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*Comment Received From: Brady Van Engelen
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**Comments on IEPR Commission Workshops on Assessing the
Future Role for Microgrids in CA**

Additional submitted attachment is included below.

March 22, 2021

Chair David Hochschild
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: Docket 20-IEPR-01 -- Comments on Draft Integrated Energy Policy Report Update Volume II: The Role of Microgrids in California's Clean and Resilient Energy Future, Lessons Learned from the CEC's Research

Dear Chair Hochschild,

Bloom Energy (Bloom) appreciates the California Energy Commission's ("Commission") leadership in recognizing the role that microgrids play in the State's energy future. Bloom values the Commission's role in crafting a document that is designed to address the state's pressing energy needs. The proceeding comments are offered in the spirit of collaboration.

Bloom Energy develops on-site distributed generation using innovative fuel cell energy technology that is fuel flexible. Our unique on-site power generation utilizes an advanced fuel cell technology with roots in NASA's Mars mission program. Derived from a sand-like powder, and leveraging advances in materials science, Bloom's technology is able to produce clean, reliable, affordable energy practically anywhere from a wide range of traditional or renewable fuel sources.

Summary of Recommendations

Over the past decade, Public Safety Power Shutoffs (PSPS) and wildfires have become a more common occurrence and a constant reminder of the devastating impacts of climate change. As the IEPR serves to guide policy and planning, this document should help to inform policy makers and stakeholders on a path forward to address these daunting challenges. To further strengthen this iteration of the IEPR, Bloom respectfully submits the following recommendations for inclusion in that will strengthen California's path forward.

1. Decouple policy from relying on antiquated and polluting technologies, such as diesel generators.
2. Fully recognize the importance and value of resilient energy solutions.
3. Identify pathways to reduce barriers that enable microgrid deployment that ensure safe and reliable power for the communities in which they serve.

California Can't Rely on Yesterday's Solutions for Today's Energy Needs

Bloom appreciates the efforts that the joint agencies, particularly the California Public Utilities Commission (CPUC), have made in reducing reliance on diesel generation in the event of power disruption. These are steps that align with the state's long term climate goals. Yet, there is more work to be done. The damaging effects of diesel generation are well researched and clearly present a public health concern. Diesel generators produce particulate matter with highly negative public health outcomes. Researchers found that just a single microgram per cubic meter

increase in the common air pollutant PM 2.5 can elevate the COVID-19 death rate by 8%.¹

Unfortunately, Californians options other than relying on dirty diesel generators during the prolonged outages remain limited. Many of the examples of microgrids that were noted by the Commission also alluded to the need for long duration backup power to supplement a microgrid in the event of a disruption that lasts more than 4+ hours. This reliance makes a bad situation worse: According to the California Air Resources Board (CARB), operating an uncontrolled one-megawatt diesel engine for only 250 hours per year results in a 50 percent increase in cancer risk to residents within one city block.² Demand for backup diesel generation has spiked, and PSPS events are likely a reality indefinitely³. For example, during the summer of 2019 the City of Lathrop was planning on burning over 10,000 gallons of diesel/day to power critical infrastructure⁴. A recent report noted that \$16 million of the \$26 million allocated to local jurisdictions went to combustion technologies and accompanying fuel tanks⁵.

Fortunately, diesel generators are not the only quick-install, fast-deploy option. Bloom recently installed a rapid-deploy system at the Sleep Train Arena field hospital.⁶ The Sleep Train Arena field hospital solution provided electricity to 20 tents and 200 hospital beds and was deployed in less than 2 weeks to support California emergency response activities. Bloom's solution reduces pollution and particulate matter by more than 99% when compared with existing combustion-based power sources.⁷ Bloom's solution proved to be an alternative to diesel combustion generation that can be rapidly deployed for immediate resiliency needs and if required, converted subsequently to a permanent microgrid or deployed as flexible infrastructure for another facility or area.

