

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Application of Pacific Gas and Electric Company for Approval of the Retirement of Diablo Canyon Power Plant, Implementation of the Joint Proposal, And Recovery of Associated Costs Through Proposed Ratemaking Mechanisms.

(U 39 E)

Application 16-08-006
(Filed August 11, 2016)

**OPENING BRIEF OF THE INDEPENDENT ENERGY
PRODUCERS ASSOCIATION**

**INDEPENDENT ENERGY PRODUCERS
ASSOCIATION**

Steven Kelly, Policy Director
1215 K Street, Suite 900
Sacramento, CA 95814
Telephone: (916) 448-9499
Facsimile: (916) 448-0182
Email: steven@iepa.com

**GOODIN, MACBRIDE,
SQUERI & DAY, LLP**
Brian T. Cragg
505 Sansome Street, Suite 900
San Francisco, California 94111
Telephone: (415) 392-7900
Facsimile: (415) 398-4321
Email: bcragg@goodinmacbride.com

Dated: May 26, 2017

Attorneys for the Independent Energy Producers
Association

TABLE OF CONTENTS

	Page
I. RETIREMENT OF DIABLO CANYON POWER PLANT	7
II. PROPOSED REPLACEMENT PROCUREMENT	8
A. Federal Tax Incentives Can Reduce the Cost of Replacement Generation by 20% or More	8
B. An All-Source Solicitation Will Result in the Greatest GHG Emissions Reductions at the Lowest Cost.....	11
C. The Benefits of Federal Tax Incentives Will Be Lost if Procurement Is Delayed Until the Conclusion of the IRP Proceeding	12
D. Resource Evaluation Must Consider Both Costs and Benefits.....	15
E. Concerns About Replacing Diablo Canyon’s Output Can Be Resolved if PG&E Follows a Least-Cost/Best-Fit Approach in an All-Source Solicitation	17
1. Deliveries Can Be Scheduled to Meet PG&E’s and the Grid’s Needs.....	18
2. Procurement of Replacement Resources Need Not Exacerbate Overgeneration.....	19
3. Integration Costs Can Be Mitigated.....	22
F. Limiting the All-Source Solicitation to GHG-Free Resources Might Not Result in the Greatest Reductions in GHG Emissions.....	22
G. Procurement of Replacement Resources Should Not Be Limited to Energy Efficiency	24
III. PROPOSED EMPLOYEE PROGRAM.....	25
IV. PROPOSED COMMUNITY IMPACTS MITIGATION PROGRAM.....	25
V. RECOVERY OF LICENSE RENEWAL COSTS	26
VI. PROPOSED RATEMAKING AND COST ALLOCATION ISSUES	26
VII. LAND USE, FACILITIES, AND DECOMMISSIONING ISSUES.....	26

TABLE OF CONTENTS
(continued)

	Page
VIII. ADDITIONAL ISSUES NOT ADDRESSED ABOVE.....	26
CONCLUSION.....	26

TABLE OF AUTHORITIES

	Page
STATUTES	
26 U.S. Code Section 45	9
26 U.S. Code Section 48	9
Public Law No. 114-113, Consolidated Appropriations Act, 2016	4, 8
Public Utilities Code Section 366.2	14
Public Utilities Code Section 394	14
Public Utilities Code Section 399.13	16
Public Utilities Code Section 399.15	2
Public Utilities Code Section 454.51	5
Public Utilities Code Section 454.52	5
DECISIONS OF THE CALIFORNIA PUBLIC UTILITIES COMMISSION	
D.14-11-042	22
OTHER AUTHORITIES	
Executive Order B-16-2012	2
Senate Bill 100	3, 6, 17

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Application of Pacific Gas and Electric Company for Approval of the Retirement of Diablo Canyon Power Plant, Implementation of the Joint Proposal, And Recovery of Associated Costs Through Proposed Ratemaking Mechanisms.

Application 16-08-006
(Filed August 11, 2016)

(U 39 E)

**OPENING BRIEF OF THE INDEPENDENT ENERGY
PRODUCERS ASSOCIATION**

The proposed retirement of the 2,200 MW Diablo Canyon Power Plant presents California with a unique opportunity to replace a portion of Diablo Canyon’s generation with clean renewable energy and to secure the renewable resources needed to meet the state’s greenhouse gas (GHG) emission reduction targets at discounted prices that are unlikely to be seen again for many years. If the Commission and Pacific Gas and Electric Company (PG&E) act quickly enough, developers of renewable generation projects may have time to qualify their projects for the maximum levels of the existing federal tax incentives before they expire or decline. On the other hand, if procurement is delayed, as PG&E and others propose, so that deliveries do not begin until 2025, after the tax incentives expire or significantly decline, the cost of these same resources will be substantially higher than the cost of projects receiving federal tax incentives. For example, the levelized costs of projects commencing operation in 2025 are

expected to be 22% (solar) to 32% (wind) more expensive than projects that qualify for incentives available in 2019.¹

It is time for the Commission to choose. The proxy costs for PG&E's proposed 2,000 GWh of replacement energy would be \$42 million per year higher in 2025 than if the tax incentives available in 2019 were used. These lower costs result in savings of up to \$42 million **per year**.² The Commission should not turn its back on a fleeting opportunity to allow the federal government to finance a significant portion of the renewable generation needed to replace Diablo Canyon's output and meet the state's GHG emission-reduction goals. Renewable energy developers are unlikely to see this level of federal financial support again, certainly not during the Trump administration. But for California to capitalize on the existing incentives, the Commission must act quickly and boldly to direct PG&E to conduct an all-source solicitation for up to 4,000 GWh (less than 25% of Diablo Canyon's annual output) as soon as possible, but no later than mid-2018.

Taking advantage of federal tax incentives is particularly critical in light of recent developments that will increase the need for load-serving entities (LSEs), including PG&E, to increase their procurement of renewable energy. Apart from the need to replace Diablo Canyon's generation, California's ambitious program to reduce GHG emissions will require new clean energy resources. In addition, California's goal is to have 1.5 million zero-emission vehicles, most of which will be electric vehicles, on the road by 2025.³ Because the Renewables Portfolio Standard (RPS) requirements are based on a percentage of an LSE's annual sales,⁴ increases in load resulting from the charging of electric vehicles will require procurement of

¹ Exh. IEP-1, pp. 9-10 (Howarth/IEP).

