

**FY2016 RENEWABLE ELECTRIC STORAGE INCENTIVE PROGRAM
STRAW PROPOSAL
MAY 07, 2015**

Purpose and Intent

The New Jersey Board of Public Utilities' Staff (Staff) and the Market Manager are issuing this straw proposal to advance the process of developing and implementing an effective Renewable Electric Storage Incentive Program for FY2016. Applying the experiences of the FY2015 solicitation and incorporating stakeholder input obtained at an April 13, 2015 Renewable Electric Storage Working Group meeting, this straw proposal discusses options and makes recommendations relating to program design, incentive structure, eligibility and technical requirements and reporting. Public comments are welcomed and will be considered by Staff and the Market Manager in developing final recommendations on the FY2016 program that will be presented to the Board of Public Utilities (Board) at one of its regularly scheduled agenda meetings. Comments should be submitted to publiccomments@njcleanenergy.com no later than 5:00 pm on May 21, 2015.

Background and Context

In 2012, the Board released a study it had commissioned from Navigant Consulting, Inc. which identified two potential opportunities for electric storage in the near term based on the amount of intermittent renewable energy (RE) installed or anticipated to be installed in New Jersey: Shifting the use of renewable generation to more optimal times of the day; and providing some of the additional frequency regulation that may be required with higher levels of intermittent RE.

Two months after the release of the Navigant study, Superstorm Sandy knocked out power to millions of New Jersey residents and businesses and thousands of critical facilities. As a result, a third important motivation emerged in support of electric storage market development: Hardening the state's electric infrastructure and allowing essential services to continue operating during power outages.

A Renewable Electric Storage Incentive Program was originally proposed in the Comprehensive Resource Assessment (CRA) for FY2014, which was approved by the Board along with the Renewable Energy Market Manager's Compliance Filing for FY2014 that detailed the development of an incentive offering through a stakeholder process. Board Staff and the Market Manager began the program development process during FY2014 for implementation in FY2015.

A Renewable Electric Storage Working Group was formed with industry stakeholders and held meetings to discuss the design, timing, process, incentive structure and eligibility criteria for a competitive solicitation. As a result of the discussions at those meeting, the issuance of two straw proposals and written comments submitted by stakeholders, Staff made a recommendation to the Board for an FY2015 Renewable Electric Storage Incentive Solicitation. On October 22, 2014, the Board held its regularly scheduled agenda meeting and approved Staff's recommendation for the first-of-its-kind offer of incentives for electric storage applications through New Jersey's Clean Energy Program (NJCEP). The offering was structured as a competitive solicitation with a program budget of \$3 million.

The Solicitation was issued on October 23, 2014 through posting on the NJCEP website and listserv distribution. A total of 22 applications were submitted by the December 8, 2014 application deadline. Following a review for completeness by the Market Manager, the applications were forwarded to the Solicitation Evaluation Committee. The Committee scored each application on the basis of four criteria categories – Financial and Economic Viability, Project Readiness, Technical Feasibility and Resilience – and then ranked the applications in descending order of their scores. The Committee recommended that the 13 top-ranked applicants receive incentive commitments totaling \$2.908 million, since that was the maximum number of commitments that could be made under the program’s \$3 million budget. The nine remaining applications ranked below the cut-off point for budgeted funds.

Staff presented the Committee’s recommendations to the Board at its regularly scheduled agenda meeting on March 18, 2015. The Board approved the recommendations in an Order dated March 18, 2015, and the Market Manager subsequently mailed approval letters to the applicants who received incentive commitments.

Program Goal

The goal of the FY2016 Renewable Electric Storage Incentive program is to provide support in the form of financial incentives for energy storage systems that are integrated with Class 1 renewable energy projects installed behind-the-meter at customer sites. It seeks to benefit New Jersey ratepayers by supporting the installation of renewable electric storage systems in government, commercial, institutional and industrial entities (including public and critical facilities) for the purpose of providing emergency back-up power for essential services, offsetting peak loads by shifting electricity to hours of higher demand and, or helping to stabilize the electric distribution system through the provision of frequency regulation services.

