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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Petition to Adopt, Amend, or Repeal a
Regulation Pursuant to Pub. Util Code §
1708.5.

Petition 22-06-_____
(Filed June 23, 2022)

**PETITION OF BLOOM ENERGY CORPORATION FOR RULEMAKING
TO ADOPT A DISTRIBUTED ENERGY RESOURCE RELIABILITY & RESILIENCE
TARIFF TO ADDRESS URGENT AND NEAR-TERM GRID RELIABILITY NEEDS**

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Pursuant to Rule 6.3 of the Rules of Practice and Procedure of the California Public Utilities Commission (“Commission”), Bloom Energy Corporation (“Petitioner”) respectfully submits this Petition for Rulemaking to leverage customer investments in highly reliable and resilient distributed energy resources (“DERs”) to combat the growing threat to grid reliability.

The Commission has devoted enormous time and effort to ensuring grid reliability is maintained while simultaneously advancing the State’s greenhouse gas (“GHG”) reduction objectives by expediting procurement and development of renewable generation and storage. A wide range of factors, all beyond the Commission’s control, however, make it increasingly likely that these efforts will fall short. Much of the new capacity anticipated to be deployed over the next few years is likely to be substantially delayed, with some at risk of failure. If that occurs, there will be a genuine threat to grid reliability that could undermine California’s policy objectives and its economy.

The Commission has recognized the important role DERs can and will play in the future, as evidenced by the pending High DERs proceeding.¹ The scoping and schedule of that proceeding, however, were never intended to channel customer DER investments to mitigate the reliability issues currently confronting the State.² Yesterday, the Energy Division released a

¹ See OIR Instituting Rulemaking to Modernize the Electric Grid for a High Distributed Energy Resources Future, R.21-06-017 (July 7, 2021), *available at* <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M390/K664/390664433.PDF>.

² See, e.g., Assigned Commissioner’s Scoping Memo and Ruling, R.21-06-017 at, 6 & 9 (Nov. 15, 2021) (deferring until 2024 proposed decisions on incenting deployment of DERs with initial decisions focused on framework, roles and responsibilities), *available at* <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M422/K949/422949772.PDF>.

white paper proposing that the Commission launch a major initiative to make better use of demand-side resources, recommending that the Commission open a rulemaking to consider its proposal.³ The proposal offers a very thoughtful, extensive assessment of the potential for a more synergistic, scalable, and integrated demand response and retail rate strategy that addresses emerging grid issues. Petitioner applauds the Energy Division’s ambitious initiative, which offers a powerful vision for California’s long-term utilization of demand-side resources. We agree with Energy Division that a new proceeding is merited, as discussed further below.

While the Commission begins work on the significant scope and complexity of the Staff proposal, however, it can and should also take critical steps now. The Commission faces two simultaneous and immediate issues that it can address right now: first, the reliability threats that are the focus of the Governor’s May Budget revise proposal to procure capacity, and second, customer expenditures on backup generation that are rising significantly, frequently in ways that undermine California’s energy and environmental concerns—such as the exponential growth in the backup diesel fleet, which in the Bay Area and South Coast alone is equivalent to roughly 15% of the State’s *total* installed capacity- that, having been procured, will likely linger as an unfortunate element of our energy system.⁴ The Commission, by using this new proceeding to adopt interim measures such as the tariff we propose in this petition, can quickly leverage highly reliable and resilient demand side resources to address California’s urgent reliability concerns, and redirect customer investments in advances California’s energy system objectives, rather than steepening the challenges to achieving them.

In this filing, Petitioner proposes a an initial, but meaningful, first step toward harnessing the growing investments being made in DERs, and ensuring those investments will help relieve the urgent energy challenges facing the State, including both short-term reliability challenges and

³ Energy Division White Paper and Staff Proposal, “*Advanced Strategies for Demand Flexibility Management and Customer DER Compensation*,” at 2, available at <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/demand-response/demand-response-workshops/advanced-der---demand-flexibility-management/ed-white-paper---advanced-strategies-for-demand-flexibility-management.pdf>.

⁴ M.Cubed, “*Diesel Back-up Generator Population Grows Rapidly in the Bay Area and Southern California*,” at 2 (October 6, 2021) (“In 2021, the two districts were collectively home to 23,507 BUGs, with a capacity of 12.2 gigawatts. . . BUGs in the Bay Area and South Coast alone can generate about 15 percent of the entire grid”) (study sponsored by Bloom Energy), available at <https://www.bloomenergy.com/wp-content/uploads/diesel-back-up-generator-population-grows-rapidly.pdf>.

longer-term policy objectives. To that end, as a rapid response that aligns well with the longer-term vision laid out in the Energy Division’s white paper, this proposal could serve well as a first phase of the rulemaking Commission Staff recommended yesterday.

I. INTRODUCTION

Petitioner proposes the Commission adopt a tariff that establishes a credit for ratepayers that install fuel cells and other qualifying DERs to compensate them for the value their resources bring to the grid by enhancing reliability, providing capacity as well as other benefits. The proposed tariff would provide a higher credit in resource adequacy local capacity requirement (“LCR”) areas, where the additional supply side capacity provide the most reliability, social and environmental value. The deployment of this new capacity would provide a demonstrable and predictable reduction of load, reduce the need for and cost to load serving entities (“LSEs”) to procure new capacity, provide stability during peak grid hours and ensure the limited budget funds proposed by the Governor for a new Strategic Energy Reliability Reserve Fund can go further in protecting California’s energy customers from outages.⁵

The proposed tariff would also provide an energy export mechanism to support the grid during times of stress. Like the Commission’s existing Emergency Load Reduction Program (“ELRP”), it would do so by providing a “pay for performance” incentive that would compensate fuel cell operators and other long duration DER customers who, during periods of declared stage alerts, voluntarily reduce their own energy usage, as occurred to a limited extent during the August 2020 outages.⁶ For those DER customers willing to commit to providing energy exports in emergencies (as opposed to doing so voluntarily), a further capacity payment would be afforded, provided they register their capacity in advance for dispatch and then actually export that energy to the grid during grid emergencies (with penalties for failing to do so).