² Exh. IEP-1, pp. 11-12 (Howarth/IEP).

³ Executive Order B-16-2012.

⁴ Pub. Util. Code § 399.15(a).

additional renewable energy. Also, on May 1, Senate President Pro Tem Kevin de León amended Senate Bill (SB) 100 to accelerate the 50% RPS goal from 2030 to 2026 and establish a 60% RPS by 2030 and a 100% RPS by 2045. If enacted by the Legislature and approved by the Governor, SB 100 will require prompt action by LSEs to meet the new goals. If the Commission and LSEs can act quickly enough, a large percentage of the costs of additional resources needed to replace Diablo Canyon’s output and to achieve California’s policy goals can be funded by the federal tax incentives rather than by ratepayers.

The Independent Energy Producers Association (IEP) addresses these issues in this opening brief.

INTRODUCTION

PG&E has asked the Commission for authority to retire the 2,200 MW Diablo Canyon Power Plant when the plant’s current Nuclear Regulatory Commission licenses expire in 2024 and 2025. However, PG&E, joined by the parties to the Joint Proposal presented in PG&E’s application, is **not** seeking to fully replace the 18,000 GWh of energy the Diablo Canyon plant produces each year.⁵ Instead, PG&E is proposing to replace only 2,000 GWh of Diablo Canyon’s annual output in the form of a “competitive solicitation of unprecedented magnitude” for energy efficiency resources.⁶ PG&E initially proposed two additional procurements—(1) an additional 2,000 GWh of resources and (2) enough resources to ensure that 55% of its annual sales in 2030 and thereafter will be generated from resources that are eligible under the state’s RPS—but PG&E has withdrawn that proposal. PG&E now recommends that any procurement needed to replace Diablo Canyon’s generation, apart from the

⁵ PG&E’s application addresses only the replacement of the energy produced by Diablo Canyon, but PG&E will also lose 2,200 MW of Diablo Canyon’s capacity.

⁶ Exh. PG&E-1, p. 3-1 (Strauss/PG&E).

2,000 GWh of energy efficiency, should be authorized through the Long-Term Procurement Plan (LTPP)/Integrated Resource Planning (IRP) proceeding, Rulemaking (R.) 16-02-007.

In more ordinary circumstances, IEP would agree that the procurement of needed resources should be governed by the biennial LTPP proceeding. The LTPP proceeding has evolved into a regular, forward-looking evaluation of resource needs over a ten-year planning horizon that for the last decade has provided the foundation for the Commission to authorize procurement that allowed the electric grid to successfully avoid generation shortfalls and to survive some significant threats to reliability.

But these are not ordinary circumstances. Three developments have combined to create a situation that requires the Commission to authorize procurement of at least some of the resources needed to replace Diablo Canyon's generation outside of the normal and emerging processes:

- **The expiration of federal tax incentives:** Federal tax incentives have greatly reduced the cost of developing renewable resources and have spurred the rapid expansion of renewable generation.⁷ The existing federal tax incentives are scheduled to expire or decline over the next couple of years, and after 2019 their economic value will be significantly diminished. The Consolidated Appropriations Act, 2016⁸ provided a last-minute extension of some of the federal tax incentives for renewable energy, but President Trump's proposals for tax reform do not include any further extensions. If the Commission and PG&E act in time to take maximum advantage of the existing federal tax

⁷ See Reporter's Transcript (RT) p. 345, ll. 5-10 (Malknight/PG&E) ("I recognize the benefits that accrue to customers when these tax credits are available to lower the cost of energy at option. And I think California customers have received substantial benefit as we have increased our RPS percentage to date.").

⁸ Pub. L. No. 114-113.

incentives, the cost of renewable energy to replace only 2,000 GWh of Diablo Canyon's generation could be reduced by more than \$40 million per year.⁹

- **Incorporating the IRP into the LTPP proceeding and the resulting complication and delay:** SB 350 required the Commission to perform integrated resource planning,¹⁰ and the Commission elected to meet this requirement by incorporating IRP into the existing LTPP proceeding, R.16-02-007. IRP added an unprecedented level of complication to an already complicated proceeding, and, not surprisingly, R.16-02-007 has bogged down. A procurement authorization that was originally scheduled for late 2017 has been delayed until the “End of 2018,” and the delay in meeting other scheduled milestones suggests that any decision authorizing procurement may not be issued until 2019, too late for California to take maximum advantage of available federal tax incentives.
- **California's climate and environmental goals:** California has a goal of putting over 1.5 million zero emission vehicles on the state's highways by 2025. Most of these vehicles will be electric vehicles, and as costs decrease and ranges increase (exemplified by the Chevrolet Bolt and Tesla Model 3), consumer demand for these vehicles could rapidly accelerate.¹¹ As the electric vehicle market expands, the demand for energy to power them will also increase. Increases in LSEs' annual demand will require additional procurement of renewable energy just to meet existing RPS goals. And the

⁹ Exh. IEP-1, p. 12 (Howarth/IEP).

¹⁰ Pub. Util. Code §§ 454.51, 454.52.

¹¹ The production of hydrogen used to power fuel cell vehicles, the other leading zero-emission technology, also requires substantial amounts of electricity.

current RPS goals may well be increased, requiring additional procurement of renewable energy. If SB 100 is enacted by the Legislature and signed by the Governor, the 50% RPS will be accelerated from 2030 to 2026, and higher new requirements will be established for 2030 (60%) and 2045 (100%).

Procuring renewable energy while the federal tax incentives are still available could save PG&E's ratepayers millions of dollars. Even if PG&E overshoots its targets and procures more renewable energy than it needs to replace Diablo Canyon's production, it will likely need additional renewable energy to meet California's RPS and GHG emission-reduction goals.

These three developments create a dilemma. If the Commission follows the usual LTPP/IRP process, the authorization of procurement of any needed resources may come too late to take advantage of federal tax incentives, which will eventually result in higher costs for ratepayers. On the other hand, if the Commission authorizes replacement of the full 18,000 GWh output of Diablo Canyon without the benefit of the record developed in the LTPP/IRP proceeding, it risks prematurely committing to the procurement of some resources that ultimately might not be needed to replace Diablo Canyon.

