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Alliance for Nuclear Responsibility Comments on Draft CEC Report

Attached please find the Comments filed by the Alliance for Nuclear Responsibility ("A4NR") in CPUC rulemaking R.23-01-007 concerning the Diablo Canyon cost comparison required by Pub. Res. Code Section 25233.2(a).

Additional submitted attachment is included below.

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Implementing Senate Bill 846)	
Concerning Potential Extension of)	
Diablo Canyon Power Plant)	Rulemaking 23-01-007
Operations.)	
)	

ALLIANCE FOR NUCLEAR RESPONSIBILITY'S COMMENTS ON CALIFORNIA ENERGY COMMISSION'S DRAFT SENATE BILL 846 DIABLO CANYON POWER PLANT EXTENSION COST COMPARISON

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I. INTRODUCTION.

Pursuant to Article 6 of the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission" or "CPUC") and the Phase 1: Track 2 schedule established by the April 6, 2023 Assigned Commissioner's Scoping Memo and Ruling as amended by the September 21, 2023 email ruling of Administrative Law Judge ("ALJ") Ehren D. Seybert, the Alliance for Nuclear Responsibility ("A4NR") respectfully submits its Comments on the September 26, 2023 draft staff report by the California Energy Commission ("CEC"), entitled "Draft Senate Bill 846 Diablo Canyon Power Plant Extension Cost Comparison" ("Draft CEC Report"). As noted in ALJ Seybert's September 26, 2023 email ruling incorporating the Draft CEC Report into the Phase 1: Track 2 evidentiary record, "This report has also been referred to in this proceeding as the CEC's cost-effectiveness evaluation."

The September 26, 2023 ALJ ruling directs: "Comments should focus on whether and how the Draft CEC Report informs the specific issues being considered in this proceeding." In A4NR's judgment, the Draft CEC Report does not directly address (or indirectly inform) any of the specific issues identified in the Assigned Commissioner's Scoping Memo and Ruling, including Scoping Issue 1.a. regarding cost-effectiveness. A4NR's Comments examine three material shortcomings that also disqualify the Draft CEC Report from being useful to the Commission's ongoing determination of the cost-effectiveness and/or prudence of an extension, as contemplated by Pub. Res. Code Section 25548.3.(c)(5)(C), and performance of its responsibilities under Pub. Util. Code Section 451.

II. THE DRAFT CEC REPORT ARBITRARILY CONSTRAINS ITS "PORTFOLIO OF OTHER FEASIBLE RESOURCES AVAILABLE FOR CALENDAR YEARS 2024 TO 2035, INCLUSIVE ..."

Pub. Res. Code Section 25233.2(a) directs the CEC to

present a cost comparison of whether extended operations at the Diablo Canyon powerplant compared to a portfolio of other feasible resources available for calendar years 2024 to 2035, inclusive, is consistent with the greenhouse gases emissions reduction goals of Section 454.53 of the Public Utilities Code.

This statutory directive gave rise to the not unreasonable expectation that the CEC would conduct a broad, comparative assessment of the costs of that "portfolio of other feasible

resources available." Indeed, noting the "extensive work under extremely tight timelines" facing the CPUC, as well as the parties to this proceeding, PG&E discouraged this Commission from "expanding the scope of this rulemaking to include a cost-effectiveness analysis already being prepared by the CEC."¹

Confronted by an abundance of "feasible resources" (the several reports from the Commission staff, CEC, and Southern California Edison ("SCE") in the R.23-01-007 record document 2025 – 2030 satisfaction of "the state's planning standards for energy reliability" with new non-emitting resources that are already online²), the Draft CEC Report subverts the legislatively-mandated cost-comparison by limiting it to resource types "not identified in planned procurements." This proscription extends not merely to identified projects already subject to a procurement contract, but to their underlying technologies as well. As the Draft CEC Report acknowledges,

... the biggest limiting factor was screening out resources that competed with procurement by electricity providers within the California ISO.

