



October 29, 2013

California Energy Commission

DOCKETED

13-IEP-1A

TN 72301

OCT 29 2013

California Energy Commission
Dockets Office, MS-4
Re: Docket # 13-IEP-1
1516 Ninth Street
Sacramento, CA 95814-5512
dockets@energy.ca.gov

Re: Comments on the 2013 Integrated Energy Policy Report (IEPR)
Publication Number: CEC-100-2013-001-LCD

Thank you for the opportunity to submit these comments regarding the 2013 Integrated Energy Policy Report. Bloom Energy Corporation (“Bloom Energy” or “Bloom”) looks forward to further participation in this proceeding and working with the Commission to ensure the IEPR adequately captures the opportunity and availability of advanced energy technologies like fuel cells to meet the state’s energy objectives.

Founded in 2001 and with over 100 MWs of installed capacity across the United States, Bloom Energy is headquartered in Sunnyvale, CA where the company manufactures unique distributed fuel cell power systems which are among the most energy efficient on the planet. Bloom Energy Servers™ produce reliable baseload electricity using an environmentally superior non-combustion process that significantly reduces carbon dioxide emissions while virtually eliminating criteria pollutants and water usage. Bloom Energy Servers can be targeted into specific locations on the electric grid on either the customer side or the utility side of the meter. The result is a new option for energy infrastructure that combines increased electrical reliability and improved energy security with significantly lower environmental impact. Bloom’s fuel cell systems were invented in California, are manufactured in California and are being deployed throughout California to help the state meet its energy, environmental and economic objectives.

Reliable, targeted, GHG reducing technologies like Bloom’s Energy Servers should play an integral role in the state’s energy plans to help address the state’s increasing environmental goals, the need to integrate intermittent technologies and the need to quickly deploy reliable resources in critical areas – for instance, post San Onofre Nuclear Generating Station (SONGS) Southern California. In California Bloom’s products have been nearly all customer-sited projects. Additionally, Bloom has also installed systems in other states at targeted utility substations. There is precedent and a

clear opportunity for reliable clean distributed generation (DG) to play a role in the energy market – both behind and in front of the meter – in California.

Bloom Overview

Bloom is able and ready to perform where and when needed to meet both customer and utility local reliability needs to enhance overall grid stability and resiliency in an environmentally sustainable way. Bloom fuel cells are more reliable than a conventional power plant, and are CARB 2007 compliant, offering environmental benefits that exempt the systems from local air permits to enable them to be sited virtually anywhere. In addition to efficiently generating electricity without combustion, Bloom Energy Servers do not use any water during normal operation.

Bloom's modular and scalable Energy Server provides on-site generation in 100kW increments that can be scaled to tens of MWs. The small foot print provides more energy density, allowing for siting in space constrained areas. The Energy Server's clean, quiet, non-combustion process makes it suitable for communities sensitive to "NIMBY" issues. Due to its inherent redundant architecture, Bloom can remain online while conducting normal maintenance activities enhancing its overall reliability and uptime. In addition, Bloom systems are capable of islanding and continuing to provide power to dedicated loads, even in the event of a grid outage. Bloom has installed over 60 MW of fuel cells in California, avoiding over 440 million pounds of CO₂ from being emitted into our atmosphere, the equivalent to taking over 42,000 cars off the road every year.

With regard to utility installations Bloom has installed close to 30 MWs at targeted substations on the east coast. Bloom Energy Servers can be co-located at substations – as we have done for Delmarva Power – or at other optimal locations identified by utilities to provide not only local capacity but also to provide grid resiliency and overall reliability in targeted remote or capacity constrained areas.

Lastly, Bloom Energy Servers can be renewable with the use of biogas. While in-state biogas supplies are currently limited – as identified in the IEPR – the new policy directives in California (such as AB 1900) and increased development of biogas supplies are promising. Bloom's energy servers do not need any equipment modification to be "renewable."

Fuel Cells in IEPR

Bloom offers the following ideas for consideration in the IEPR to ensure advanced technologies like Bloom's can be utilized as part of the solution to help meet California's energy goals and challenges in the near, mid and long term.

Zero Net Energy (ZNE) New Buildings

The IEPR calls for adoption of definition¹ of ZNE Code Building as:

¹ 2013 IEPR, Page 18

“A ZNE Code Building is one where the societal value of the amount of energy provided by on-site renewable energy sources is equal to the value of the energy consumed annually by the building at the level of a single “project” seeking development entitlements and building code permits, measured using the California Energy Commission’s Time Dependent Valuation (TDV) metric. A ZNE Code Building meets Energy Use Intensity by building type and climate zone that reflect best practices for highly efficient buildings.”

Bloom supports the state’s efforts towards ZNE new buildings and is encouraged by the foresight of our policy leaders towards planning for on-site energy in new construction. However, adhering to a “renewables only” policy within ZNE is shortsighted and misses opportunities to make utilization of GHG reducing non-renewable DG that in the long run could provide a better overall energy reduction paradigm.

Customers installing Bloom fuel cells, whether renewable or not, are able to permanently shift load off the grid, obviate the need for diesel generators and as a co-benefit reduce GHGs. Because Bloom’s technology is GHG reducing AND provides such a high level of availability and reliability, the inclusion of technologies like Bloom into the ZNE definition would provide potentially a better overall net energy portfolio. Especially when coupled with other preferred resources like energy efficiency, demand response and solar/wind, Bloom Energy Servers can provide an elegant ZNE solution and should be considered in IEPR.

Demand Response

The IEPR correctly highlights the need for increased demand response to tackle the energy needs of today and the future – especially in resource constrained areas like Southern California. However, the use of reliable DG to facilitate greater penetration of DR should also be explored. The 60 MWs Bloom currently has installed in California provides permanent and predictable load reduction. Because of their 24/7 nature, Bloom Energy Servers can be used to reduce load in specific areas of need. And further, with overall permanent load reduction comes peak load reduction – thus beginning to flatten peak load.