The requirement for integrating electric storage systems with RE systems is necessary, since the legislation establishing the Societal Benefits Charge (the Electric Discount and Energy Competition Act, or EDECA) stipulates that ratepayer funds can be used only for the development of energy efficiency or renewable energy markets. Renewable electric storage supports the RE market by enhancing the value and benefits of renewable energy systems.

The restriction limiting incentives to behind-the-meter RE installations at the sites of non-residential customers is proposed to be maintained for this program year. Limiting incentive eligibility in this early iteration of the program to non-residential customer-generators allows funds to be used at facilities that serve the broader public need, rather than residences where benefits are limited to the individuals who reside there. Limiting incentive eligibility in this program year to applicants with previously installed RE systems ensures that energy storage incentives do not motivate investment in solar that would not otherwise be cost effective thereby contributing to the current SREC oversupply situation.

FY2016 Program Objectives

The FY2016 program is designed to meet the following objectives:

1. Focus on energy storage systems integrated with behind-the-meter electric generation defined consistently with the New Jersey Renewable Portfolio Standard (RPS) definition as a New Jersey

Class I renewable energy resource, which are “ready to build” and can be completed as expeditiously as possible.

2. Establish maximum incentive amounts which will allow the limited amount of funds to be committed to a broader number of projects.
3. Prioritize facilities that are defined as “public and critical” with the goal of demonstrating the potential for RE-integrated, behind-the-meter energy storage to keep critical systems operating during power outages.

Eligibility Requirements

Regardless of whether the FY2016 program takes the form of a solicitation or open enrollment program, Staff and the Market Manager believe that the key elements of the FY2015 Solicitation’s eligibility requirements be retained:

- Electric storage projects must be integrated with a Class 1 renewable resource that is an existing installation.
- The RE system to which the electric storage project is integrated must be a behind-the-meter, net metered system interconnected to the New Jersey electric distribution system and sized to produce no more than 100% of the host site’s historic annual electric consumption.
- The proposed site host must be served under a non-residential electric tariff and contribute to the Societal Benefits Charge (SBC) through their electric and/or natural gas bills.
- Incentives are contingent upon the applicant meeting all other program requirements, including but not limited to compliance with the host EDC’s interconnection requirements and compliance with all applicable local, state and federal laws, permit requirements and regulations.
- Applicants must agree to supply accurate cost information based upon the actual as-built installation cost.
- Applicants must identify the source of funds and the amount of any other direct incentives received for the project. Applicants must deduct other direct incentives from the total installed cost in the calculation of final incentive amounts.
- Applicants who receive incentives from the New Jersey Energy Resilience Bank (ERB) for storage equipment or technology will not be eligible to receive incentives under this program for the same equipment or technology. Renewable electric storage projects must have a minimum capacity of 50 kW. However, an Applicant may aggregate multiple storage projects of any size in order to meet the minimum capacity, provided that the host sites are all within the service area of a single EDC.

There was a discussion at the April 13, 2015 Renewable Electric Storage Working Group meeting as to whether eligibility should be limited to public and critical facilities. Staff and the Market Manager recommend that all customers served by non-residential tariffs continue to be eligible for incentives, but that two-thirds of the proposed annual program budget be dedicated to fund projects at public and critical facilities. Staff and the Market Manager will monitor participation from the public and critical sector through the first six months of the program to determine if it justifies the continuation of the set aside for the remainder of the program year. If participation is not sufficient to justify continuation, Staff will recommend to the Board that set aside funds remaining be released to all applicants. In addition, Staff and the Market Manager recommend that higher per-watt incentives be offered to public and critical facilities (see “Incentive Structure and Maximums” section).