⁵ See Department of Finance, 2022 Trailer Bill Language, Energy Reliability, Relief, and Clean Energy Investments (updated: 05/18/2022) (“2022 Trailer Bill”) at 2-4 (creating Distributed Electricity Backup Assets Program to incentivize the construction of cleaner and more efficient distributed energy assets that would serve as on-call emergency supply or load reduction for the State’s electricity grid during extreme events), available at <https://esd.dof.ca.gov/trailer-bill/public/trailerBill/pdf/741>.

⁶ St. John, “[Distributed Energy Helped Fight California's Grid Outages, But It Could Do Much More](https://www.greentechmedia.com/articles/read/california-outages-distributed-energys-grid-potential-barriers-to-access)” (Greentech Media, Aug. 28, 2020), available at <https://www.greentechmedia.com/articles/read/california-outages-distributed-energys-grid-potential-barriers-to-access>.

In addition to helping manage demand on the grid, the proposed tariff would also facilitate the deployment of proven and reliable resources that would introduce resource diversity that is increasingly lacking in the State's energy portfolio. It would do so without compounding the environmental justice concerns being raised by the increasingly widespread deployment of diesel generation. Finally, at least with regard to fuel cells, it would also align with the State's effort to transition away from natural gas given the ability of fuel cells to switch to renewable fuels, thereby advancing SB 100's goals of switching to such fuels by 2045.

The proposed tariff would accomplish these goals with limited upward pressure on rates. It would do so by leveraging DER customer capital investment. Ratepayers would not, as is more typically the case with supply-side procurement, be on the hook for the entire cost of the reliability and resilience these resources provide. Instead, the credit that qualifying DER customers receive would represent only a portion of the total required capital and operating expense, serving as a catalyst for enabling substantial new infrastructure that will bring benefits far in excess of the credit paid.

The tariff is designed with baseload DERs in mind but would be open to investments in any DER technology that has the capability to deliver highly reliable capacity at anticipated times of grid stress and continue to do so over long outages, as have occurred in the recent past (*i.e., at least* 120 hours of continuous operations). As proposed, qualifying DERs would have to comply with the California Air Resource Board's criteria air pollutant requirements as provided in the Distributed Generation Certification Program and have both the capability to operate on renewable fuels and a commitment by the DER customer to fully transition to such fuels consistent with SB 100's timelines.

As detailed below and supported by the accompanying testimony of Dr. Jack Brouwer, Petitioner believes DERs that have such operational profiles are best suited to advancing the State's immediate and longer-term needs. With increasing Public Safety Power Shutoffs (PSPSs), wildfires, and extreme weather events, grid outages of longer duration are likely, if not certain. Qualifying resources under the proposed tariff should therefore be able to operate for multiple days, at a bare minimum, and preferably on a baseload basis.

As a result, the proposed tariff would provide a tool for the Commission to establish a margin of safety at a time when future events are highly unpredictable and the cost of failing to close a potential capacity shortfall is extremely high. The *status quo* provides no guarantees of

success going forward, but there is ample evidence that DERs can contribute to mitigating the risks the State confronts and can do so cost effectively by leveraging customer investments. Fuel cells, for example, can be quickly installed, in some instances in as little time as a long weekend.⁷ The factor limiting the deployment of these reliability and resilience resources, therefore, is the time the Commission needs to implement a tariff regime that recognizes their value and provides an incentive for DER customers to make the required investment.

To that end, Petitioner urges the Commission to act swiftly. As the Energy Division white paper suggests, there is no proceeding before the Commission that has within its current scope any mechanism that would achieve the goals of leveraging distributed energy resources in this way. By granting this petition, the Commission can enable qualifying DERs to be brought to bear on California's urgent needs as quickly as possible, and ensure ongoing customer investments align with its vision for California's energy future.

II. COMMISSION ACTION IS ESSENTIAL TO MITIGATE THE CONTINUING GRID RELIABILITY RISK

Over the past three years, the Commission has taken repeated and aggressive steps to address concerns that the State could face a capacity shortfall that would pose a major threat to grid reliability. To meet this concern, late in 2019 in the Integrated Resource Planning ("IRP") proceeding, the Commission, together with the State Water Board, took the difficult decision of pushing out the retirement dates of several once through cooling ("OTC") plants slated for closure.⁸ In that same decision, it also ordered the procurement of 3,300 MW of RA capacity by 2023 on top of the substantial procurement already ordered in that IRP cycle.⁹

Last summer, the Commission built on this effort with a decision in the successive IRP cycle, ordering LSEs to accelerate procurement of 11,500 MW that would come online over the

⁷ Wood, "Bloom's Quick Build Microgrids Installed at COVID-19 Field Hospitals in California," (Microgrid Knowledge April 22, 2020), available at <https://microgridknowledge.com/rapid-deploment-microgrids-hospitals-bloom/>.

⁸ See D.19-11-019 at 3-4, 13-16, available at, <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M319/K825/319825388.PDF>.

⁹ *Id.* That decision was followed by D.21-02-028, which focused on procurement for this summer. See D.21-02-028, available at <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M366/K441/366441341.PDF>.

four years from 2023 through 2026, including 1,000 MW of clean, firm capacity.¹⁰ It followed that decision with its decisions in the Microgrid and Extreme Weather Proceedings that expanded utility procurement to try to address capacity shortfalls anticipated this summer.¹¹

These decisions have resulted in a steady drumbeat of advice letters and resolutions approving the development of new capacity, much of it battery and hybrid solar/storage projects.¹² Along the way, however, there have been concerns about whether these projects will be able to effectively replace the essential functions served by the resources that will be obliged to retire along the road to achieving the objectives of SB 100. As the Commission noted in its most recent IRP decision, “though modeling suggests that a large amount of other zero-emitting resources with equivalent NQC values can replace the retiring fossil-fueled generation, the reality is that these modeling results have not been tested operationally in a system of this scale anywhere” and that “outstanding concerns remain about the possibility of various risks occurring simultaneously rather than in isolation.”¹³ This prompted the Commission to note that “[i]n such a scenario, we may need contingency options for maintaining reliability.”¹⁴

The State may be facing such a scenario, with multiple new risks arising simultaneously. Drought conditions persist – the worst in 1200 years according to one report¹⁵ – which have depressed hydroelectric generation and made California more prone to wildfires. Extreme heat

¹⁰ See D.21-06-035 at 2, 21 (Ordering LSE’s to accelerate procurement of 11,500 MW over next four years “to achieve our ambitious greenhouse gas” while meeting changing system needs), *available at* <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M389/K603/389603637.PDF>.

