Docket No.:	R.20-11-003
Commissioner	Marybel Batjer
ALJ:	Brian Stevens, Sarah R. Thomas
Exhibit No.:	
Date:	September 10, 2021
Witness:	Matthew Barmack

REPLY TESTIMONY OF MATTHEW BARMACK ON BEHALF OF CALPINE CORPORATION

I. INTRODUCTION AND BACKGROUND

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

A: My name is Matthew Barmack. I am the Vice President, Market and Regulatory Policy for Calpine Corporation ("Calpine"). In this role, I work on market and regulatory issues related primarily to long-term procurement, resource adequacy ("RA"), and renewables procurement and integration issues. My professional and educational background was provided as Exhibit A to my September 1, 2021 opening testimony entitled "Testimony of Matthew Barmack on behalf of Calpine Corporation."

2. Q: What is the purpose of your reply testimony?

A: My reply testimony responds to certain parties' comments on gas generation. In particular, I highlight inaccuracies made in opening testimony and any implications on Calpine's proposal to allow upgrades to gas plants to count towards the recently implemented mid-term reliability procurement mandates. Additionally, my reply testimony responds to other party proposals in opening testimony related to wholesale supply issues.

II. RESPONSE TO SIERRA CLUB'S OPENING TESTIMONY

1. Q: Do any of the gas generation arguments raised by Sierra Club impact Calpine's proposal to allow upgrades to gas plants to count towards the recently implemented mid-term reliability procurement mandates?

A: No. As explained below, many of Sierra Club's gas generation arguments are unsubstantiated and inaccurate. Additionally, Calpine's proposal would only apply to incremental gas plant upgrades that could come online by summer 2022 and 2023. Calpine has already identified viable upgrades, which are generally permitted and would fit within existing

interconnection capacity. Even considering Sierra Club's concerns about additional reliance on gas generation, the capacity that could result from Calpine's proposal is cleaner than many of the solutions that the state is implementing or considering, such as diesel back-up generators. Other potential methods to reduce emissions from gas generation using carbon capture and sequestration or alternative fuels such as renewable natural gas and hydrogen could also be incorporated into Calpine's proposal.

Ultimately, Calpine's proposal would directly add firm and reliable supply to the grid that could meet net peak needs while still meeting state environmental goals. Any concerns raised by Sierra Club and other parties about gas generation ignore the critical needs of the state identified in the Emergency Proclamation and are inapplicable to Calpine's incremental gas plant upgrade proposal.

2. Q: Do you agree with Sierra Club that gas generation significantly adversely impacts local air quality?[1]

A: No, as Calpine demonstrated in testimony we submitted earlier in this proceeding, the impacts of gas generation on local air quality are minimal, especially compared with sources in other sectors, such as vehicles.[2] In addition, Sierra Club's concerns about emissions from gas generation are misplaced given the significantly higher emissions from other solutions, such as diesel back-up generators, that the state is currently pursuing to address near-term reliability.

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[1] *See* Prepared Opening Testimony of Cara Bottorff on behalf of Sierra Club ("Sierra Club Testimony"), at 11.

[2] Exh. Calpine-1, Reply Testimony of Christopher A. Emery on Behalf of Calpine Corporation, Exhibit B, R.20-11-003 (Jan. 19, 2021).

3. Q: Do you agree with Sierra Club that the procurement of incremental gas generating capacity is inconsistent with state policy?[3]

A: No, state policy is clear with respect to greenhouse gas reduction and renewable energy goals, but it does not preclude reliance on gas generating capacity to meet reliability goals. Further, Sierra Club ignores the fact that investment in some incremental relatively efficient gas generation could facilitate the retirement of older less efficient capacity once near-term reliability problems are addressed. It also overlooks the potential to reduce emissions from gas generation using carbon capture and sequestration or alternative fuels such as renewable natural gas and hydrogen.

4. Q: Do you agree with Sierra Club that gas generation is unreliable?

A: No, gas generation is uniquely reliable because it is one of the few "firm" resources left in the state's resource portfolio, i.e., it can be dispatched whenever it is needed. In contrast, generation from intermittent renewables such as solar and wind are impacted by weather and the availability of sunlight and battery storage, while dispatchable, is energy-limited and hence may not be able to sustain its output through extended reliability events. The average forced outage rate of gas plants, i.e., a few percent of its nameplate capacity, is modest relative to the more severe limitations on these other resources. In addition to the inherent limitations of these other resources, they are also subject to potential forced outages.[4]

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[3] *See* Sierra Club Testimony, 12.

[4] *See e.g.,* Kassia Micek, *Overheated Batteries Force Shutdown of Vistra's 300-MW Moss Landing Phase I* (Sept. 7, 2021), https://www.spglobal.com/platts/en/market-insights/latest-news/electric-power/090721-overheated-batteries-force-shutdown-of-vistras-300-mw-moss-landing-phase-i.