Renewable energy resources such as geothermal, hydropower, solar, and on/offshore wind are proven resources that may be important for California's energy future, but they were removed from this analysis as are the resources likely to be procured by CPUC jurisdictional LSEs for their compliance with IRP procurement requirements and POUs within California ISO to meet the state's carbon reduction goals and reliability need.

Because geothermal, hydropower, solar, and on/offshore wind are screened out due to procurement competition, all technologies relying on clean hydrogen were also screened out because hydrogen production relies on the same clean energy.

Supply resources included in this analysis may compete with IRP procurement order requirements in the future as they become more technologically and commercially mature and costs drop to make them more competitive. As they are not currently competitive, they are included in this analysis. While LDES [i.e., long-duration energy storage] resources are called out by the CPUC's procurement orders, these are likely to be predominantly lithium-ion systems in

¹ PG&E Reply Comments on OIR, p. 6.

² See A4NR Reply Brief, pp. 12 – 13.

³ Draft CEC Report, p. 1.

the near term, which are intentionally excluded from this analysis to avoid competition with LSEs' ongoing procurement requirements.⁴

Rather than conduct the statutorily-ordered assessment of whether the resources being assembled by the 49 California Load-Serving Entities ("LSEs"), consistent with the emission-reduction goals of Pub. Util. Code Section 454.53, will cost more or less than extended operation of Diablo Canyon, the Draft CEC Report limits the comparison from the outset to resource types that are currently infeasible or unmarketable and prematurely terminates its analysis at 2025. The Draft CEC Report disingenuously screens out all generating resource types, and restricts its "supply scenario" to only electrochemical, mechanical, and thermal forms of long duration energy storage. Unsurprisingly, once the zero-carbon technologies now dominating the market (and current strategy for meeting the Pub. Util. Code Section 454.53 goals) are precluded, the Draft CEC Report's conclusion is inevitable:

- No supply resources can be built by 2025 to cover DCPP's energy production
- No supply resources can be built by 2025 to cover capacity of DCPP at Net Peak⁷

The Draft CEC Report offers a bizarre, narrative-over-data explanation for its heavy-handed exclusionary choices:

Resources currently being pursued for procurement by LSEs are solar, wind, and energy storage. While these resources are coming on faster than ever in California, they are still not coming on quickly enough to meet demand due to interconnection delays, supply chain issues, and sheer competition for limited clean energy resources, resulting in a tight market for available solar, wind, and energy storage. Ordering more of these resources does not mean that they can come online quickly enough to provide the necessary grid support. Therefore, this analysis excludes these conventional clean resources from consideration for further investment from the state, as state investments in conventional solar,

⁴ *Id.*, pp. 10 – 11.

⁵ *Id.*, pp. 6, 8.

⁶ *Id.*, pp. 10 – 11, Table 2.

⁷ *Id.,* p. 28.

wind, and battery storage would only exacerbate the market bottleneck in getting these clean resources online.⁸

A4NR does not begrudge the authors of the Draft CEC Report their right to dissent, in the appropriate forum, from the rationale underlying multiple CPUC procurement orders or the federal Inflation Reduction Act and Infrastructure Investment and Jobs Act. But Pub. Res. Code Section 25233.2(a) does not ask for a conclusory broadside, it instead commands a transparent cost comparison. The Draft CEC Report appears to reject this assignment in preference to an outcome-motivated polemic, marinated in arbitrariness and capriciousness. This Commission should afford the Draft CEC Report no weight in the R.23-01-007 proceeding.

III. THE DRAFT CEC REPORT FAILS TO IDENTIFY THE SPECIFIC BENEFITS THAT EXTENDED OPERATION OF DIABLO CANYON WOULD PROVIDE.