¹¹ See D.21-12-004 at 25-27 (authorizing the potential use of temporary generation to address the immediate shortfall of up to 3,500 MW during potential extreme weather conditions and grid strain).

¹² A partial listing of these advice letters can be found on the CPUC’s website at <https://www.cpuc.ca.gov/news-and-updates/newsroom/summer-2021-reliability/utility-advice-letters-for-emergency-supply-procurement>. As a result of D. 21-12-015, in which the CPUC ordered the utilities to continue their efforts to procure emergency reliability resources for the summer of 2022 and 2023, the IOUs have filed multiple advice letters documenting their procurement of additional resources.

¹³ See D.22-02-004 at 133, *available at* <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M451/K412/451412947.PDF>.

¹⁴ *Id.*; see also D. 21-12-015 at 12 (issued Dec. 6, 2021) (additional supply side and demand side actions required to ensure electric power in light of conclusion that “current planning and procurement resource levels may not be sufficient through 2023 under extreme conditions.”), *available at* <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M428/K821/428821475.PDF>.

¹⁵ Alexander, “California slips into its worst mega-drought in 1,200 years” *SF Chronicle* (Feb. 15, 2022), *available at* <https://www.sfchronicle.com/bayarea/article/California-rest-of-the-West-slips-into-worst-16918334.php#>.

with higher average temperatures and more frequent and severe heat waves are expected,¹⁶ not only in California but West-wide, making outages like the one that occurred in August 2020 a continuing serious threat. In recognition of this, the Governor has proposed a “Strategic Energy Reserve” that would use billions of dollars in state funds to procure resources that could address imminent grid reliability threats.¹⁷

Meanwhile, there are a growing number of concerning market developments. Supply chains continue to be disrupted by the impacts of the pandemic. It has been widely reported that these impacts will be felt by California and other states that are seeking to add new storage capacity, both in terms of price increases as well as project delays. There is no question that solar and storage will serve an increasingly important and growing role in California’s energy future; however, recent developments underline the need for a diverse resource base to buffer conditions well beyond the Commission’s control.

For example, a recent report by the Solar Energy Industry Association (“SEIA”) suggests many projects scheduled for completion in 2022 have been delayed by a year or more or cancelled outright.¹⁸ Other reports are to the same effect,¹⁹ coupled with lingering concerns

¹⁶ See California Resources Agency “*Protecting Californians Amidst Heat: A State Action Plan to Build Community Resilience*,” at 3 (Draft released Jan. 10, 2022) (“Average annual temperature increases experienced over most of California have already exceeded 1°F, with some areas exceeding 2°F. . . By 2050, average heat-health events are projected to last two weeks longer in the Central Valley and four to ten times more often in the Northern Sierra region.”), available at <https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Climate-Resilience/Draft-Extreme-Heat-Action-Plan-ADA.pdf>.

¹⁷ See Office of the Governor, “*May Revise Fact Sheet - California Climate Commitment: Governor Newsom’s Comprehensive Plan to Tackle Pollution, Protect Californians, and Forge an Oil-Free Future*,” at 2 (May 13, 2022) (proposing \$5.2 billion to deploy a Strategic Electricity Reliability Reserve to enhance grid reliability), available at <https://www.gov.ca.gov/wp-content/uploads/2022/05/California-Climate-Commitment-May-Revise-Fact-Sheet.pdf>; see also 2022 Trailer Bill at 1.

¹⁸ See, e.g., SEIA, “*Solar Growth Trajectory Remains Uncertain as Federal Legislation Stalls*” (March 10, 2022) (“In 2021, U.S. solar prices increased as much as 18% due to unprecedented supply chain challenges, trade actions, and legislative uncertainty, causing “a third of all utility-scale solar capacity scheduled for completion in Q4 2021 was delayed by at least a quarter and 13% of capacity slated for completion in 2022 has either been delayed by a year or more or canceled outright”), available at <https://www.seia.org/news/solar-growth-trajectory-remains-uncertain-federal-legislation-stalls>.

¹⁹ See “World Economic Forum, “*Here’s how supply chain issues are affecting renewable energy projects*” (“56% of worldwide utility-scale solar projects planned for 2022 could be postponed or cancelled”), available at <https://www.weforum.org/agenda/2021/11/supply-chain-problems-solar-power-renewable-energy/>; Power Grid International, “*Global supply chain disruptions could slow grid modernization and decarbonization*” (published October 27, 2021), available at <https://www.power-grid.com/energy-storage/global-supply-chain-disruptions-could-slow-grid-modernization/#gref>.

about the Department of Commerce investigation of Chinese solar panel distribution, notwithstanding the temporary moratorium that was recently announced.²⁰ Events arising out of Ukraine are likely to exacerbate these supply chain disruptions, particularly as Europe races to reduce its reliance on Russian energy supplies and Ukraine's energy manufacturing has essentially come to a halt.²¹

There are indications that these supply chain disruptions could be particularly challenging for battery storage projects given the dramatic uptick in electric vehicle production coinciding with the deployment of utility scale storage in California and elsewhere. The supply chain disruptions have prompted some battery manufacturers to stop taking new orders and led some developers to notify their off-takers that their projects will be delayed as a result of *force majeure*.²² Meanwhile, the price of lithium carbonate, a critical component of lithium ion batteries, has risen dramatically, as much as 485% in the past year according to one report.²³ A recent presentation by the California Energy Storage Association ("CESA") states "these price changes will affect project economics and potentially [have] impacts on contracts and project

²⁰ See Solar Reviews, "President Biden Takes Executive Action to Boost Solar" (June 20, 2022) (noting that 24 month moratorium on tariffs ordered by President may restart many of the postponed 6 GW of large-scale solar projects), available at <https://www.solarreviews.com/blog/president-biden-executive-orders-on-solar>.