5. Q: Do you agree with Sierra Club that gas generation poses a disproportionate safety risk?[5]

A: No. Any facility that produces or delivers large amounts of energy poses a safety risk. For example, numerous grid scale batteries have caught fire and transmission lines can cause wildfires.[6]

III. RESPONSE TO THE CALIFORNIA LARGE ENERGY CONSUMER ASSOCIATION'S ("CLECA") OPENING TESTIMONY

1. Q: Do you support the CLECA proposal for the procurement of additional maintenance and/or upgrades associated with existing gas generation?

A: As I indicated in my opening testimony, I support long-term procurement of upgrades to existing gas plants that increase capacity (as well as the underlying existing capacity). As I understand it, the CLECA proposal would also address not only upgrades that increase capacity, but also upgrades that improve reliability.[7] However, I would appreciate further clarification of this aspect of the proposal. Given California's RA rules, the expectation is that capacity that is procured as RA capacity will be available or subject to replacement/substitution or penalty, so suppliers who are able to sell RA capacity already have

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[5] *See* Sierra Club Testimony, 16-17.

[6] *See e.g.,* Lora Kolodny, *Tesla Megapack Fire Highlights Issues to be Solved for Utility 'Big Batteries'* (Aug. 5, 2021) https://www.cnbc.com/2021/08/05/tesla-megapack-fire-highlights-early-stage-issues-with-big-batteries.html#:~:text=Andrew%20Evers%20%7C%20CNBC-,A%20Tesla%20Megapack%20fire%20at%20the%20Victorian%20Big%20Battery%20in,to%20the%20Country%20Fire%20Authority; *see also* Julian Spector, *APS Details Cause of Battery Fire and Explosion, Proposes Safety Fixes* (July 27, 2020) https://www.greentechmedia.com/articles/read/aps-battery-fire-explosion-safety-lithium-mcmicken-fluence.

[7] *See* Testimony of Catherine Yap and Paul Nelson on behalf of the California Large Energy Consumers Association, at 5-7.

incentives to maintain the availability of that capacity. (In addition, as described below, potential lost energy market revenues provide another incentive to maintain availability. Further, generators are subject to GO 167 standards.)[8] Consequently, it is not clear what additional availability commitments purely reliability-related upgrades might entail. Given the incentives for RA resources to perform, the best way to ensure the availability of gas generation is to contract it as RA capacity. In addition, longer-term (multi-year) procurement enables suppliers the financial certainty required to undertake the types of maintenance the costs of which are typically amortized over multiple years.

To the extent that stronger availability incentives are warranted, they should apply to all resources and resource types, not only a subset of resources with special contracts with increased availability incentives. If higher availability standards were introduced for all RA capacity, suppliers would seek to recover the costs of the maintenance required to meet those standards in RA contracts and RA prices would rise accordingly.

IV. RESPONSE TO PACIFIC GAS AND ELECTRIC COMPANY'S ("PG&E") OPENING TESTIMONY

1. Q: Do you support PG&E's proposed interim modifications to the Central Procurement Entity ("CPE")?

I support the ability of PG&E as the CPE in its service territory to negotiate bilaterally contracts for incremental capacity that could come on-line in 2022 and 2023.[9] However, the proposal should be adjusted to apply to all resources and not just preferred resources. Given

[8] *Infra*, at Section VI.

[9] *See* Pacific Gas and Electric Company Emergency Reliability Order Instituting Rulemaking Opening Testimony, at 9-6—9-9.

current reliability challenges and the fact that gas generation is cleaner than many of the alternatives that are being considered for emergency procurement, the proposal should apply to incremental gas generation as well. For simplicity and equity, any procedure adopted for PG&E's proposal should apply to all resource types.

V. RESPONSE TO OPENING TESTIMONY RELATED TO THE PLANNING RESERVE ("PRM") MARGIN

1. Q: Do you support proposals to increase the PRM and/or introduce new RA requirements tied to evening net peak load?

A: I support more robust RA requirements with sound analytic foundations. I believe that there is more analytic support for increasing the current peak based PRM than for introducing new net peak-based requirements. In addition, given that the Commission already introduced an "effective" 17.5% PRM in this proceeding, I support translating that requirement into an actual PRM for RA compliance, as proposed by the California Independent System Operator Corporation ("CAISO") and the Public Advocates Office ("PAO"), so that load serving entities are obligated to meet the full requirement rather than relying on the investor-owned utilities to meet the portion of the requirement above the current 15% RA PRM on their behalf.

Both CAISO and PAO propose increasing the PRM used to set system RA requirements as well as adding new and separate RA requirements tied to net peak load at 8 p.m.[10] Neither the PAO nor CAISO has demonstrated that a higher PRM alone or in combination with an additional evening RA requirement satisfies an objective reliability criterion, such as 1 event in 10 years.

[10] *See* Opening Testimony of the California Independent System Operator Corporation, at 2-14; *see also* Public Advocates Office Prepared Testimony, Chapter 1: Planning Reserve Margin (Christian Lambert) ("PAO Testimony"), at 1-1—1-5.

