



November 7, 2013

Stephanie Kato
Michael Tollstrup
California Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: Bloom Energy Comments on Assembly Bill 1318: Assessment of Electrical Grid Reliability Needs and Offset Requirements in the South Coast Air Basin (AB 1318 Report)

Dear Ms. Kato and Mr. Tollstrup,

Bloom Energy Corporation (Bloom) appreciates the opportunity to provide comments on the Assembly Bill 1318: Assessment of Electrical Grid Reliability Needs and Offset Requirements in the South Coast Air Basin Report (AB 1318 Report). Advanced clean energy technologies like Bloom's Energy Servers have the ability to help the state maintain electric grid reliability in the South Coast Air Basin in the face of permitting constraints related to air pollutant emission offsets. Not only can technologies like Bloom's be sited without the need for emission reduction credits, they can also reduce greenhouse gases (GHG) - assisting the state in making meaningful progress towards achieving the emission reductions required by AB 32. These comments aim to offer guidance on how technologies like Bloom's fuel cells can play a more significant role in providing electrical grid reliability and air pollutant and GHG emissions reductions in the South Coast air basin.

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 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 sited in 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 and air pollutant reducing technologies like Bloom's Energy Servers should play an integral role in the state's energy plans to help address increasing environmental goals, the need to integrate intermittent technologies and the need to quickly deploy reliable resources in critical areas in the South Coast air basin as outlined in the AB 1318 Report. Bloom's product attributes, as described in more detail below, provide an elegant solution specific to the challenges faced in the South Coast as the product is both reliable, providing the needed capacity, and does not require air permits and/or emission reduction credits. For these reasons we urge the report authors and contributors to reconsider their recommendations and include the integration and use of reliable and clean fuel cells in South Coast as an additional recommendation.

Bloom's Attributes

Bloom's energy servers can replace existing baseload capacity, defer or eliminate transmission and distribution upgrades, and simultaneously avoid the need for emission reduction credits. Bloom is able and ready to perform where and when needed to meet 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 have environmental benefits that exempt the systems from local air permits to enable them to be sited virtually anywhere.



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's Energy Servers provide significant GHG reduction and environmental benefits compared to traditional energy generating technologies. Bloom's product has been certified by the California Public Utilities Commission (CPUC) to be GHG reducing. The CPUC's GHG standard is the most stringent in CA, requiring reductions above and beyond the California Air Resources Board (CARB) AB 32 emissions factor.¹ This certification is performed by accredited third party testing entities. Bloom has installed over 60 MW of fuel cells in California, avoiding over 440 million pounds of CO2 from being emitted into our state's atmosphere, the equivalent to taking over 42,000 cars off the California roads every year.

Furthermore, Bloom's fuel cells are certified by the CARB to meet the 2007 distributed generation emission standards regulating the emissions nitrogen oxide, carbon monoxide and volatile organic compounds. These standards are stricter than any state in the country and significantly stricter than federal standards. And Bloom Energy Servers do not use any water during normal operation.

Lastly, Bloom Energy Servers are renewable with the use of biogas. While in-state biogas supplies are currently limited 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."

Report Findings and Recommendations

Given the major findings of the report, namely the interrelatedness of grid reliability issues, need for additional capacity in light of OTC retirement, the subsequent reliability issues because of those retirements, and the need to address the SONGS shutdown, there is ample opportunity to find new and innovative solutions. Additionally, as the report discusses at length, there are significant problems with approaching these issues with status quo solutions: there are not emissions offsets available to site new conventional generation; repowering existing OTC plants will move us further away from state environmental goals; and preferred demand side resources will need to perform in an unprecedented manner and even still cannot be 100% of the solution. Importantly, fuel cells address both the reliability and air pollutant issues. Additionally, fuel cells can be either a demand side load reduction tool or a wholesale side capacity solution and in both instances are clean and reliable.

Throughout the report the reference to Preferred Resources appears to have excluded distributed generation including fuel cells. Indeed the definition of Preferred Resources includes distributed generation fuel cells using either natural gas or renewable biogas.² Distributed generation generally, and fuel cells specifically, should be considered as an integral component of grid reliability. Bloom urges the authors to revise the report in light of the fact that Preferred Resources includes advanced energy technologies such as distributed fuel cells.

Bloom agrees with the report recommendations to focus on clean replacement of existing conventional capacity. As the recommendations point out replacing all existing OTC power plants with conventional gas-fired generation would meet grid reliability requirements, however this strategy is inconsistent with the State's loading order and air quality and climate change goals. As discussed in these comments,

¹ See discussion in SGIP Decision 11-09-015, pages 13-16.

² Preferred Resource is a term defined in the PUC's Long Term Procurement Planning proceeding and is based on the Energy Action Plan II's Loading Order. See *Energy Action Plan II*, p. 2 and *Track 1 Procurement Plan of Southern California Edison Company Submitted to Energy Division Pursuant to D. 13-02-015*, p.2.



Bloom finds that our products can directly address the dual concerns of meeting reliability needs and compliance with the loading order and air quality/climate changes goals. Because of this Bloom urges the final report to more thoroughly explore the use of reliable, targeted, GHG reducing fuel cells as a solution.

Specifically, Bloom offers the following solutions that need to be considered in this final report to address clean generation, reliability and additional capacity needs:

Additional targeted capacity – 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.

Grid reliability and resiliency –The Bloom systems located at a Delmarva substation continued to operate without disruption while Hurricane Sandy passed directly over the systems. Bloom provided electricity to Delmarva’s customers while many parts of the electric grid remained offline. Providing system hardening and overall resiliency not only helps deal with infrastructure needs now, it also helps prepare the grid for the likely impacts of climate change and other major events.

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.

Load Reduction via customer generation (demand side management) -- Bloom’s technology can ensure critical loads are 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 - and replace traditional "back up" generation technologies such as diesel generators.

Conclusion

Bloom’s fuel cells, which can be sited virtually anywhere to provide a clean, reliable generation and transmission alternative, can effectively help alleviate local reliability and air pollutant emissions concerns. Bloom Energy Servers provide permanent and predictable load reduction, which helps reduce the need for new natural gas-fired power plants and electricity generated by dirty “peaker” plants. The ability to defer further investments in GHG-additive technologies like peaker plants, along with the ability to meet the capacity needs of South Coast should make Bloom’s technology a preferred solution.

For the reasons outlined above, Bloom urges that clean fuel cells be included in the final report as integral components for the future reliability of the grid in the South Coast Air Basin.

Thank you for your consideration,



Erin Grizard
Director, Regulatory and Government Affairs