IEP proposes a solution that balances cost (the federal tax incentives) and process (the LTPP/IRP). The Commission should direct PG&E to act quickly, while the maximum federal tax incentives are still available, to conduct an all-source solicitation for up to 4,000 GWh of clean energy (equivalent to Tranches 1 and 2 in PG&E's original proposal) to replace a fraction of Diablo Canyon's annual generation. To ensure that developers have enough time to take the actions necessary to qualify for the maximum federal tax incentives, the solicitation

should commence as soon as possible, and certainly no later than July 2018,¹² so that projects can qualify before the existing incentives expire or begin to decline after 2019.

It is not necessary for PG&E to take deliveries from projects that qualify for the federal tax incentives in 2019 or in later years when the projects complete construction. As long as the basic requirements for the federal tax incentives can be met before the incentives expire or begin to decline after 2019, any resulting power purchase agreements can be structured to align the start of deliveries with PG&E's needs, including the need to replace the energy or capacity of the retiring Diablo Canyon units.

Under this approach, a fraction of the resources needed to replace Diablo Canyon's output would be in position to qualify for the federal tax incentives and to bid lower prices in the all-source solicitation, creating a considerable benefit for ratepayers. If IEP's recommended solicitation is fully subscribed, it would amount to less than 25% of Diablo Canyon's 18,000 GWh annual energy output, leaving a considerable potential residual need for additional replacement resources (the remaining 14,000 GWh) for consideration in the LTPP/IRP proceeding.

I. RETIREMENT OF DIABLO CANYON POWER PLANT

IEP concurs with PG&E's decision not to renew the licenses of the two units of the Diablo Canyon Power Plant. Replacement resources that are both less expensive and better able to fit the needs of PG&E's customers and the electric grid are available. The lack of a permanent storage facility for spent nuclear fuel and Diablo Canyon's location in a seismically active area are additional considerations supporting PG&E's decision.

¹² The earlier a solicitation can get underway, the more likely that projects will be able to qualify for the federal tax incentives. Even if the solicitation is started in July 2018, many projects might not be able to complete the steps needed to qualify for the tax incentives.

II. PROPOSED REPLACEMENT PROCUREMENT

The Joint Proposal originally recommended that replacement of a portion of Diablo Canyon's 18,000 GWh of annual energy production should occur in three tranches. The first tranche would procure 2,000 GWh of energy efficiency between 2019 and 2024. For Tranche 2, PG&E would conduct an all-source solicitation to procure 2,000 GWh of GHG-free energy (which could include energy efficiency) for delivery starting in 2025. Tranche 3 consists of PG&E's commitment to achieve a 55% RPS beginning in 2031 (an increase over the current RPS target of 50% in 2030).

On February 27, 2017, PG&E notified the parties that the Joint Parties had agreed that consideration of Tranches 2 and 3 was better performed as part of the Commission's IRP exercise taking place in the LTPP/IRP proceeding and that PG&E was withdrawing its testimony on Tranches 2 and 3. The Joint Parties and PG&E would continue to recommend a Tranche 1 procurement of 2,000 GWh of energy efficiency, but under their proposal additional procurement of replacement resources would await the Commission's authorization at the end of the IRP process.

IEP is concerned that the Joint Parties and PG&E's proposed schedule for procurement of replacement energy would result in California losing the significant financial benefit of federal renewable energy tax incentives. Delaying the procurement of energy to replace at least a fraction of Diablo Canyon's production will result in significantly higher costs for California and PG&E's ratepayers.

A. Federal Tax Incentives Can Reduce the Cost of Replacement Generation by 20% or More

Congress last addressed federal tax incentives in the Consolidated Appropriations Act, 2016 (the Act). The Act extended the investment tax credit (ITC) and production tax credit

(PTC) but phased out the level of these renewable energy tax incentives over time.¹³ The last year for projects to qualify for the maximum benefit of the existing incentives is 2019.

The availability of the federal tax credits is tied to the “commencement of construction” of the project and the completion of the project within four years. However, in lieu of commencing construction (defined as beginning “physical work of a significant nature”), solar and wind projects can meet “safe harbor” requirements by incurring 5% or more of the total project costs (*e.g.*, by purchasing wind turbines or photovoltaic (PV) panels) by eligibility deadlines.

There are three major categories of federal tax incentives:

Investment Tax Credit: To qualify for the 30% ITC, solar PV projects must commence construction by 2019. Projects that commence construction in 2020 or 2021 would qualify for a 26% credit or a 22% credit, respectively, 13% to 27% less than the existing ITC. To receive the ITC at these reduced levels, construction must be completed by 2023. Projects completed after 2023 and any projects that commence construction after 2021 qualify for only a 10% ITC,¹⁴ which reduces the federal contribution toward project costs by 67% compared to the current ITC.

Production Tax Credits: To receive the PTC in effect at the time the project commences construction or achieves safe harbor, the project developer must demonstrate that there has been continuous work on the project from that date. The Internal Revenue Service provides a “continuity safe harbor” to wind projects that are placed in service no more than four calendar years after commencing

¹³ 26 USC §§ 45, 48.

¹⁴ Exh. IEP-1, p. 6 (Howarth/IEP).

construction or achieving safe harbor. Thus, wind projects would have until the end of 2020 to come online and receive 100% of the PTC value available to projects that commenced construction or achieved safe harbor in 2016 (2.3¢/kWh for wind projects). The PTC steps down annually in 20% decrements from 2016 to 2019 (*i.e.*, the credit for projects commencing construction in 2017 is 1.84¢/kWh, 20% less than the 2016 credit, and the 2018 and 2019 credits are 1.38¢/kWh and 0.92¢/kWh, respectively, 40% and 60% lower than the 2016 credit) and phases out in 2020. Wind projects beginning deliveries in 2025 cannot qualify for the continuity safe harbor and would not be eligible for production tax credits.¹⁵

Bonus Depreciation: Equipment placed in service before January 1, 2018 is eligible for 50% bonus depreciation. The bonus depreciation level falls to 40% in 2018 and to 30% in 2019. There is no bonus depreciation for equipment placed in service after 2019.¹⁶

The potential financial benefits of the federal tax incentives are substantial. The difference in levelized costs between 2019 (the last year that bonus depreciation is available) and 2025 (when Diablo Canyon will be retired and the sole federal tax incentive is a 10% ITC) is significant. Using the Commission's RPS Calculator, IEP's witness calculated that the expiration and reduction of federal tax incentives resulted in levelized costs of solar PV plants that would be 22% higher in 2025 than in 2019, even after accounting for cost reductions due to improvements in technology.¹⁷ For the same reason, the levelized costs of wind projects would

¹⁵ Exh. IEP-1, pp. 6-7 (Howarth/IEP).