Further, Bloom’s technology allows customers to ensure that their critical load can be maintained – even when grid instability or interruptions occur. Such could also be the case when load reductions are needed to balance the system or ride out peak usage incidents. By providing customers greater assurances that their business will not be negatively impacted, Bloom could be used to dramatically increase customer participation in demand response and real time load reduction programs.

Biomethane

Bloom appreciates IEPR’s discussion of the challenges related to the greater use of pipeline biomethane as Bloom’s customers are eager to pursue renewable biomethane projects when economical. As the Draft Report correctly points out, the upfront costs for

injecting and interconnecting biomethane to the existing natural gas infrastructure have proven to be prohibitive to date.

As the report also points out, incentives do not exist to address the commercialization of these projects, and thus there has been little advancement. The recommendation the report makes is to support research, development and demonstration projects. Bloom urges the consideration of directly incentivizing dairy farmers, landfill owners, or other project developers for pipeline biomethane projects once AB 1900 is fully implemented. Ensuring that these projects are developed is the key enabler to the proliferation of biomethane use which will greatly contribute to renewable projects that are non-intermittent.

Electricity Infrastructure Needs

Bloom offers comments on the Electricity Infrastructure Needs section in two parts – generically and specific to the SONGS replacement activities. First, consideration and recognition of the potential for DG solutions to be part of electricity infrastructure going forward is a must. Second, Bloom Energy is disheartened by the tenor and overall direction of the IEPR relative to efforts to replace energy/capacity from SONGS. The lack of discussion of advanced energy solutions like fuel cells and other innovative and clean technologies to meet such needs must be addressed to recognize the potential of such technologies. To do otherwise and presuppose the need for extension of existing, or construction of new, traditional generation and transmission resources without exploring even the possibility of newer commercially available technologies will serve to arrest the efforts California has undertaken for decades to improve air quality and more recent work towards GHG reduction. We offer insight into Bloom's capabilities as illustration of capabilities of new technologies to meet the problems facing Southern California.

- **Additional capacity at substations** – Because of Bloom's power density, 99+% availability, and ability to be sited without permits/ERCs (emission reduction credits), Bloom Energy Servers could easily and quickly be placed at or near substations or other optimal sites to provide baseload capacity and energy to meet today's capacity needs and grow to meet potential load growth in the future.
- **Peak generation via Bloom flexible solution** – Bloom's current commercial product provides reliable baseload power. Bloom's Energy Server technology also has the ability to help utilities reduce peak demand from customers, particularly in constrained load pockets. Again, because of Bloom's attributes (see Bloom Overview above) such solutions can be placed in key areas of need.
- **Grid reliability and resiliency** –The Bloom systems located at a Delmarva substation continued to operate without disruption while Hurricane Sandy passed directly over our systems. Bloom provided electricity to Delmarva's customers while many parts of the electric grid remained offline. By providing system hardening and overall resiliency, it not only helps deal with infrastructure needs

now it helps prepare the grid for the likely impacts of climate change and other major events.

- **Voltage support** – Bloom can provide lagging or leading VAR support and power factor adjustment in targeted areas, thereby helping utilities reduce operational costs
- **Grid Independent EV Charging** – Bloom Energy Servers combined with Bloom's DC charging station can provide fast charging independent of the grid, protecting the grid from additional load burdens. One could foresee EV charging hubs, where Bloom systems produce DC power in areas of high grid congestion without having to draw down from grid

California's 2030 Electricity System

Bloom Energy agrees that new technologies like CCUS and further development of biofuels will be key parts of our 2030 system. However, the IEPR misses an opportunity to highlight the innovations in DG that are occurring now and will absolutely continue to advance and improve over the next decades. Technologies like Bloom's Energy Servers can help bridge the changes and evolution that the distribution system will undergo. While Bloom's systems can provide significant GHG reductions today when running on natural gas, they can seamlessly switch to operate on biogas and become a baseload renewable resource when biogas availability increases in our state. In addition, as California experiences wide deployment of electric vehicles, technologies like Bloom's fuel cells have the potential to serve as high capacity local energy generation resource specifically for EVs, avoiding the need to draw from the distribution system. Maintaining a broad scope of potential opportunities for DG solutions and recognizing the value that DG offers is critical in allowing for the best solutions to come to market and be a key part of the future grid.

Lastly, Bloom supports technology inclusiveness and urges the Commission to do so as well. The distributed generation market is flourishing – with many emerging technologies participating in the State's various programs. The programs and policies required to achieve California's various energy goals need to continue to provide technology inclusiveness and flexibility for adding new technologies as they come to market, especially recognizing that energy markets and technologies can change significantly in a short time period. A technology specific IEPR will stifle innovation and unintentionally pick winners and losers. To ensure that California maintains reliability while tackling our climate and environmental challenges, Bloom encourages the Commission to take this opportunity to provide a push for the most efficient, clean technologies, renewable or otherwise.

Conclusion

In conclusion, Bloom reiterates its appreciation for the opportunity to comment on the 2013 IEPR. Bloom finds that the IEPR with more broad inclusion of DG technologies like fuel cells can provide California with better energy solutions. Consideration of advance energy technologies to help address the Commission's many important

objectives will provide more robust discussion and the potential for new and innovative technologies to solve the energy problems of today and tomorrow. New technologies such as Bloom's provide clean, reliable generation that can fit many different scenarios and should be considered as a solution for the objectives discussed herein.

Thank you for your consideration,

A handwritten signature in black ink, appearing to read 'Erin Grizard', with a stylized flourish at the end.

Erin Grizard
Director, Regulatory and Government Affairs