²¹ World Economic Forum, "How to Reinvent Supply Chains in a New Global Economic Order" ("The combination of COVID-19 and the war in Ukraine has the potential to significantly impact Europe's economy") (published May 24, 2022), available at <https://www.weforum.org/agenda/2022/05/reinvent-supply-chains-pandemic-ukraine/>; see also Hockenos, "How Russia's War Is Putting Green Tech Progress in Jeopardy," (Yale Environment 360, June 16, 2022), available at <https://e360.yale.edu/features/russia-ukraine-war-metals-electric-vehicles-renewables>.

²² T&D World, "COVID Lockdowns May Delay \$1.2B SCE Storage Project" (April 12, 2022) (developer may not meet August 1 online date for 537.5 MW of storage for SCE because of COVID caused delays), available at <https://www.tdworld.com/utility-business/article/21238724/covid-lockdowns-may-delay-12b-sce-storage-project>.

²³ Reuters, "Lithium carbonate prices jump to record high in China" (January 5, 2022), available at <https://www.reuters.com/business/energy/lithium-carbonate-prices-jump-record-high-china-bmi-2022-01-05/>; see also Forbes, "The Challenges Posed by Rising Lithium Prices" (December 31, 2021), available at <https://www.forbes.com/sites/rpapier/2021/12/31/the-challenges-posed-by-rising-lithium-prices/?sh=648618713af9>.

execution.”²⁴ Constraints on nickel supplies, which have been worsened by the Russia-Ukraine conflict, are also limiting battery manufacturing.²⁵

All of these factors are going to impact whether the Commission’s aggressive efforts to ensure the availability of sufficient new capacity can be successful. A presentation by Commission staff at the recent CEC Workshop on Summer and Midterm Reliability provided the stark bottom line: “it is highly likely issues [arising out of supply chain, interconnection and transmission and permitting issues] will lead to delays for some – if not many – of these projects.”²⁶ Several of the Investor Owned Utilities (“IOUs”) echoed these concerns in their comments on the workshop.²⁷

There is every reason to believe that delayed and failed projects, in combination with extreme weather, drought and increasing congestion on the transmission grid, could pose a serious risk to grid reliability over the next few years. How great a risk is difficult to predict, but the probabilities of occurrence and the certainty of economic and quality of life hardship when they do occur certainly warrant further consideration of tools to mitigate the risk. As discussed below, granting this petition provides a practical, dependable and cost-effective approach to doing so.

²⁴ California Energy Storage Association, “*CESA Project Execution & Supply Chain Challenges*,” at 4 (noting that “recent price changes in lithium ~300%+ since Fall” and “generally unhedgeable to date with fixed prices in contracts”) (filed May 20, 2022), available at CEC Docket 21-ESR-01, available at <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-ESR-01>.

²⁵ Hockenos, “*How Russia’s War Is Putting Green Tech Progress in Jeopardy*,” Yale Environment 360 (June 16, 2022).

²⁶ Presentation of Molly Sterkel, CPUC Energy Division, “*Tracking Energy Development, Presentation at CEC Staff Workshop on Summer and Midterm Reliability*,” at 6 (dated May 20, 2022), available at <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-ESR-01>.

²⁷ By way of example, SoCalGas noted in its comments:

Supply chain disruptions, oil and shipping costs, lithium cost increases, the Auxin Circumvention Case, and interconnection and permitting delays are affecting the battery and lithium supply as mentioned during the workshop by Alex Morris of the California Energy Storage Alliance (CESA). Thus there is a possibility that these batteries will not come online by September 2023 as assumed in the [CEC’s] Stack Analysis results.

Comments of SoCalGas on the CEC Staff Workshop on Summer and Midterm Reliability, at 4 (filed May 27, 2022), available at <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-ESR-01>; see also comments of PG&E (filed May 27, 2022) (regarding supply chain disruptions).

III. LEVERAGING CUSTOMER INVESTMENTS IN FUEL CELLS AND OTHER HIGHLY RELIABLE DERs IS A CREDIBLE PARTIAL SOLUTION TO MEETING THE CHALLENGE AND PROVIDING ADDITIONAL BENEFITS

As the Energy Division white paper outlines, DERs provide another means to address the challenges currently facing the State. Instead of focusing on supply, DERs afford the opportunity to address the problem from the demand side of the equation. Fuel cells, as an example, provide a reliable energy supply that, as a baseload resource with extremely low outage rates, and act as a load modifier, consistently reducing the amount of energy the distribution system is required to deliver. They can be depended upon to provide capacity around the clock, including at times of grid stress. Fuel cells are already in wide deployment in California and have a demonstrated track record for reliability and resilience. There are more than 300 MWs of fuel cell systems deployed across the State.²⁸ Substantially more fuel cells and other highly reliable DERs could be deployed, instead of diesel and other highly-polluting backup generation, if customers received a credit for the value those DERs confer on the system.²⁹

Most importantly for purposes of California's immediate needs, this capacity would provide an insurance policy in the event that supply-side capacity does not show up when and as expected. That is at the heart of this proposed tariff: by recognizing the capability that fuel cells and other highly reliable DERs could offer, they can be quickly deployed to help reduce the amount of new supply needed by reducing the overall demand and substantially reduce the likelihood, extent and damage caused by extended outages. Said differently, the deployment of fuel cells and other highly reliable DERs, particularly those with high capacity and availability factors, will result in dependable load reduction that will reduce grid stress.³⁰

²⁸ Testimony of Jacob (Jack) Brouwer (hereinafter "Brouwer Test.") at 6 (Petition Attachment C).