Technical Requirements

Staff and the Market Manager recommend the following technical requirements for the FY2016 program:

- Storage systems must be capable of charging and discharging electricity only. Thermal storage systems (i.e., those that store energy in the form of ice or hot water) are ineligible.
- Electricity placed into storage must be generated by the Class 1 renewable energy system to which the storage is integrated. The storage device may not be charged by electricity generated by other on-site fossil-fueled generators, nor can it be imported from the distribution system except for short-term charging and discharging that enables ancillary services with no material net import or export from the grid.
- Equipment must be new, permanently installed and utilize proven and commercially available technology that is scalable and replicable at other sites. The program is technology agnostic.
- For purposes of emergency backup, the storage system must be capable of supporting the host facility's critical load as defined and identified by the Applicant, although the program will not set a minimum or maximum number of hours for which the critical load must be supported.

Program Funding Levels and Budget

The funding levels for the NJCEP and its individual incentive program budgets must be approved by the Board, based on recommendations from a Comprehensive Resource Assessment (CRA) process that is currently underway for FY2016. Staff and the Market Manager have proposed a program budget of \$6 million for the FY2016 Renewable Electric Storage Incentive, but the final budget amount is yet to be determined.

Program Delivery Options

At the April 13, 2015 Electric Storage Working Group meeting, stakeholders discussed the advantages and disadvantages of three program delivery options that were put forward by Staff and the Market Manager:

- the competitive solicitation format used in FY2015;
- a rolling solicitation, which would retain the evaluation element of the competitive solicitation but would replace the 45-day application window with an open enrollment period;
- a traditional open enrollment program featuring a prescriptive rebate.

The key advantages and disadvantages of a competitive solicitation format can be summarized as follows:

ADVANTAGE	DISADVANTAGE
Establishes an organized, orderly timeline for applications, evaluations and approvals	Planning and budgeting cycles for public agencies may not align with application window
Competition and project economic evaluation ensures that only the most cost-effective projects are funded	Lengthy and detailed review process delays start of project installation
Evaluation conducted by representatives of multiple organizations with expertise in different subject areas provides diverse perspectives in the review of relative project benefits and costs	Significant time commitment required from individuals and organizations represented on evaluation committee
More effective budget management and control	Prohibition on Market Manager assistance to applicants leads to missing, incorrect or incomplete data resulting in denial of applications
Ability to initiate a second solicitation round if funding is still available after first round	Applicants denied incentive commitments must wait until next solicitation round to reapply

The key advantages and disadvantages of a rolling solicitation format can be summarized as follows:

ADVANTAGES	DISADVANTAGES
Eliminating application window allows applicants to submit at their convenience	Superior projects may be excluded if program budget is exhausted by the time they apply
Denied or deactivated projects can reapply immediately instead of having to wait for next solicitation round	Prohibition on Market Manager assistance to applicants leads to missing, incorrect or incomplete data resulting in denial of applications
Evaluation conducted by representatives of multiple organizations with expertise in different subject areas	Significant time commitment required from individuals and organizations represented on evaluation committee

Retains evaluation process but removes element of competition that creates “winners and losers”	Applicants must still meet minimum scoring standards based on evaluation criteria, but the loss of competition may result in over-subsidization, over- subscription, and incentive queues.
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The key advantages and disadvantages of an open enrollment program with a prescriptive rebate can be summarized as follows:

ADVANTAGES	DISADVANTAGES
Prescriptive rebate can be adjusted during the program year on the basis of available funds	Prescriptive rebate is “one size fits all” that may over-fund some projects while under-funding others
Eliminating application window allows applicants to submit at their convenience	Superior projects may be excluded if program budget is exhausted by the time they apply
Market Manager handles all program administrative support, eliminating need for commitments from multiple organizations	Subject matter expertise is limited to Market Manager’s knowledge on various subject areas
Quicker turnaround time for application review and approvals	Funds all projects that submit complete applications, regardless of cost effectiveness
Funds from deactivated projects can replenish budget for new projects and can be applied for immediately	
Marketing efforts can be adjusted during program year on the basis of available funds	
Market Manager can offer assistance to applicants, leading to fewer problems involving missing or incomplete data on applications	

