BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CAL

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Order Instituting Rulemaking Regarding Policies, Procedures and Rules for Development of Distribution Resources Plans Pursuant to Public Utilities Code Section 769.	Rulemaking 14-08-013 (Filed August 14, 2014)
And Related Matters	A.15-07-002 A.15-07-003 A.15-07-006

NOT CONSOLIDATED

In the Matter of the Application of PacifiCorp (U901E) Setting Forth its Distribution Resource Plan Pursuant to Public Utilities Code Section 769.	A.15-07-005 (Filed July 1, 2015)
And Related Matters	A.15-07-007 A.15-07-008

COMMENTS OF BLOOM ENERGY PROPOSING DEMONSTRATION PROJECTS

Erin Grizard
Director, Regulatory and Government Affairs
Bloom Energy Corporation
1299 Orleans Drive
Sunnyvale, CA 94089
Phone: (408) 543-1073
Fax: (408) 543-1501
erin.grizard@bloomenergy.com

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COMMENTS OF BLOOM ENERGY PROPOSING DEMONSTRATION PROJECTS

Pursuant to the *Joint Assigned Commissioner and Administrative Law Judge's Ruling Regarding Track 2 Demonstration Projects*, Bloom Energy respectfully submits the following proposal for a project focusing on Demonstration Project C: Demonstrate DER Locational Benefits. We appreciate the forum that the Commission has created for third party vendors such as Bloom Energy to demonstrate the clear benefits that DERs provide for the California electric system.

OBJECTIVES AND METHODS

1. ***Describe the project goals and the specific functions and features of DERs the project will demonstrate. Describe how the projects will demonstrate the stated goals found in the description of the demonstration project at pages 6-7 of the Attachment to the Guidance Ruling dated February 2, 2015.***

Bloom Energy would like to propose projects that demonstrate the benefits of a Bloom solid-oxide fuel cell placed in service on the IOU distribution system. This is in line with the purpose of Demonstration Project C to demonstrate DER locational benefits. These installations can be placed in service in any of the following configurations:

1. Directly interconnecting to a substation or installing on the distribution system to meet a capacity or voltage need; or
2. Installing in a microgrid configuration with the all-electric fuel cell as the backbone of the microgrid; or
3. Installing at a customer site where the customer requires uninterruptible, critical power; or
4. Utilizing Bloom fuel cells for EV charging and simultaneously offering grid benefits such as ancillary services and providing Resource Adequacy

2. ***What are the specific learning objectives and how will that inform the achievement of California's DRP Goals?***

The specific learning objectives will be to:

1. Understand and quantify the amount of reliable, consistent capacity provided by the DER (and Resource Adequacy where applicable);
2. Understand and quantify the locational grid benefits of a DER on the distribution system
3. Understand and quantify Bulk System Benefits
4. Understand and quantify the resiliency and energy security benefits
5. Develop a methodology to quantify Environmental benefits

3. What specific metrics will assess the project performance?

The specific metrics that will assess the project performance will measure the quantitative values of the following learning objectives:

1. Understand and quantify the amount of reliable, consistent capacity provided by the DER;
    a. annual capacity (kW) provided;
    b. annual kWh output / capacity factor;
    c. availability; and
    d. annual efficiency
2. Understand and quantify the locational benefits of a DER on the distribution system
    a. avoided/deferred distribution system investment
    b. reduced wear and tear on distribution system
    c. avoided distribution energy losses
    d. voltage management
    e. power factor improvement
3. Understand and quantify Bulk System Benefits
    a. Avoided generation capacity
    b. Avoided (reduced) energy production costs
    c. Avoided transmission energy losses
    d. Avoided transmission investments
    e. Ancillary services benefits
4. Understand and quantify the resiliency and energy security benefits
    a. Restoration benefits
    b. Avoided outage costs
    c. Avoided T&D investments for resiliency purposes
    d. Avoided loss of utility revenues during outages
    e. Option value (time to power)
5. Environmental benefits
    a. GHG reductions
    b. Criteria Air Pollutant (SO_2, NOx, PM, etc.) reductions

c. Public health benefits
d. Reduced land use and biological resource benefits
e. Reduced water use and higher water quality benefits
f. Noise and odor pollution benefits

4. What is the project's potential for replication across the system?

The projects can easily be replicated by the IOUs. Bloom Energy provides a scalable, modular, fault tolerant solution as opposed to other single points of failure solutions. Bloom's modular design means that maintenance can be performed on individual power modules while the system is still operating (i.e. no system downtime). This same design also improves reliability by providing multiple levels of redundancy.