¹⁶ Exh. IEP-1, p. 7 (Howarth/IEP).

¹⁷ Exh. IEP-1, p. 9 (Howarth/IEP).

be 32% higher in 2025, when no tax incentives are available, than in 2019.¹⁸ Using PG&E's proxy cost approach, IEP's witness estimated that the proxy cost of projects coming on line in 2019 would be 20% lower than for projects coming on line in 2025, reducing the proxy cost from \$107/MWh to \$86/MWh. Applied to the original Tranche 2 target of 2,000 GWh, these lower costs result in savings of up to \$42 million **per year**.¹⁹

The analysis presented by IEP's witness demonstrates that the loss of federal tax incentives has the effect of increasing renewable energy costs. On this point, there is no dispute.

If PG&E delays its solicitation of replacement resources until after the Commission's final decision in the LTPP/IRP proceeding, as it now proposes,²⁰ the delay will result in the loss of renewable project developers' ability to take full advantage of the existing federal tax incentives. Without the tax incentives, the cost of renewable energy will be greater and costs for ratepayers will be higher. To secure the maximum potential benefit for California of the remaining federal tax incentives while respecting the LTPP/IRP process, the Commission should direct PG&E to combine PG&E's originally proposed Tranche 1 and Tranche 2 into an all-source solicitation, commenced as soon as possible but no later than July 2018, for resources that would provide up to 4,000 GWh annually.

B. An All-Source Solicitation Will Result in the Greatest GHG Emissions Reductions at the Lowest Cost

Although the procurement of renewable resources eligible for the federal tax incentives could be accomplished in a solicitation limited to RPS-eligible resources resulting from the yet-to-be-filed 2017 RPS procurement plan proceedings, an all-source solicitation will allow all resources to compete on a fair basis and will facilitate the selection of the least-

¹⁸ Exh. IEP-1, p. 10 (Howarth/IEP).

¹⁹ Exh. IEP-1, pp. 11-12 (Howarth/IEP).

²⁰ Exh. PG&E-1, p. 1-7 (Malknight/PG&E).

cost/best-fit resources regardless of technology. Unlike a solicitation limited to RPS-eligible projects, an all-source solicitation can consider the ability of a variety of technologies to meet a number of policy goals, in particular, a resource's ability to reduce GHG emissions. An all-source solicitation allows PG&E to select the portfolio of resources that results in the greatest reductions in GHG emissions or the most effective mitigation of the potential for overgeneration at the lowest cost, a result that might not be available if the solicitation is limited to renewable resources.

C. The Benefits of Federal Tax Incentives Will Be Lost if Procurement Is Delayed Until the Conclusion of the IRP Proceeding

Several parties have argued that any procurement, including procurement to replace Diablo Canyon's generation, should be delayed until the LTPP/IRP proceeding has concluded and the Commission has determined the amount of capacity that will be needed in future years. Waiting until the IRP proceeding is concluded, however, will mean that California will lose the substantial economic benefit of federal tax incentives for renewable energy.

It is almost certain that any procurement authorized in the IRP proceeding cannot be completed in time to take advantage of the maximum federal tax incentives. When SB 350 required the Commission to conduct integrated resource planning, it added an extra layer of complexity to an already complex proceeding, the biennial LTPP proceeding. The details of how the Commission can meet its statutory requirements are still being worked out.

Not surprisingly, the LTPP/IRP proceeding is not moving as fast as contemplated.²¹ For example, the Scoping Memo for R.16-02-007 issued on May 26, 2016, called for issuance of staff guidance on IRP processes and contents to be issued in December

²¹ See Exh. GPI-2, p. 11 (Morris/GPI) "[T]he first-ever attempt at preparing IRPs is currently in the early stages of development, with the results of the effort still months away and highly uncertain."

2016.²² On December 21, 2016, the Assigned Commissioner and Administrative Law Judge revised the schedule for the proceeding and rescheduled the staff guidance for March 2017.²³ The staff guidance finally came out as an attachment to the Administrative Law Judge’s ruling of May 16, 2017, five months later than initially expected.²⁴ Similarly, the Scoping Memo called for the decision adopting the LSEs’ IRPs and authorizing any procurement to be issued in late 2017 or early 2018.²⁵ The December 21, 2016 ruling, however, revised the target date for authorizing procurement to “mid-late 2018.”²⁶ The May 16, 2017 ruling further delayed the procurement authorization to the “End of 2018,” a year later than initially scheduled. At this point, it seems entirely possible, and perhaps probable, that the decision authorizing procurement in the IRP proceeding will be delayed until 2019.²⁷

Other parties share IEP’s anxiety about the pace of the LTPP/IRP proceeding. The Natural Resources Defense Council, for example, stated that “[t]he IRP proceeding will not result in a procurement decision until late in 2019 at the earliest,”²⁸ far too late for renewable energy developers to take maximum advantage of the federal tax incentives. The witness for Future Grid Coalition is also skeptical that the IRP can yield completed projects by the time the Diablo Canyon units are retired:

Many intervenors seem quite confident that deferral of a need determination to the IRP can yield completed projects, if any are needed, by the time of Diablo’s proposed closure in 2025. I am less optimistic. It may take years for the Commission to get

²² Exh. CEERT-X-1, pp. 14-15.

²³ Exh. CEERT-X-2, p. 19.

²⁴ The Administrative Law Judge took official notice of the May 16, 2017 ruling in an email ruling issued on May 19, 2017.

²⁵ Exh. CEERT-X-1, p. 16.

²⁶ Exh. CEERT-X-2, p. 20.

