

Docket:	:	<u>A.16-03-006</u>
Exhibit Number	:	<u>ORA-01</u>
Commissioner	:	<u>Florio</u>
Admin. Law Judge	:	<u>Bushey</u>
Witnesses	:	<u>K. McNabb</u>
	:	<u>Y. Lasko</u>



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

**Report on the  
2015 Nuclear Decommissioning Cost  
Triennial Proceeding for  
Pacific Gas and Electric Company**

Humboldt Bay Operating Expenses, Decommissioning  
Cost, Project Reasonableness;  
Diablo Canyon Decommissioning Cost Estimate;  
PG&E's Nuclear Decommissioning Trust Funds and  
Revenue Requirements for Diablo Canyon and Humboldt  
Bay Power Plants

San Francisco, California  
August 25, 2016



**TABLE OF CONTENTS**

1

2 **1. INTRODUCTION (McNABB) .....2**

3 **2. SUMMARY OF RECOMMENDATIONS (McNABB/LASKO) .....2**

4 **3. OVERVIEW OF PG&E’S REQUEST (McNABB) .....3**

5 **4. HUMBOLDT BAY UNIT #3 (McNABB) .....4**

6 A. HBPP UPDATED NUCLEAR DECOMMISSIONING COST ESTIMATE.....4

7 B. HPBB 2017 – 2019 SAFSTOR O&M FORECASTS .....5

8 C. HPBB NUCLEAR 2013-2015 SAFSTOR O&M

9 REASONABLENESS REVIEW .....6

10 D. REASONABLENESS OF HBPP UNIT # 3 COMPLETED

11 DECOMMISSIONING PROJECTS .....6

12 E. TRUST BALANCES & REVENUE REQUIREMENT .....8

13 I. THE COMMISSION SHOULD USE THE MOST UP-TO-DATE TRUST

14 FUND BALANCES WHEN CALCULATING PG&E’S NUCLEAR

15 DECOMMISSIONING REVENUE REQUIREMENTS .....8

16 **5. DIABLO CANYON (LASKO) ..... 10**

17 A. DECOMMISSIONING COST ESTIMATE.....10

18 B. 25% IS AN EXCESSIVE OVERALL PROJECT CONTINGENCY FOR

19 THE DIABLO CANYON DECOMMISSIONING COST ESTIMATE.....10

20 C. BREAKWATER DISPOSITION .....13

21 I. HISTORICAL BACKGROUND OF EXECUTIVE ORDER D-62-02 .....15

22 II. THE REQUEST FOR ADDITIONAL FUNDS FOR BREAKWATER

23 DISPOSITION BASED ON PG&E’S NEW ASSUMPTION SHOULD

24 NOT BE APPROVED AT THIS TIME .....17

25 D. TRUST FUND BALANCES & REVENUE REQUIREMENT .....18

26 I. THE COMMISSION SHOULD USE THE MOST UP-TO-DATE TRUST

27 FUND BALANCES WHEN CALCULATING PG&E’S NUCLEAR

28 DECOMMISSIONING REVENUE REQUIREMENTS .....19

29 **6. QUALIFICATIONS AND PREPARED TESTIMONY OF**

30 **KATHERINE C. McNABB ..... 21**

31 **7. QUALIFICATIONS AND PREPARED TESTIMONY OF YAKOV**

32 **LASKO..... 22**

33

1 **1. INTRODUCTION**

2 This exhibit presents the Office of Ratepayer Advocates' (ORA)  
3 analyses and recommendations regarding:

- 4 • Pacific Gas and Electric Company's (PG&E) Humboldt Bay  
5 Unit 3 operating expenses, forecast decommissioning costs  
6 and decommissioning project reasonableness;
- 7 • PG&E's Diablo Canyon Power Plant (DCPP) nuclear  
8 decommissioning cost estimate (DCE);
- 9 • Decommissioning trust balances and revenue requirements  
10 for the Nuclear Decommissioning Trusts regarding Diablo  
11 Canyon Units 1 & 2 and the Humboldt Unit 3; and,
- 12 • Ratemaking issues.

13 **2. SUMMARY OF RECOMMENDATIONS**

14 ORA recommends the following:

15 Humboldt Bay

- 16 • ORA does not oppose PG&E's updated decommissioning cost  
17 estimate, 2017-2019 SAFSTOR O&M forecasts, 2013-2015  
18 SAFSTOR O&M reasonableness or the reasonableness of  
19 completed decommissioning projects.
- 20 • The most recent Decommissioning Trust Fund Balances be  
21 used when calculating HBPP Unit #3 Revenue Requirement.

22 Diablo Canyon

- 23 • The estimated overall project contingency percentage should  
24 be reduced to 17.4%;
- 25 • Additional funding for breakwater disposition based on  
26 PG&E's new assumptions should not be approved at this time;  
27 and

- The Commission should use the most up-to-date Decommissioning Trust Fund balances when calculating PG&E’s nuclear decommissioning revenue requirements.

