



November 1, 2013

Mary Nichols, Chair
California Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: Bloom Energy Comments on Discussion Draft of First Update to AB 32 Scoping Plan

Dear Chair Nichols,

Bloom Energy Corporation (Bloom) appreciates the opportunity to provide comments on the Discussion Draft of the First Update to the AB 32 Scoping Plan. Advanced clean energy technologies like Bloom's Energy Servers have the ability to help the state make meaningful progress towards achieving the emission reductions required by AB 32 while also providing co-benefits such as increasing energy reliability, reducing air pollution, and creating jobs. These comments aim to provide guidance on how technologies like Bloom's fuel cells can play a more significant role the Scoping Plan and help to achieve AB 32 goals.

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 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) in 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's Attributes

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 ARB 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 Air Resources Board (ARB) 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.

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. In addition to the reduced CO₂ emissions, virtual elimination of harmful pollutants, and ease of permitting and installation, 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."

Ability to Provide Reliable Generation

The Draft Update mentions the challenges of electrical intermittency caused by the addition of variable renewable resources such as solar and wind. Bloom's fuel cells can help alleviate local reliability concerns due to the operating characteristics outlined above, namely the reliable 24/7 operation. Furthermore, 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

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

defer further investments in GHG additive technologies like peaker plants, along with additional transmission and distribution expenses, is valuable. Clean (GHG reducing), reliable technologies play a complimentary role to the investment in intermittent renewables and together will realize greater GHG reductions rather than simply intermittent renewables alone.

Bloom offers the following solutions to address 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 -- 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.

Recommendations for Energy Sector

Bloom is supportive of the call for an overarching energy plan to ensure that long-term climate goals are achieved. Advanced energy technologies like fuel cells should have a role in that strategy to achieve the state’s long term climate goals.

One of the recommended actions for the energy sector calls for more research, development, and demonstration (RD&D) for stationary fuel cell technologies. While there may be select projects that fit the RD&D approach, Bloom strongly urges ARB to focus its

efforts on deployment, setting a goal for fuel cell penetration in the commercial market. Stationary fuel cell technologies are already commercially available and are proven in the field. In order to meet the state's aggressive climate goals, the steps to get there must be equally as aggressive. Suggesting that fuel cell technology is still in the research in development stage does a dis-service to the industry and to the goals the state is trying to achieve. Stationary fuel cells are beyond the R&D phase and are ready to be deployed on a larger scale. Given the environmental and reliability attributes already discussed, Bloom recommends that one of the actions in the Scoping Plan should be to evaluate and clearly define procurement strategies for fuel cell technologies.

Additionally, there is a continuing need for the state to encourage and support customers considering the purchase of clean distributed generation technologies through existing and new incentive programs. AB 32 and the Renewable Portfolio Standard are successfully moving large emitters and utilities to reduce emissions and provide cleaner energy. However, more can be done to encourage customers – particularly in the commercial and industrial sectors – to purchase clean energy technologies that meet both the customer's reliability needs and the state's environmental goals. Customers in these sectors are not driven towards providing cleaner energy through RPS or AB 32, rather, they often need incentives to financially justify the purchase of clean technologies. The state should extend successful customer-side GHG-reducing programs such as the Self-Generation Incentive Program (SGIP) to take advantage of already successful programs that will also meet the AB 32 Scoping Plan needs.

Conclusion

Bloom reiterates our appreciation for the opportunity to comment on the Draft Scoping Plan Update. AB 32 has been, and continues to be, a reason why California is a leader in clean technology innovation and deployment.

Bloom Energy encourages ARB to take this opportunity to highlight the innovations in advanced energy technologies that are occurring now and will absolutely continue to advance and improve over the next decades. Technologies like Bloom's Energy Servers can help reduce GHGs today, while also helping bridge the changes and evolution that the energy landscape will undergo. When biogas availability increases in our state, Bloom's systems can seamlessly switch from a GHG reducing clean baseload resource to a renewable baseload resource. 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 technology neutral solutions and recognizing the value that advanced energy technologies offer is critical in allowing for the best solutions to come to market and be a key part of the future grid.

The distributed generation market is flourishing – with many emerging technologies participating in the State's various programs. The state has made smart investments to help advance the commercialization of these technologies. Now 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. To ensure that California maintains reliability while tackling our climate and environmental challenges, Bloom encourages the CARB to take this opportunity to provide a push for the most efficient, clean technologies.

We appreciate CARB's leadership on AB 32 and look forward to working with CARB to fully realize the potential of fuel cells to help meet climate goals.

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