The robust, modular design of the Bloom Energy Server has a proven history of withstanding extreme weather events and therefore provides resiliency benefits which can be demonstrated in Project C. Bloom Energy installed a 3MW project within the fence line of the Delmarva Power Brookside Substation in 2011, as part of a project that supplies Delmarva Power with 30MW of electricity in support of local utility operations. In October 2012 Hurricane Sandy passed directly over the Brookside project and the systems provided uninterrupted operation without incident.

In addition, a 1MW Bloom Energy Server located in American Canyon continued operating during and after the 6.0 magnitude South Napa earthquake in 2014. The epicenter was 4 miles away from the Bloom systems which powered through the earthquake.

The Bloom solution improves resiliency to wide area outages by being able to provide uninterruptible power to critical loads. This helps local businesses avoid outage-related costs (e.g. grocery store spoilage) and benefit community members by allowing local businesses to continue serving them during extended outages.

For example, the City of Hartford recently announced a microgrid system powered by Bloom fuel cells that will help manage electricity costs and supply emergency power to a portion of the city's Parkville neighborhood. During non-emergency operation, the 800 kW microgrid system is designed to provide 100 percent of the electricity for Parkville Elementary School, Dwight Branch Library, Parkville Senior Center and Charter Oak Health Center. In the event of an electrical grid outage, the system will provide emergency power to these locations in addition

to a local fuel station and grocery store. Excess electricity generated by the system will reduce electricity costs at four local schools. Bloom has been working on this microgrid in close conjunction with the local IOU, Eversource Energy.

Moreover, Bloom can partner with IOUs to provide a full, turnkey solution for the growing EV charging market based on proven technology, while also providing cost-effective, grid reliability benefits. By partnering with Bloom, the IOUs can achieve ALL of the following:

1. Enhance the system reliability and flexibility of the grid during peak demand periods;
2. Support the State's goals of GHG reduction; and
3. Meet the rapidly growing demand for fast EV charging in a way that promotes innovation and provides more benefits for the IOU and its ratepayers

PROJECT LOCATION

5. ***Identify the proposed location for the project and explain why the location was selected.***

Bloom would like to propose the following locations as potential sites for Demonstration Project C:

1. Goleta, CA area, at or near the Goleta substation
2. Orange County near the current SCE PRP
3. Orange County near Santiago or Johanna/Johanna Jr substations
4. The Bay Area peninsula or San Francisco area
5. Central Valley such as Fresno
6. General areas at the end of the feeder line which may have a high cost to serve with traditional grid infrastructure
7. Other areas where IOUs have a reliability/capacity issue such as those areas stated in the CAISO LCR Study.

6. ***Identify the relevant characteristics of the location chosen for the project (e.g., rural or urban area, current load, number of customers, current DER penetration, and projections of load and DER penetration).***

The relevant characteristics of the locations chosen for the projects are as follows:

1. Areas at the end of the feeder which may be costly to serve with traditional solutions
2. Areas with reliability/capacity constraints and/or issues
3. Areas/customers with a higher need of reliability/premium power requirements
4. Areas with high concentration of electric vehicles

7. ***Describe any relevant demonstration projects and pilots being done outside of the DRP process (for example, with EVs and the demand response reverse auction) and the coordination issues that need to be considered.***

Bloom Energy suggests that DERs be considered for the following:

1. IOU integration of electric vehicles and EV charging
2. As an alternative for ANY new proposed centralized generation such as in Oxnard and Carlsbad

DER PORTFOLIO AND DER OWNERSHIP

8. ***If known, explain what specific DER technologies will be selected and why.***

Bloom proposes a project(s) that utilizes the Bloom Energy solid-oxide fuel cell in this proposal. As discussed above, Bloom provides clear and quantifiable locational benefits that can be demonstrated in Project C.

9. ***Described what role third-party DER technology vendors will have in the project.***

Bloom Energy will be the primary third-party DER technology vendor in this proposed Demonstration Project C. This is an opportunity for IOUs to test the use cases as well as quantitative and qualitative benefits of the DERs.

10. ***Describe DER ownership: utility, customer, and third party with appropriate justification.***

The Bloom Energy Server can be owned and rate based by the IOU to earn an authorized rate of return. Alternatively, the Server can be financed by a third party owner where the IOU can contract with the third party under a PPA, tolling, or capacity payment agreement for the

term of the project. This will allow Bloom to provide financing while also removing the asset from the balance sheet of the IOU.

If it is on the customer side of the meter, the customer could own the Server or it can be financed similar to other traditional financing mechanisms with modest financial support from the utility as part of this demonstration project to test and monitor the different grid benefits of the DER. The IOU could also consider offering an optional tariff for the customer to enable financing for the customer-side installation.