Table 1-1 below shows a comparison of ORA’s recommended and PG&E’s proposed revenue requirements:

**Table 1-1  
Comparison of 2017 Nuclear Decommissioning Revenue Requirements (\$ millions)**

	Trust Funds	ORA Recommended	PG&E Proposed	Difference in Millions
1	Diablo Canyon Units 1 & 2 Trusts	\$108.223 <sup>1</sup>	\$117.324	\$9.101
2	Humboldt Unit 3 Trust	\$62.569	\$62.924	\$0.355
3	Humboldt Unit 3 O&M	\$4.493	\$4.493	\$0
4	Total	\$175.285	\$184.741	\$9.456

**3. OVERVIEW OF PG&E’S REQUEST**

On March 1, 2016, PG&E filed its 2015 NDCTP Application<sup>2</sup> seeking a total estimated 2017 CPUC-jurisdictional revenue requirement for nuclear decommissioning in the amount of \$184.741 million, which is composed of the following elements:

- \$117.324 million annual revenue requirement for contributions to the tax qualified Diablo Canyon Power Plant ND Trusts;
- \$62.924 million annual revenue requirement for contributions to the tax qualified Humboldt Unit 3 ND trust;

---

<sup>1</sup> This recommendation does not reflect ORA’s recommended 17.4% contingency factor and reduction of decommissioning cost estimates by \$164.47 million (2014 \$).

<sup>2</sup> Application of Pacific Gas and Electric Company in its 2015 Nuclear Decommissioning Cost Triennial Proceeding, A.16-03-006.

- \$4.493 million in estimated annual revenue requirements for 2017; \$4.475 million in annual revenue requirements for 2018; and \$3.885 million in annual revenue requirements for 2019 and thereafter for Humboldt Bay Unit 3 SAFSTOR O&M.

PG&E's total 2017 revenue requirement request is \$77.308 million more than its currently authorized decommissioning revenue requirement of \$107.433 million.

PG&E additionally seeks Commission approval for the following:

- To find PG&E's Diablo Canyon Units 1 & 2 decommissioning cost estimates and associated trust contributions and analysis are reasonable and in accordance with §§ 8321 through 8330 of the California Public Utilities Code;

On July 15, 2016, ALJ Bushey issued a Joint Scoping Memo<sup>3</sup> which declined to consolidate this proceeding with Southern California Edison's 2015 NDCTP, ruled that all portions of PG&E's request would be addressed in this proceeding (including the reasonableness of completed projects at HBPP Unit #3), and established a schedule for testimony, hearings and briefs. The schedule was modified on July 28, 2016.

#### 4. HUMBOLDT BAY UNIT #3

##### A. HBPP Updated Nuclear Decommissioning Cost Estimate

PG&E currently estimates the total cost of decommissioning HBPP #3 to be \$1,054.8 million,<sup>4</sup> with \$531.3 million of decommissioning work left to be completed.<sup>5</sup> These amounts represent a \$76.9 million increase over

---

<sup>3</sup> Joint Scoping Memo and Ruling of Assigned Commissioner and Administrative Law Judge, dated July 15, 2016.

<sup>4</sup> PG&E Prepared Testimony, 2017 Nuclear Decommissioning Cost Triennial Proceeding, pp. 4-1 and 4-2.

<sup>5</sup> PG&E Prepared Testimony, 2017 Nuclear Decommissioning Cost Triennial

(continued on next page)

1 the estimate that was approved in the 2012 NDCTP.<sup>6</sup> PG&E attributes this  
2 increase to four main cost contributors: Independent Spent Fuel Storage  
3 Installation Costs, Other ISFSI Related Projects, and Final Site Restoration  
4 Plan for both HPBB and its ISFSI.<sup>7</sup>

5 ORA has reviewed these specific cost contributors as well as  
6 PG&E's updated decommissioning cost estimate for HBPP Unit #3 in its  
7 entirety and does not oppose it.

8 **B. HPBB 2017 – 2019 SAFSTOR O&M Forecasts**

9 PG&E has requested that the Commission approve its 2017 – 2019  
10 Nuclear Production Expense Forecasts, which are as follows:

- 11 • \$3.391 million in 2017;
- 12 • \$3.304 million in 2018; and
- 13 • \$2.663 million in 2019.<sup>8</sup>

14 These expenses represent the cost of activities that are required to  
15 maintain the HBPP Unit #3 facilities in accordance with its Part 50 U.S.  
16 Nuclear Regulatory Commission (NRC) License. These O&M expenses  
17 have declined and are expected to continue to decline as  
18 decommissioning work is completed because there are fewer facilities that  
19 will need to be maintained in accordance with the Part 50 License. This  
20 above mentioned decrease is reflected in the forecast SAFSTOR O&M  
21 Costs.

---

(continued from previous page)  
Proceeding, p. 4-1.

<sup>6</sup> PG&E Prepared Testimony, 2017 Nuclear Decommissioning Cost Triennial  
Proceeding, p. 4-2.

<sup>7</sup> PG&E Prepared Testimony, 2017 Nuclear Decommissioning Cost Triennial  
Proceeding, pp. 4-2 & 4-3.