²⁹ As discussed, the proposed tariff is open to DERs that have the ability to operate continuously for at least 120 hours subject to certain conditions. That might include new and existing long duration batteries. There is a benefit to baseload resources, such as certain types of fuel cells. In its decision to address mid-term reliability, the Commission recognized this and ordered the procurement of resources capable of being able to deliver clean firm power with a capacity factor of at least 80 percent that is able to generate when needed for as long as needed. D.21-06-035 at 36 (ordering the procurement of 1,000 MW of clean firm supply with characteristic of nuclear and OTC plants), *available at* <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M389/K603/389603637.PDF>. Fuel cells could play a role in this regard by serving as a demand-side surrogate.

³⁰ In the Microgrid proceeding, the Commission effectively recognized the extraordinarily high reliability and availability of fuel cells by deciding to suspend the capacity reservation charge that microgrid operators employing fuel cells otherwise would have to pay. The Commission reasoned that cost

If these highly reliable and resilient DERs are sited at critical facilities, such as hospitals, water supply and treatment works, supermarkets, dialysis centers, communication centers and other critical infrastructure with substantial load, their deployment will not only reduce load on the system but also help ensure that the public can depend on the availability of critical services, food and water during disasters, without disruption from energy system failures. No pun intended, but this tariff will quite literally lighten the load on the system and help ensure continuity of critical services.

These twin goals would be, in and of themselves, a worthwhile outcome. But the proposed tariff would do more. It proposes to provide an energy payment energy to DER customers who export energy to the grid during stage alerts (provided they take service on the distribution system at a location that can accommodate such energy exports). As proposed, the tariff would have both “pay for performance” and, for those DER customers who opt to do so, advanced registration allowing grid planners and operators to direct the DER customer to curtail its load and export power to the grid.

Whether registered or not, the proposed tariff would provide for the same energy payment to qualifying DER customers that is provided under the Commission’s existing Emergency Load Reduction Program (“ELRP”) by curtailing their own energy use during stage alerts. This would result in the export of the unused DER generation to the grid. Unless the DER customer registered its capacity with its LSE, the DER customer decision to curtail its energy usage would be entirely voluntary. If, instead, the DER customer decided to register its capacity with its LSE, curtailment and energy export would no longer be voluntary and the DER customer would be obliged to export energy in exchange for an additional monthly capacity payment. Whether voluntary or under commitment, these exports would effectively provide peaking capability at a much lower cost than developing new supply-side resources, assuming such capacity could be procured and deployed at all.³¹

causation principles made it unreasonable to allocate a charge to those systems with an availability factor greater than 95% and a capacity factor greater than 85% because such systems were unlikely to have need for the service. *See* D. 21-07-011 at 28-29, *available at* <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M393/K334/393334241.PDF>.

³¹ Given the challenges currently facing projects under development, it seems unlikely a capacity shortfall can be overcome by additional contracting for new storage projects that will face the same delaying challenges. Against that backdrop, the deployment of behind the meter fuel cells, which do not face the

As detailed in the accompanying testimony of Dr. Brouwer and Mr. Howarth, deployment of fuel cells and/or other long duration DERs would result in creating imputed capacity to the system as well as significant economic benefits to ratepayers by reducing the costs for energy generation, ancillary services, losses, and transmission and distribution infrastructure. Mr. Howarth notes in his testimony that the deployment of fuel cells would reduce ratepayer costs for generation, transmission and distribution infrastructure in a meaningful way. Using the Commission’s 2021 Avoided Cost Calculator (“ACC”) – which is the latest version currently available – Mr. Howarth estimates the base amount for avoided ratepayer costs by deploying fuel cells and other long duration DERs translates to roughly \$13/kW-mo – \$21/kW-mo after taking into account avoided generation, transmission and distribution capacity costs, depending on the distribution service territory of the DER customer.³²

Last week, in connection with the Commission’s annual update of the ACC, E3 issued its draft avoided capacity cost values for the 2022 version. These figures are significantly higher than the 2021 ACC values, with a range of roughly \$23/kW-mo (for SDG&E) and \$30/kW-mo (for PG&E and SCE). As detailed by Mr. Howarth in his testimony, the dramatic increase is the result of the Commission making two changes to the ACC. First, the draft 2022 ACC captures an aspect of avoided costs not captured by previous versions of deferring capital investments to future years when technology costs are lower. Second, the draft 2022 avoided cost figures apply the impact of the effective load carrying capacity (“ELCC”) of a 4-hour battery differently than prior versions of the ACC. In the 2022 update, the ACC transitions from using average ELCCs to applying marginal ELCCs to reflect the contribution of an incremental capacity to meeting net peak loads.³³

Importantly, the draft 2022 ACC does not yet take into account market and supply developments that will impact the capital cost of 4-hour batteries – which is the proxy marginal capacity resource currently used in the ACC. Therefore, the impact of the current market

same supply chain and interconnection issues as batteries, may be the best option for quickly bringing on new peaking capacity.

³² See Testimony of Mr. David Howarth (hereinafter “Howarth Test.”) at 3 (Petition Attachment D); *see also* MRW, “*Avoided Cost Value of Fuel Cells and Other Highly Reliable Distributed Energy Resources*,” at 9, Table 5 (June 21, 2022) (“FC Avoided Cost Report”), attached as Ex. 2 to Howarth Test. The work papers supporting the FC Avoided Cost Report are available upon request.

³³ Howarth Test. at 6-7; *see also* FC Avoided Cost Report at 4.

dislocation and price run-ups in battery raw materials are not yet reflected in the draft 2022 ACC update. It seems likely the cost impacts of these developments will be factored in before the 2022 ACC is finalized. Assuming it does, the 2022 ACC values for avoided costs will likely be driven higher still above the \$23/kW-mo to \$30/kW-mo range.³⁴

Whatever the figures ultimately are, however, it is important to recognize the limited scope of the ACC. It does not reflect *the total benefits* to ratepayers from the deployment of fuel cells and other long duration DERs. The avoided costs it calculates are premised on a utility system that is in equilibrium, *i.e.* one with installed operating reserves that are sufficient to avoid outages. Therefore, generation capacity is simply valued at the marginal cost of new capacity, rather than as a function of the value of lost load that would result from a capacity shortage.³⁵ Said differently, the ACC does not capture the value of reducing the risk of outages or the economic benefits that stem from a grid with the increased resilience that the deployment of such DERs would afford.