BUDGET AND COST RECOVERY

11. Provide a breakdown of the project by activity (e.g., engineering, installation of field devices, modeling, data gathering, data analysis) and an estimated cost for each activity. Include the grand total for the project.

The budget and costs will vary depending on size, location, and structure of the selected project. At this time, it is too premature to assess a project cost for a potential pilot project. Bloom Energy would only suggest a project where it makes sense for the IOU to try a DER as a potential new solution.

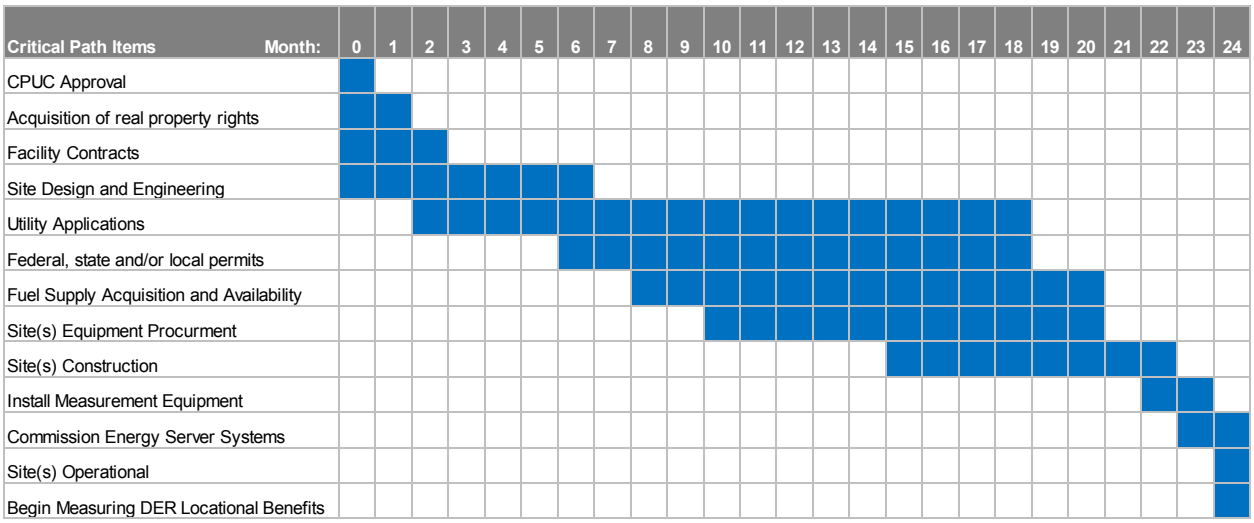
12. What other funding and/or pilots will be leveraged by deploying the project in the proposed area?

Bloom Energy proposes leveraging private capital and only using a limited amount of ratepayer funds for these demonstration/pilot projects to better understand new solutions as alternatives to traditional grid investments or centralized generation.

SCHEDULE

13. Provide a schedule for project design and deployment. Identify major milestones for the project and a description of the activity to be performed. Include a timetable (by year and quarter) showing when each step will be completed, including when deliverables are due.

Upon approval from the Commission for a Bloom Energy demonstration of Project C, the project design and deployment would take place using the following time table:



DELIVERABLES AND REPORTING

14. Identify the deliverables that are expected during the project including their due dates.

Bloom Energy would provide updates every 6 months on the status of critical path items in order to make the site(s) operational. Upon commercial operation of the Bloom Energy demonstration project, we would provide annual reports that measure the DER locational benefits of Demonstration Project C.

15. Identify a schedule and format for reporting to the Commission interim and final results.

Bloom would provide a report to the Commission one year after the commencement of commercial operations of Demonstration Project C providing a detailed analysis of the quantitative DER locational benefits of the Bloom Energy Systems. We would continue to provide annual reports to the Commission thereafter on the quantitative benefits of the Bloom Energy System in Demonstration Project C.

STAKEHOLDER ENGAGEMENT AND COLLABORATION WITH THIRD-PARTIES

16. How will stakeholder participation be coordinated in the design and implementation of the project?

Bloom Energy will work with the IOUs, third party consultants, local AHJs, local municipalities, local project developers, local contractors, local community leaders, and other technology vendors to implement a successful project.

CONCLUSION

Bloom Energy thanks the Commission and Energy Division for their consideration and time. We look forward to our continued engagement with the Commission, IOUs, and other stakeholders in the DRP proceeding.

Dated June 17, 2016

Respectfully submitted,

/s/ Erin Grizard
Erin Grizard
Director, Regulatory and Government Affairs
Bloom Energy Corporation
1299 Orleans Drive
Sunnyvale, CA 94089
Tel: (408) 543-1073
Fax: (408) 543-1501
Email: erin.grizard@bloomenergy.com