<sup>8</sup> PG&E Prepared Testimony, 2017 Nuclear Decommissioning Cost Triennial  
Proceeding, p. 6-5.

1 ORA has reviewed these forecasts, as well as PG&E’s forecasting  
2 methodology, and does not oppose them.

3 **C. HPBB Nuclear 2013-2015 SAFSTOR O&M**  
4 **Reasonableness Review**

5 PG&E has submitted its 2013 – 2015 SAFSTOR O&M under  
6 collections for Commission review of their reasonableness. Table 1-2  
7 show how PG&E’s actual SAFSTOR expenditures differ from its  
8 SAFSTOR revenues for 2013, 2014 and 2015.<sup>9</sup>

9 **Table 1-2**  
10 **2013 – 2015 SAFSTOR Costs**  
11 **(Millions of Dollars)**

	2013	2014	2015
SAFSTOR Rev. Req.	\$12.044	\$10.301	\$10.180
Actual SAFSTOR O&M Costs	\$13.236	\$11.178	\$10.712
Difference	(\$1.192)	(\$0.877)	(\$0.532)

12  
13 PG&E attributes this undercollection to its forecast attributing less  
14 A&G allocation to SAFSTOR that was actually incurred. The  
15 undercollection over the three-year period is \$2.601 million or roughly 8%  
16 of the original forecast. ORA does not oppose this minimal  
17 undercollection.

18 **D. Reasonableness of HBPP Unit # 3 Completed**  
19 **Decommissioning Projects**

20 PG&E has requested review of the reasonableness of \$371.0 million in  
21 costs associated with the Self Perform/Plant Systems Removal Phase of  
22 Decommissioning at HBPP Unit #3.<sup>10</sup> This includes the following amounts:

---

<sup>9</sup> PG&E Prepared Testimony, 2017 Nuclear Decommissioning Cost Triennial Proceeding, pp. 6-4 and 6-5.

<sup>10</sup> PG&E Prepared Testimony, 2017 Nuclear Decommissioning Cost Triennial Proceeding, pp. 5-1 and 5-2.

- 1 • \$39.5 million for Remainder of Plant Systems, Direct Labor and
- 2 Liquid Radwaste Removal
- 3 • \$19.2 million for Remainder of Plant Systems, Tools and Equipment
- 4 • \$14.9 million for Site Infrastructure
- 5 • \$38.1 million for Specific Project Costs
- 6 • \$58.1 million for Waste Disposal Costs
- 7 • \$38.9 million for Small Value Contracts
- 8 • \$28.8 million for Spent Fuel Management
- 9 • \$2.4 million for Common Site Support, Caisson and Canals

10 When compared to Commission authorized decommissioning costs, PG&E  
11 spent significantly over the estimate in some areas, while also making  
12 decisions that ultimately saved ratepayers money in other areas. PG&E  
13 had provided detailed documentation of its decommissioning challenges,  
14 current decommissioning progress and completed decommissioning  
15 activities,<sup>11</sup> as well as provided parties with a site visit and detailed walk-  
16 through of the HBPP Unit #3 decommissioning progress.

17 PG&E spent \$3.2 million for ISFSI operating costs which is  
18 approximately 10 times the \$318,000 estimate for the 2009 – 2011 time  
19 period. PG&E provided detailed information in support of its decision to  
20 upgrade the ISFSI security system, which was the main driver of this  
21 overage. It included information about the research it undertook when  
22 initially selecting a security system vendor, a discussion of the unforeseen  
23 issue that arose with false alarms, NRC regulatory guidelines on this issue,  
24 and the process that it undertook when selecting a vendor to perform the  
25 upgrade.<sup>12</sup> On a separate project, the turbine building decommissioning

---

<sup>11</sup> PG&E Prepared Testimony, 2017 Nuclear Decommissioning Cost Triennial Proceeding, Ch. 5 – Attachment A & Ch. 4 – Attachment A.

<sup>12</sup> PG&E Prepared Testimony, 2017 Nuclear Decommissioning Cost Triennial

(continued on next page)

1 and demolition, PG&E underspent its estimate by \$3 million and completed  
2 the project ahead of schedule.<sup>13</sup> Overall, PG&E estimates it will be able to  
3 complete the scope of work that was approved in the 2012 Nuclear  
4 Decommissioning Cost Estimate by about \$20 million or 2% under the  
5 approved estimate.<sup>14</sup>

6 ORA has reviewed all the costs and supporting documentation  
7 associated with PG&E's completed decommissioning projects and does  
8 not oppose them.

9 **E. Trust Balances & Revenue Requirement**

10 PG&E requests that the Commission approve an annual revenue  
11 requirement \$62.924 million for funding the Humboldt Bay Unit #3 tax  
12 qualified trust fund. ORA's analyses and recommendations regarding  
13 PG&E's nuclear decommissioning contributions and revenue requirement  
14 are presented below.