A necessary prerequisite for a cost comparison of Diablo Canyon's extended operation with "other feasible resources" is the clear specification of the particular required services each alternative is expected to provide. The Draft CEC Report attempts to skew this comparison by simply seeking to replicate a claimed 18,000 GWh/year⁹ and 2.2 GW¹⁰ during 4 p.m. to 9 p.m. net-peak periods. But the CEC March 2023 report prepared under Pub. Res. Code Section 25233.2(c), and the quarterly Joint Reliability Planning Assessments prepared under Pub. Res. Code Section 25233(a), all indicate 2025 – 2030 satisfaction of "the state's planning standards for energy reliability" with new zero-carbon resources that have come online since January 2020.¹¹ The reliability threat identified by these state agency reports is "extreme events" like heat waves, and/or heat waves combined with wildfires. Because these posited extreme events are of limited duration, state strategies to address them focus on contingency resources

⁸ *Id.*, p. 8.

⁹ According to PG&E's September 2, 2022 application to the DOE Civil Nuclear Credit Program, the five most recent years for which data was available showed Diablo Canyon energy production only averaged 17,043 GWh. A4NR-01, CONFIDENTIAL Exhibit W, spreadsheet line 13.

¹⁰ The Draft CEC Report does not consider the advisability of derating Diablo Canyon's capacity factor or energy production during extended operation to reflect the alterations in financial incentives to PG&E made by SB 846 "in acknowledgment of the greater risk of outages in an older plant that the operator could be held liable for." *See*, e.g., Pub. Util. Code Sections 712(f)(6) and 712.8(i), which may inadvertently increase forced outages by insulating PG&E from their financial consequences.

¹¹ See A4NR Reply Brief, pp. 12 – 13, citing A4NR-02, p. 18, lines 20 – 27, and A4NR-01, p. 23, line 24 – p. 25, line 8.

that may not formally qualify for resource adequacy status but can be mobilized quickly for short-term use. As noted in the CEC's March 2023 report, \$3.365 billion in funding was provided in 2022 to the Department of Water Resources and the CEC to establish a Strategic Reliability Reserve ("SRR"): "When fully operational, the SRR is anticipated to provide up to 5,000 MW of additional extreme-event support to the state ... The SRR is expected to remain in operation through 2027 but may be extended if circumstances warrant continuation." ¹²

An inflexible, 2.2 GW of always-on nuclear capacity is a costly remedy to episodic events like heat waves or wildfires because of the inability to load-follow or quickly ramp. The overwhelming majority of costs are incurred in hours outside the episodic hours of need. Even if the Draft CEC Report's focus on the 4 p.m. to 9 p.m. net-peak periods during four summer months was posited to be heat wave and/or wildfire conditions making full use of the 2.2 GW, that would only account for 6.85% of the hours in the year (or 600 hours). Are Diablo Canyon's year-round operating costs sufficiently low to justify such an out-of-kilter ratio? Does the emission-free energy associated with this capacity come at a sufficiently low cost that can offset this undeniable surplus? As PG&E disclosed to DOE in its September 2, 2022 application for the Civil Nuclear Credit Program, Diablo Canyon's "above-market" costs during the 2017 – 2021 period, the most recent five years for which data was available, exceeded \$2.1 billion. 13 Is there no more economic solution to the purported reliability problem?

Nor should Diablo Canyon energy production be whitewashed without regard to cost. To the extent that other zero-carbon energy available at a lower cost is displaced, extended operations would undercut achievement of the Pub. Util. Code Section 454.53 goals by misallocating finite taxpayer/ratepayer financial capacity. The Pub. Res. Code Section 25233.2(a) cost comparison should include a cost per CO2e/MWh for each portfolio of "feasible resources."

¹² Attachment D to the April 20, 2023 ALJ ruling, p. 14. Although receiving a General Fund appropriation of \$75 million at the same time, Diablo Canyon has not been included in the Strategic Reliability Reserve due to its inflexible operating characteristics.

¹³ See A4NR Reply Brief, pp. 7 – 8, citing A4NR-01, p. 27, lines 1 – 9, and CONFIDENTIAL Exhibit W, spreadsheet line 94.