This, of course, is the central reason for advancing the proposed tariff: to build in an added level of resilience and reliability to the grid. The ACC does not and cannot value this critically important benefit.

In addition, the ACC does not capture the environmental benefits associated with the reduced emissions fuel cells emit relative to avoided resources. That issue is discussed in greater detail below. Finally, the ACC does not capture many other benefits to the system that could come from the deployment of fuel cells and other long duration DERs.³⁶ Thus, while the ACC provides a useful data point, at most it sets a floor, not a ceiling, for the benefits that would come from the deployment of fuel cells and other long duration DERs.

Against that backdrop, a tariff that pays a capacity credit substantially more than the ACC figures should still yield greater benefits than costs. For purposes of the proposed tariff, Petitioner has proposed capacity payments that should incent the deployment of new DERs, with a higher capacity payment in LCR zones that likely have a greater need for new imputed capacity

³⁴ *Id.* at 5-6; *see also* FC Avoided Cost Report at 3.

³⁵ *Id.* at 4-5; *see also* FC Avoided Cost Report at 2.

³⁶ Additional benefits include “demand response/demand control” type response during local or general scarcity events, providing non-wires alternative to distribution system upgrades such as relieving low voltage issues, often seen in downtown areas of high rise cities or high load concentration centers. *See* Brouwer Test. at 9-11.

than elsewhere. Those figures – up to \$40/kW-mo & up to \$30/kW-mo, respectively – reflect only a modest sum above the high end of the draft 2022 ACC figures.³⁷ Given the very serious problems that this capacity would help solve, the benefits of the proposed tariff would significantly exceed the costs. Petitioner recognizes, however, that this is a topic that warrants the Commission’s further study and consideration. Petitioner’s hope is that it has made the case for such analysis and consideration given the serious challenges facing the State.

In sum, a tariff incentivizing the deployment of fuel cells and other long duration DERs would have the effect of reducing the load LSEs must serve, with benefits that go well beyond mitigating the current reliability risk. In Section V, below, we detail a proposed Reliability and Resilience model tariff that the Commission should put in place to help accomplish these objectives. Before doing so, however, we examine prior Commission action with regard to fuel cells that factors into the proposed tariff.

IV. THE DEPLOYMENT OF FUEL CELLS AND OTHER HIGHLY RELIABLE DERs WOULD ADDRESS NOT ONLY NEAR AND MIDTERM NEEDS BUT ALSO LONG-TERM OBJECTIVES

In the Microgrid proceeding, the Commission suspended the capacity reservation charge for fuel cells. The rationale for doing so was the high availability and capacity factors relative to other technologies that fuel cells can provide meant the capacity reservation (and therefore the charges for it) were unnecessary.³⁸ In the same decision, the Commission imposed the following additional emissions requirements to ensure that any fuel cells put into operation met the State’s GHG reduction goals:

- Non-renewable microgrid resources shall each individually comply with the emissions standards adopted by the State Air Resources Board pursuant to the distributed generation certification program requirements of Section 94203 of Title 17 of the California Code of Regulations, or any successor regulation, regardless of if the resource is required to obtain certification pursuant to the CARB distributed generation program;
- Non-renewable resources have the technical capacity to operate using at least one renewable fuel, such as, but not limited to, renewable natural gas, biogas, and green

³⁷ The capacity credit contained in the proposed tariff has a “pay for performance” element to ensure that DERs with high availability and capacity factors will be paid at the top end of the range and those with lower performance levels are paid at a lower end of the range.

³⁸ This decision was premised on longstanding and sensible cost causation principles that a ratepayer should not be obliged to pay for utility services it neither needs nor triggers. *See* D. 21-07-011 at 28-29, available at <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M393/K334/393334241.PDF>.

hydrogen at the time of application for the suspension;

- Microgrid customers utilizing non-renewable resources must bindingly commit, at the time of application for the suspension, to converting to, and exclusively utilizing renewable fuels by December 31, 2030, if reasonably feasible and practicable. A progress report on activities to meet this commitment must be submitted by January 1, 2025.

D.21-07-11 at 33. These requirements were designed to ensure that distributed generation technology “not conflict with California’s decarbonization laws, policies and goals” and, to that end, oblige such distributed generation technology to have the “capability to operate using a renewable fuel source, such as renewable natural gas, biogas, or green hydrogen.”³⁹

This was a wise and pragmatic decision that recognized the value that resources with these characteristics, such as fuel cells, can bring. As will be evident in the next section, the tariff proposed in this petition builds on this foundation to provide a means for further deployment of highly reliable and resilient DERs that align with the State’s objectives.

Before discussing the proposed tariff, a few additional points specifically on fuel cells are worth noting in greater detail. As the Commission recognized in D.21-07-11, fuel cells can switch from natural gas to renewable fuel sources, such as biogas and green hydrogen. Thus, their deployment today will not result in delaying the transition away from natural gas and to renewable fuels. Indeed, to the extent fuel cells are powered by hydrogen or biogas, they align perfectly with the projected need for baseload “clean firm power” that the Commission called for in the IRP⁴⁰ and a recent E3 study suggested would be needed to achieve SB 100 goals.⁴¹

In the meantime, fuel cells can serve to make the transitional use of natural gas less environmentally impactful because, unlike traditional gas-fired generation, fuel cells use an electrochemical, rather than a combustion, process to convert the fuel to electricity, which results

³⁹ *Id.*

⁴⁰ D.21-06-035 at 36 (ordering the procurement of 1,000 MW of clean firm supply), *available at* <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M389/K603/389603637.PDF>.