²⁷ PG&E expected that the solicitation resulting from the LTPP/IRP proceeding would be held no later than 2020 (RT p. 270, ll. 10-17 (Malknight/PG&E))—too late for winning projects to qualify for the maximum federal tax incentives.

²⁸ Exh. NRDC-1, p. 4 (Miller/NRDC).

through the IRP proceeding, another year or so for whatever procurement process PG&E adopts to lead to contracts, and an unknown length of time beyond that for contract counterparties to actually complete their projects (whatever they may be).²⁹

Apart from this sort of routine delay, the Commission in the LTPP/IRP proceeding still must resolve some critical issues before it can authorize procurement. For example, the Commission has very limited authority over procurement by Community Choice Aggregators and Electric Service Providers,³⁰ and it's not clear that the Commission has the legal authority to order those entities to procure the resources that the IRP process concludes are necessary. Even if the LTPP/IRP proceeding can stay on the schedule announced in the May 16 ruling, which calls for a decision authorizing procurement to be issued at the "End of 2018," it will be extremely challenging for projects selected as a result of that authorization to commence construction in time to qualify for the maximum federal tax incentives.³¹

The Diablo Canyon retirement proceeding, on the other hand, avoids these jurisdictional issues—the Commission has clear authority to authorize PG&E to conduct a solicitation for needed replacement resources, and PG&E's application asked the Commission to authorize procurement of replacement generation.³² Moreover, the Diablo Canyon retirement proceeding has a schedule that is much more consistent with the timing required for the solicitation and procurement of projects in time to benefit from the federal tax incentives.

To be clear, the IRP proceeding may conclude that procurement in addition to the 2,000 GWh PG&E proposes for Tranche 1 or the 4,000 GWh IEP proposes may be needed. IEP

²⁹ Exh. FCG-2, p. 4 (Mitchell/Future Grid Coalition).

³⁰ Pub. Util. Code § 366.2(a)(5); see Pub. Util. Code § 394(f).

³¹ The Joint Intervenor's alternative to PG&E's now-withdrawn Tranche 2 proposal would delay procurement of replacement energy until mid-2022, which would also foreclose the possibility of receiving significant benefit from the existing federal tax incentives. (Exh. Joint-1, pp. 8-9 (Barkovich/Joint Intervenor)).

³² Application 16-08-006, p. 12; see RT p. 262, ll. 24-26 (Malknight/PG&E) ("It was always envisioned that Diablo would be replaced with a combination of action in this proceeding and the IRP.").

is not suggesting that the IRP proceeding should be ignored or shut down, and IEP recognizes that the IRP proceeding may authorize additional replacement procurement beyond the 4,000 GWh IEP proposes. IEP is concerned, however, that waiting until the conclusion of the LTPP/IRP proceeding to act will result in the loss of an opportunity to take advantage of federal tax incentives that can significantly lower the cost of procuring renewable energy. California is unlikely to receive much, if any, support for renewable energy from the current federal administration other than the existing federal tax credits, and for that reason it is even more important for the Commission and PG&E to act quickly to take advantage of the existing tax incentives before they expire or decline.³³

D. Resource Evaluation Must Consider Both Costs and Benefits

In rebuttal to IEP's testimony, the Joint Intervenors presented testimony that suggested that PG&E should not procure resources in time to benefit from federal tax incentives, because due to the time value of money, "waiting to expend ratepayer funds will result in greater savings than spending the money in the short term even with the loss of a tax benefit."³⁴

However, Joint Intervenors' witness acknowledged that his analysis focused solely on the net present value of the **costs** of procuring an assumed 2,000 GWh of resources³⁵ and that a more complete analysis would consider **both** costs and benefits to determine the net present value of a resource.³⁶ Moreover, in a present value analysis, receiving benefits earlier results in a greater value than receiving the same benefits later.³⁷

³³ IEP notes that even though SolarCity advocates for considering replacement procurement in the IRP, it recommends that an "all-source" procurement (limited to preferred resources and energy storage) for replacement resources is appropriate if a decision is needed before the decision in the IRP can be issued. (Exh. SC-1, pp. 10-11 (Franz/SolarCity).)

³⁴ Exh. Joint-2, p. 4 (Kinosian/Joint Intervenors).

³⁵ RT p. 1276, l. 24 to p. 1277, l. 7 (Kinosian/Joint Intervenors).

³⁶ RT p. 1277, ll. 16-24 (Kinosian/Joint Intervenors).

³⁷ RT p. 1277, l. 25 to p. 1278, l. 4 (Kinosian/Joint Intervenors).

The undisputed evidence is that the cost of procuring renewable energy will be higher after federal tax incentives are eliminated or significantly reduced (potentially by \$420 million over the term of 10-year power purchase agreements for 2,000 GWh³⁸). Whether it makes sense, due to the time value of money, to wait and pay the higher cost of renewable energy in the future depends on the value of the energy, capacity, and environmental attributes received over the entire period, since both costs and benefits must be considered in a net present value procurement analysis. The fact that renewable energy costs are expected to rise as federal tax incentives are withdrawn simply means that it is more likely that procuring earlier will result in ratepayer benefits. IEP's proposal provides PG&E the opportunity to capture these benefits when it procures energy to replace Diablo Canyon's production.

When making procurement decisions, a utility should weigh a resource's costs against its benefits, on a net present value basis.³⁹ The costs and benefits that should be considered include things like the contract price, the value of the energy the resource will supply, any Renewable Energy Credits that the resource can provide, the extent of the resource's ability to supply system, local, or flexible Resource Adequacy capacity, the resource's effect on overgeneration and related curtailment of renewable generators, and how the resource interacts with other resources to mitigate overgeneration and minimize GHG emissions.⁴⁰

In rebuttal, Joint Intervenors' witness presented a hypothetical scenario that included **no** benefits from renewable energy procured between 2019 and 2025. Had that analysis included even some of the benefits listed above, or had it considered projects that begin deliveries later than 2019 (since projects could take advantage of safe harbor provisions to come

³⁸ Starting in 2021, at least 65% of a retail seller's RPS contracts must have terms of 10 years or more. Pub. Util. Code § 399.13(b).

³⁹ See RT p. 1277, ll. 16-24 (Kinosian/Joint Intervenors).