Recognizing the Value of Resilience

As noted in the IEPR, the California Legislature enacted Senate Bill 1339 (Stern)⁸ in 2018 (Chapter 566, Statutes of 2018) to facilitate the commercialization of

¹ Wu, X. and Nethery R. 2020, COVID-19 PM2.5 A national study on long term exposure to air pollution and COVID-19 mortality in the United States, viewed 1 May 2020, <https://projects.iq.harvard.edu/covid-pm/home>

² <https://www.ourair.org/wp-content/uploads/marjun01.pdf>

³ <https://www.nbcbayarea.com/investigations/pge-public-safety-power-shutoffs-likely-a-reality-indefinitely/2458616/>

⁴ <https://www.mantecabulletin.com/news/local-news/pge-will-cost-lathrop-40k-daily-fuel/>
⁵ <https://www.caloes.ca.gov/GrantsManagementSite/Documents/Public%20Safety%20Power%20Shutoff%20Legislative%20Report%20FY%202019-20.pdf>

⁶ Wood, Elisa, Bloom's Quick Build Microgrids Installed at COVID-19 Field Hospitals in California, Microgrid Knowledge, April 22, 2020, <https://microgridknowledge.com/rapid-deploment-microgrids-hospitals-bloom/>.

⁷ Tsvetomira Tsanova, Bloom builds microgrids for California field hospitals, April 22, 2020, Renewables Now, <https://renewablesnow.com/news/bloom-builds-microgrids-for-california-field-hospitals-695946/>

⁸ Senate Bill No. 1339 (Chapter 566, Statutes of 2018)

https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB1339

microgrids.⁹ Microgrids come in a variety of configurations.¹⁰ In practice, a microgrid can serve multiple customers or just one; it can incorporate multiple technologies or just one. In all configurations, microgrids are a natural progression of technology to enable greater flexibility, reliability, and resilience. The Legislature recognized that with an enabling regulatory environment microgrids can permit “the electricity customer to manage itself according to its needs, and then to act as an aggregated single entity to the distribution system operator, allow[ing] for a number of innovations and custom operations.”¹¹ Microgrids also provide an opportunity for new distributed energy resource (DER) types and configurations to provide resilience AND do so in an environmentally beneficial manner. California has shown time and time again that choosing between business and the environment is a false choice – stewardship of the environment and business must go hand in hand, especially in the electric sector.

With PSPS, wildfires, resource shortages, extreme heat, floods, cybersecurity, and other threats to the traditional grid infrastructure, customers must now make their *own* investments to ensure service when the *grid* fails. Microgrids offer a new paradigm in which highly reliable on-site sources serve as the primary source of power, improving service for those customers, and providing valuable predictability and flexibility to the entire grid. A key component of microgrids is their resiliency. Customers that are choosing to install microgrid configurations value resiliency and that has been proven out by the continued growth of microgrids nationally. The primary solution for resiliency cannot be polluting technologies such as diesel generation. Bloom encourages the Commission to identify a path forward that leverages the full potential of microgrids as a tool for customers and utilities alike. Doing so would allow for a spectrum of microgrid policies that enable the capabilities of DERs to meet both the resiliency and environmental challenges facing California.

Breaking Down Barriers to Leverage Microgrids at the Community Level

Bloom is in violent agreement with the IEPR’s suggestion that strategically placed microgrids can serve as a benefit to the broader community. As a developer of microgrids, Bloom has seen firsthand the benefits that a resilient solution can provide to a community that is impacted by an energy disruption. For example, in Hartford, CT Bloom developed in conjunction with the local utility to provide resilient solutions to the community.¹² The Hartford microgrid powers a gas station, grocery store, library, senior center, health center and an elementary school. The microgrid, installed after the city lost power for 11 days, has since provided resilient electricity to essential facilities through seven power outages.

Each individual community may have different needs, and this was certainly contemplated in SB 1339. To that end, each community understands best the vital

⁹ Public Utilities Code Section 8371

¹⁰ Public Utilities Code Section 8370 (d)

¹¹ Senate Bill 1339 (Chapter 566, Statute of 2018) Section 1 (b)

https://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB1339

¹² Discovery Education and Constellation, “Hartford Microgrid” YouTube 3:51, April 21, 2017 <https://www.youtube.com/watch?v=2gMv-Diaxow>

role that facilities within that community can play in the event of a disruption. Bloom would encourage the Commission to harness the experience and knowledge that can be gained from those that already deployed microgrids to better understand what is critical in nature versus what is not. And, most importantly to ensure that there is a coordinated effort to develop a list of critical facilities, and that it is reviewed on a regular basis as needs of the community may change.

Conclusion

Bloom thanks the Commission for the opportunity to provide feedback and reiterate that highly efficient, non-combustion fuel cells should be an integral component of the Commission's continuing efforts to chart a resilient, prosperous, sustainable, and equitable energy future for all Californians.

Sincerely,

A handwritten signature in black ink, appearing to read 'Brady Van Engelen', with a stylized flourish at the end.

Brady Van Engelen
Policy Manager, Bloom Energy