Advocates Office’s audit sample was judgmentally selected and consisted of 11 items recorded in DACGTBA and 6 items recorded in CSGTBA. A “judgment sample” is a non-random sample selected by the auditor based on the judgment (opinion) of the auditor. When selecting a judgment sample, an auditor makes judgments about various elements including but not limited to the internal control environment, exposure/ materiality, risk, and results of analytical reviews.

²⁹⁶ PG&E Direct Testimony, p. 5-6, Table 5-2.

1 **V. CONCLUSION**

2 The Public Advocates Office’s review of the DACGTBA and CSGTBA for the
3 2019 and 2020 Record Periods found no required accounting adjustments, and the Public
4 Advocates Office does not object to the costs recorded in the DACGTBA and CSGTBA.
5 The Public Advocates Office found that the 2019 and 2020 DACGTBA/CSGTBA
6 administrative and outreach expenses are reasonable, appropriate, correctly stated, and in
7 compliance with applicable Commission Decisions. The Public Advocates Office found
8 that the 2019 and 2020 DACGTBA/CSGTBA is in compliance with the applicable tariffs
9 and Commission directives.

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Table 5-1
PG&E Generation Fuel Costs
Record Period 2020

PG&E Chapter 6- Generation Fuel Cost	Record Period 2020 Total
1. Gas Procurement	\$ [REDACTED] ²⁹⁷
2. Distillate Expenses Distillate fuel oil burned at PG&E plant Humboldt	\$139,914 ²⁹⁸
3. Water Purchased for Power Payments to obtain water for use in hydro generation	\$2,435,041 ²⁹⁹
4. Nuclear Fuel Expenses Fuel expenses DCPD	\$ [REDACTED] ³⁰⁰
5. Nuclear Fuel Carrying Costs Nuclear fuel inventory carrying costs	\$ [REDACTED] ³⁰¹

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VI. CONCLUSION

The Public Advocates Office does not take exception to PG&E’s procurement of fuel for its PG&E owned generation facilities, fuel for PG&E tolling agreements, acquisition of water for hydroelectric generation and procurement of nuclear fuel for DCPD.

²⁹⁷ PG&E Response to Public Advocates Office Data Request 15, Question 01.

²⁹⁸ A. 21-03-008 PG&E Direct Testimony, Chapter 6, p. 6-8 line 7.

²⁹⁹ A. 21-03-008 PG&E Direct Testimony, Chapter 6, p. 6-8 line 17.

³⁰⁰ A. 21-03-008 PG&E Direct Confidential Testimony, Chapter 6, p. 6-9 line 3.

³⁰¹ A. 21-03-008 PG&E Direct Confidential Testimony, Chapter 6, p. 6-10 line 20.

1 PG&E properly applied the weighted average cost of compliance (WAC) methodology
2 for calculating its compliance cost per MTCO₂e. PG&E further supplied all necessary
3 cost data in the reporting format required by D.19-04-016 et al. Specifically, PG&E’s
4 reported compliance costs were recorded in the New Systems Generation Balancing
5 Account (NSGBA), and the Portfolio Allocation Balancing Account (PABA), as well as
6 the ERRA balancing account. Based on our review of these accounts, the Public
7 Advocates Office has no objections to the GHG Cap-and-Trade compliance costs as
8 reported for the 2020 Record Period.³⁰⁴

9 **II. RECOMMENDATIONS**

- 10 • The Public Advocates Office does not object to the GHG Cap-
11 and-Trade compliance costs of [REDACTED] reported for the 2020
12 Record Period.

13 **III. BACKGROUND**

14 **A. CARB Cap-and-Trade Program Begins in 2013**

15 The CARB Cap-and-Trade program is a market-based regulation that is designed
16 to reduce GHG emissions from multiple sources. The program is designed to meet the
17 goal of reducing GHG emissions to 1990 levels by the year 2020,³⁰⁵ and 40 percent
18 below 1990 levels by the year 2030.³⁰⁶ Compliance with Cap-and-Trade began in 2013
19 for electricity generators and large industrial facilities emitting 25,000 MTCO₂e or more
20 annually (covered entities).³⁰⁷ Covered entities must report emissions to CARB annually
21 and emissions are verified through an independent third-party verification process. To
22 meet its compliance obligation, an entity can use two types of GHG emission compliance

³⁰⁴ The Commission’s review was adjusted to include these three accounts through, respectively, D.02-10-062, D.06-07-029 as modified by D.10-12-035, and D.18-10-019.

³⁰⁵ Assembly Bill (AB) 32 (Stats. 2006, Ch. 488).

³⁰⁶ AB 398 (Stats. 2016, Ch. 249).

³⁰⁷ Starting in 2015, the Cap-and-Trade program expanded to cover distributors of transportation, natural gas, and other fuels.

1 instruments: allowances, initially sold at CARB quarterly auctions; or offset credits,
2 initially generated by qualified carbon-negative environmental projects.³⁰⁸

3 **B. D.14-10-033 Standardized Utility GHG Emissions Compliance**
4 **and Moved it into ERRA**

5 Pursuant to D.12-12-033, the electric investor-owned utilities (IOU) filed
6 applications seeking approval of 2014 GHG costs and revenue forecasts in 2013. The
7 Commission consolidated the applications and bifurcated the proceeding into two phases:
8 Phase 1 adopted the 2014 GHG costs and revenues and Phase 2 focused on standardizing
9 GHG procedures for future applications.³⁰⁹ D.14-10-033, as modified by D.14-10-055
10 and D.15-01-024, adopted methodologies for forecasting and recording GHG compliance
11 costs and allowance revenues. It required the three large electric IOUs to calculate and
12 report their GHG emissions and associated costs in ERRA using these methodologies and
13 reporting conventions.³¹⁰ Specifically, the Commission ordered the electric IOUs to use
14 the WAC methodology to calculate most of their direct GHG compliance costs,³¹¹ and
15 report them using the instructions and template laid out in Attachment C to D.14-10-
16 033.³¹² The Commission also discontinued the use of the GHG cost sub-balancing
17 account, opting instead for more specialized reporting as explained in the instructions and
18 templates in Attachment D to D.14-10-033.³¹³

³⁰⁸ Offsets are limited to 8% of an entity’s obligation per compliance period, according to 17 CCR § 95856(h)(1)(A).

³⁰⁹ *Assigned Commissioner and Administrative Law Judge’s Scoping Memo and Ruling*, October 4, 2013, A.13-08-002 et al.

³¹⁰ D.14-10-033, pp. 2-3, and D.15-01-024, Attachment D.

³¹¹ D.14-10-033 Ordering Paragraph 6, p. 50.

³¹² D.14-10-033 Ordering Paragraph 9, p. 51.

³¹³ D.14-10-033, p. 35: “Initially, it was necessary to establish a GHG costs sub-balancing account so that costs could be deferred until the revenue return mechanism was finalized. Cost deferment ended once the revenue return mechanism was finalized in D.13-12-041... The five utilities must also track GHG costs separately for reference purposes. Template D-2 provides a means for IOUs to track this information without requiring special treatment in the balancing account.”

1 **C. D.19-04-016 Clarified GHG Compliance Reporting in the ERRA**
2 **Compliance and Forecast Applications**

3 The Commission’s review and reconciliation of the 2016-2018 ERRA record
4 periods made apparent several ambiguities and deficiencies in D.14-10-033,
5 D.14-10-055, and D.15-01-024 that led to repeated disagreements between the three large
6 IOUs and the Public Advocates Office.³¹⁴ D.19-04-016 replaced Attachment C with
7 clarified instructions regarding the demonstration of the monthly WAC calculations and
8 emissions costs recorded in the ERRA balancing account.³¹⁵ The new Attachment C also
9 included a methodology for calculating and reporting true-ups for changes to the WAC or
10 monthly emissions volume data updates to better align the Commission’s requirements
11 for GHG compliance cost accounting in ERRA with the practices of accrual accounting.

12 **D. D.21-05-004 Clarified the Accounting of GHG Compliance Costs**
13 **in Accounts Other than the ERRA Balancing Account**

14 In D.20-05-004 the Commission stated that it “ha[d] never directly addressed
15 changing balancing account needs to record direct GHG costs for increased departed
16 customer load growth.”³¹⁶ As a result, D.20-05-004 ordered Southern California Edison
17 Company to convene a working group to “file a petition to modify Decision 19-04-016,
18 which incorporates modifications to address balancing account treatment of direct
19 greenhouse gas costs.”³¹⁷ The working group recommended the Commission modify
20 D.19-04-016 such that:

21 GHG costs for resources should be given the same balancing
22 account treatment as other procurement-related expenses for the

³¹⁴ D.19-04-016, p. 11: “differing interpretations regarding D.14-10-033 Ordering Paragraph (OP) 10 and OP 13 have led to longstanding discovery disputes.”

³¹⁵ D.19-04-016, p. C-8: “the utility will record, in its balancing account (ERRA or ECAC)”. *See also* p. C-7, C-10, C-11, and C-13.

³¹⁶ *Decision Approving Southern California Edison Company’s 2018 Energy Resource Recovery Account Entries and Related Matters* (D.20-05-004), p. 56. Before the 2018 Record Period, GHG compliance costs for Southern California Edison Company and the other independently owned utilities were booked almost exclusively to their ERRA balancing accounts. The Public Advocates Office protested the shift to the NSGBA with the understanding that the D.19-04-016 et al. language required GHG compliance costs be recorded in the ERRA balancing account.