The prospective mismatch between Diablo Canyon costs and reliability benefits might be brought into even clearer focus by targeting the same hours urged by the CEC's May 2023 Senate Bill 846 Load-Shift Goal Report, produced in response to newly enacted Pub. Res. Code Section 25302.7. Rather than the 600 hours inferred by the new Draft CEC Report, the Load-Shift Goal Report had identified a considerably narrower target:

The net peak period is defined as the top 100 net system load hours in a year, and correspondingly the net peak demand is defined as the average hourly demand over the net peak period. The LBNL [i.e., Lawrence Berkeley National Laboratory] Potential Study also uses the top 100 net load hours to define the system peak period.¹⁴

The Draft CEC Report identifies an incremental achievable potential of 485 MW by the end of 2025, with a capital cost of \$230 – 330 million plus recurring annual incentive costs of about \$50 – 65 million. Over the potential five-year extended operations period contemplated by SB 846, these estimated costs would sum to \$480 – 575 million and provide 22% of the capacity benefit attributed in the Draft CEC Report to Diablo Canyon. The Draft CEC Report does not attempt to project its demand-side strategy past 2025, although the Load-Shift Goal Report adopted a statewide goal for an incremental 3,400 – 3,900 MW in 2030 that "would align with the elements of SB 846 related to the potential extension of the operation of the Diablo Canyon Nuclear Power Plant to at least 2030." 17

Despite the imperfect fit of Diablo Canyon for the "extreme event" reliability challenges identified in the CEC March 2023 report and the quarterly Joint Reliability Planning Assessments, the Draft CEC Report falls victim to the primitive oversimplification of the CEC's resource stack methodology. With the conceptual rigidity of a carpenter whose only tool is a hammer, the Draft CEC Report prioritizes increases to the Planning Reserve Margin ("PRM") and solves for a 2025 PRM of 26%. This Commission previously rebuked the CEC's recent stack

¹⁴ CEC, SB 846 Load Shift Goal Report, p. 19.

¹⁵ Draft CEC Report, p. 24.

¹⁶ CEC, SB 846 Load Shift Goal Report, p. 24.

¹⁷ *Id.,* p. 18.

obsession in D.21-12-015 when applied only a year in advance, ¹⁸ and the stack methodology's avoidance of probabilistic analyses renders it more exaggeration-prone when extended to longer periods of time. The difficulty in reconciling a PRM of 26% with ratepayer affordability is perhaps best illustrated by the lack of any CEC initiatives to require increases above 15% among the publicly-owned utilities for which it is responsible.

This Commission confronted that reality most recently in D.23-06-029, which adopted a 17% PRM for 2024 - 2025 resource adequacy, augmented by additional procurement of 1,700 - 3,200 MW of contingency resources to create an "effective PRM" of 21 - 23.5%. ¹⁹ As noted in D.23-06-029, SCE explained the necessity for such an approach,

SCE states that a tight RA market is precisely why it is reasonable to retain the current PRM framework and that increasing the PRM may create shortages, which will lead to excessive prices and excessive costs to customers. [footnote omitted] SCE argues that retaining the effective PRM will keep costs down and provide reliability benefits because there are less stringent counting rules and fewer entities competing for the same resources.²⁰

