

DOCKETED

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**Comments on IEPR Workshop Assessing the Future Role for
Microgrids in CA**

Additional submitted attachment is included below.



July 30, 2020

The Honorable Janea Scott, Vice-Chair
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

**Re: Docket 20-IEPR-04 -- Comments on IEPR Commission Workshops on
Assessing the Future Role for Microgrids in CA**

Dear Vice-Chair Scott,

Bloom Energy (Bloom) appreciates the California Energy Commission's ("Commission") leadership in recognizing the role that microgrids play in the State's energy future. We strongly support including microgrids in the Commission's next Integrated Energy Policy Report (IEPR). Microgrids can and will contribute significantly to achieving the Commission's goals "to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety."¹ Bloom's recommendations for the Commission's consideration are set forth below.

Summary of Recommendations:

1. A state microgrid policy should not limit, but, rather, should enable and include all clean technologies, combinations and deployments of microgrids. The policy should serve to drive innovation to meet California's energy needs and goals.
 2. A state microgrid policy must be inclusive and technology neutral to serve a variety of grid needs, whether customer owned, utility owned or community owned.
 3. A state microgrid policy must place a high priority on **resilience** and recognize that the natural gas system is an asset that should be enabled as it evolves over time as fuels change.
- I. ***A state microgrid policy should not limit, but, rather, should enable and include all clean technologies, combinations and deployments of microgrids. The policy should serve to drive innovation to meet California's energy needs and goals.***

Microgrids are a clean, resilient, cost-effective solution. They enable California's communities, critical facilities, vulnerable populations, and businesses to ride through power outages caused by Public Safety Power Shutoffs (PSPS), extreme heat, flooding, droughts, other climate-related disasters, and everyday outages

¹ Public Resources Code §25301(a)).



resulting from aging infrastructure and operations. Californians deserve access to the full suite of available microgrid technologies, configurations and deployments to achieve sustainability, equity, resilience and reliability.

As defined in California law, “Microgrid” means any interconnected system of loads and energy resources, including, but not limited to, distributed energy resources, energy storage, demand response tools, or other management, forecasting, and analytical tools, appropriately sized to meet customer needs, within a clearly defined electrical boundary that can act as a single, controllable entity, and can connect to, disconnect from, or run in parallel with, larger portions of the electrical grid, or can be managed and isolated to withstand larger disturbances and maintain electrical supply to connected critical infrastructure.”²

In adopting this definition, the California legislature recognized that resource diversity is the foundation for meeting energy system goals such as reliability, resilience and lower emissions of criteria air pollutants and greenhouse gases, while continuing to move to achieve net-zero or zero emissions. Adopting this broad definition of microgrids was a conscious choice to encourage and enable the full spectrum of energy innovations and technologies now and into the future. To provide the most certainty, microgrid policies should align between the legislature and across agencies to achieve this vision.

II. *A state microgrid policy must be inclusive and technology neutral to serve a variety of grid needs whether customer owned, utility owned or community owned.*

There is no one singular solution to the complexity in the energy system and industry. Inclusive and technology neutral solutions to achieve economic, environmental and reliability goals will allow the right solution for the right problem. The policy should also enable all forms of microgrid ownership: public, private, utility, tribal, community, for front-of-the meter, behind-the-meter and community installations that provide backup, baseload and flexible power. Bloom has several examples of microgrids that use a variety of technology solutions for a variety of customers, both in front of and behind the meter.

Bloom has installed 31 fuel cell microgrids in California. In just the last two years, these microgrids have provided electricity to customers through 65 power outages that lasted more than 4 hours. This included a PSPS-related outage in Northern California that lasted multiple days. For almost a full week, Bloom powered a multi-megawatt manufacturing facility with clean, reliable, electricity. In CA, Bloom found that the average duration of outages was about 46 hours, or nearly two full days, suggesting that Bloom’s long duration solution is a needed tool to address multiday

²Sec. 2. Chapter 4.5, Section 8370, Div. 4.1
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB1339



outages.³ The Stanford Woods Institute estimates a 48-hour outage costs California's residents, workers, and businesses \$2.5 billion dollars—due to lost wages, spoiled inventory, cancelled contracts, and other material harms.⁴ Customers, residential, commercial or industrial, will need flexibility in selecting resilient resources as their individual requirements will vary and to ensure the financial harm of an outage is managed.