³¹⁷ D.20-05-004, Ordering Paragraph 7, p. 67.

1 resources...[and] include a new template called the “GHG
2 Balancing Account Table” which summarizes the direct GHG costs
3 in an electric utilities’ various balancing accounts.³¹⁸

4 D.21-05-004 adopted the modified accounting of GHG compliance costs and
5 made the modification effective in 2021 for the 2020 Record Period ERRA compliance
6 applications.³¹⁹

7 **IV. DISCUSSION AND ANALYSIS**

8 **A. PG&E Complied with Relevant Commission Decisions, 9 Providing the Required Data in the Templates from 10 D.19-04-016**

11 PG&E states that in the 2020 Record Period it incurred direct emissions
12 compliance costs of [REDACTED]. Of this, [REDACTED] was used for PG&E’s direct
13 physical compliance obligation, recorded in PABA.³²⁰ PG&E’s direct physical
14 compliance obligation represented [REDACTED] of GHG emissions at an average
15 WAC of [REDACTED] in the 2020 Record Period.³²¹ PG&E’s financial obligations to
16 contracted counterparties for GHG compliance cost was [REDACTED].³²² These financial
17 obligations were recorded in PABA and NSGBA, consistent with the associated resource
18 costs.³²³

19 PG&E’s testimony and data request responses generally demonstrated detailed
20 tracking of the physical and financial compliance obligation attributable to its generating
21 resources. PG&E provided Template C-1 as indicated by Attachment A of D.19-04-016,
22 demonstrating its calculation of the WAC and proper application of the WAC
23 methodology to calculate Cap-and-Trade compliance costs resulting from recorded

³¹⁸ D.21-05-004, p. 5.

³¹⁹ D.21-05-004, Ordering Paragraph 2, pp. 8-9.

³²⁰ PG&E Testimony Chapter 12 Attachment A, p. 12 AtchA-9.

³²¹ PG&E Response to CalAdvocates Master Data Request Question 52 Attachment 01, spreadsheet “ERRA-2020-PGE-Compliance_DR_CalAdvocates_MDR001-Q52Atch01-CONF.xlsx,” tab “Atch C, Table 12-1 & 12-2,” cells E695-E706. Attached as Attachment 6.1 to this testimony.

³²² PG&E Testimony Chapter 12 Attachment B, p. 12 AtchB-1, Table line 17.

³²³ PG&E Testimony, p. 12-16.

1 emissions.³²⁴ PG&E also demonstrated its application of the true-up methodology
2 required by D.19-04-016.³²⁵ Lastly, PG&E provided the modified Template D-2 required
3 by D.19-04-016.³²⁶

4 The Public Advocates Office is satisfied that PG&E complied with CARB’s GHG
5 Cap-and-Trade program and is in compliance with the relevant Commission decisions.

6 **B. PG&E’s Compliance Instrument Procurement was**
7 **Consistent with Commission Decisions and its Commission-**
8 **Approved GHG Procurement Plan**

9 During the 2020 Record Period, PG&E procured a total of [REDACTED] in
10 GHG compliance instruments, which is well below its procurement limit of [REDACTED]
11 [REDACTED].³²⁷ This is consistent with PG&E’s bidding strategy. PG&E has further
12 demonstrated how this volume of procurement will be sufficient to meet its compliance
13 obligation to CARB given its current position of banked compliance instruments.³²⁸
14 Additionally, [REDACTED]
15 [REDACTED], which minimizes its risk of violating its compliance instrument procurement
16 limit.³²⁹

17 The Public Advocates Office monitors all IOUs’ GHG compliance instrument
18 procurements during the year by participating in the PRGs and reviewing QCRs. The
19 information presented in PG&E’s testimony is consistent with what the Public Advocates
20 Office observed during the 2020 Record Period. The Public Advocates Office has no
21 objections to PG&E’s compliance instrument procurement in 2020.

³²⁴ See Attachment 6.1, tab “Attch, Table 12-1 & 12-2.”

³²⁵ See Attachment 6.1, tab “2020 Summary.”

³²⁶ PG&E Testimony Chapter 12 Attachment B, p.12AtchB-1.

³²⁷ PG&E Testimony Chapter 7, p. 7-8.

³²⁸ PG&E Workpaper for Chapter 7, “Ch7_ERRA-2020-PGE-Compliance_Phys vs Fin Workpaper CONF Version.xlsx.” Attached as Attachment 6.2 to this testimony.

³²⁹ PG&E Testimony Chapter 7, p. 7-6.

1 **V. CONCLUSION**

2 For the 2020 Record Period, PG&E accurately recorded and reported its GHG
3 emissions and costs related to compliance with the GHG Cap-and-Trade program.

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LIST OF ATTACHMENTS FOR CHAPTER 6

#	Attachment	Description
1	6.1	PG&E Response to CalAdvocates Master Data Request Question 52 Attachment 01, spreadsheet "ERRA-2020-PGE-Compliance_DR_CalAdvocates_MDR001-Q52Atch01-CONF.xlsx," tab "Atch C, Table 12-1 & 12-2." (Confidential, Available via email)
2	6.2	PG&E Workpaper for Chapter 7, "Ch7_ERRA-2020-PGE-Compliance_Phys vs Fin Workpaper CONF Version.xlsx." (Confidential, Available via email)

3

1 Commission jurisdictional LSEs.³³² The Commission also adopted 2021 system RA
2 requirements based on the California Energy Commission (CEC) 1-in-2 monthly load
3 forecast, plus a 15% planned reserve margin.³³³

4 Appendix S of PG&E’s BPP provides the standards and criteria for PG&E’s
5 management and sales of RA products.³³⁴ These RA products include system, flexible
6 and local RA and import allocation rights. The BPP states that PG&E will “seek to sell
7 RA products principally originated through PG&E-held competitive solicitations and
8 electronic solicitations. PG&E will not engage in activities for RA Product sales through
9 market request-for-proposals or electronic solicitations issued by other market
10 participants, *unless engagement in such activities is to facilitate a purchase through a set*
11 *of simultaneous purchase and sale transactions.*”³³⁵

12 **III. DISCUSSION AND ANALYSIS**

13 **A. Summary of RA Requirements and PG&E’s Positions**

14 PG&E regularly reported its quarterly RA positions³³⁶ and changes to its RA
15 positions during RA-related briefings at Procurement Review Group (PRG) meetings in
16 the Record Period. PG&E also reported its RA positions in its Quarterly Compliance
17 Report (QCR) filings which were timely filed throughout the Record Period and included
18 as workpapers to its present testimony. Both PRG and QCR reporting are required by
19 PG&E’s BPP.³³⁷

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³³² D.20-06-031, pp. 6-18.

³³³ D.20-06-031, pp. 18-20.

³³⁴ PG&E 2014 Bundled Procurement Plan: version updated as of February 11, 2021, by approval of Advice Letter 5905-E (PG&E 2014 BPP), Sheets 258-277.

³³⁵ Emphasis added to highlight language that was added to the BPP by Advice Letter 5905-E which was submitted by PG&E on August 5, 2020 and approved by the Commission on February 11, 2021. PG&E 2014 BPP, Sheet 269.

³³⁶ An RA position is a metric that shows how much above or below PG&E’s RA portfolio is compared to Commission RA requirements in particular months and/or local areas.

³³⁷ PG&E BPP Appendix S, Section A. See also PG&E BPP Appendix M, Section A.2 and A.3.

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Table 1: PG&E’s 2021 System and Local RA Positions (MW)³³⁸

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
System	[REDACTED]											
Bay Area	[REDACTED]											
Fresno	[REDACTED]											
Sierra	[REDACTED]											
Stockton	[REDACTED]											
Kern	[REDACTED]											
Humboldt	[REDACTED]											
NCNB	[REDACTED]											
PG&E Other	[REDACTED]											

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Table 2: PG&E’s 2022 Local RA Positions (MW)³³⁹

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bay Area	[REDACTED]											
Fresno	[REDACTED]											
Sierra	[REDACTED]											
Stockton	[REDACTED]											
Kern	[REDACTED]											
Humboldt	[REDACTED]											
NCNB	[REDACTED]											
PG&E Other	[REDACTED]											

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Table 1 shows that PG&E held [REDACTED] of 2021 as of the end of the 2020 Record Period. Month-ahead system RA requirements may be met up until 45 days before the showing month.³⁴⁰ Both tables list the seven local capacity areas (LCAs) in which PG&E is assigned local RA requirements, as well as the “PG&E Other” LCA.³⁴¹

³³⁸ System positions as of December 31, 2020. Local positions as of November 2, 2020. “PG&E Other” is the sum of Fresno, Sierra, Stockton, Kern, Humboldt, and North Coast/North Bay (NCNB) positions. Attachment 7.1, p. 11.

³³⁹ System RA requirements for 2022 were not assigned to LSEs by the Commission during the 2020 Record Period since system RA requirements only extend to the next year ahead.

³⁴⁰ Commission 2020 Filing Guide for System, Local and Flexible RA Compliance Filings, July 21, 2020, pp. 9-10.