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¹⁸ D.21-12-015, pp. 24 – 26: "The CEC [2022 Summer Stack] analysis provides a snapshot of an extreme weather event coupled with conservative assumptions on availability of hydroelectric and imported resources and the potential need for contingencies in summer 2022. The CEC analysis can be used as a point of reference in determining resources needed to maintain grid reliability in the most extreme summer weather events. However, as noted in the Appendix to the CEC's adopted Summer 2021 Mid-term Reliability Analysis, [footnote omitted] the Summer Stack Analysis is: '... primarily intended to provide a snapshot of a potential worst case scenario to inform the level of contingencies that the state should plan for. As such, the extreme scenario is developed to capture extreme demand and supply conditions that might represent a very low likelihood. While portions of an identified shortfall using the Hourly Stack Analysis in an extreme weather scenario might be deemed necessary to be addressed by additional procurement, the intention of an Hourly Stack Analysis is not to determine whether traditional procurement is needed ... '[Italics in D.21-12-015] As stressed by the CEC in its Mid-term Reliability Analysis, this risk stacking approach is a different approach to need determination from traditional electricity resource planning and RA approaches and is not intended to determine the level of traditional resources needed. Resource planners forecast the probability of a loss of load event based on historic variations in weather, electricity demand, and resource performance. Traditionally, California resource planning uses a 'probabilistic' approach – that is, it considers various scenarios, rather than a single worst-case scenario. The CEC analysis takes a 'deterministic' approach that assumes all worst-case scenarios occur simultaneously." See also D.21-12-015, FOF #44, FOF #45, and FOF #46.

¹⁹ D.23-06-029, pp. 24 – 25.

²⁰ *Id.*, p. 18, citing SCE Reply Comments at p. 3. *See* also FOF #5: "Extending the effective PRM through 2025 is beneficial in that it provides non-binding targets for IOUs to procure contingency resources and allows procurement of resources that provide reliability benefits without unnecessarily inflating RA prices and costs to ratepayers, and without reducing the pool of available RA resources."

The inability to better define the 2025 – 2030 reliability problem to be solved, and the analytic slothfulness of simply opting instead to replicate 2.2 GW of baseload capacity and 18,000 GWh/year of energy production, arbitrarily and capriciously confines the Draft CEC Report to a blinkered vision of would-be solutions. This Commission should afford the Draft CEC Report no weight in the R.23-01-007 proceeding.

IV. THE DRAFT CEC REPORT FAILS TO ACCURATELY CAPTURE EVEN PG&E'S ESTIMATE OF THE COSTS OF A 2025 – 2030 DIABLO CANYON EXTENSION.

The Draft CEC Report relies on cost projections from PG&E's DOE grant application, which PG&E subsequently repudiated in its July 28, 2023 rebuttal testimony in this proceeding. After criticism in A4NR-01 that PG&E-01 had omitted nearly \$2.158 billion of "readily calculable amounts" from its operating cost forecast, PGE-04 increased the company's estimate by \$2,796,810,000, more than half the prior amount projected, bringing the new forecast total to \$8,067,010,000.²¹ TURN characterizes PG&E's dissembling over its cost forecasts as "an obvious red flag" and "a classic 'bait and switch' in the making." The magnitude by which the Draft CEC Report's outdated cost assumptions are understated, even by PG&E's admission in PG&E-04, is clear:

Changes in PG&E Cost Projections for Extended Operations

SOURCE	2024	2025	2026	2027	2028	2029	2030	TOTAL
PG&E-01	744,446	893,139	765,144	751,996	885,818	773,478	422,644	\$5.2 billion
PG&E-04	969,401	1,403,781	1,286,212	1,218,161	1,353,879	1,233,850	601,726	\$8.1 billion ²³

The cost comparison assignment to the CEC by Public Res. Code Section 25233.2(a) obviously contemplates using the most reliable cost estimate available, but even the failure of

²² TURN Opening Brief, p. 19.

²¹ A4NR Reply Brief, p. 2.

