Arcadia

December 12, 2022
Community Energy Storage Proposal
In the Matter of the New Jersey Energy Storage Incentive
Docket No. QO22080540

TO: New Jersey Board of Public Utilities Community Solar Staff
FR: Arcadia Power, Inc.

I. Arcadia Background

Arcadia Power, Inc. ("Arcadia")[1] is building the software necessary for consumers in New Jersey and beyond to realize the full benefits of clean energy. Today, customers face a bewildering assortment of energy technologies – ranging from energy efficiency and renewable energy offerings to battery storage and electric vehicles – all of which have unique capabilities, costs, and user experiences. Arcadia's software makes it possible for energy technology providers to delight their customers and move clean energy forward by enabling simple user experiences that will save people money. The first industry served with Arcadia's software is community solar, where Arcadia manages more than 100,000 subscribers across projects totaling more than 1 gigawatt in thirteen states and Washington, DC – making it the largest manager of community solar subscribers in the United States.

Arcadia is a national leader in educating and soliciting community energy program subscribers using methods and ethical standards that far exceed minimum regulatory requirements. In fact, we strive to deploy standards that are better than industry best practices in this new and evolving clean energy landscape.

We are happy to be deeply involved in New Jersey and are impressed by the quality of the New Jersey Community Solar Program and the ambitions for energy storage.

We respectfully submit the following recommendations to Board Staff to consider while drafting the energy storage straw proposal and NJ Storage Incentive Program. These recommendations focus on establishing a standalone community storage and community solar plus storage program that incorporates these technologies into the same – or a similar – program to the state's thriving Community Solar program. In addition, these recommendations are based on insights learned from leading energy storage programs in the United States, namely those in New York, Massachusetts, and Connecticut. In addition, these proposals draw from substantial first-hand experience working with more than 100,000 existing community renewable energy program subscribers across the country.

II. Outline of Proposal

1. Establish two community energy storage programs with a combined sub-goal of 1,000 MW by 2030, which is 50% of the state's 2,000 MW storage goal.

[1] In December 2019 Arcadia Power rebranded to 'Arcadia'.

2. **Include the following components in a Community Standalone Storage Program:**
    a. Implement a Time-Of-Use rate to incentivize battery charging when energy demand and costs are lowest and energy dispatch when demand and cost are highest.
        i. Rate should embody an on-peak vs. off-peak differential of at least 3:1.
    b. Deploy a dual-incentive structure for participating standalone storage projects.
        i. Per kWh upfront incentive; and
        ii. Ongoing performance incentive per kW.
    c. Adopt regulations governing innovative standalone community storage models that can provide financial benefits to New Jersey residents, particularly low and moderate income households and those in communities most affected most by fossil fuel generation siting.
        i. Build off the Board's successful community solar program – this program would have subscribers who receive on-bill credits and guaranteed savings applied to their monthly power bill.

3. **Include the following components in a Community Solar Plus Storage Program:**
    a. Provide an adder to community solar projects that includes a storage component.
    b. Cap project size at 5 MW for standalone storage projects, and 5 MW solar plus 5 MW storage for solar plus storage projects.

4. **Learn from leading distributed generation programs with community storage options (i.e., Massachusetts and New York).**

III. <u>Community Energy Storage Straw Proposal</u>

1. **Establish two community energy storage programs with a combined sub-goal of 1,000 MW by 2030, which is 50% of the 2,000 MW goal.**

    The Clean Energy Act of 2018 sets a goal for the State of New Jersey to have 2,000 MW of Energy Storage by 2030. This ambitious objective can only be reached through an all of the above approach, including standalone community storage and community solar plus storage; residential behind the meter storage; and utility scale storage projects. The following are Arcadia's proposals for a community standalone storage program and a community solar plus storage program. As detailed below, both proposals may function as an independent program or as a modification to the existing community solar program.

    Due to a number of factors, including a limitation in project size to 5 MW, community energy storage projects have the advantage of being sited precisely, with fewer siting concerns. They may also be sited where they are needed on the grid and in places where grid upgrades are less costly and complicated. This enables more storage capacity to be installed more quickly where it is needed most.

