

## DOCKETED

<b>Docket Number:</b>	15-IEPR-12
<b>Project Title:</b>	Nuclear Power Plants
<b>TN #:</b>	210257
<b>Document Title:</b>	PG&E Response to Comments Filed by Friends of the Earth Regarding Diablo Canyon Nuclear Power Plant
<b>Description:</b>	N/A
<b>Filer:</b>	System
<b>Organization:</b>	Pacific Gas and Electric Company/Nathan Bengtsson
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	2/9/2016 4:41:34 PM
<b>Docketed Date:</b>	2/9/2016

*Comment Received From: Nathan Bengtsson*

*Submitted On: 2/9/2016*

*Docket Number: 15-IEPR-12*

**PG&E Response to Comments Filed by Friends of the Earth Regarding Diablo Canyon Nuclear Power Plant**

*Additional submitted attachment is included below.*

February 9, 2015

**VIA E-MAIL DOCKET@ENERGY.  
CA.GOV**California Energy Commission  
Dockets Office, MS-4  
Docket No. 15-IEPR-12  
1516 Ninth Street  
Sacramento, CA 95814-5512Re: Docket 15-IEPR-12: Pacific Gas and Electric Company Response to Comments Filed by Friends of the Earth Regarding Diablo Canyon Power Plant**I. Introduction**

Pacific Gas and Electric Company (PG&E) provides these responses to comments submitted by Friends of the Earth (FOE) with regard to the treatment of Diablo Canyon Power Plant (DCPP or Diablo Canyon) in the 2015 Draft Integrated Energy Policy Report (2015 Draft IEPR or IEPR). These comments refer both to the 2015 Draft IEPR as well as the revised version of the 2015 IEPR (2015 Revised IEPR), which will be considered for adoption by the Energy Commission on February 10, 2016. PG&E appreciates the willingness of the California Energy Commission (CEC) to consider these comments.

The key points of PG&E's responses, roughly in order of the concerns listed in the FOE letter, are as follows:

- **Costs Associated with DCPP:** PG&E disagrees with FOE's assertion that the 2015 Draft IEPR does not appropriately address the costs associated with Diablo Canyon. PG&E identifies and presents costs necessary to operate and maintain DCPP in regular ratemaking proceedings at the appropriate venue, the California Public Utilities Commission (CPUC).
- **Appropriate Planning Assumptions:** Contrary to FOE's position, the inclusion of DCPP in the IEPR's planning assumptions out to 2026 are perfectly appropriate, as DCPP was considered under the most recent CPUC long-term procurement plan (LTPP) proceeding. FOE ignores modelling of long-term greenhouse gas reduction scenarios that show that ceasing DCPP operations could have an added GHG cost.
- **Seismic Safety and Compliance:** FOE's comments regarding DCPP's licensing basis and seismic safety are incorrect. Study has confirmed, rather than disproved, that DCPP is seismically safe. Additionally, as stated in PG&E's original comments on the 2015 Draft IEPR and acknowledged in the Revised IEPR, the contents of letters from CPUC President Picker relating to Diablo are not compliance items, but rather a list of items to be included in any future licensing request.

- **Pending Litigation:** FOE’s attempt to incorporate its litigation position at the Washington D.C. Circuit Court of Appeals into the IEPR is inappropriate, as the legal process is ongoing.
- **Once-Through Cooling:** The FOE review of once-through cooling (OTC) compliance costs is appropriately excluded from the IEPR based on its lack of detailed engineering and costs analysis and lack of any site-specific information. FOE’s allegation of a conflict of interest between Bechtel and PG&E is without factual support. PG&E agrees with the FOE that wedge wire screens are not a viable compliance alternative for potential OTC requirements.

## II. Costs Associated with DCP

Other than the costs of long-term spent fuel storage, which currently are reimbursed to PG&E ratepayers pursuant to a settlement agreement with the Department of Energy, PG&E is not specifically aware of the costs to which Friends of the Earth (FOE) refers in its comments on the 2015 Draft IEPR. PG&E expects the CEC included a reference in the 2015 Draft IEPR to potential costs associated with OTC replacement or mitigation measures because those measures have been under review for several years and studies indicate that the cost to replace or mitigate for OTC are in the magnitude of \$500 million - \$15 billion. PG&E will identify and present costs necessary to operate and maintain Diablo Canyon in regular ratemaking proceedings at the CPUC. To the extent the costs to operate Diablo Canyon exceed the benefit to ratepayers of retaining this carbon-free generation resource in PG&E’s generation resource portfolio, PG&E and the CPUC will take appropriate action.

## III. Draft 2015 IEPR Planning Assumptions Regarding Diablo Canyon Are Appropriate

In their letter, FOE incorrectly contends that it is inappropriate for the 2015 Draft IEPR to represent Diablo Canyon as being in operation after 2025. In the LTPP proceeding, the CPUC considers how to treat existing resources, including Diablo Canyon, for long-term resource planning purposes. The CEC’s IEPR assumptions should align with the CPUC’s LTPP process with respect to long-term operation assumptions regarding Diablo Canyon. Therefore, it is appropriate for the IEPR to assume that Unit 1 and Unit 2 continue operating in 2024 and 2025, respectively, as these assumptions were part of the 2015 LTPP.