²³ TURN's calculation of net ratepayer cost would add nearly \$2.1 billion to this amount. TURN Opening Brief, p. 16.

the Draft CEC Report to reflect PG&E's significantly altered assumptions is masked by the two conceptual errors discussed above. A third conceptual error undercuts the financial analysis that the CEC should have performed, whatever numbers used: the Draft CEC Report refuses to recognize that the extension decision will involve a multi-year commitment of finite financial resources (from both taxpayers and ratepayers) that regulatory prudence requires be evaluated using "least cost/best fit" criteria. Here, by PG&E's most recent estimate, some \$8.1 billion dollars of ratepayer obligation and some \$1.475 billion of General Fund obligation are at stake. Reflecting the priority that SB 846 placed on reliability, ²⁴ is a five-year life extension of a fully-depreciated, aged nuclear plant the best use of \$9.575 billion²⁵ to address ("consistent with the greenhouse gases emissions reduction goals of Section 454.53 of the Public Utilities Code" the "extreme events" that reputedly vex California's electricity planners? And at the end of the five-year period, does this extraordinary forced investment have any residual value at all – as investment in developing technologies or long-lived infrastructure may – or is it simply a forestalling of decommissioned status?

For context, the widely heralded 2022 – 2023 CAISO Transmission Plan, "supporting more than 40 gigawatts (GW) of new resource development identified by the CPUC as cost-effective and needed to meet the state's clean-energy goals over the next 10 years," is estimated to have a cumulative cost of \$7.3 billion. Can any of the 45 projects for system expansion and upgrades be accelerated by a sooner commitment of funds? What about next year's Transmission Plan, which the CAISO expects to facilitate the addition of 70 GW by 2033? Or the newly announced Subscriber Participating Transmission Owner model intended for development of generation and transmission from outside of the CAISO balancing area? Given the reduced-cost, enhanced-reliability, lowered-reserve-requirement benefits universally attributed to the Western Energy Imbalance Market and the coming Extended Day Ahead

²⁴ The urgency clause, uncodified Section 18, is premised on "ensuring electrical reliability in the California electrical system."

²⁵ Using TURN's estimate would bring the combined ratepayer/taxpayer total to roughly \$11.6 billion.

²⁶ Pub. Res. Code Section 25233.2(a).

²⁷ CAISO News Release, May 18, 2023, https://www.caiso.com/Documents/caiso-2022-2023-transmission-plan-approved.pdf

Market, is now a strategic time to improve the import/export capabilities of the CAISO grid? Inexplicably, the CEC Draft Report neglects to even consider a transmission alternative for its cost comparison despite the demonstrable fact that \$9.575 billion would pay for a lot of transmission projects.

V. CONCLUSION.

The Draft CEC Report treats the Diablo Canyon extension as *fait accompli*, with an implicit incremental cost of \$1.475 billion at most. This is magical thinking which flouts the responsibility assigned the CEC by Pub. Res. Code Sections 25233.2(a) and substitutes a preordained conclusion for a competently-performed cost comparison. Or, as Lewis Carroll's Queen of Hearts memorably urged during the trial of the Knave of Hearts, "Sentence first – verdict after." For the reasons stated herein, the Draft CEC Report does not directly address (or indirectly inform) any of the specific issues identified in the Assigned Commissioner's Scoping Memo and Ruling, including Scoping Issue 1.a. regarding cost-effectiveness. This Commission should afford the Draft CEC Report no weight in the Commission's ongoing determination of the cost-effectiveness and/or prudence of an extension, as contemplated by Pub. Res. Code Section 25548.3.(c)(5)(C), and performance of its responsibilities under Pub. Util. Code Section 451.

Respectfully submitted,

By: /s/ John L. Geesman

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Date: October 6, 2023 Attorney for

ALLIANCE FOR NUCLEAR RESPONSIBILITY

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²⁸ Lewis Carroll, *Alice's Adventures in Wonderland* (1865), p. 91, https://gutenberg.org/files/11/old/alice30.pdf

VERIFICATION

I am the attorney for the Alliance for Nuclear Responsibility ("A4NR"); which is absent from the County of Sonoma, California, where I have my office, and I make this verification for A4NR for that reason and am authorized to do so; the statements in the foregoing document are true of my own knowledge, except as to matters which are therein stated on information or belief, and as to those matters I believe them to be true.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on October 6, 2023 at Bodega Bay, California.

/s/ John L. Geesman

Attorney for Alliance for Nuclear Responsibility