⁴⁰ See RT p. 1278, l. 21 to p. 1280, l. 7 (Kinosian/Joint Intervenors).

online later than 2019), the benefits of early procurement would likely outweigh the argument for delaying procurement due to the time value of money. Only by weighing the costs, benefits, and portfolio fit over the term of a proposed contract can it be determined if it is reasonable for the utility to procure a particular resource at a given time.

That is the type of analysis that the Commission describes as least-cost/best-fit (LCBF) and is the evaluation methodology IEP recommends for its proposed all-source solicitation. If the evaluation of resources is performed thoughtfully, weighs all the potential costs and benefits associated with the procurement of a particular resource, and considers the way in which those costs and benefits change over time, the concerns raised about IEP's proposal can be overcome.

E. Concerns About Replacing Diablo Canyon's Output Can Be Resolved if PG&E Follows a Least-Cost/Best-Fit Approach in an All-Source Solicitation

Parties have raised several concerns about procuring resources to replace Diablo Canyon's output and in particular about procuring replacement resources in time to reap the benefits of federal tax incentives. Some parties have argued that additional procurement will exacerbate overgeneration and increase renewables integration costs. Some parties are concerned that deliveries from additional resources may begin before the retirement of the Diablo Canyon units, *i.e.*, before the resources are needed to replace Diablo Canyon's generation.⁴¹

However, many of the objections to procuring replacement resources in time to take advantage of existing federal tax incentives can be overcome if PG&E employs an LCBF approach to an all-source solicitation started as soon as possible, and no later than July 2018, as

⁴¹ Arguments about the need for additional renewable generation, whether intended as replacement for Diablo Canyon's generation or not, might become moot if SB 100 becomes law and its higher RPS goals take effect.

IEP recommends. In the past, the LCBF approach has apparently been applied to put heavier weighting on the least-cost element, with the result that the procured resources did not always fit the needs of the grid. As solar photovoltaic resources dropped in price, for example, utilities procured resources that are perceived to contribute to grid operation problems like overgeneration and steep ramps. If “best-fit” is defined in a thoughtful way and applied rigorously in the bid evaluation, however, the objections to IEP’s recommendation quickly evaporate.

Similarly, proposals to limit replacement resources to GHG-free resources, without exception, might have the unintended effect of restricting PG&E’s ability to procure the portfolio of resources that provides the greatest overall reduction in GHG emissions at the lowest possible cost. An all-source solicitation using the LCBF approach to bid evaluation is the best way to select a portfolio of resources that will achieve the greatest reduction in GHG emissions at the lowest cost to ratepayers.

1. Deliveries Can Be Scheduled to Meet PG&E’s and the Grid’s Needs

Some parties have argued that PG&E has no need for additional renewable generation in the period before the Diablo Canyon units retire in 2024 and 2025. The federal tax incentives, however, are tied to the commencement of construction, not the commencement of deliveries, which creates the possibility that a project could commence construction and come on-line in time to secure the federal tax benefits, but postpone deliveries to PG&E until Diablo Canyon is retired and replacement generation is needed. In its solicitation, PG&E should allow bidders the opportunity to tailor the start of deliveries to PG&E’s or the electric grid’s expected needs by submitting proposals for different delivery dates.⁴² Some projects may be able to take advantage of safe harbor provisions to delay deliveries to PG&E while still qualifying for federal

⁴² Exh. IEP-1, pp. 13-14 (Howarth/IEP).

tax incentives. Projects may also be able to enter into short-term agreements with other entities, such as community choice aggregators with limited credit, before commencing deliveries to PG&E under a long-term contract. Projects with later delivery dates will have lower net present value costs, due to the time value of money, than if the same projects begin deliveries in 2019.⁴³ In the solicitation protocols, PG&E can provide guidance about how it will value different delivery dates. If later delivery dates are more valuable to PG&E, it can indicate that fact and bidders can attempt to design their offers to meet PG&E's needs (best fit) at the lowest cost.

As a general principle, IEP agrees with TURN's witness that "replacement procurement should be targeted to meet best the evolving needs of the state's electric grids" and that "California regulators and LSEs can maximize the value of non-GHG replacement resources with reasonable planning and procurement."⁴⁴ In keeping with the goal of the LCBF methodology, PG&E can solicit offers from the resources that best fit the needs of the grid at the lowest cost. Projects that are able to take advantage of the federal tax incentives can lower their bids because their costs are lower, and might also be able to provide resources with the attributes, including a later delivery date, that best fit the needs of the grid.

2. Procurement of Replacement Resources Need Not Exacerbate Overgeneration

Several parties raise the concern that procurement of replacement resources that come on line before the retirement of Diablo Canyon would exacerbate the overgeneration problem that the California Independent System Operator (CAISO) has been confronting in recent years.⁴⁵ Overgeneration—the excess of electricity supply over load—is a condition that results from a variety of physical and market conditions. Overgeneration can present some

⁴³ RT p. 1281, ll. 2-25 (Kinosian/Joint Intervenors).

⁴⁴ Exh. TURN-2, pp. 14, 15 (Woodruff/TURN).

⁴⁵ *E.g.*, Exh. Joint-2, p. 6 (Kinosian/Joint Intervenors).

considerable operational challenges, but responsible entities are taking a variety of measures to limit overgeneration and the curtailment of renewable resources that sometimes results when overgeneration arises.

For its part, PG&E can consider a resource's potential to contribute or mitigate overgeneration as part of an LCBF bid evaluation in a competitive solicitation. For example, in its proposed Tranche 1 solicitation for energy efficiency resources, PG&E proposes to use time-differentiated avoided costs to distinguish between resources that reduce overgeneration and renewables integration costs and those that worsen those conditions.⁴⁶ The same approach can be used to evaluate the potential for renewable energy projects to increase or mitigate overgeneration.⁴⁷ Resources that exacerbate overgeneration will be deemed to have higher costs (or lower benefits), and resources that mitigate overgeneration will be deemed to have lower costs (or greater benefits).