⁴¹ See E3, “CARB Draft Scoping Plan: AB32 Source Emissions Initial Modeling Results,” at 25 (March 15, 2022) (noting one alternative for new resource capacity build in 2035 including 26 GW of hydrogen fuel cells as firm clean capacity), *available at* <https://ww2.arb.ca.gov/sites/default/files/2022-03/SP22-Model-Results-E3-ppt.pdf>; see also California Current, “California’s Zero Emissions Goal Drives Huge New Demand, Weird Math and Dunkelflaute” at 3 (April 14, 2022) (enormous new demand from electrification will require that power supply include clean firm power technologies to address periods of low solar and wind output), *available at* <https://cacurrent.com/califs-zero-emissions-goal-drives-huge-new-demand-weird-math-and-dunkelflaute/>.

in near-zero emissions of criteria pollutants. Thus, their further deployment provides a means to stem or at least reduce the reliance on the continued operation of older natural gas fired plants that are in many cases well beyond their planned retirement dates and located in environmental justice zones which have long been adversely impacted by these plants' emissions.⁴² As detailed in Mr. Howarth's testimony, the reductions in emissions attributable to the deployment of fuel cells are substantial.⁴³

Perhaps most importantly, fuel cells can bring immediate capacity benefits without the adverse environmental impacts associated with diesel generation, which is the resource that has most often been looked to for back-up generation, particularly since the advent of PSPSs.⁴⁴ As Dr. Brouwer notes in his testimony, diesel is an exceedingly harmful fuel that brings with it severe health impacts.⁴⁵ Those impacts have imposed gigantic costs on society. One study has found that the economic and health benefits associated with reducing NOx and PM emissions exceed the economic and health benefits of reducing GHG emissions on a per ton basis.⁴⁶ Fuel cells bring none of the environmental costs of diesel given the electrochemical process they utilize to convert natural gas (or renewable fuels) into electricity.⁴⁷ Thus, a tariff that facilitates their deployment meets the State's environmental objective, both now and in the future.

V. THE PROPOSED TARIFF

In this section, Petitioner details the key terms of the Reliability and Resilience model tariff it proposes. As noted above, the tariff incorporates elements of D.21-07-11 to ensure that fuel

⁴² This includes the OTC powerplants for which the Commission has agreed to continue operations as well as many of the cogeneration facilities located in the LA Basin that continue operations by dint of new contracting ordered by the Commission.

⁴³ Howarth Test. at 5; *see also* FC Avoided Cost Report at 11-12 & Table 7.

⁴⁴ One study, for example, noted that demand for backup generators spiked 1,400% since the policy to rely on PSPS went into effect. *See* Shao, "Demand for Generators Lights Up as PG&E Power Shutoffs Loom," *San Francisco Chron.* (June 27, 2019), available at <https://www.sfchronicle.com/business/article/Demand-for-generators-lights-upas-PG-E-power-14054242.php>.

⁴⁵ Brouwer Test. at 12-16.

⁴⁶ Institute for Policy Integrity, New York University School of Law, "How States Can Value Pollution Reductions from Distributed Energy Resources" July 2018, available at https://policyintegrity.org/files/publications/E_Value_Brief_-_v2.pdf.

⁴⁷ *See* Brouwer Test. at 14.

cells, if deployed, meet California’s decarbonization laws, policies and goals. To that end, the tariff would provide a credit for DER capacity that meets the following requirements:

- Size: The resource must be at least 100 kW and no larger than the peak load of the site host.⁴⁸
- Eligibility: The DER must have a capacity factor of at least 80% and be capable of continuous operation for a minimum of 120 hours and operate during any stage alert.⁴⁹

If the DER operates on a non-renewable fuel, it must meet emissions standards set forth in the Microgrid Track 3 decision, D.21-07-11, including capability and commitment to operate on renewable fuels, and must fully convert to renewable fuels in time to meet the SB 100 goals if reasonably feasible and practicable.⁵⁰

- Load Reduction Credit: Resources meeting the eligibility requirements will be paid up to \$40/kW-mo if located within an LCR RA area and up to \$30/kW-mo if located elsewhere, depending on capacity and availability factors.⁵¹
- Emergency Energy Export Compensation: During stage alerts, eligible resources located will be paid \$2.00/kWh for energy exported to the grid.⁵²

⁴⁸ The minimum size requirement is aimed at reducing the administrative burden on the IOUs from having to manage customers with very small fuel cells that make a de minimis contribution to reducing load.

⁴⁹ The 80% capacity factor is drawn from the Self Generation Incentive Program. See “*Self-Generation Incentive Program Handbook*,” at 80 (Feb. 22, 2022), available at <https://www.selfgenca.com/>. As noted above, the 120 hour period is meant to ensure the DER is capable of operating across the entirety of potential service interruptions when the grid is under stress. The proposed tariff, therefore, makes such resources eligible so long as the DER is capable of operating through the longest of recent outages (*i.e.*, 120 hours), and demonstrates that it is actually operating during times of grid stress.

⁵⁰ While D.21-07-11 proposed an earlier conversion date of 2030, we suggest consistency with SB 100’s timeline would be more practicable and avoid chilling financing for resources that would nonetheless help California assure achieving SB 100’s goals.

⁵¹ The capacity credit is premised on a figure that is commensurate with the benefits provided. As discussed in Section III of the petition, the capacity payment is above the ACC figure in order to reflect at least some of the value associated with the enhanced reliability and environmental benefits not reflected in the ACC figure. The capacity credit would also be subject to upward or downward adjustment based on capacity and availability factors, with high performance (*e.g.* >95%) paid at the high end.