Hurricane Sandy put a national spotlight on the need for energy resiliency. Bloom has developed and deployed fuel cell microgrids within many communities and utilities along the East Coast, where damage from severe weather is a regular occurrence. For example, working with the local utility, Bloom developed a microgrid for the City of Hartford, Connecticut to provide a resilient solution to the community. The Hartford microgrid powers a gas station, grocery store, library, senior center, health center and an elementary school. Installed after the city lost power for 11 days, Bloom's microgrid has since provided resilient electricity to the essential facilities through seven power outages.

Additionally, our Rapid Deploy systems are a clean alternative to diesel combustion generation systems and can be rapidly deployed for immediate resiliency needs. If required, our Rapid Deploy systems can also be converted to permanent microgrids, or re-deployed as flexible infrastructure for another facility or area. Bloom recently installed a Rapid Deploy system at the Sleep Train Arena field hospital in 5 days. The Sleep Train Arena field hospital solution provided electricity to 20 tents and 200 hospital beds⁵.

A state microgrid policy must be inclusive to enable and encourage solutions at every level of the state's energy infrastructure and should allow and catalyze innovative solutions that are delivering results.

III. *A state microgrid policy must place a high priority on resilience and recognize that the natural gas system is an asset that should be enabled as it evolves over time as fuels change.*

Bloom Energy's fuel cell microgrids operate on natural gas, biogas, or hydrogen. These microgrids can operate up to a 60% efficiency and are considered one of the most efficient power solutions currently available. Bloom's non-combustion fuel cell technology generates resilient and clean energy while emitting virtually zero particulate matter and generating greenhouse gas emissions that are significantly lower than the alternatives.⁶

³ <https://www.bloomenergy.com/bloom-energy-outage-map>

⁴ <https://www.sfchronicle.com/business/article/A-cool-billion-Economists-estimate-PG-E-14505047.php>

⁵ <https://www.energylive.com/2020/04/24/bloom-energy-builds-fuel-cell-microgrids-for-hospitals-in-california/>

⁶ <https://www.bloomenergy.com/datasheets/energy-server-es5-300kw>



Underground fuel lines are more resilient because they don't face the same fire-prone, wind and safety risks that traditional poles and wires do during severe weather and catastrophic events. Leveraging the resilient and reliable gas infrastructure is a benefit of fuel cell applications.

In addition to being able to withstand powerful winds, our systems have been proven through multiple earthquakes. For example, the epicenter of the 7.1 magnitude Ridgecrest earthquake was only nine miles from one of our systems. The electric grid went down in the area, but the Bloom system and the natural gas system were unaffected by the earthquake.

With fuel flexibility and without relying on combustion, Bloom's fuel cell technology can maintain resilience, reliability and affordability as the market innovates and transitions to cleaner fuels. Our commitment is clear: Bloom recently announced our initial hydrogen strategy.⁷ We are committed to bringing the benefits of this innovation to our home state of California. A state microgrid policy must be flexible and agile enough to allow use of the systems in place today while working towards a clean fuels future.

Conclusion

We thank the Commission for the opportunity to provide comments on a state microgrid policy and reiterate that microgrids can and should be a key part of California's energy future.

Respectfully,

A handwritten signature in black ink, appearing to read "Abbie Laugtug".

Abbie Laugtug
Policy Manager, Bloom Energy

⁷ <https://www.businesswire.com/news/home/20200715005286/en/Bloom-Energy-Announces-Initial-Strategy-Hydrogen-Market>