³⁴¹ The PG&E Other LCA is an aggregation of six LCAs which, previous to the 2020 Record Period, had

1 As shown in Tables 1 and 2, PG&E was unable to meet the local RA requirements
2 for certain months in [REDACTED] local capacity areas (LCAs) for the 2021 compliance year and
3 [REDACTED] LCAs for the 2022 compliance year.³⁴² PG&E demonstrated its attempts to procure
4 enough local RA to meet its requirements through a Commission waiver request.³⁴³
5 PG&E also demonstrated that it had procured sufficient local RA to meet the alternative
6 means of compliance for the aggregated PG&E Other local RA requirement.³⁴⁴ The
7 Energy Division of the Commission ultimately approved PG&E's local RA procurement
8 in the PG&E Other LCA and waived penalties associated with PG&E's individual LCA
9 deficiencies.³⁴⁵

10 PG&E made attempts to procure RA for each of the six LCAs in the PG&E Other
11 LCA, while also maintaining surplus positions in some of those areas in order to meet the
12 PG&E Other requirement, whose showing was reduced by deficiencies in some LCAs.³⁴⁶
13 Although surplus RA positions should be minimized in order to obtain ratepayer value
14 through RA sales, the Public Advocates finds PG&E's surplus RA positions in the PG&E
15 Other constituent LCAs to be reasonable and necessary to meet the PG&E Other
16 requirement given PG&E's failure to procure sufficient local RA in the constituent
17 LCAs.

18 PG&E also made attempts to [REDACTED]
19 [REDACTED]³⁴⁷ and its RA

individual local RA requirements. The individual local RA requirements were maintained in 2020, but the Commission allowed LSEs to show an RA deficiency in one or more of the six LCAs if the LSE also demonstrated that it attempted to meet individual requirements and that the total MW procured in the six LCAs met the collective requirement of the PG&E Other LCA. D.20-06-031, p. 70.

³⁴² Attachment 7.1, p. 11. See Also PG&E Advice Letter 5989-E, November 2, 2020.

³⁴³ PG&E Advice Letter 5989-E, November 2, 2020.

³⁴⁴ PG&E Advice Letter 5989-E, November 2, 2020.

³⁴⁵ Attachment 7.1, pp. 8-10.

³⁴⁶ The surplus positions also contributed to meeting PG&E's system RA requirements in some months. Attachment 7.1, p. 11.DR5Q8Att2. See also PG&E Advice Letter 5989-E, pp. 1-2, 4-7.

³⁴⁷ Attachment 7.7.

1 showing³⁴⁸ to the Commission on November 2, 2020.³⁴⁹ Lastly, PG&E was able to offer

2 [REDACTED]

3 [REDACTED].³⁵⁰

4 **B. PG&E RA Purchases and Sales and BPP Compliance**

5 PG&E conducted numerous RA purchases and sales in the Record Period to both
6 meet its RA requirements and to make available and monetize its surplus RA. PG&E's
7 BPP provides for Commission-authorized strategies and approval structures for RA
8 transactions which include the use of competitive solicitations and bilateral and brokered
9 transactions.³⁵¹ PG&E reported its RA sales and purchases in its four Record Period
10 QCR filings which the Public Advocates Office reviewed upon issuance. The Public
11 Advocates Office did not protest any of PG&E's 2020 QCRs.³⁵²

12 PG&E's BPP requires it to make available for sale excess RA capacity.³⁵³ The
13 amount available for sale is limited by [REDACTED]

14 [REDACTED]

15 [REDACTED]

16 [REDACTED].³⁵⁴ PG&E also limits its RA sales

17 quantity by setting floor prices that consider PG&E's exposure risk to CAISO penalties

³⁴⁸ Attachment 7.1, p. 11.

³⁴⁹ The RA showing requirement for local RA is October 31, 2020, though that day was a Saturday, so filings were made on November 2, 2020.

³⁵⁰ For example, PG&E [REDACTED]

Attachment 7.9 - PRG Slides, pp. 4-5.

³⁵¹ PG&E BPP, Section IV, Table 4, Sheet 28.

³⁵² PG&E conducted additional procurement outside of the QCR process to meet mandates other than RA requirements, such as IRP procurement ordered by D.19-11-016. With the exception of an RA sales transaction with SCE, procurement activities approved of through non-QCR advice letters or applications will not be reviewed in this ERRRA chapter.

³⁵³ PG&E BPP Appendix S, Section B.3.b, Sheets 252-253.

³⁵⁴ PG&E BPP Appendix S, Sheet 253-258.

1 and [REDACTED].³⁵⁵ Finally, PG&E may also maintain a surplus RA
2 position due to different types of resources required to meet system, flexible, or local RA-
3 specific requirements.³⁵⁶

4 PG&E conducted five RA sales solicitations through the Record Period for RA
5 deliveries in compliance years 2020 to 2022.³⁵⁷ The Public Advocates Office performed
6 review of each sales solicitation and the resulting executed transactions in its review of
7 QCR filings throughout 2020 and 2021. For the present Application, the Public
8 Advocates Office performed additional review of each sales solicitation and the resulting
9 transactions to ensure conduct was consistent with PG&E's BPP and to ensure the sales
10 did not harm PG&E's ability to meet its RA requirements.³⁵⁸ The Public Advocates
11 Office's review included data requests to PG&E and review of PG&E's explanations of
12 offer evaluation methodologies provided to the Public Advocates Office through
13 discovery in the 2019 Record Period ERRA Compliance application.³⁵⁹

14 The Public Advocates Office recommends that the Commission find that PG&E's
15 efforts to procure and sell RA in its solicitations for Record Period 2020 were in
16 compliance with the requirements of PG&E's BPP.

17 **1. Swap Offer Evaluations**

18 Swap transactions are typically trades of equal amounts of system RA for local
19 RA or vice-versa. They may also trade local RA for two different LCA categories. The

³⁵⁵ PG&E Testimony, p. 8-8. See also PG&E BPP, Appendix S, Sheet 263.

³⁵⁶ For example, PG&E may have five flexible RA resources that are all in the same local capacity area. PG&E may end up with surplus RA in that local area if selling off a single resource's capacity would lead to a deficiency in meeting flexible RA requirements.

³⁵⁷ PG&E Testimony, p. 8-7.

³⁵⁸ As shown in Section A of this testimony, PG&E satisfactorily met its RA requirements though it failed to meet the local RA requirements in some LCAs. However, the Commission approved a waiver after PG&E demonstrated it met the aggregated requirements of the PG&E Other LCA. The Public Advocates Office performed a review of PG&E's waiver request, Advice Letter 5989-E, at the time the advice letter was served to the RA Rulemaking service list. The Public Advocates Office did not protest that Advice Letter.

³⁵⁹ A.20-02-009, *Cal Advocates Prepared Testimony*, July 10, 2020, pp. 7-6 to 7-9. See Also Attachment 7.1, pp. 21-22.

1 transactions may or may not include an additional price paid, most often to reflect the
2 higher value of local RA compared to system RA. These types of transactions are often
3 preferred when an LSE has surplus local RA in some LCAs but does not have surplus
4 system RA.

5 PG&E sought and received numerous swap transaction offers at all five of its
6 competitive solicitations in the Record Period.³⁶⁰ A number of swap offers received were
7 rejected by PG&E [REDACTED] despite the offers having no negative impact
8 on PG&E's RA positions.³⁶¹ PG&E explains that it evaluates and accepts swap offers
9 based on the following [REDACTED].³⁶²

10 [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]
14 [REDACTED]³⁶³
15 [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED]
19 [REDACTED]

20 This swap evaluation methodology may cause PG&E to reject an offer despite it
21 generating revenue while having no negative impact on PG&E's ability to meet its RA
22 requirements. For example, if PG&E has a 100 MW surplus local RA at an LCA in
23 October but has no surplus system RA for that month, an LSE may bid \$5/kW-mo to
24 purchase 10 MW of October local RA from PG&E and offer \$4/kW-mo for 10 MW of
25 October system RA that PG&E would purchase from the LSE. The transaction would
26 provide PG&E \$10,000 for surplus RA it does not need for local RA compliance.

³⁶⁰ Attachments 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, Tab "Shortlist RA".

³⁶¹ For example, Attachment 7.4, Tab "Shortlist RA", Rows 50-53.

³⁶² Offers may still be rejected due to other reasons, such as harming PG&E's ability to meet RA requirements. Attachment 7.1, pp. 21-22.

³⁶³ PG&E BPP Appendix S, Section B.1.d.(3)(a).

1 However, if PG&E determines the [REDACTED]
2 [REDACTED]
3 [REDACTED] and the offer is rejected.³⁶⁴ PG&E states this is an [REDACTED]
4 [REDACTED]
5 [REDACTED].³⁶⁵

6 PG&E’s approach to swap offer evaluation neither interferes with the amount of
7 RA sales PG&E may offer at its solicitations as set by its BPP,³⁶⁶ nor with the provisions
8 added to facilitate swap transactions.³⁶⁷ The methodology used for swap transactions is
9 consistent with the BPP, though the BPP requires no particular methodology to evaluate
10 swap transactions.³⁶⁸

11 **C. Transaction with SCE**

12 In its testimony, PG&E requests approval of a bilateral transaction with SCE.³⁶⁹
13 PG&E purchased local RA from SCE and conditionally sold system RA to SCE - a swap
14 transaction. At the time of the transaction,³⁷⁰ PG&E’s BPP allowed for RA sales and
15 purchases in solicitations conducted by PG&E itself with review in the QCR process.³⁷¹
16 However, this swap resulted from PG&E’s participation in a third-party solicitation
17 which was not authorized, nor prohibited, by PG&E’s BPP.³⁷² PG&E requests that the
18 Commission approve of its transactions with SCE in this ERRA Application, claiming

³⁶⁴ [REDACTED]

³⁶⁵ Attachment 7.1, pp. 21-22.