⁵² The proposed figure is based on the compensation paid to participants under the Commission’s Emergency Load Reduction Program (“ELRP”). See Emergency Load Reduction Program Fact Sheet, available at https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/documents/energy/electric-energy/elrp_factsheet_121021.pdf. Because the frequency of such events should be relatively infrequent, particularly if the tariff results in substantial deployment of fuel cells, the overall cost should not be great notwithstanding the high compensation payment proposed. This aspect of the proposed tariff would be voluntary. For DER customers willing to commit to providing

- Export Capacity Compensation: DER customers that register on an annual basis the capacity they are willing to devote to exporting energy during stage alerts will receive 9.50-11.50/kW-mo, depending on reduced usage and season. DER customers located within LCR RA areas will be paid 120% of this figure.⁵³
- Duration: Customers who have installed eligible DER will be eligible to receive the credits and compensation provided under this tariff for a period of 10 years from the date of installation.⁵⁴

An incentive and eligibility structure along these lines should result in the deployment of fuel cells and other long duration DERs in locations where they are needed.

VI. THIS PETITION PROPERLY RAISES ISSUES THAT HAVE NOT BEEN LITIGATED BEFORE THE COMMISSION, CONSISTENT WITH COMMISSION RULE OF PRACTICE 6.3(B)

Rule 6.3(b) of the Commission’s Rule of Practice and Procedure prescribes that a petition for rulemaking must state whether the issues raised in the petition have, to the Petitioner’s knowledge, ever been litigated before the Commission, and if so, when and how the Commission resolved the issues, including the name and case number of the proceeding. The rule provides further that the Commission will not entertain a petition for rulemaking on an issue that the Commission has acted on or decided not to act on within the preceding 12 months.⁵⁵ This Petition meets the requirements of the rule as the Commission has not had an opportunity to substantively consider the proposed request. We note, as discussed above, that yesterday’s Energy Division white paper has come to the same conclusion in recommending a new proceeding.

such emergency energy exports in exchange for an additional capacity payment, the export obligation would be mandatory and subject to penalty provisions for failure to respond.

⁵³ Petitioner proposes using the incentive and penalty structure contained in PG&E’s Base Interruptible Program, which pays on a monthly basis \$10.50/kW – \$11.50/kW from May – October, depending on the amount of load reduction and roughly 10% less the balance of the year as well as a \$6/kWh for failure to effect the load reduction. See PG&E Electric Schedule E-BIP, sheet 11, available at https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_SCHEDS_E-BIP.pdf. Additional background can be found at https://www.pge.com/en_US/large-business/save-energy-and-money/energy-management-programs/demand-response-programs/base-interruptible/base-interruptible.page.

⁵⁴ The 10 year period is consistent with the time horizon customers use in conducting their cost/benefit analysis. Making the incentive available for this period spreads the costs over time while simplifying the investment decision. The DER must meet the eligibility requirements throughout this period in order to be eligible for compensation.

⁵⁵ CPUC Rules of Practice and Procedure Rule 6.3(f).

Last year, in response to Governor Newsom’s July 30, 2021, proclamation of a state of emergency, Bloom Energy and the Microgrid Resources Coalition (“MRC”)⁵⁶ separately proposed tariffs in the Microgrid proceeding (R.19-09-009) and Extreme Weather proceeding (R.20-11-003), respectively. These tariffs share some common elements with the tariff proposed here. However, the Commission did not consider either tariff proposal, as discussed below, and as a result neither of these prior filings warrants the Commission declining to entertain this petition for the reasons noted below.

With respect to Bloom’s proposal, the expedited nature of that proceeding led the Commission to conclude that the proposal was “out of scope” and, therefore, not something the Commission could consider.⁵⁷ As a result that issue was not actually litigated before the Commission in the past 12 months.⁵⁸

With regard to MRC’s proposal, the Commission never acted on it. An earlier scoping order in the Extreme Weather proceeding directed parties to redirect their proposals to Commission proceedings that were already focused on increasing supply and/or reducing demand for reliability.⁵⁹ That resulted in MRC’s proposal being addressed in the Microgrid proceeding. However, it got no more attention there than in the Extreme Weather proceeding,

⁵⁶ According to its filing in the Extreme Weather proceeding, the Microgrid Resource Coalition is a consortium of leading microgrid owners, operators, developers, suppliers, and investors formed to advance microgrids through advocacy for laws, regulations and tariffs. *See* Opening Brief of the Microgrid Resources Coalition at 1 (R.20-11-003 filed Sept. 20, 2021), *available at* <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M408/K491/408491814.PDF>.

⁵⁷ D. 21-12-004 at 36 (“we declined to adopt [Bloom Energy’s] recommendation because it is out of scope for the purposes of the Expedited Phase 1 of Track 4”), *available at* <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M428/K827/428827925.PDF>.

⁵⁸ Bloom Energy filed a petition to modify D. 21-12-004 to remove two sentences that implied the Commission made a substantive ruling on its proposal. As detailed there, having ruled the issue was out of scope, the Commission had no record to support the two sentences. *See* Bloom’s Petition for Modification (filed April 18, 2022), *available at* <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M467/K827/467827225.PDF>. Multiple parties filed comments expressly or implicitly concurring with Bloom’s position. *See* Comments of PG&E, SCE, MRC and CESA filed in R.19-09-009 on May 18, 2022, *available at* <https://apps.cpuc.ca.gov/apex/f?p=401:57:0>.

⁵⁹ *See* D.21-12-015 at 9, *available at* <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M428/K821/428821475.PDF>.

with the Commission declining to act on it “because it may affect outcomes in other proceedings.”⁶⁰

Moreover, the tariff MRC proposed was quite different from the one proposed here. That proposal was designed to provide pre-specified, dispatchable capacity to the grid during emergency circumstances including a capacity shortfall. Eligibility turned on the DER customer being ready to commit to provide capacity support to its interconnection utility through a combination of load reduction or energy export during emergency conditions.⁶¹ The tariff Petitioner proposes here is much broader in scope, focusing primarily on effecting an overall reduction in load and thereby reducing the capacity requirements of the associated LSE, although it retains the potential option for qualifying DER customers to commit to providing energy during grid emergencies. Thus, that proposal was never actually litigated before the Commission either.

VII. CONCLUSION

For the reasons stated, Petitioner requests that the Commission grant this petition and commence the associated rulemaking proceeding.

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Respectfully submitted,

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⁶⁰ D. 21-12-004 at 36-37.

⁶¹ *Id.* at 3.