Each of the three program delivery options offer compelling advantages and disadvantages. However, it appears that in weighing the positive and negative factors of each option against the others, an open enrollment program with a prescriptive rebate offers greater benefits to both applicants and ratepayers

than either the competitive or rolling solicitation formats. The open enrollment/prescriptive rebate with multiple funding cycles provides greater flexibility in allowing for mid-course adjustments to budgets, incentive levels and marketing efforts; quicker turnaround in processing and approving applications; greater convenience for applicants in submitting applications on their own schedules; and fewer commitments of time and resources by outside organizations involved in the evaluation process. Having gained some insight to storage project costs and benefits with the experience from the FY15 program design, the benefits from the proposed approach are anticipated to outweigh the drawbacks of potentially overfunding projects; funding projects submitting complete applications without regard to cost-effectiveness; and operating on a first-come, first-served basis instead of ranking applications against each other.

Therefore, Staff and the Market Manager recommend that the FY2016 Renewable Electric Storage Incentive be offered in the form of an open enrollment program with a prescriptive rebate.

Incentive Structure and Maximums

As noted above, one of the drawbacks of a prescriptive rebate is its “one size fits all” approach in offering incentives. Projects have different economics based on a number of factors, and effort expended on identifying equitable and efficient incentive levels may not ensure that each incentive award provide an applicant with only the increment necessary to make an investment viable. Based on a scatter plot analysis of system size versus installed system cost that was reviewed at the April 13 working group meeting, the Market Manager determined that there were no apparent economies of scale in the installed costs for the electric storage systems proposed. Installed system costs for the 22 applicants to the FY2015 solicitation (disregarding a few outliers) were fairly constant at \$1,200 to \$1,500 per kW, although system sizes ranged from 200 kW to 1,500 kW. Staff and the Market Manager therefore recommend that a declining tier incentive structure, which is often used to reflect economies of scale in larger systems, is not appropriate for this program at this time. Instead, a single cents-per-watt rebate level is proposed to be established for all projects. .

In the FY2015 solicitation, the average incentive requested by the 13 applicants receiving incentive commitments was 33.23 cents per watt, while the average among all 22 applicants was slightly higher at 39.74 cents per watt. Staff and the Market Manager believe in the effort to establish an initial prescriptive rebate level it is more relevant to identify the incentive request that ranked lowest on a per-watt basis (16 cents per watt). In anticipation of energy storage market conditions characterized by rapid technological advances, more experienced installers, and the associated declines in hard and soft costs, the incremental financial requirement for the FY16 incentive should be lower than the incentive amounts required in FY15.

Another reason to focus on the lowest incentive request instead of averages is reflected in a comparison done by the Market Manager of several per-watt prescriptive rebate amounts to the requests submitted in the FY2015 solicitation. At a 35 cent level – about five cents below the average of all applicants’ requests – eight of the 13 approved projects would have received incentives in excess of their requests. At a 20 cent level, only an applicant with a 16 cent per watt request would have received a prescriptive rebate greater than the amount they requested in the solicitation.

One of the participants at the April 13 meeting proposed an idea that merits consideration. He suggested setting the incentive level at a low rate initially to both preserve the available funding and gauge the level of interest. If there is adequate interest at that level, it would remain constant through

the remainder of the program year or the depletion of the budget. However, if Staff and the Market Manager determine that participation is either above or below an adequate level, they could evaluate the impact of incentive levels on participation and recommend to the Board that the rate be adjusted as appropriate to bring participation in line.