³⁶⁶ PG&E BPP Appendix S, Section B.1.b.(1).

³⁶⁷ PG&E BPP Appendix S, Section B.1.d.

³⁶⁸ PG&E BPP Appendix S, Section B.1.d.(3).

³⁶⁹ PG&E Testimony, p. 8-9.

³⁷⁰ PG&E’s BPP would later be updated to authorize swap transactions by Advice Letter 5905-E, which was submitted by PG&E to the Commission on August 5, 2020, but not approved until February 11, 2021. Advice Letter 5905-E, pp. 3-4. https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_5905-E.pdf

³⁷¹ PG&E is authorized to participate in third-party RA solicitations, though a bilateral swap’s approval must be conducted outside of the BPP’s QCR process, such as the ERRA. PG&E BPP Appendix S, Section 3.

³⁷² PG&E Testimony, p. 8-9.

1 the transactions were reasonable because the swap enabled PG&E to comply with its
2 Local RA requirements for the 2021 RA compliance year.³⁷³

3 The transaction resulted from SCE's Fourth Quarter Request for Proposals (SCE's
4 Q4 RFP) in September 2020, and the resulting swap was executed on [REDACTED]
5 [REDACTED]³⁷⁴ PG&E [REDACTED]
6 [REDACTED] as shown in Table 3 below. The swaps between PG&E and SCE
7 resulted in a shift of PG&E's RA positions as follows:

8 **Table 3: Change of PG&E system and local positions resulting**
9 **from the SCE-PG&E swaps (MW):³⁷⁵**

[REDACTED TABLE CONTENTS]

10 Prior to SCE's Q4 RFP, PG&E reported its system RA capacity position to the PRG and
11 showed [REDACTED]
12 [REDACTED]³⁷⁶ Despite the [REDACTED], the swap
13 transactions did not alter PG&E's system RA positions since local RA capacity is also
14 one-for-one system RA capacity.³⁷⁷

³⁷³ PG&E Testimony, p. 8-9.

³⁷⁴ Attachment 7.1, pp. 2-5.

³⁷⁵ This table does not include flexible RA: [REDACTED]. Negative figures indicate a decrease in capacity possessed by PG&E due to sale, while a positive number is an increase due to purchase. Note that [REDACTED]
Attachment 7.1, p. 6.

³⁷⁶ Attachment 7.9 - PGE PRG PRES Q3-2020 Electric Position Update_091520, pp. 4-5.

³⁷⁷ Local RA capacity also has one-for-one value with system RA. A trade of equal amounts of system RA for local RA thus has zero effect on a system RA position. Table 3 shows [REDACTED].

1 PG&E also reported [REDACTED]
2 [REDACTED].³⁷⁸ The
3 swap transactions for local RA [REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]. In particular and as shown in Table 1, PG&E showed [REDACTED]
7 local RA above its requirements due in part to the swap transactions with SCE. Through
8 discovery, PG&E explained the challenge of procuring capacity through multiple
9 processes that may make meeting precise requirements difficult in the final month before
10 RA showings are due to the Commission.³⁷⁹ PG&E was also engaged in RA
11 procurement to meet its [REDACTED] which May 2021 [REDACTED]
12 [REDACTED] local RA contributes towards.³⁸⁰ PG&E's Commission system RA position³⁸¹ for
13 May 2021 was [REDACTED] above its requirement of [REDACTED].³⁸² PG&E sought to [REDACTED]
14 [REDACTED]
15 [REDACTED].³⁸³

16 The Public Advocates Office finds the swap transaction with SCE in Record
17 Period 2020 to be prudent and reasonable.

18 **IV. CONCLUSION**

19 Overall, the Public Advocates Office finds that PG&E's efforts to procure and sell
20 RA in its solicitations were in compliance with the requirements of PG&E's BPP.
21 Additionally, the Public Advocates Office finds that PG&E's transactions with SCE,

³⁷⁸ Attachment 7.9 - PGE PRG PRES Q3-2020 Electric Position Update_091520, p. 5.

³⁷⁹ Attachment 7.1, pp. 16-17.

³⁸⁰ Attachment 7.1, pp. 16-17.

³⁸¹ The Commission and CAISO system RA requirements are slightly different since CAISO includes assumptions about resource outages which relatively increase the requirements compared to the Commission's methodology.

³⁸² Attachment 7.2 - 02_RA Portfolio Breakdown Q4 2020.

³⁸³ Attachment 7.1 – DR12Q1.

- 1 outside of the requirements of the BPP, were reasonable and recommends the
- 2 Commission approve these transactions.
- 3

LIST OF ATTACHMENTS FOR CHAPTER 7

#	Attachment	Description
1	7.1 Compiled Data Requests	PG&E Response Public Advocates Office Data Requests. Only relevant data request responses included. Some attachments are abridged. (Confidential)
2	7.2 02_RA Portfolio Breakdown Q4 2020	PG&E summary of end-of-record period RA positions. (Confidential) (Available via E-Mail)
3	7.3 January 2020 Q2 Balance of Year RA and Import Energy	QCR workpaper showing results of the 2020 Q2 Balance of Year RA solicitation. (Confidential) (Available via E-Mail)
4	7.4 April 2020 Q3 through Balance of Year and 2021-2023	QCR workpaper showing results of the 2020 Q3 Balance of Year RA solicitation. (Confidential) (Available via E-Mail)
5	7.5 July Q4 through Balance of Year and 2021-2022 RAS	QCR workpaper showing results of the 2020 Q4 Balance of Year RA solicitation. (Confidential) (Available via E-Mail)
6	7.6 August 2020 MYRAS Phase 1 - RA Solicitation Shortlist	QCR workpaper showing results of the Multiyear RA solicitation, phase 1. (Confidential) (Available via E-Mail)
7	7.7 October 2020 MYRAS Phase 2 - RA Solicitation Shortlist	QCR workpaper showing results of the Multiyear RA solicitation, phase 2. (Confidential) (Available via E-Mail)
8	7.8 November Draft Shortlist - Confidential	QCR Workpaper showings results of a November, 2020, RA and Import Energy E-Solicitation. (Confidential) (Available via E-Mail)
9	7.9 PRG Slides	PG&E slides from Procurement Review Group meetings on September 15, 2020 and March 16, 2021 describing electric positions. (Confidential)

1 utilities “operated [their] resources to produce the lowest possible cost for customers.”³⁸⁵
2 Prudent contract administration also entails “administration of all contracts within the
3 terms and conditions of those contracts, to include dispatching dispatchable contracts
4 when it is most economical to do so.”³⁸⁶ In addition, it is the utility’s responsibility to
5 “dispose of economic long power and to purchase economic short power in a manner that
6 minimizes ratepayer costs.”³⁸⁷

7 The Commission also established that the utility bears the burden of proving that it
8 administered its contracts reasonably and in compliance with the Standards of Conduct to
9 produce the lowest possible costs for ratepayers.³⁸⁸ In prior Energy Resource Recovery
10 Account (ERRA) proceedings, PG&E acknowledged this burden of proof and that the
11 utility must demonstrate its compliance through its testimony.³⁸⁹

12 **IV. DISCUSSION AND ANALYSIS**

13 For the 2020 Record Period, the Public Advocates Office reviewed 25
14 transactions, five contract disputes, 19 force majeure claims, and three other matters. Of
15 the transactions discussed in Section IV.A, 23 were related to the CAISO System
16 Emergencies of August through October 2020, and two additional transactions modified
17 contracts with Crockett Cogeneration Co.³⁹⁰ Section IV.B covers contract disputes,
18 focusing on the two which were closed during the 2020 Record Period. Three contract
19 disputes are ongoing: the Global Ampersand dispute began in the 2018 Record Period,³⁹¹
20 the South Feather Water and Power Agency dispute opened in the 2019 Record Period,³⁹²

³⁸⁵ D.05-01-054, p. 14.

³⁸⁶ D.02-12-074, p. 54.

³⁸⁷ D.02-12-074, p. 54.

³⁸⁸ D.02-12-074, p. 54.

³⁸⁹ D.16-04-006, p. 11.

³⁹⁰ PG&E Testimony, p. 9-20 – 9-21.

³⁹¹ PG&E Testimony, p. 9-15.

³⁹² PG&E Testimony, p. 9-16.

1 and a dispute with mNOC EARS LLC commenced during the 2020 Record Period.³⁹³
2 The three ongoing contract disputes will be reviewed by the Public Advocates Office
3 during the Record Period filing when they are resolved. Of the 19 force majeure claims,
4 the counterparties to five claims were [REDACTED]
5 [REDACTED] and therefore had no impact.³⁹⁴ Three claims were
6 [REDACTED] and four were due to [REDACTED].³⁹⁵ The
7 Public Advocates Office did not consider seven other claims that remain under review by
8 PG&E.

9 The Public Advocates Office used the following standards of review to evaluate
10 PG&E's activities regarding its contract administration and dispute resolution practices:

- 11 i) What are the financial impacts of the disputes and outcomes?
- 12 ii) Did the utility adequately justify or explain the rationale for the
13 disputes and outcomes, either in the application, testimony, Master
14 Data Request, or subsequent data requests?
- 15 iii) Was the dispute resolution process initiated following a reasonable
16 amount of communication between PG&E and the other contract
17 counterparty?
- 18 iv) Do the disputes and outcomes reflect the ratepayers' and/or
19 stakeholders' best interests?