15 **i. The Commission Should Use The Most**  
16 **Up-to-Date Trust Fund Balances When**  
17 **Calculating PG&E's Nuclear**  
18 **Decommissioning Revenue**  
19 **Requirements**

20 PG&E filed its 2015 NDCTP application on March 1, 2016, and  
21 based its revenue requirement calculations on its trust fund balances as of  
22 December 31, 2015.<sup>15</sup> These balances were now 8 months old and may

---

(continued from previous page)

Proceeding, p. 5-97; PG&E Prepared Testimony, 2017 Nuclear Decommissioning Cost  
Triennial Proceeding, Ch. 5 – Attachment B, p. 368.

<sup>13</sup> PG&E Prepared Testimony, 2017 Nuclear Decommissioning Cost Triennial  
Proceeding, p. 5-79; PG&E Prepared Testimony, 2017 Nuclear Decommissioning Cost  
Triennial Proceeding, Ch. 5 – Attachment B, p. 313.

<sup>14</sup> PG&E Prepared Testimony, 2017 Nuclear Decommissioning Cost Triennial  
Proceeding, Ch. 4 – Attachment B-1.

<sup>15</sup> PG&E 2017 NDCTP Prepared Testimony, p. 7-6.

1 be close to a year old by the time the Commission issues a decision. In  
2 order to determine the most accurate revenue requirement, ORA  
3 recommends the Commission use the most recent trust fund balances  
4 when approving PG&E's revenue requirements, which will be in effect for  
5 the next three years. The updated trust fund balances as of June 30,  
6 2016, are shown in Table 1-3 below.<sup>16</sup>

7 **Table 1-3**  
8 **Updated Trust Fund Balances**  
9 **June 30, 2016**

10

Plant	Trust Fund Balance (Market Value)
Humboldt Unit 3 CPUC Qualified, CPUC Non-Qualified and FERC Qualified Trusts	\$205.4 million

11  
12 PG&E has calculated its updated revenue requirement for HPBB  
13 Unit #3 to be \$62.569 million using these updated trust fund balances.<sup>17</sup>  
14 The revenue requirement includes updated decommissioning cash flows,  
15 as PG&E states that not doing so would erroneously result in double  
16 counting of decommissioning costs.<sup>18</sup> ORA recommends that PG&E use  
17 the most recent trust fund balances available at the time it calculates the  
18 final revenue requirement for this proceeding and files its compliance  
19 advice letter for their approval. ORA is not opposed to PG&E also  
20 updating its decommissioning cash flows as part of its revenue  
21 requirement calculation for that filing.

---

<sup>16</sup> PG&E response to ORA data request ORA-PG&E-KMC-005, Q.1.

<sup>17</sup> PG&E response to ORA data request ORA-PG&E-KMC-005, Q.4.b.

<sup>18</sup> PG&E response to ORA data request ORA-PG&E-KMC-005, Q.4.c.

1 **5. DIABLO CANYON**

2 **A. Decommissioning Cost Estimate**

3 The 2015 decommissioning cost estimates (DCE) for Diablo Canyon  
4 Units 1 & 2 presented in PG&E's Prepared Testimony are \$3,779.202  
5 million and \$3,946.195 million for the DECON and SAFSTOR options,  
6 respectively.<sup>19</sup> These estimates include an overall project contingency of  
7 25%.<sup>20</sup> The 2012 NDCTP approved a decommissioning cost estimate of  
8 \$2,288 million (2011 \$).<sup>21</sup> ORA has reviewed PG&E's 2015  
9 decommissioning cost estimate and presents its analyses and  
10 recommendations below.

11 **B. 25% Is An Excessive Overall Project**  
12 **Contingency For The Diablo Canyon**  
13 **Decommissioning Cost Estimate**

14 PG&E has imputed a 25% overall project contingency in its nuclear  
15 decommissioning cost estimate for Diablo Canyon Units 1 and 2,  
16 increasing the 17.4%<sup>22</sup>, which TLG initially calculated by individual  
17 decommissioning activity, to 25%. ORA opposes the 25% overall  
18 contingency given that it is an estimate, and plant decommissioning is not  
19 likely to begin for at least 8 years.<sup>23</sup> PG&E has stated that it will prepare a  
20 site-specific decommissioning study for the 2018 NDCTP.<sup>24</sup>

---

<sup>19</sup> PG&E 2016 TLG Diablo Canyon Units 1 & 2 Decommissioning Cost Study, p. 2-AtchA-20 – 21.

<sup>20</sup> PG&E 2016 TLG Diablo Canyon Units 1 & 2 Decommissioning Cost Study, p. 2-AtchA-54.

<sup>21</sup> CPUC D.14-12-028, pp. 4-5.

<sup>22</sup> TLG estimates a 17.0% contingency for the SAFSTOR alternative and 17.4% for the DECON alternative. 2016 TLG Diablo Canyon Units 1 & 2 Decommissioning Cost Study, p. 2-AtchA-54.

<sup>23</sup> The two nuclear units are licensed until 2024 and 2025. PG&E 2016 TLG Diablo Canyon Units 1 & 2 Decommissioning Cost Study, p. 2-AtchA-11.