Another suggestion that merits consideration is offering a higher per-watt incentive for projects that do not intend to participate in ancillary markets, such as frequency regulation (FR) and demand response (DR). The per-watt incentive for these projects, whose purposes will be limited to emergency back-up and load shifting, could be \$.05 per watt higher than the incentive for projects that intend to participate in ancillary markets. This differential in incentive levels will aid Staff and the Market Manager in understanding the financial value of FR and DR, and will help inform the direction of future incentive programs for electric storage.

Based on these suggestions and the rebate level analysis, Staff and the Market Manager recommend the following:

- Two-thirds of the annual program budget should be set aside for projects at public and critical facilities. These projects will also be eligible for higher per-watt incentives than projects at all other sites.
- A higher per-watt incentive should be offered to projects that agree not to participate in ancillary markets such as FR and DR.
- The incentive levels should initially be set at the per-watt rates in the chart below, with the option of adjusting those levels during the program year based on participation and available funds;
- A maximum incentive based on 1,500 kW of storage capacity. Individual projects larger than 1,500 kW are still eligible, but incentive amounts are capped at that level;
- A per-entity maximum of \$500,000 for multiple projects under the ownership of a single site host, developer/installer or other ownership entity within one program year.
- As motivation for the timely completion of projects, applicants who require a six-month extension beyond the initial 12-month approval period will forfeit 10% of their incentive award.

	Public and Critical	Non-Public and Critical
Ancillary Market Participation	\$.20 per watt	\$.15 per watt
No Ancillary Market Participation	\$.25 per watt	\$.20 per watt

Past programs in both prescriptive rebate and solicitation formats included a maximum incentive award based on total installed system cost as a safeguard against over-funding a project. Staff and the Market Manager therefore recommend that incentives for the FY2016 program be offered at the lesser of the relevant per-watt amount in the chart above, or 30% of the total installed cost of the storage system. In addition to the per-watt incentives, applicants who are required by their electric distribution company (EDC) to undergo a Level 3 interconnection study may apply to the program for reimbursement of 50% of the study's costs. These costs typically range from \$3,000 to \$5,000 if a full-blown study is required, but may be less if only a review by the EDC is required. Level 3 studies are generally required by EDCs for storage systems that intend to participate in FR. As part of the FY2016 program, applicants may be reimbursed for 50% of the cost of any Level 3 interconnection study required by an EDC. Documentation of the study's cost and proof of payment in the form of a receipt and/or cancelled check must be

submitted to the Market Manager to process a reimbursement claim. As a condition of reimbursement, the applicant must also agree to provide the study to Staff and the Market Manager and allow it to be made publically available on the NJCEP website. The reimbursement amount will not count against either the individual or entity incentive caps.

Reporting Requirements

As a condition of participating in any future electric storage incentive programs, incentive award recipients will be required to submit quarterly performance reports on their storage systems for the first 12 months of their operation. These reports will help Staff and the Market Manager verify and monitor performance for projects receiving incentives; provide market intelligence on costs and benefits to inform future ratepayer investment, business development, rules and regulations, program and incentive design, and policy; and Identify major changes to systems supported by incentives.

General quarterly metrics will include:

- Storage Efficiency (i.e., percentage of kWh out to kWh in)
- Storage Capacity Factor
- Storage Output to Renewable Energy Output
- Number of times system is called upon for FR, DR or emergency back-up

Specific metrics will also focus on:

- Back-up power
- Ancillary services
- Demand reduction
- Load shifting
- Changes to the system
- System availability

The Market Manager will develop a Performance Reporting Form that can be completed online and submitted electronically.

Other Considerations

In addition to the topics addressed above, the following issues were brought up for discussion at the April 13 working group meeting:

- Should minimum warranty requirements be established?
- How can ratepayer benefits be quantified for both public and private sector projects?
- To what extent should an application's technical and/or financial information be made public, and when should that occur?

Staff and the Market Manager welcome stakeholder comments on these and all the other issues discussed in this straw proposal. Comments may be submitted to publiccomments@njcleanenergy.com no later than 5:00 pm on May 21, 2015.