20 The Public Advocates reviewed PG&E's testimony, Master Data Request
21 responses, supplemental data request responses, workpapers, past ERRA testimony from
22 the 2018 Record Period, and prior Commission decisions. Based on these
23 communications and review of PG&E's testimony, the Public Advocates Office provides
24 the following analysis.

³⁹³ PG&E Testimony, p. 9-17.

³⁹⁴ PG&E Testimony, p. 9-33 – 9-34.

³⁹⁵ Among the four claims attributed to [REDACTED]

[REDACTED] (Phone call, April 28, 2021.) [REDACTED] (Email communication with PG&E Staff, June 9, 2021).

1 **A. Contract Amendments and Transactions**

2 **1. CAISO System Emergency Transactions**

3 A series of extreme heat events resulted in rolling blackouts on August 14 and 15,
4 2020, and a subsequent heatwave over Labor Day weekend in September 2020 also
5 challenged system reliability. In response to shedding of customer load by the CAISO,
6 “PG&E sought incremental capacity from existing suppliers and entered into short-term
7 agreements with multiple counterparties.”³⁹⁶ The CAISO System Emergency
8 Transactions emerged from *ad hoc* communication between PG&E, generators, and the
9 CAISO to uncover potential energy in the face of the mid-August heatwave.³⁹⁷ In some
10 cases, [REDACTED] in response to CAISO Flex Alerts and
11 PG&E press releases forecasting rolling outages. When the CAISO issued Emergency
12 Alerts in September and October 2020, [REDACTED]
13 [REDACTED].³⁹⁸

14 The Public Advocates Office reviewed the CAISO System Emergency
15 Transactions and found that they do not add any ratepayer costs beyond those defined by
16 the original contracts.³⁹⁹ Generators provided additional energy capacity during tight
17 system hours and were remunerated according to the terms of the existing contracts.⁴⁰⁰
18 These contracts are timely collaborations between stakeholders under high-stress
19 conditions and provide cost effective benefits to ratepayers. The Public Advocates Office
20 recommends that the Commission approve PG&E’s CAISO System Emergency
21 Transactions.

22

³⁹⁶ PG&E Testimony, p. 9-21.

³⁹⁷ The Mesquite Solar 1 contract is an example of the *ad hoc* negotiation process. [REDACTED]

³⁹⁸ Phone call with PG&E, April 28, 2021.

³⁹⁹ PG&E Testimony Confidential Workpapers, Chapter 9, CAISO Transactions for Approval.

⁴⁰⁰ PG&E Testimony Confidential Workpapers, Chapter 9, CAISO Transactions for Approval.

1 the parties settled their dispute [REDACTED]

2 [REDACTED]
3 [REDACTED].⁴⁰⁴ While the lost capacity represents a setback for reliability, ratepayers are not
4 impacted financially; thus, the Public Advocates Office recommends the Commission
5 approve this settlement.

6 **2. City and County of San Francisco**

7 PG&E reports that the City and County of San Francisco (CCSF) “acting by and
8 through its SF PUC, CleanPowerSF, and CCSF, acting by and through its SF PUC,
9 Power Enterprise, issued a dispute with PG&E.”⁴⁰⁵ The counterparties “claimed that
10 interest amounts accrued on late payments by CCSF, related to five delivering RA
11 Confirmations, were incurred due to PG&E’s delinquency in paying CCSF business and
12 tax payment obligations.”⁴⁰⁶ Following a teleconference meeting with the counterparty,
13 PG&E received payment in full and the dispute was closed.⁴⁰⁷ Given there was no
14 impact on ratepayers, the Public Advocates Office recommends the Commission approve
15 this settlement.

16 **3. Ongoing Disputes**

17 PG&E reported three ongoing disputes which have not yet been resolved. First,
18 Global Ampersand, LLC (Global) initiated a dispute resolution process with PG&E on
19 November 16, 2017 and noted that the parties reached a tentative agreement during the
20 2020 Record Period.⁴⁰⁸ Second, South Feather Water and Power Agency opened a
21 dispute over provisions in the Power Purchase Agreement that relate to a prolonged
22 outage and parties remain in negotiations.⁴⁰⁹ Finally, mNOC AERS LLC opened a
23 dispute against PG&E’s denial of their force majeure claim and parties remain in

⁴⁰⁴ PG&E Testimony, p. 9-16.

⁴⁰⁵ PG&E Testimony, p. 9-17

⁴⁰⁶ PG&E Testimony, p. 9-17.

⁴⁰⁷ PG&E Testimony, p. 9-17.

⁴⁰⁸ PG&E Testimony, p. 9-15.

⁴⁰⁹ PG&E Testimony, p. 9-16.

1 negotiations.⁴¹⁰ Because these disputes all remain open, the Public Advocates Office
2 cannot assess PG&E’s reasonableness as a contract manager and will defer
3 recommending a course of action until final agreements are confirmed in a subsequent
4 Record Period.

5 **C. Other Matters**

6 **1. Vantage Wind Energy LLC.**

7 PG&E and Vantage Wind Energy LLC are parties to a PPA which “contains a cost
8 sharing mechanism for transmission-related costs in the event such costs exceed a
9 specified threshold for a given Contract Year.”⁴¹¹ PG&E discovered that it was not
10 applying the cost-sharing mechanism and is now seeking to recover its share of
11 transmission-related costs prior to Contract Year 2018-2019 per the PPA terms.⁴¹² The
12 Public Advocates Office assessed the details of this negotiation in the 2019 Record
13 Period’s ERRA Compliance proceeding and deferred analysis of this matter until an
14 agreement is reached.⁴¹³ Negotiations are ongoing because the former Shaping and
15 Firming agent, Powerex, cites delays due to COVID-19 restrictions in providing
16 necessary data to determine costs.⁴¹⁴

17 **2. Villa Sorriso Solar**

18 While upgrading its metering database, PG&E discovered an overpayment of
19 ██████████ to Villa Sorriso Solar (a 7.2 kilowatt Qualifying Facility) since 2014 due to a
20 meter configuration issue. The customer agreed to reimburse PG&E in the amount of

⁴¹⁰ PG&E Testimony, p. 9-16.

⁴¹¹ PG&E Testimony, p. 9-18.

⁴¹² PG&E Testimony, p. 9-18.

⁴¹³ Cal Advocates Prepared Testimony on Pacific Gas and Electric Company Application for Compliance Review Of Utility Owned Generation Operations, Portfolio Allocation Balancing Account Entries, Energy Resource Recovery Account Entries, Contract Administration, Economic Dispatch Of Electric Resources, Utility Owned Generation Fuel Procurement, Diablo Canyon Seismic Studies Balancing Account, And Other Activities For the Period January 1 Through December 31, 2019, July 10, 2020, pp. 8-4 – 8-5.

⁴¹⁴ PG&E Testimony, p. 9-18.

1 [REDACTED].⁴¹⁵ In the future, PG&E should pursue full reimbursement for overpayments so
2 that ratepayers do not to bear the costs of PG&E's mistake.

3 **3. PG&E Bankruptcy**

4 PG&E emerged from bankruptcy on July 1, 2020 and is repaying amounts owed
5 pursuant to Decision (D.) 20-05-053 which the Commission approved on May 28, 2020
6 for the Plan of Reorganization Order Instituting Investigation (I) proceeding (I.19-09-
7 016). PG&E staff clarified that the ten settlement agreements associated with 16
8 contracts described in PG&E's Testimony are listed for informational purposes as an
9 update on PG&E's Bankruptcy.⁴¹⁶ PG&E is not seeking review and approval of the
10 settlement agreements in this proceeding.⁴¹⁷

11 **V. CONCLUSION**

12 Based on the analysis and evaluations described above, the Public Advocates
13 Office does not object to PG&E's contract administration activities and practices for
14 Record Period 2020. However, the Public Advocates Office recommends disallowing
15 from consideration the second amendment signed with Crockett Cogeneration Co. that
16 applies to January and February 2021, because this does not fall in the 2020 Record
17 Period. The disallowed amendment should be re-submitted in the 2021 Record Period
18 ERRR Compliance filing.

⁴¹⁵ PG&E Testimony, p. 9-18.

⁴¹⁶ Email communication with PG&E Staff, May 21, 2021.

⁴¹⁷ Email communication with PG&E Staff, May 21, 2021.