Similarly, because the location and generation profiles of specific projects can affect the potential for overgeneration,⁴⁸ PG&E can consider those factors in its bid evaluation as part of an all-source solicitation. Moreover, in the solicitation protocol, PG&E can provide guidance about how curtailment provisions and options (or other responses to overgeneration) will be valued. Bidders can then respond, for example, by offering different levels of curtailment that they can accept or by proposing to pair renewable generation and storage to reduce or avoid curtailments. If PG&E communicates to bidders that it values resources that do not contribute to greater levels of overgeneration, bidders can respond with innovative solutions and propose resources that best fit the identified needs of the grid. As PG&E's witness stated, "I think going

⁴⁶ Exh. PG&E-5-1, p. 2-35 (Berman/PG&E).

⁴⁷ RT p. 557, ll. 1-22 (Strauss/PG&E).

⁴⁸ Exh. IEP-1, pp. 12-13 (Howarth/IEP); Exh. TURN-2, pp. 13-14, 19-20 (Woodruff/TURN).

forward the intention would be to make sure we're matching the characteristics of a portfolio as best we can to system need.”⁴⁹

With a thoughtful application of the LCBF methodology, PG&E will have the ability to select a portfolio of resources that will have the least possible impact on overgeneration while it balances a variety of other policy goals.

Overgeneration is also being addressed through the development and growth of the Energy Imbalance Market (EIM). The EIM has created a way for renewable generators in the CAISO balancing area to avoid curtailment by selling energy that might otherwise be curtailed to other participating balancing areas that have the ability to absorb additional generation. Avoided curtailments of renewable energy grew tenfold from 2015, the EIM's first full year of operation, to 2016—from 31,082 MWh in 2015 to 328,238 MWh in 2016.⁵⁰

Moreover, the Commission's pioneering efforts to kick-start energy storage will have the added benefit of reducing overgeneration. Energy storage facilities can absorb energy when overgeneration threatens, especially during times of high insolation or rapid snowmelt. More specifically, the rapid expansion of energy storage developed in conjunction with generation can help renewable generators avoid curtailments due to overgeneration by absorbing energy (charging) when supply exceeds demand and shifting deliveries (discharge) to periods when demand is higher. Other technologies, including baseload renewables and demand response, can also mitigate overgeneration.⁵¹

⁴⁹ RT p. 322, ll. 7-10 (Malknight/PG&E).

⁵⁰ Exh. IEP-X-1, p. 8.

⁵¹ Exh. GPI-2, p. 10 (Morris/GPI).

3. Integration Costs Can Be Mitigated

Some parties argue that procurement of resources, particularly energy efficiency and intermittent renewable resources, to replace Diablo Canyon's output will increase the costs of integrating variable energy resources into the existing grid.⁵²

Many of the strategies being pursued to reduce overgeneration will also have the effect of controlling integration costs. IEP agrees that integration costs should be part of the LCBF evaluation performed by PG&E, but the quantification of integration costs has been extremely difficult. After several years of effort, the Commission's attempts to model integration costs accurately have still not arrived at a reliable conclusion.⁵³

The larger point is that in IEP's proposed replacement procurement, PG&E should select the portfolio of resources that provides the best fit at the least cost. Both the best-fit and least-cost elements of this formula should help constrain integration costs. At the same time, the Commission should recognize that integration costs are only a component, and according to most estimates a small component, of the total cost of replacement generation.⁵⁴

F. Limiting the All-Source Solicitation to GHG-Free Resources Might Not Result in the Greatest Reductions in GHG Emissions

Because Diablo Canyon is a GHG-free resource, PG&E proposes to limit its sole replacement procurement to GHG-free energy efficiency.⁵⁵ Other parties propose that all generation to replace Diablo Canyon should be GHG-free. However, focusing on the GHG

⁵² See Exh. CLECA-1, pp. 12-15 (Barkovich/CLECA).

⁵³ Southern California Edison Company filed a Renewables Integration Cost Adder report, the result of studies begun in 2014, in R.16-02-007 on April 4, 2016. Comments and reply comments on the report were filed in R.16-02-007 on June 3 and 17, 2016, but since then R.16-02-007 has focused on development of the IRP. See *Joint Administrative Law Judges' Ruling Seeking Input on Report and Next Steps for Development of Renewables Integration Cost Adder*, issued in R.16-02-007 and R.15-02-020 on May 11, 2016.

⁵⁴ In D.14-11-042, the Commission adopted an interim variable integration cost of \$4/MWh for wind and \$3/MWh for solar. D.14-11-042, pp. 61-63.

⁵⁵ Exh. PG&E-1, pp. 3-1 to 3-2 (Strauss/PG&E).

emissions of individual resources, rather than selecting the portfolio of resources that is most effective at reducing the electric sector's GHG emissions, could lead to unexpected results and increased costs. Requiring each replacement resource, without exception, to be GHG-free may have the unintended effect of undermining the larger goal of minimizing GHG emissions from the electric sector. As the witness for the Geothermal Energy Association (GEA) noted, the strategy for replacing Diablo Canyon generation should be based on the most cost-effective way of eliminating GHG emissions from the electric system.⁵⁶ Geothermal resources, for example, may at times emit small amounts of GHGs, but their operational characteristics may allow the CAISO to reduce reliance on integrating resources with higher GHG emissions and may accordingly be more effective at reducing overall GHG emissions than if more variable GHG-free renewable energy resources were operating.⁵⁷ Efficient and flexible gas-fired resources may also lower overall GHG emissions if they displace higher GHG-emitting resources.⁵⁸

Thus, if the Commission arbitrarily limits the all-source solicitation to GHG-free resources, it could miss an opportunity to reduce overall GHG emissions more effectively and at a lower cost. As GEA's witness testified, "The Commission should consider a strategy to meet the plan's goals based on the most cost-effective way of eliminating greenhouse gases from the system."⁵⁹

The all-source solicitation should be viewed in a larger system context, and the goal should be to identify a portfolio of resources that will minimize GHG emissions by the electric sector over time.⁶⁰ Rather than limiting the all-source solicitation for replacement

⁵⁶ Exh. GEA-1, p. 5 (Kitz/GEA).

⁵⁷ Exh. IEP-1, p. 14 (Howarth/IEP); Exh. GEA-1, pp. 8-9 (Kitz/GEA).

⁵⁸ Exh. IEP-1, p. 14 (Howarth/IEP).

⁵⁹ Exh. GEA-1, p. 5 (Kitz/GEA).