<sup>24</sup> A.16-08-006, Joint Proposal, pp. 12-13.

1           ORA estimates that increasing the Diablo Canyon DCE contingency  
2 from 17.4% to 25% increases the total estimated cost of decommissioning  
3 by approximately \$230 million.

4           ORA recommends that the estimated overall project contingency  
5 percentage be reduced to 17.4%, the same figure used by TLG. ORA  
6 does not agree that 25% is a standard project contingency that should be  
7 used for all decommissioning estimates in the future. Instead, the overall  
8 project contingency should depend on contingency factors that are  
9 calculated on a unit-by-unit and item-by-item basis.

10           Over the course of the Commission’s past NDCTP proceedings the  
11 amount of overall project contingency approved as part of  
12 decommissioning cost estimates has decreased from 50%<sup>25</sup> to the present  
13 rate, 25%. When PG&E ultimately conducts a site-specific engineering and  
14 decommissioning study in preparation for decommissioning Diablo Canyon  
15 Units 1 and 2, it should provide a more accurate estimate and item-by-item  
16 contingency factors for the decommissioning work to be completed at  
17 Diablo Canyon.

18           In the event the Commission rejects ORA’s recommendation that the  
19 estimated contingency percentage be reduced to TLG’s estimate of 17.4%,  
20 ORA recommends that the Commission consider some reduction of project  
21 contingency from its current 25% estimate until more accurate estimates  
22 and item-by-item contingency factors will become available.

23           In its testimony, PG&E notes “[t]he contingency applied to reactor  
24 vessel and internals removal cost element was reduced from the 75  
25 percent contingency value used in the 2012 estimate to a 35 percent  
26 contingency value used in the 2016 TLG Cost Study. The basis for this  
27 reduction is the incorporation of industry experience into the reactor vessel

---

<sup>25</sup> CPUC D.07-01-003, p. 27.

1 and internals removal cost basis.”<sup>26</sup> However, the overall project  
2 contingency remained unchanged at 25 percent because “[t]he multiplier to  
3 achieve an overall contingency factor of 25% was revised from the prior  
4 cost study.”<sup>27</sup> In response to ORA’s data request, PG&E explains “the  
5 purpose of the average contingency index is to uniformly change the  
6 contingency for each of the work activities, such that the overall project  
7 contingency is 25%. Uniformly change means to increase by a constant  
8 percentage rate.”<sup>28</sup> Therefore, despite changes to contingencies to some  
9 work activities’ costs, the average contingency index had to be revised  
10 from the 2012 cost study<sup>29</sup> to keep the overall project contingency at  
11 25%.<sup>30</sup>

12 It is important to recognize that over time, as the planning phase  
13 moves closer to the engineering phase for each major activity, the  
14 contingency factors for work activities driving the overall project  
15 contingency will tend to decrease. The Commission has noted that “the  
16 reasonableness of a contingency factor may vary between nuclear plants  
17 and at different stages of decommissioning.”<sup>31</sup>

18 ORA recommends that the estimated overall project contingency  
19 percentage be reduced to 17.4%, which TLG initially calculated by  
20 individual decommissioning activity, because the overall project  
21 contingency should depend on contingency factors of work activities  
22 calculated on an item-by-item basis. In the event the Commission rejects

---

<sup>26</sup> PG&E 2017 NDCTP Prepared Testimony, p. 2-5.

<sup>27</sup> PG&E response to TURN data request TURN-001, Q.10.

<sup>28</sup> PG&E response to ORA data request ORA-PG&E-YNL-004, Q.4.

<sup>29</sup> PG&E response to ORA data request ORA-PG&E-YNL-004, Q.5.

<sup>30</sup> The average contingency index in 2012 was 1.411 and increased to 1.439 in the 2016 cost study.

<sup>31</sup> CPUC D.14-12-082, Conclusions of Law #10.

1 ORA's recommendation, the Commission should adopt a gradual reduction  
2 of overall project contingency estimates from its current level to account for  
3 less uncertainty over time and greater industry experience.

4 **C. Breakwater Disposition**

5 Diablo Canyon Power Plant has two breakwater structures that  
6 protect the intake canal from the currents and waves generated by the  
7 Pacific Ocean. These two structures can be seen on the bottom right  
8 corner in the image below.