LIST OF ATTACHMENTS FOR CHAPTER 8

#	Attachment	Description
1	8.1	Email communication with PG&E Staff, June 9, 2021. (Confidential)
2	8.2	<p>PG&E Testimony Confidential Workpapers, Chapter 9, CAISO Transactions for Approval. (Confidential, Available Via Email)</p> <p>List of transactions included in attachment:</p> <ol style="list-style-type: none"> 1. 20200817_33R144_Mesquite Solar 1_Agmt for Short Term Emergency Energy Summary_CONF 2. 20200820_33R254_SPI Biomass_Letter Agmt for Short Term Additional Deliveries_Aug17-31_CONF 3. 20200824_33R406_Wheelabrator Shasta_Letter Agreement for Surplus Delivered Energy_Aug17-31_CONF 4. 20200904_25C002_Chevron U.S.A. (TaftCadet)_Letter Agmt for Short Term Emerg. Energy_Sept5-7_CONF 5. 20200904_25C003_Chevron U.S.A. (Cymric)_Letter Agmt for Short Term Emergency Energy_Sept5-7_CONF 6. 20200904_25C055_Chevron U.S.A. (Coalinga)_Letter Agmt for Short Term Emergency Energy_Sep5-7_CONF 7. 20200904_25C063QPA2_Frito Lay Cogen_Additional Energy Letter Agreement_Sept5-7_CONF 8. 20200904_25C138QPA_Western Power and Steam II_LA for Short Term Addtl Deliveries_Sept5-7_CONF 9. 20200904_33R254_SPI Biomass_Letter Agreement for Short Term Additional Deliveries_Sept5-7_CONF 10. 20200904_33R406_Wheelabrator Shasta_Surplus Delivered Energy Letter Agreement_Sept5-7_CONF

#	Attachment	Description
		<p>11. 20200916_25C138QPA_Western Power and Steam II_LA for Short Term Addtl Deliveries_Sept 16-30_CONF</p> <p>12. 20200917_33R406_Wheelabrator Shasta_Surplus Delivered Energy Letter Agreement_Sept17-30_CONF</p> <p>13. 20200918_25C002_Chevron U.S.A. (TaftCadet)_Letter Agmt for Short Term Emerg. Energy_Sep19-30_CONF</p> <p>14. 20200918_25C003_Chevron U.S.A. (Cymric)_Letter Agmt for Short Term Emerg. Energy_Sept 19-30_CONF</p> <p>15. 20200918_25C055_Chevron U.S.A. (Coalinga) Letter Agmt for Short Term Emerg. Energy_Sept19-30_CONF</p> <p>16. 20200918_33R254_SPI Biomass_Letter Agreement for Short Term Additional Deliveries_Sept18-30_CONF</p> <p>17. 20200922_25C246_Chevron U.S.A. (SE Kern River)_LA for Short Term Emergency Energy_Sept 19-30_CONF</p> <p>18. 20201005_25C138QPA_Western Power and Steam II_LA for Short Term Addtl Deliveries_Oct5-31_CONF</p> <p>19. 20201005_33R254_SPI Biomass_Letter Agreement for Short Term Additional Deliveries_Oct 5-31_CONF</p> <p>20. 20201013_25C002_Chevron U.S.A. (TaftCadet)_Letter Agmt for Short Term Emerg. Energy_Oct13-31_CONF</p> <p>21. 20201013_25C003_Chevron U.S.A. (Cymric)_Letter Agmt for Short Term Emerg. Energy_Oct 13-31_CONF</p> <p>22. 20201013_25C055_Chevron U.S.A. (Coalinga)_Letter Agmt for Short Term Emerg. Energy_Oct13-31_CONF</p>

#	Attachment	Description
		23. 20201013_25C246_Chevron U.S.A. (SE Kern River)_LA for Short Term Emerg. Energy_Oct13-31_CONF
3	8.3	Cal Advocates Prepared Testimony on Pacific Gas and Electric Company Application for Compliance Review Of Utility Owned Generation Operations, Portfolio Allocation Balancing Account Entries, Energy Resource Recovery Account Entries, Contract Administration, Economic Dispatch Of Electric Resources, Utility Owned Generation Fuel Procurement, Diablo Canyon Seismic Studies Balancing Account, And Other Activities For the Period January 1 Through December 31, 2019, July 10, 2020, pp. 8-4 – 8-5. (Confidential)
4	8.4	Email communication with PG&E Staff, May 21, 2021.

1

1 Table 9-1 shows the breakdown of costs for the Green Tariff Shared Renewables
 2 Memorandum Account by category.

Table 9-1⁴²⁰
PG&E GTSRMA Recorded Costs
Record Period 2020

Description	Amount
Program Management	\$205,596
IT/ Billing System	\$1,054,679
Energy Procurement	\$106,008
Contact Center Operations	\$23,250
Outreach	\$58,411
Total	\$1,447,944

3
 4 **IV. GREEN TARIFF RENEWABLES BALANCING ACCOUNT**

5 In D.15-01-051, PG&E’s GTSR program design was approved with modifications.
 6 The purpose of the GTSRBA is to track revenues received and actual expenses incurred
 7 to procure renewable generation resources for customers participating in the GTSR
 8 program.⁴²¹ In 2020, the ending balance of the GTSRBA was \$242,342.

9 Table 9-2 shows the breakdown of expenses and revenues for the Green Tariff
 10 Shared Renewables Balancing Account.

Table 9-2⁴²²
PG&E GTSRBA Expenses and Revenues
Record Period 2020

Description	Amount
Beginning Balance	\$276,572
Net Revenues	\$(8,275,004)
Net Expenses	\$11,519,268
Interest	5,918
Disposition	\$(3,284,413)
Ending balance	\$242,342

⁴²⁰ A. 21-03-008 PG&E Direct Confidential Testimony, Chapter 11, Table 11-1.

⁴²¹ A. 21-03-008 PG&E Direct Confidential Testimony, Chapter 11, p. 11-5 lines 28-30.

⁴²² A. 21-03-008 PG&E Direct Confidential Testimony, Chapter 11, p. 11-10, Table 11-4.

1 **V. PUBLIC ADVOCATES OFFICE ANALYSIS**

2 The Public Advocates Office reviewed PG&E’s testimony, workpapers, and
3 PG&E’s responses to data requests. The Public Advocates Office also reviewed a
4 sampling of source documents that support the expenses and revenues recorded in the
5 GTSRMA and GTSRBA. The Public Advocates Office selected a sample of monthly
6 line items to determine whether there is adequate support for those transactions. The
7 Public Advocates Office’s audit sample was judgmentally selected and consisted of 6
8 items recorded in GTSRMA and 6 items recorded in GTSRBA. A “judgment sample” is
9 a non-random sample selected by the auditor based on the judgment (opinion) of the
10 auditor. When selecting a judgment sample, an auditor makes judgments about various
11 elements including but not limited to the internal control environment, exposure/
12 materiality, risk, and results of analytical reviews.

13 **VI. CONCLUSION**

14 The Public Advocates Office’s review of the GTSRMA and GTSRBA for the
15 2020 Record Period found no required accounting adjustments, and the Public Advocates
16 Office does not object to the costs recorded in the GTSRMA and GTSRBA. The Public
17 Advocates Office found that the 2020 GTSRMA administrative and outreach expenses
18 are reasonable, appropriate, correctly stated, and in compliance with applicable
19 Commission Decisions. The Public Advocates Office found that the 2020 GTSRBA is in
20 compliance with the applicable tariffs and Commission directives.

1 PG&E submitted Advice Letter 5440-E to implement the changes in
2 D.18-10-019.⁴²⁴ The Commission approved PG&E Advice Letter 5440-E on May 3,
3 2019 with an effective date of January 1, 2019. PG&E Advice Letter 5440-E established
4 the PABA, and updated the ERRA balancing account, Modified Transition Cost
5 Balancing Account (MTCBA) and Utility Owned Balancing Account (UGBA) to be
6 consistent with the PABA.

7 The purpose of the PABA is to record the above-market costs for all generation
8 resources eligible for recovery through PCIA rates.⁴²⁵ The PCIA is recovered from both
9 bundled and departing load customers. The PCIA assigns costs responsibility for
10 vintages of generation resources based upon when the customer departed bundled service.
11 The PABA is comprised of subaccounts for each year's vintage portfolio that records the
12 costs and revenues associated with the categories of activity for all generation resources
13 executed or approved by the Commission for cost recovery that year.

14 Activity recorded to the PABA include the following categories: Revenues from
15 Customers; Renewable Portfolio Standard (RPS) Activity; Resource Adequacy (RA)
16 Activity; Adopted Utility Owned Generation (UOG) Revenue Requirements; California
17 Independent System Operator (CAISO) Related Charges and Revenues, Fuel Costs,
18 Contract Costs, Greenhouse Gas (GHG) costs, and Miscellaneous costs.

⁴²⁴ PG&E Advice Letter 5440-E available at https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_5440-E.pdf, accessed on June 4, 2021.

⁴²⁵ PG&E's PABA Electric Preliminary Statement Part HS available at https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_PRELIM_HS.pdf, accessed on June 4, 2021.

1 Table 10-1 below reflects PG&E’s PABA accounting entries for the Record Period.

2 **Table 10-1**
3 **PG&E PABA Accounting Entries⁴²⁶**
4 **Record Period 2020**

PABA Beginning Balance	\$713,711,384
PABA Net Activity Before Interest ⁴²⁷	\$(526,114,251)
PABA Net Interest	\$3,708,652
PABA Ending Balance	\$191,305,785
PCIA ⁴²⁸ Subaccount Beginning Balance	\$38,300,488
PCIA Subaccount Ending Balance	\$0
Total PABA Ending balance	\$191,305,785

5
6 **IV. THE PUBLIC ADVOCATES OFFICE’S AUDIT**
7 **OBJECTIVES, SCOPE AND PROCEDURES**

8 The Public Advocates Office reviewed PG&E’s PABA for the Record Period to
9 determine whether entries recorded in the PABA were appropriate, correctly stated, and
10 compliant with applicable Commission Decisions. The Public Advocates Office’s audit
11 procedures included, but were not limited to the following:

- 12 • Review of PG&E’s application, testimony, exhibits, workpapers
13 and data request responses;
- 14 • Review of applicable advice letters, resolutions, and Commission
15 Decisions;
- 16 • Review of monthly entries, including reviews of monthly
17 balances recorded for each of the tariff line items in the PABA
18 during the record period, and evaluation of monthly and annual
19 fluctuations;
- 20 • Selection of a sample of PABA monthly tariff line items to
21 determine whether adequate support exists. Examination of
22 invoices, journals, general ledger entries, etc. for amounts

⁴²⁶ PG&E Direct Testimony, Chapter 12, Table 12-8.