Community storage coupled or uncoupled with solar can provide community net metering benefits for subscribers, while modernizing the power grid through diversified generation technologies and models, leveling out peak load demands by reducing the need for quickly-ramping fossil fuel peaking power plants, providing resilience benefits for the grid at large, and providing critical infrastructure, including at community gathering facilities.

2. Community Standalone Storage Program

To properly incentivize a Community Standalone Storage Program, Arcadia proposes including the following components: (1) a dual-incentive structure that includes a per kWh upfront incentive and ongoing performance incentive; (2) a time-of-use rate that incentivizes charging and dispatching to optimize grid performance; and (3) regulations enabling projects to provide financial benefits to New Jersey residents, particularly low and moderate income households.

a. **Adopt a simple time-of-use (TOU) rate for energy storage resources (on an opt-in basis) utilizing values sufficient to incentivize both residential and commercial storage during peak and off-peak periods that would better optimize the grid.**

As access to better data and real-time use information is improved, BPU should adopt TOU rates that are modeled using real-time pricing, to better reflect the value that storage provides to the electric grid. These rate designs will incentivize storage customers to further drive down electricity costs by incentivizing storage assets to provide capacity from storage projects during peak periods. In the short-term, this can be done through the adoption of TOU rates that incorporate meaningful differentials between peak and off-peak to encourage behaviors that significantly reduce peak demand. As such, Arcadia recommends that the TOU rates should have the following parameters:

i. The TOU structure should apply year round.
ii. The TOU structure should include at least three pricing periods:
    1. <u>On-peak</u>: representing the price at which the storage shall dispatch to the grid
    2. <u>Off-peak</u>: representing the price at which the storage facility shall charge from the grid (or from a connected distributed energy resource)
    3. <u>Baseline</u>: representing the general pricing that is otherwise applicable to the rate class
    4. The price between the on-peak and off-peak periods should be large enough to represent adequate compensation for the value of the storage asset and warrant shifts in behavior. <u>The suggested differential between the on-peak and off-peak rate is **3:1**.</u> This

price differential should be informed by current real-time usage and pricing, and should be updated on an annual basis as load curves change.

5. The TOU rate should also include location-specific pricing for projects in areas with identified constraints.

b. Establish a dual-incentive structure for participating projects.

i. Per kWh upfront incentive: To qualify for the upfront incentive, the storage facility must be front-of-meter in the community standalone storage program and be set to automatically discharge during PJM summer peak periods, while storing at least 20% of battery storage capability for reserve back-up power.

Proposed per kWh upfront incentive structure			
	Small Commercial	Medium Commercial	Large Commercial
Peak Demand	<200 kW	200 kW - 500 kW	>500 kW
Incentive for first MW block of storage projects	$200/kWh	$175/kWh	$100/kWh*

ii. Ongoing performance incentive per kW: Performance incentive payments are based on average kW discharged over the course of all active dispatch events for the year.

Proposed performance incentives				
	Years 1-5		Years 6-10	
	Summer	Winter	Summer	Winter
Max Season Incentive	$200/kW	$25/kW	$115/kW	$15/kW
Max Annual Incentive	$225/kW		$130/kW*[2]	

[2] Connecticut Public Utilities Regulatory Authority. Energy Storage Solutions. Upfront Declining Incentive Block Structure and Annual Performance-Based Incentive. https://portal.ct.gov/-/media/PURA/electric/Fact-sheet-for-commercial-and-industrial-customers.pdf

c. **Adopt regulations governing innovative community storage models that can provide financial benefits to New Jersey residents, particularly low and moderate income households and those in communities affected most by fossil fuel generation siting.**

The BPU should implement a community storage program, functioning either within the existing community solar program (by incorporating standalone storage and solar + storage as an eligible technology) or nearly identically to the community solar program, available to customers regardless of whether the storage is tied to renewable energy. The characteristics of this program would mirror the functionality and subscriber benefits (on-bill credits) of the community solar program, while furthering New Jersey's storage and grid modernization objectives including improved peak load smoothing and management, reduced peaking power plant emissions and associated environmental benefits, and a more distributed, resilient, and reliable grid.