FOE’s letter also claims that there is “no justification” to expect an increase in GHG emissions if Diablo Canyon were to cease operations, as stated in the Draft IEPR.<sup>1</sup> In fact, Energy+Environmental Economics (E3), the firm hired by the California’s energy agencies to perform the “Pathways” study of long-term GHG reduction scenarios, has modeled an increase of 7 million metric tons of emissions beginning in 2025 due to the assumption in their model that Diablo Canyon would no longer be generating. This assumption is a “worst-case scenario” given the uncertain outcome of license renewal and other required state approvals. The 2015 Revised IEPR rightly notes that, “natural gas-fired generation would increase in the years after Diablo Canyon ceases to operate, and this generation would not be GHG emissions-free.”<sup>2</sup> Even if this emissions increase could be offset by other GHG reduction measures, FOE’s contention is incorrect – ceasing operations at Diablo Canyon will result in additional gas-fired generation and associated GHG emissions.

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<sup>1</sup> 2015 Draft IEPR, p. 238

<sup>2</sup> 2015 Revised IEPR, p. 263

#### IV. Study has Demonstrated Seismic Safety at Diablo Canyon

FOE's contention that the results of the Central Coastal California Seismic Imaging Project (CCCSIP) (AB1632) study, released in Sept 2014, indicate "there are at least four large active faults nearby, **all capable of more ground motion than the plant was originally designed for**" is misleading.

Diablo Canyon is unlike other U.S. plants in that three design basis earthquakes were used by the Nuclear Regulatory Commission (NRC) to develop the seismic qualification basis for plant structures, systems and components:

- Design or Operating Basis Earthquake (DE or OBE, 0.2 g), a
- Double Design Earthquake (DDE, 0.4 g) and the
- Hosgri Earthquake (HE, 0.75 g)

For Diablo Canyon, the NRC recognizes the DDE as the equivalent to the Safe Shutdown Earthquake (SSE). The DDE was exceeded when the Hosgri fault was discovered before the plant began operating. The plant was subsequently retrofitted based on a third earthquake design, the Hosgri Earthquake (HE) design.

As in the case of an SSE, the NRC requires that plant structures, systems and components necessary for a safe shut down also be functional following a Hosgri Design basis earthquake. Recent analysis (PG&E, 2014, 2015) has lowered the ground motions for the Hosgri fault (0.75 g to 0.46 g, a change of -38%). These recent results, however, have not altered the HE design basis earthquake spectra. In other words, expected earthquake ground motions are less than the plant design.

New data (PG&E, 2014, 2015) have shown that the estimated ground motions for other faults in the vicinity of DCP have changed by only a few percent from previous estimates (Shoreline: 0.56 g to 0.57 g, a + 2% change; Los Osos: 0.54 g to 0.50 g, a change of -7%; San Luis Bay: 0.61 g to 0.63 g, a change of +3%). While these values are greater than the DDE or SSE, they are less the HE design.

The NRC has already determined (RIL 12-01) that the ground motions from the Shoreline fault are at or below the level for which the plant was evaluated (i.e. HE design) and that the existing design basis for the plant already is sufficient to withstand those ground motions.

Similarly, the linked rupture of multiple faults (i.e., Hosgri-San Simeon-Shoreline and Hosgri-San Simeon) all have estimated ground motions (0.56 g and 0.55 g, respectively) that, while in excess of the DDE or SSE, are less than the original HE design.

PG&E fully expected to perform the seismic risk evaluation by 2017 as a result of a comparison of the new ground motion response spectra (GMRS) against the DDE. The new GMRS does not exceed the evaluated seismic margin of critical plant equipment. Known as the Long Term Seismic Program (LTSP) seismic margin, it envelopes all of the plant's earthquake designs and demonstrates that plant is seismically safe.

Also on the topic of Diablo's continued safe operation, the FOE comments mention letters, described in the 2015 Draft IEPR, from CPUC President Michael Picker to former PG&E President Chris Johns.<sup>3</sup>

As PG&E clarified in original comments on the 2015 Draft IEPR, the items identified in the Commissioner's letters are not compliance items. As Commissioner Picker's letter explained, the items identified must be included in any PG&E request for customer funding of relicensing activities.<sup>4</sup> However, PG&E does not have an active request pending at the CPUC for customer funding for relicensing, nor has PG&E filed such a request in the last year. The items identified in Commissioner Picker's letter are not "compliance items" as FOE mistakenly implies, but rather are a list of items to be included in any future relicensing funding request. PG&E appreciates that the 2015 Revised IEPR was clarified to reflect this; however, we suggest that the relevant recommendation on page 280 also be updated to remove reference to "compliance items" in order to help clarify this issue to all stakeholders.