⁶⁰ "[R]eplacement procurement should be targeted to meet best the evolving needs of the state's electric grid." Exh. TURN-2, p. 14 (Woodruff/TURN).

resources to only non-GHG emitting resources, PG&E should consider the effect of the candidate resources on overall system GHG emissions and select the resources that on a portfolio basis result in the most cost-effective reductions in GHG emissions.

G. Procurement of Replacement Resources Should Not Be Limited to Energy Efficiency

PG&E proposes to limit its initial procurement of replacement resources to energy efficiency (Tranche 1). PG&E believes that this limitation would mitigate the possibility that replacement procurement would exacerbate overgeneration.

As discussed above, the potential of a resource to contribute to overgeneration can be considered in the LCBF evaluation of bids in IEP's proposed all-source solicitation. More pertinent to PG&E's current proposal, it is unclear whether PG&E will be successful in procuring 2,000 GWh of energy efficiency. PG&E's proposed procurement of 2,000 GWh of energy efficiency is extremely optimistic. PG&E's forecasted savings from energy efficiency are significantly greater than the California Energy Commission's forecast of Additional Achievable Energy Efficiency savings in 2025 and the Commission's "aggressive yet achievable" energy efficiency goals, which take cost-effectiveness into account.⁶¹ The Office of Ratepayer Advocates (ORA) noted that PG&E's Tranche 1 proposal was an increase of 53.5% over its currently approved energy efficiency goals for 2018-2024, and that "[s]uch a substantial increase in the [energy efficiency] potential is only possible by lowering the Commission's threshold for cost-effectiveness."⁶² ORA accordingly questions the feasibility of procuring an additional 2,000 GWh of energy efficiency.⁶³ Thus, unless PG&E ignores cost-effectiveness, PG&E may fall well short of its very modest goals for replacing Diablo Canyon's generation

⁶¹ Exh. CLECA-1, pp. 8-9 (Barkovich/CLECA).

⁶² Exh. ORA-4, p. 11 (Buch/ORA).

⁶³ Exh. ORA-4, p. 12 (Buch/ORA).

while risking increased overgeneration and forgoing the benefits of federal tax incentives for renewables.

In addition, TURN's witness bluntly stated that "PG&E has offered no basis for asserting that procuring EE resources alone will lead to a lower contribution to over-generation than procuring non-GHG supply resources."⁶⁴ In fact, replacing Diablo Canyon's output with only energy efficiency may exacerbate overgeneration. As discussed above, if overgeneration is a concern, a better approach is for PG&E to conduct an all-source solicitation in which the "best fit" element includes consideration of a project's potential effect on overgeneration. PG&E could then identify the resources and portfolios that will address overgeneration at the least cost.⁶⁵

Similarly, SolarCity argues that Tranche 1 should be open to preferred resources and energy storage to meet SB 350's emphasis on a diverse and balanced portfolio of resources, optimal integration of renewable energy and cost-effectiveness.⁶⁶ Presumably energy efficiency would fare well in such a solicitation, but other supply resources may offer even greater reductions in GHG emissions at a lower cost. If the Commission limits PG&E's sole solicitation for replacing Diablo Canyon's generation to energy efficiency, PG&E will be deprived of its best means to identify the most effective and least costly ways to reduce GHG emissions.

III. PROPOSED EMPLOYEE PROGRAM

IEP does not address this issue in this brief.

IV. PROPOSED COMMUNITY IMPACTS MITIGATION PROGRAM

IEP does not address this issue in this brief.

⁶⁴ Exh. TURN-2, p. 27 (Woodruff/TURN).

⁶⁵ Exh. TURN-2, p. 28 (Woodruff/TURN).

⁶⁶ Exh. SolarCity-2, p. 2 (Franz/SolarCity).

V. RECOVERY OF LICENSE RENEWAL COSTS

IEP does not address this issue in this brief.

VI. PROPOSED RATEMAKING AND COST ALLOCATION ISSUES

IEP does not address this issue in this brief.

VII. LAND USE, FACILITIES, AND DECOMMISSIONING ISSUES

IEP does not address this issue in this brief.

VIII. ADDITIONAL ISSUES NOT ADDRESSED ABOVE

IEP does not address this issue in this brief.

CONCLUSION

The federal government has made hundreds of millions of dollars available for California to use to pursue its GHG emissions-reduction and clean energy goals. This money can also be used to finance the resources needed to replace part of the 18,000 GWh that will no longer be produced by the Diablo Canyon power plant when it retires in 2024 and 2025.

But there's a catch to this gift. The renewable resources that are eligible for this benefit have to commence construction, meet safe harbor requirements, or complete construction by 2019 to qualify for the maximum tax incentives. After that, the level of the incentives declines rapidly, and by 2025, when PG&E proposes to begin accepting deliveries from replacement resources, the only remaining tax incentive will be a 10% investment tax credit.

The Commission must act quickly to allow California to receive the benefit of the existing tax incentives. If the Commission delays its procurement authorization until after the completion of the LTPP/IRP process, now optimistically scheduled for the end of 2018, it will be too late for renewable energy developers to qualify for the maximum tax incentives. On the other hand, if the Commission acts quickly and authorizes PG&E to conduct an all-source

solicitation for up to 4,000 GWh as soon as possible, and certainly by July 2018, PG&E and its ratepayers may yet reap the financial benefits that Congress has made available.

The choice is the Commission's: act quickly and secure the benefit of hundreds of millions of dollars, or wait until the completion of the stalled LTPP/IRP proceeding and lose the possibility of procuring at a steep discount at least a portion of the generation needed to replace the output of Diablo Canyon.

For the reasons stated in this brief, IEP respectfully urges the Commission to act quickly in this proceeding, and to authorize PG&E to conduct an all-source solicitation for up to 4,000 GWh as soon as possible.

Respectfully submitted May 26, 2017 at San Francisco, California.

GOODIN, MACBRIDE,
SQUERI & DAY, LLP
Brian T. Cragg
505 Sansome Street, Suite 900
San Francisco, California 94111
Telephone: (415) 392-7900
Facsimile: (415) 398-4321
Email: bcragg@goodinmacbride.com

By /s/ Brian T. Cragg

Brian T. Cragg

Attorneys for the Independent Energy Producers
Association