To encourage adoption of battery storage technology, we recommend a regime of upfront incentives coupled with ongoing performance incentives and a TOU rate associated with beneficial dispatch, the value of storage to the grid, and enhanced performance. Intuitively, the higher the proportion of the total incentive value that is baked into the underlying rate, the greater the alignment of storage dispatch with those rates, resulting in greater grid benefits. Therefore, Arcadia urges BPU to dedicate more of the overall incentive to enhance the TOU rate differential, rather than providing more of the incentive via the upfront and ongoing kW incentives.

3. Community Solar Plus Storage program

At a minimum, a community solar plus storage program needs to provide a financial adder to projects that are composed of both community solar and storage components.

a. Provide an adder to community solar projects that add a storage component.

A complimentary approach would be to establish a community solar plus storage program. To do this, Arcadia proposes building off the Massachusetts SMART model. This program allows participating projects to receive an additional monetary incentive per kWh to compensate them for having and utilizing a given amount of storage capacity. While the storage adder varies based on tranche, project size, and storage hours at rated capacity, an 800 kW solar array with an

equally sized storage system with three storage hours at rated capacity will receive an adder of $0.0607 per kWh.[3]

b. <u>Incorporate additional program components</u>

i. Project and Program Size

1. To reduce complication, standalone Community Solar projects should be sized in alignment with the state's existing community solar program, which has a maximum capacity of 5 MW.

2. Community solar + storage projects should be sized to a maximum of 5 MW solar capacity *and* 5 MW storage capacity.

3. Goal: community storage program should track to exceed 50% of storage mandate, or 1,000 MW by 2030.

ii. Project Siting

1. Each Electric Distribution Company (EDC) should be directed to conduct a siting assessment study to identify areas of the grid that can benefit most from storage dispatch/are stressed at peak times, if any. Locational priority should also be emphasized (through monetary adders or incentives, or project application preference) for siting in/on such identified "resilience hubs" and important community centers and critical infrastructure like hospitals or emergency shelter locations in overburdened communities.

4. Learn from leading distributed generation programs with community storage options.

Two leading distributed generation markets, New York and Massachusetts, maintain flourishing community distributed generation programs that encourage the installation of community storage facilities. Both have a unique approach and both are successful.

New York uses an approach referred to as the Value of Distributed Resources (VDER) or Value Stack. This tech-agnostic approach compensates renewable energy projects at a rate based on when and where it injects electrons onto the grid.[4] For example, a solar project in rural New York where electricity demand and local marginal prices are low will have a much lower VDER (compensation rate) than a standalone storage project in downtown Manhattan that injects electrons into the grid on a hot, summer afternoon.

In addition, New York maintains two additional incentive programs: 1) Community Distributed Generation and 2) Inclusive Community Solar Adder. As a result, New York

[3] Massachusetts Department of Energy Resources. Energy Storage Calculator. https://www.mass.gov/doc/energy-storage-adder-calculator

[4] New York State Energy Research and Development Authority. NY-SUN: The Value Stack. https://www.nyserda.ny.gov/All-Programs/ny-sun/contractors/value-of-distributed-energy-resources

has both community standalone storage projects and community solar plus storage projects.

Another working model is within the Solar Massachusetts Renewable Target (SMART) program. This program provides an additional financial adder per kW to solar projects coupled with storage. As such, Massachusetts has a growing number of community solar plus storage projects, but no community storage projects.

Arcadia is confident both approaches would succeed in New Jersey. Nonetheless, due to no existing VDER methodology in the state today, we believe a Massachusetts-style storage adder regime for community solar projects may be the easiest to implement.

Conclusion

We appreciate the opportunity to provide these proposals to the energy storage program and look forward to our continued work with BPU and interested stakeholders. Please contact James Feinstein at James.Feinstein@arcadia.com or 202 999 8916 if you would like to discuss these matters further.

Sincerely,

James Feinstein
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Arcadia