⁴²⁷ Amount includes PABA Revenues, Net of Revenue Fees and Uncollectible (RF&U) (credit) totaling \$2,365,069,339 and PABA Net Costs and Expenses (debit) totaling \$1,838,955,088.

⁴²⁸ Power Charge Indifference Adjustment.

1 recorded in the PABA and to verify the mathematical accuracy of
2 accounting worksheets and review of supporting documentation;

- 3 • The Public Advocates Office attended a virtual meeting with
4 PG&E staff to discuss each of the selected PABA monthly and
5 tariff line items in detail and to trace those items to supporting
6 documents;
- 7 • Review of proof of payments for selected invoices during the
8 audit process;
- 9 • Review of monthly interest rates and the interest amount
10 calculations;
- 11 • Determination of whether revenues and costs recorded were
12 appropriate and correctly stated; and
- 13 • Determination of whether PG&E complied with applicable
14 Commission Decisions and advice letter resolutions.

15 The Public Advocates Office reviewed a sampling of source documents that
16 support the revenues, costs, and expenses recorded in the PABA. The Public Advocates
17 Office’s sample was judgmentally selected and consisted of 48 monthly tariff line items
18 recorded into the PABA. A “judgement sample” is a nonrandom sample selected by the
19 auditor based on the judgment (opinion) of the auditor. Items considered when selecting
20 a judgment sample include auditor judgments about various elements including but not
21 limited to the internal control environment, exposure/ materiality, risk, and results of
22 analytical reviews.

23 **V. CONCLUSION**

24 The Public Advocates Office found that the 2020 accounting entries recorded into
25 PABA were reasonable, correctly stated, and in compliance with applicable Commission
26 Decisions.

1 **CHAPTER 11 : SUMMARY OF ENERGY RESOURCE RECOVERY ACCOUNT**
2 **ENTRIES FOR THE RECORD PERIOD**

3 (Witness: Brian Lui)

4 **I. INTRODUCTION AND SUMMARY**

5 The Public Advocates Office reviewed chapter 13 of PG&E’s 2020 Energy
6 Resource Recovery Account (ERRA) testimony for Record Period January 1, 2020
7 through December 31, 2020. As of December 31, 2020 the balance in PG&E’s ERRA
8 balancing account was an over-collection of \$271.5 million.

9 **II. RECOMMENDATION**

10 The Public Advocates Office found that the 2020 accounting entries recorded into
11 ERRA appropriate, correctly stated, and in compliance with applicable Commission
12 Decisions.

13 **III. BACKGROUND**

14 Pursuant to Decision (D.) 02-10-062, D.02-12-074 and Public Utilities Code
15 Section 454.5(d)(3), the purpose of the ERRA balancing account was to account for the
16 actual ERRA revenues and electric procurement costs for revenue recovery. The ERRA
17 balancing account was substantially modified by Decision (D.) 18-10-019, issued in the
18 Power Charge Indifference Adjustment (PCIA) rulemaking R.17-06-026. D.18-10-019
19 ordered the implementation of the Portfolio Allocation Balancing Account (PABA) and
20 included revisions to the ERRA balancing account. The revised ERRA records power
21 costs applicable solely to PG&E’s bundled customers. Power costs incurred on behalf of
22 both bundled and departing load customers are recorded either in the PABA, the
23 Modified Transition Cost Balancing Account, the New System Generation Balancing
24 Account (NSGBA), the Tree Mortality Non-Bypassable Charge Balancing Account, and
25 the Bioenergy Market Adjusting Tariff (BioMAT) Non-bypassable Charge Balancing
26 Account.⁴²⁹

⁴²⁹ PG&E Direct Testimony Chapter 13, Lines 21-23 and Footnote 2.

1 Table 11-1 below reflects ERRA’s accounting entries for the Record Period.

2 **Table 11-1**
3 **PG&E ERRA Accounting Entries⁴³⁰**
4 **Record Period 2020**

Line No		Amount (\$)
1	ERRA Beginning Balance	\$(616,011,174)
2	ERRA Net Activity Before Interest ⁴³¹	\$618,906,826
3	ERRA Interest and Other	\$(2,895,647)
4 (Line 1+2+3)	ERRA Ending Balance	\$6
5	PCIA ⁴³² Subaccount Beginning Balance	\$0
6	PCIA Subaccount Ending Balance	\$(271,523,521)
7 (Line 4+5+6)	Total ERRA Ending balance	\$(271,523,515)

5
6 **IV. PUBLIC ADVOCATES OFFICE’S AUDIT OBJECTIVES,**
7 **SCOPE, AND PROCEDURES**

8 The Public Advocates Office reviewed PG&E’s ERRA for the Record Period to
9 determine whether entries recorded in the ERRA were appropriate, correctly stated, and
10 compliant with applicable Commission Decisions. The Public Advocates Office’s audit
11 procedures included, but were not limited to the following:

- 12
- 13 • Review of PG&E’s application, testimony, exhibits, workpapers and data request responses;
 - 14 • Review of applicable advice letters, resolutions, and Commission
15 Decisions;
 - 16 • Review of monthly entries, including reviews of monthly
17 balances recorded for each of the tariff line items in the ERRA
18 during the record period, and evaluation of monthly and annual
19 fluctuations;

⁴³⁰ PG&E Direct Testimony Chapter 13, Table 13-2.

⁴³¹ Amount includes ERRA Revenues (credit) totaling \$2,130,633,114 and ERRA Net Costs and Expenses (debit) totaling \$2,749,539,940.

⁴³² Power Charge Indifference Adjustment.

- 1 • Selection of a sample of ERRA monthly tariff line items to
2 determine whether adequate support exists. Examination of
3 invoices, journals, general ledger entries, etc. for amounts
4 recorded in the ERRA balancing account and to verify the
5 mathematical accuracy of accounting worksheets and review of
6 supporting documentation. The Public Advocates Office attended
7 an online review to discuss each of the selected ERRA monthly
8 and tariff line items in detail and to trace those items to
9 supporting documents;
- 10 • Review of proof of payments for selected invoices during the
11 audit process;
- 12 • Review of monthly interest rates and the interest amount
13 calculations;
- 14 • Determination of whether revenues and costs recorded were
15 appropriate and correctly stated; and
- 16 • Determination of whether PG&E complied with applicable
17 Commission Decisions and advice letter resolutions.

18 The Public Advocates Office reviewed a sampling of source documents that
19 support the revenues, costs, and expenses recorded in the ERRA. The Public Advocate
20 Office’s sample was judgmentally selected and consisted of 31 monthly tariff line items
21 recorded into the ERRA. A “judgment sample” is a nonrandom sample selected by the
22 auditor based on the judgment (opinion) of the auditor. Items considered when selecting
23 a judgment sample include auditor judgments about various elements including but not
24 limited to the internal control environment, exposure/ materiality, risk, and results of
25 analytical reviews.

26 **V. CONCLUSION**

27 The Public Advocates Office found that the 2020 accounting entries recorded into
28 ERRA were reasonable, correctly stated, and in compliance with applicable Commission
29 Decisions.

1 through the end of 2030. PG&E’s proportionate share of the \$10 million per year is 43.7
 2 percent, or \$4.37 million per year.⁴³³ In accordance with D.18-06-027, PG&E filed
 3 Advice Letter 5363-E to implement the DACSASHBA.⁴³⁴ PG&E Advice Letter 5363-E
 4 was approved by the Commission on January 24, 2019 and effective as of September 19,
 5 2018.

6 D.18-06-027 also required that start-up costs for the DAC SASH program be
 7 tracked in a memorandum account and reviewed in each investor-owned-utility’s ERRA
 8 proceeding.⁴³⁵ PG&E filed Advice Letter 5361-E to establish the DACSASHMA.⁴³⁶
 9 PG&E Advice Letter 5361-E was approved by the Commission on December 14, 2018
 10 and effective as of August 20, 2018.

11 Table 13-1 below reflects DACSASHBA’s expenses for the Record Period.

Table 13-1
PG&E DACSASHBA Recorded Expenses⁴³⁷
Record Period 2020

Line No	Description	Amount (\$)
1	PG&E Program Management	\$25,349
2	Program Administrator (PA) Administrative Expenses	\$853,777
3	Incentives	\$3,424,872
4	Total	\$4,303,998

15

⁴³³ D.18-06-027, Appendix A, P. A-6.

⁴³⁴ PG&E Advice Letter 5363-E https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_5363-E.pdf, accessed on June 4, 2021.

⁴³⁵ D.18-06-027 Ordering Paragraph 10, p. 103.

⁴³⁶ PG&E Advice Letter 5361-E https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_5361-E.pdf, accessed on June 4, 2021.

⁴³⁷ PG&E Direct Testimony, Table 15-1, p. 15-2.