Further, the implication in both proposals that a PRM that is ostensibly defined to be applied to the peak should apply to different hours of the day independently has no clear theoretical or analytic basis. (The practice that PAO and CAISO have introduced of decomposing the PRM into components that correspond to operating reserves, forced outages, and load forecast uncertainty that should apply to each hour is at best an approximation of what a rigorous LOLE analysis might yield. For example, it could be that a peak based PRM that yields 1-in-10 reliability overall results in slightly lower capacity margins and slightly more risk of loss of load events in the evening. In fact, the Commission's recent analysis of the Preferred System Plan demonstrates that a portfolio that is reliable overall might be riskier in the evening.[11])

While neither CAISO nor PAO have linked their proposals to a clear reliability standard, other analyses suggest a higher peak-based PRM is warranted. For example, Energy Division's own analysis seems to suggest that a 22.8% PRM may be consistent with an interpretation of 1 event in 10 years.[12]

With respect to new net peak requirements, as PAO acknowledges and Middle River Power ("MRP") notes, the implications of introducing a new net peak RA requirement requires careful consideration. For example, PAO states:

> "[a]dditional work to define the net peak period is necessary to prevent the inadvertent adoption of duplicative or contrary rules

[11] Integrated Resource Planning (IRP) Proposed Preferred System Plan Analysis Workshop Presentation (Sept. 1, 2021), at Slide 56 of https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2019-2020-irp-events-and-materials/psp-workshop-slides.pdf.

[12] *See* Energy Division, *Track 3.B Workshops: Day 2 Presentation* (Nov. 23, 2020), at Slide 44, https://www.cpuc.ca.gov/-/media/cpuc-website/files/uploadedfiles/cpuc_public_website/content/utilities_and_industries/energy/energy_programs/electric_power_procurement_and_generation/procurement_and_ra/ra/track-3b-day-2-presentation.pdf.

> for the gross peak and net peak PRMs. Other issues that the RA proceeding should address include clarification of how resources or resource attributes should count towards the net peak period, including any necessary adjustments to the current RA counting methodologies."[13]

Relatedly, MRP warns:

> "MRP is concerned that procurement focused on the net load peak hours may have unintended detrimental impacts. Currently, the Commission's Resource Adequacy ("RA") program looks only at the gross peak load to set requirements and assess adequacy. If the Commission directs procurement of additional resources to meet the net load peak demand, as it indicates it intends to do in this phase of this rulemaking, such incremental resources are also likely to count towards meeting the gross load peak RA requirements. This will lead to a surplus of resources needed to meet the gross load peak RA requirements and create the perception that a surplus of capacity exists and not every existing resource is still required, even though the PSA appears to indicate that all existing resources are required."[14]

VI. RESPONSE TO THE PROTECT OUR COMMUNITIES FOUNDATION'S ("PCF") OPENING TESTIMONY

1. Q: Do you support the PCF proposal for more onerous inspections of generating plant outages?

A: No, I do not support the proposal because it is largely duplicative of current practice and is unlikely to have a significant impact on increasing supply during peak or net peak periods. For example, PCF suggests that plants should be audited after outages, especially outages during peak demand periods.[15] This generally already happens. In addition,

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[13] PAO Testimony, at 1-5.

[14] MRP Testimony, at 15-16 (emphasis omitted).

[15] The Protect Our Communities Foundation Opening Testimony of Bill Powers, P.E., Proposals, and Comments on Energy Division Staff Concepts ("PCF Testimony"), at 17.

PCF recommends that audits should "include accessing and reviewing all plant operator logs and operator communications with the ISO."[16] Again, this is a routine aspect of most audits. Further, PCF argues that plant employees should be subject to whistleblower protections; however, protections already exist under General Order 167-B for retaliatory actions.[17]

More fundamentally, the PCF recommendation ignores the fact that suppliers have strong incentives to maintain the availability of generating plants, including potential foregone market revenues, contractual penalties, and CAISO RA availability incentives. Notwithstanding these incentives, generation plants are complex systems with numerous moving parts that require constant maintenance and ongoing repairs; suppliers should not be the subject of witch hunts or deemed "cheaters" as PCF infers due to the physical realities of these complex systems. Ultimately, PCF's proposal is unlikely to result in an increase in supply and thus the Commission should instead focus on the numerous proposals put forward by other parties that will more realistically address the state's current emergency reliability needs.

VII. CONCLUSION

1. Q: Was this material prepared by you or under your supervision?

A: Yes, it was.

2. Q: Insofar as this material is factual in nature, do you believe it to be correct?

A: Yes, I do.

[16] PCF Testimony, at 19.

[17] *See e.g.,* GO 167-B, Section 12.2 (Retaliation).

3. Q: Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

A: Yes, it does.

4. Q: Do you adopt this testimony as your sworn testimony in this proceeding?

A: Yes, I do.

5. Q: Does this conclude your reply testimony?

A: Yes.

/s/
Matthew Barmack
Vice President, Market and Regulatory Policy
Calpine Corporation