#### **V. Mention of FOE Litigation Should Be Excluded or Limited to the Facts**

The CEC is right to reject FOE's attempt to incorporate its litigation position at the Washington D.C. Circuit Court of Appeals regarding the Diablo Canyon seismic licensing basis into the Draft 2015 IEPR because discussion of the issue in their letter is incomplete. If mentioned at all, discussion of the pending litigation should be kept to the facts:

- FOE has filed a complaint at the D.C. Circuit Court of Appeals against the Nuclear Regulatory Commission challenging continued operation of Diablo Canyon.
- The NRC and PG&E have responded to the Complaint.
- The Court stayed the Complaint pending the outcome of similar claims filed by FOE at the NRC and is currently considering a motion filed by FOE to lift the stay.

PG&E appreciates that the 2015 Revised IEPR addresses the issue of FOE's litigation factually, in accord with the suggestion above.

#### **VI. Once-Through Cooling Concerns**

The 2015 Draft IEPR properly excludes any reference to the untimely review provided by FOE on the topic of retrofitting Diablo Canyon for future OTC compliance except to say that FOE feels the costs are too high due, they speculate, to schedule and site location. FOE first commented in the State Water Resources Control Board's (SWRCB) Nuclear Review Committee process in November of 2013—some two-and-a-half years after the process began, and only as the Committee was finalizing its review of Bechtel's detailed report. Given the lack of detailed engineering and cost analysis in FOE's alternative (Powers Engineering) submissions, it is appropriate to exclude that work from the 2015 Draft IEPR in favor of the work performed by Bechtel. The FOE submittals are not nearly detailed enough and do not involve any site-specific information regarding Diablo Canyon such that they could provide a meaningful alternative to the Bechtel study. The FOE submission merely provides examples of possible technologies and a review of the desktop assessment done by Tetra Tech.

In contrast, Bechtel was selected through the SWRCB's process, based on criteria established by the Nuclear Review Committee, as the independent third party to perform a comprehensive alternative analysis for the state's nuclear plants. The Committee, with input from the two utilities, worked to find a contractor with significant nuclear power

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<sup>3</sup> Draft 2015 IEPR, p. 244.

<sup>4</sup> Letter from Commissioner Picker to Christopher Johns dated May 27, 2015, p. 1

plant experience, as well as experience with cooling systems. The Bechtel study involved site visits and includes detailed engineering, permitting and construction estimates.

Furthermore, FOE's allegation of "inflated budget numbers" for OTC compliance due to a conflict of interest "given that Bechtel and PG&E have significant mutual business interests" is without any factual support. In the decade prior to Bechtel performing the Special Studies examining OTC compliance, PG&E did not have significant mutual business interests: in the five years preceding the OTC compliance alternatives study contract, PG&E did not pay Bechtel more than \$100,000 a year on average and in several years not more than \$10,000.

It should also be noted that a minority of the members of the Nuclear Review Committee, representatives of the Alliance for Nuclear Responsibility, California Energy Commission, California Public Utilities Commission, and the Center for Energy Efficiency and Renewable Technologies, filed comments that are erroneously referred to in the Draft 2015 IEPR and by FOE as the "Subcommittee." The Nuclear Review Committee itself determined that there would be no subcommittees, but that members could submit comments individually or jointly. This is reflected in the title provided on the SWRCB's website: "Joint Comments of a Group of Committee Members."

Finally, on the issue of modular wedge wire screens raised in the FOE letter, FOE appears to be objecting to use of the word "solutions" in the 2015 Draft IEPR overview of OTC compliance alternatives studied by Bechtel. This could be remedied by replacing "solutions" with "alternatives." However, if the IEPR intends to suggest wedge wire screens are a compliance solution, PG&E agrees with FOE's position that this is erroneous. An evaluation performed by Tenera Environmental, reviewed by additional experts, and cited in the Bechtel Report, noted that the vast majority of fishes entrained at Diablo Canyon are very small and that screens would need to be no more than 1 millimeter in order to achieve entrainment reductions – and that the reduction would be in the range of five percent.<sup>5</sup> Nuclear Review Committee members, including PG&E, voiced significant concerns regarding the efficacy and operability of screens. Biofouling and clogging would likely be serious issues and it is also likely that entrainment would merely be converted to some form of impingement in a fine mesh or wedge wire screening system. The probability of small fish or larvae surviving impingement, screen-wash systems and fish returns is very low.<sup>6</sup>

## Conclusion

We appreciate the opportunity to respond to the Friends of the Earth letter for the record.

Sincerely,

/s/

Nathan Bengtsson

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<sup>5</sup> *Length-Specific Probabilities of Screen Entrainment of Larval Fishes Based on Head Capsule Measurements*. Tenera Environmental. October 2013. p. 15

<sup>6</sup> *Evaluation of Fine-mesh Intake Screen Systems for the Diablo Canyon Power Plant*. Tenera Environmental. August 2013. p. 10-11