9



10

11 In 2012 and 2016 NDCTP cost studies PG&E includes the cost  
12 associated with removal of the breakwater from the site. The major  
13 difference between the two cost studies is that the 2012 study assumes  
14 that the breakwater concrete will be removed to a local landfill, while the  
15 2016 TLG cost study assumes that the concrete will be removed to an out-  
16 of-state facility. Specifically:

17

18

19

The 2012 NDCTP estimate assumed that the breakwater concrete was crushed after removal and transported to a local landfill for disposal. The cost for

1 crushing was included in the “Concrete Crushing” cost  
2 element, the cost for transport and disposal at a local landfill  
3 was included in the “Backfill and Remove Concrete Rubble”  
4 cost element. The 2016 TLG Cost Study assumes that the  
5 breakwater concrete is transported to a local railhead (in San  
6 Luis Obispo), without crushing, and transported and disposed  
7 of at an out-of-state location. The total cost associated with  
8 removing, transporting and disposing of the concrete to an  
9 out-of-state facility is estimated at \$172/ton (2014 \$s). The  
10 total 2012 cost associated with removing (only) was estimated  
11 at \$30/ton (2011 \$s). The cost for transporting and disposing  
12 of the concrete was included in the Backfill and Remove  
13 Concrete Rubble cost element at a cost of \$16/ton (2011 \$s).  
14 The avoided concrete crushing cost is \$7.6 million based on a  
15 crushing rate of \$5/ton (2011 \$s).<sup>32</sup>  
16

17 In the 2012 NDCTP estimate, the cost of disposing breakwater  
18 concrete per ton at a local landfill was assumed to be \$51/ton (2011 \$s).  
19 Utilizing PG&E’s assumption where the “[c]osts reported from the 2012  
20 NDCTP estimate have been escalated to 2014 \$s using an average annual  
21 escalation rate of 2.85 percent”<sup>33</sup> ORA estimates the cost of disposing  
22 breakwater concrete at a local landfill to be \$55.486/ton in 2014 \$s. PG&E  
23 estimates that there is a total of 1,411,646 tons<sup>34</sup> of breakwater concrete  
24 on site that would need to be removed. ORA estimates that the total cost  
25 of removing the breakwater concrete to an out-of-state facility based on the  
26 new 2016 TLG Cost Study assumption is \$242.8 million<sup>35</sup> (2014 \$s) as  
27 opposed to \$78.33 million (2014 \$s) based on the 2012 NDCTP estimate  
28 that assumes the breakwater concrete could be removed to a local landfill

---

<sup>32</sup> PG&E 2017 NDCTP Prepared Testimony, pp. 2-7 – 2-8.

<sup>33</sup> PG&E 2017 NDCTP Prepared Testimony, pp. 2-2.

<sup>34</sup> PG&E 2017 NDCTP Prepared Testimony, pp. 2-4.

<sup>35</sup> PG&E estimates that the total cost of removal of breakwater demolition and removal to be \$198.5 million on page 2-4 of PG&E’s testimony. This number does not include contingency per note provided on page 2-3, line 33.

1 for disposal. This represents an overall increase of approximately \$164.47  
2 million (2014 \$s).

3 In response to ORA's data request regarding breakwater disposition,  
4 PG&E explains:

5 Concrete rubble produced by demolition activities is  
6 considered decommissioning material (i.e., materials with low  
7 residual levels of radioactivity that, upon decommissioning of a  
8 licensed site, may be released under NRC rules with no  
9 restrictions upon their use). It is assumed that following  
10 termination of the once-through-cooling system in support of  
11 operations and initial decommissioning activities, the  
12 breakwaters would be deemed concrete rubble and would  
13 need to be shipped from the site to out-of-state locations for  
14 recycling or disposal pursuant to Executive Order D-62-02,  
15 which imposes a moratorium on disposal of any  
16 decommissioning materials from any licensed nuclear site into  
17 any California class III landfill and unclassified waste  
18 management units.<sup>36</sup>

19 **i. Historical Background Of Executive Order D-62-02**

20 Former Governor of California, Gray Davis, issued Executive Order  
21 D-62-02 on September 30, 2002 which "ordered that the Water Boards  
22 shall, as soon as possible, take all steps necessary to impose a  
23 moratorium on the disposal of decommissioned materials into Class III  
24 landfills and unclassified waste management units, as described in title 27,  
25 sections 20260 and 20230, of the California Code of Regulations."<sup>37</sup> In  
26 response to the Governor's Executive Order, California Regional Water  
27 Quality Control Board Central Valley Region (Central Valley Regional  
28 Board) issued a cleanup and abatement order No. R5-2002-0728 for a  
29 moratorium on the disposal of decommissioned materials to Class III and  
30 unclassified waste management units.

---

<sup>36</sup> PG&E response to ORA data request ORA-PG&E-Lasko-003, Q.8.

<sup>37</sup> <https://www.cdph.ca.gov/certlic/radquip/Documents/RHB-HT-EO-D-62-02.htm>

1           The Executive Officer of the Regional Board found that  
2 “[d]ecommissioned materials are radioactive materials in excess of local  
3 background levels that have been released for unrestricted use as part of a  
4 decommissioning action by the appropriate state or federal agency.”<sup>38</sup> In  
5 addition, the Executive Officer found that “Executive Order No. D-62-02 by  
6 the Governor [...] will remain in effect until DHS<sup>39</sup> completes its  
7 assessment of the public health and environmental safety risks associated  
8 with the disposal of decommissioned materials and its regulations setting  
9 dose standards for decommissioning take effect.”<sup>40</sup> Following these  
10 findings and pursuant to Executive Order No. D-62-02, Central Valley  
11 Regional Board issued a number of orders which established “a  
12 moratorium on the disposal of decommissioned material from  
13 decommissioned sites into Class III and unclassified waste management  
14 units... [and that this] moratorium shall remain in effect until DHS  
15 completes its assessment of the public health and environmental safety  
16 risks associated with the disposal of decommissioned materials and its  
17 regulations setting dose standards for decommissioning to take effect.”<sup>41</sup>