1 **IV. PUBLIC ADVOCATES OFFICE ANALYSIS**

2 The Public Advocates Office reviewed PG&E’s testimony, workpapers, and
3 PG&E’s responses to data requests. The Public Advocates Office also reviewed a
4 sampling of source documents that support the expenses and revenues recorded in the
5 DACSASHBA. The Public Advocates Office selected a sample of monthly line items to
6 determine whether there is adequate support for those transactions. The Public
7 Advocates Office’s audit sample was judgmentally selected and consisted of 5 items
8 recorded in DACSASHBA. A “judgment sample” is a non-random sample selected by
9 the auditor based on the judgment (opinion) of the auditor. When selecting a judgment
10 sample, an auditor makes judgments about various elements including but not limited to
11 the internal control environment, exposure/ materiality, risk, and results of analytical
12 reviews.

13 **V. CONCLUSION**

14 The Public Advocates Office takes no issue with entries recorded in the
15 DACSASHBA.

Table 13-1
PG&E CPE Administrative Costs⁴⁴¹
Record Period 2020

Line No	Description	Amount (\$)
1	CPE Systems – Contract Costs	150,410
2	CPE Systems – Overhead	24,499
3	CPE Implementation Team costs- Labor	186,697
4	CPE Implementation Team costs- Other	1,499
5	Consulting Services	6,900
6	Total	\$370,005

IV. PUBLIC ADVOCATES OFFICE ANALYSIS

The Public Advocates Office reviewed PG&E’s testimony, workpapers, and PG&E’s responses to data requests. The Public Advocates Office also reviewed a sampling of source documents that support the administrative costs recorded in the CLPA. The Public Advocates Office selected a sample of monthly line items to determine whether there is adequate support for those transactions. The Public Advocates Office’s audit sample was judgmentally selected. A “judgment sample” is a non-random sample selected by the auditor based on the judgment (opinion) of the auditor. When selecting a judgment sample, an auditor makes judgments about various elements including but not limited to the internal control environment, exposure/ materiality, risk, and results of analytical reviews.

V. CONCLUSION

The Public Advocates Office does not take issue with the CPE administrative costs recorded in the CLPSA for the 2020 Record Period.

⁴⁴¹PG&E Direct Testimony, Table 16-1.

APPENDIX A
QUALIFICATIONS OF WITNESESS

1 **QUALIFICATIONS AND PREPARED TESTIMONY**
2 **OF**
3 **KARL STELLRECHT**
4

5 **Q.1 Please state your name and business address.**

6 A.1 My name is Karl Stellrecht and my business address is 505 Van Ness Avenue, San
7 Francisco, CA 94102. I am a Public Utilities Regulatory Analyst in the Electric
8 Pricing and Customer Programs Branch of the Office of Ratepayer Advocates.
9

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

11 A.2 I am employed by the California Public Utilities Commission as a Public Utilities
12 Regulatory Analyst in the Public Advocates Office.
13

14 **Q.3 Briefly state your educational background and experience.**

15 A.3 I have a Bachelor of Arts in Environmental Studies from the University of
16 California, Santa Barbara, and a Masters of Arts in International Environmental
17 Policy from the Monterey Institute of International Studies. I started working at
18 the Commission in 2017 in the Public Advocates Office's Electricity Planning and
19 Policy Branch. In the Public Advocates Office, I am involved in the Forecast and
20 ERRA Compliance proceedings as well as Direct Access and Provider of Last
21 Resort Proceedings. I also contributed testimony in the Oakland Clean Energy
22 Initiative proceeding. My previous experience includes working on energy
23 industry issues for the consulting firm Eastern Research Group and as a program
24 coordinator at the National Association of Regulatory Utility Commissioners
25 (NARUC).
26

27 **Q.4 What is the scope of your responsibility in this proceeding?**

28 A.4 I am the Project Coordinator and am responsible for Chapter 1 – Executive
29 Summary.
30

31 **Q.5 Does this complete your testimony at this time?**

32 A.5 Yes, it does.
33

1 **QUALIFICATIONS AND PREPARED TESTIMONY**
2 **OF**
3 **KYLE NAVIS**
4

5 **Q.1 Please state your name and business address.**

6 A.1 My name is Kyle Navis and my business address is 505 Van Ness Avenue, San
7 Francisco, CA 94102. I am a Public Utilities Regulatory Analyst in the Electricity
8 Planning and Policy Branch of the Office of Ratepayer Advocates.
9

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

11 A.2 I am employed by the California Public Utilities Commission as a Public Utilities
12 Regulatory Analyst in the Public Advocates Office.
13

14 **Q.3 Briefly state your educational background and experience.**

15 A.3 I have a Bachelor of Arts in Peace Studies from Whitworth University (Spokane,
16 WA), and a Master of Arts in International Affairs from the University of
17 California, San Diego. I started working at the Commission in 2020 in the
18 Electricity Planning and Policy Branch. In the Public Advocates Office, I am
19 involved in ERRRA Compliance proceedings as well as the Resource Adequacy,
20 Emergency Reliability, Integrated Resource Planning, and Provider of Last Resort
21 proceedings. I also contribute to Public Advocates Office engagement at the
22 California Independent System Operator's Resource Adequacy Enhancements
23 stakeholder initiative. My previous experience includes researching the use of
24 mobile platforms for delivering government services at the Center For Global
25 Development (Washington, DC), managing community development programs for
26 the Mennonite Central Committee (Santa Cruz, Bolivia), and teaching science for
27 the School District of Philadelphia (PA).
28

29 **Q.4 What is the scope of your responsibility in this proceeding?**

30 A.4 I am the witness for Chapter 8 – Contract Administration.
31

32 **Q.5 Does this complete your testimony at this time?**

33 A.5 Yes, it does.
34

1 **QUALIFICATIONS AND PREPARED TESTIMONY**
2 **OF**
3 **PATRICK CUNNINGHAM**
4

5 **Q.1 Please state your name and business address.**

6 A.1 My name is Patrick Cunningham. My business address is 505 Van Ness Avenue,
7 San Francisco, CA 94102.
8

9 **Q.2 By whom are you employed and what is your job title?**

10 A.2 I am employed by the California Public Utilities Commission as a Public Utilities
11 Regulatory Analyst in the Electricity Planning and Policy Branch of the Public
12 Advocates Office.
13

14 **Q.3 Will you please briefly state your educational background and experience?**

15 A.3 I hold a Master of Pacific and International Affairs degree from the University of
16 California San Diego, a Master of Arts degree in History from the American
17 Military University, and a Bachelor of Arts degree in History from the University
18 of California Santa Cruz. I joined the Public Advocates Office in May of 2016
19 and have devoted my work to the study and analysis of ERRA cases, associated
20 Commission decisions, and resource adequacy policies. For the ERRAs of
21 investor-owned utilities, I have conducted analysis as the expert witness of least-
22 cost dispatch eight times and contract administration seven times. I have also been
23 the expert witness for hydroelectric administration for PG&E's 2016 ERRA and
24 resource adequacy for PG&E's 2019 ERRA. I also coordinated and conducted
25 analysis on SDG&E's 2018 ERRA Forecast and SCE's 2020 and 2021 ERRA
26 Forecasts.
27

28 **Q.4 What testimony are you sponsoring in this proceeding?**

29 A.4 I am responsible for analysis and the testimony of the resource adequacy chapter
30 of testimony.
31

32 **Q.5 Does this complete your testimony at this time?**

33 A.5 Yes, it does.
34

1 **QUALIFICATIONS AND PREPARED TESTIMONY**
2 **OF**
3 **BRIAN LUI**
4

5 **Q.1 Please state your name and business address.**

6 A.1 My name is Brian Lui. My business address is 505 Van Ness Ave, San Francisco,
7 California, 94102.
8

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

10 A.2 I am employed by the California Public Utilities Commission (CPUC) as a Public
11 Utilities Financial Examiner in the Public Advocates Office, Electricity Planning
12 & Policy Branch.
13

14 **Q.3 Please describe your educational and professional experience.**

15 A.3 I hold a Masters Degree in Accounting from Golden Gate University in San
16 Francisco. I also received a Bachelors of Science Degree in Biochemistry from
17 the University of California, Riverside. I joined the Commission on January 7,
18 2014 in the Public Advocates Office's Electricity Planning and Policy Branch. In
19 the Public Advocates Office, I am involved in the ERRA Forecast and ERRA
20 Compliance proceedings. Immediately prior to joining the Commission, I worked
21 for the California State Board of Equalization as a tax auditor. I have over 9 years
22 of experience working as an auditor in the public sector.
23

24 **Q.4 What is the scope of your responsibility in this proceeding?**

25 A.4 I am responsible for:

- 26 • Chapter 4: Review Entries Recorded in the Disadvantaged Community
27 – Green Tariff Balancing Account and the Community Solar Green
28 Tariff Balancing Account;
- 29 • Chapter 5: Generation Fuel Costs;
- 30 • Chapter 9: Review Entries Recorded in the Green Tariff Shared
31 Renewables Memorandum Account and the Green Tariff Shared
32 Renewables Balancing Account;
- 33 • Chapter 10: Summary of Portfolio Allocation Balancing Account
34 Entries for the Record Period;
- 35 • Chapter 11: Summary of Energy Resource Recovery Account Entries
36 for the Record Period;

- 1 • Chapter 12: Review Entries Recorded in the Disadvantaged
2 Community – Single Family Affordable Solar Homes Balancing
3 Account and the Disadvantaged Community – Single Family
4 Affordable Solar Homes Memorandum Account; and
5 • Chapter 13: Central Procurement Entity Entries Recorded to the
6 Centralized Local Procurement Sub-Account.

7

8 **Q.5 Does this complete your testimony at this time?**

9 A.5 Yes, it does.

10