18           ORA was able to confirm with a representative of the Central Valley  
19 Regional Board that cleanup and abatement order No. R5-2002-0728 was  
20 still in effect. It is therefore reasonable to assume that the California  
21 Department of Public Health has yet to take action pursuant to Executive

---

<sup>38</sup>

[http://www.waterboards.ca.gov/centralvalley/board\\_decisions/adopted\\_orders/general\\_orders/r5-2002-0728.pdf](http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2002-0728.pdf)

<sup>39</sup> DHS is an acronym for the Department of Health Services. The Department is now known as the California Department of Public Health.

<sup>40</sup>

[http://www.waterboards.ca.gov/centralvalley/board\\_decisions/adopted\\_orders/general\\_orders/r5-2002-0728.pdf](http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2002-0728.pdf)

<sup>41</sup> Id.

1 Order No. D-62-02 and until it does so, the moratorium would continue to  
2 be in place unless the Governor’s Office rescinds the Executive Order that  
3 was issued on September 30, 2002.

4 **ii. The Request For Additional Funds For Breakwater**  
5 **Disposition Based On PG&E’s New Assumption**  
6 **Should Not Be Approved At This Time**

7 As discussed above, the change in the assumption that breakwater  
8 concrete would need to be removed to an out-of-state facility as opposed  
9 to a local landfill for disposal represents an overall increase of  
10 approximately \$164.47 million (2014 \$s). The out-of-state option, under  
11 the current California regulations, should only be entertained if PG&E can  
12 show that the breakwater concrete meets the definition of  
13 “decommissioned materials.”

14 There appears to be some ambiguity as to what constitutes  
15 “decommissioned materials.” According to PG&E, “[c]oncrete rubble  
16 produced by demolition activities is considered decommissioning material  
17 (i.e., materials with low residual levels of radioactivity that, upon  
18 decommissioning of a license site, may be released under NRC rules with  
19 no restrictions upon their use).”<sup>42</sup> Meanwhile, Central Valley Regional  
20 Board in Order No. R5-2002-0728 finds “[d]ecommissioned materials are  
21 radioactive materials in excess of local background levels that have been  
22 released for unrestricted use as part of a decommissioning action by the  
23 appropriate state or federal agency.”<sup>43</sup> ORA’s interpretation of this  
24 language is that should the breakwater concrete not show radiation levels  
25 in excess of local background levels then it would not be considered as

---

<sup>42</sup> PG&E response to ORA data request ORA-PG&E-003, Q.8.

<sup>43</sup>

[http://www.waterboards.ca.gov/centralvalley/board\\_decisions/adopted\\_orders/general\\_orders/r5-2002-0728.pdf](http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2002-0728.pdf) (*emphasis added*).

1 “decommissioned materials.” Therefore, PG&E should first be required to  
2 test the breakwater material and demonstrate that its radiological  
3 contamination is in excess of local background levels.

4 ORA recommends the Commission reduce PG&E’s 2015  
5 decommissioning cost estimates by \$164.47 million (2014 \$s) until PG&E  
6 conducts a site-specific engineering and decommissioning study in  
7 preparation for decommissioning Diablo Canyon Units 1 and 2 and  
8 provides more information on the radiological content of breakwater  
9 material. Finally, should the Commission disagree with ORA’s  
10 interpretation of what constitutes “decommissioned materials,” it may still  
11 be prudent to wait until PG&E’s next application before making a final  
12 decision in the event that either:

- 13 (1) California Department of Public Health will take action and “adopt  
14 regulations establishing dose standards for the decommissioning of  
15 radioactive materials by its licensees”<sup>44</sup>; or
- 16 (2) The Governor’s Office rescinds Executive Order D-62-02.

#### 17 **D. Trust Fund Balances & Revenue Requirement**

18 PG&E requests that the Commission approve an annual revenue  
19 requirement of \$117.324 million for the Diablo Canyon Nuclear  
20 Decommissioning Trusts.<sup>45</sup> ORA’s analyses and recommendations  
21 regarding PG&E’s nuclear decommissioning contributions and revenue  
22 requirement are presented below.

---

<sup>44</sup> <https://www.cdph.ca.gov/certlic/radquip/Documents/RHB-HT-EO-D-62-02.htm>

<sup>45</sup> PG&E 2017 NDCTP Prepared Testimony, p. 1-2.

1                            **i. The Commission Should Use The Most**  
2                            **Up-To-Date Trust Fund Balances When**  
3                            **Calculating PG&E's Nuclear**  
4                            **Decommissioning Revenue**  
5                            **Requirements**

6                            PG&E filed its 2015 NDCTP application on March 1, 2016, and  
7                            based its revenue requirement calculations on its trust fund balances as of  
8                            December 31, 2015.<sup>46</sup> These balances are eight months old and may be  
9                            close to one year old by the time the Commission issues a decision. In  
10                            order to determine the most accurate revenue requirement, ORA  
11                            recommends the Commission use the most recent trust fund balances  
12                            when approving PG&E's revenue requirements, which will be in effect for  
13                            the next three years. ORA notes that the revenue requirement calculation  
14                            should also be adjusted to reflect ORA's recommendations of a lower  
15                            17.4% contingency factor and denial of PG&E's request for additional  
16                            funds for breakwater disposition at this time.

17                            The updated trust fund balances as of June 30, 2016, are shown in  
18                            Table 1-4 below.<sup>47</sup>

---

<sup>46</sup> PG&E 2015 NDCTP Prepared Testimony, p. 7-5.

<sup>47</sup> PG&E response to ORA data request ORA-PG&E-KMC-005, Q.1.

1  
2  
3  
4

**Table 1-4**  
**Updated Trust Fund Balances**  
**June 30, 2016**

Plant	Trust Fund Balance in Millions of Dollars (Market Value)
Diablo Canyon Unit 1 CPUC and FERC Qualified Trusts	\$1,167
Diablo Canyon Unit 2 CPUC and FERC Qualified Trusts	\$1,526
Total	\$2,693

5  
6 Using the updated June 30, 2016, trust fund balances for Diablo  
7 Canyon Power Plant, ORA's recommended revenue requirements are  
8 shown in Table 1-5 below.<sup>48</sup>

9  
10  
11  
12

**Table 1-5**  
**Updated Revenue Requirements**  
**June 30, 2016**

Plant	Revenue Requirement in Millions of Dollars
Diablo Canyon Unit 1	\$59.065
Diablo Canyon Unit 2	\$49.158
Diablo Canyon Aggregated Total	\$108.223

13

---

<sup>48</sup> PG&E response to ORA data request ORA-PG&E-KMC-005, Q.4.

1 **6. QUALIFICATIONS AND PREPARED TESTIMONY OF KATHERINE C.**  
2 **McNABB**

3 Q.1 Please state your name and business address.

4 A.1 My name is Katherine McNabb. My business address is 505 Van  
5 Ness Avenue, San Francisco, California, 94102.

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

7 A.2 I am employed by the California Public Utilities Commission as a  
8 Public Utilities Regulatory Analyst III in the Office of Ratepayer  
9 Advocates, Energy Cost of Service and Natural Gas Branch.

10 Q.3 Briefly describe your relevant educational background and work  
11 experience.

12 A.3 I received a Bachelor of Arts Degree in Political Science and minor  
13 in Agriculture Business from California Polytechnic State University,  
14 San Luis Obispo. I previously worked in DRA's Communications  
15 Policy Branch from 2008-2010. I previously testified about nuclear  
16 decommissioning issues related to Humboldt Bay Power Plant Unit  
17 #3 in the 2012 NDCTP, and testified regarding rate base and  
18 working cash in the 2017 PG&E General Rate Case.

19 Q.4 What is the purpose of your testimony?

20 A.4 I am responsible for sections 1, 2, 3, 4 and 6 of Exhibit ORA-01,  
21 Humboldt Bay Power Plant Unit #3 Cost Estimates, SAFSTOR O&M  
22 Estimates and Reasonableness of Completed Projects.

23 Q.5 Does that complete your prepared testimony?

24 A.5 Yes, it does.

1     **7. QUALIFICATIONS AND PREPARED TESTIMONY OF YAKOV LASKO**

2     Q.1   Please state your name and business address.

3     A.1   My name is Yakov Lasko. My business address is 505 Van Ness  
4         Avenue, San Francisco, California, 94102.

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

6     A.2   I am employed by the California Public Utilities Commission as a  
7         Public Utilities Regulatory Analyst IV in the Office of Ratepayer  
8         Advocates, Energy Cost of Service and Natural Gas Branch.

9     Q.3   Briefly describe your relevant educational background and work  
10        experience.

11    A.3   I received a Bachelor of Arts Degree in Political Economy of  
12        Industrial Societies from the University of California at Berkeley, and  
13        a Master's Degree in Corporate Finance from SDA Bocconi in Milan,  
14        Italy. I previously worked in ORA's Electric Planning & Policy  
15        Branch from 2012-2016 and testified before the Commission on  
16        PG&E ERRR Compliance and the SONGS OII proceedings. I have  
17        been ORA Project Coordinator for PG&E 2014 and 2015 ERRR  
18        compliance proceedings A.15-02-023 and A.16-02-019.

19    Q.4   What is the purpose of your testimony?

20    A.4   I am responsible for sections 2, 5 and 7 of Exhibit ORA-01, Diablo  
21        Canyon Decommissioning Cost Estimate, Trust Fund balances and  
22        revenue requirement.

23    Q.5   Does that complete your prepared testimony?

24    A.5   Yes, it does.