



NEW JERSEY BOARD OF PUBLIC UTILITIES

FY2016 Renewable Electric Storage Incentive Program Second Straw Proposal

Comments of SEIA

The Solar Energy Industries Association (SEIA) appreciates the opportunity to submit comments on Staff's September 15, 2015 Second Straw Proposal for the FY16 Renewable Electric Storage Incentive Program.

Established in 1974, SEIA is the national trade association of the United States solar energy industry and is a broad-based voice of the solar industry in New Jersey. Through advocacy and education, SEIA and its 1,000 member companies are building a strong solar industry to power America. There are 75 SEIA member companies in operation in New Jersey working in all market segments – residential, commercial, and utility-scale. SEIA member companies provide solar panels and equipment, financing, and other services to a large portion of New Jersey solar projects.

In the Second Straw Proposal, Staff reiterates that the goal of the FY2016 Renewable Electric Storage Incentive program is to provide financial incentives for energy storage systems that are integrated with Class 1 renewable energy projects installed behind-the-meter at customer sites for the purpose of (1) providing emergency back-up power for essential services, (2) offsetting peak loads by shifting electricity to hours of higher demand and, or (3) helping to stabilize the electric distribution system through the provision of frequency regulation services. Staff built on the successes and experience gained from the FY15 program, as well as stakeholder comments on the initial straw proposal, to develop its Second Straw of the FY16 Program.

SEIA's comments on the initial straw proposal in May focused on the following items:

- Design the incentive to balance the three goals of time shifting, frequency regulation, and resiliency
- Leverage federal funds to reduce costs to New Jersey ratepayers by allowing new renewable energy systems to participate in the FY16 program
- Efficiently deploying program resources by ensuring efficient reservation of scarce incentive dollars
- Provide transparency in how incentive levels may be adjusted
- Clearly state that the reimbursement for 50% of the cost of Level 3 interconnection is not an invitation to the EDCs to require Level 3 studies

In response to comments and other developments, Staff made a number of changes from the first straw, including:

- An open enrollment program with a prescriptive rebate offered on a first come, first serve basis
- Allocating half of the \$6 million budget to the open enrollment program while retaining the other half for a program later in FY2016 to be recommended by Rutgers Laboratory for Energy Smart Systems (LESS) and refined through the stakeholder process

- Basing the prescriptive rebate on energy capacity (kWh) rather than power capacity (kW)
- Allowing RES systems to be integrated with either existing or new RE installations, and
- Refining the application and monitoring requirements to enable evaluation of the resiliency implications of incentive design, rather than establishing a minimum discharge time for RES systems.

Comments

SEIA thanks staff for the thoughtful modifications to the FY2016 program, and generally endorses the changes. However, we have concerns about the timely delivery of the proposed second phase of the program to be developed based on a study by the Rutgers Laboratory for Energy Smart Systems (LESS), and suggest that for FY2016, the total RES budget should be allocated to the proposed rebate program. This would allow additional time for the Rutgers' study to be developed and vetted by stakeholders, and delivered for the FY2017 program.

I. Incentive design to balance the three goals of time shifting, frequency regulation, and resiliency

SEIA supports Staff's proposal to award incentives based on the energy capacity of the RES system, which is intended to balance the three goals of the RES program, maximize ratepayer savings, and give NJ valuable experience in utilizing flexible resources that will help integrate renewables.

II. Leverage federal funds to reduce costs to New Jersey ratepayers by allowing new renewable energy systems to participate in the EY16 program

SEIA supports Staff's proposed modification to allow for the eligibility of storage systems connected with new RE installations, which is consistent with SEIA's prior recommendation. Allowing for new solar systems that incorporate batteries are a very prudent use of ratepayer funds as such systems can include the cost of the battery in the ITC basis, reducing the overall cost of the project.¹

III. Efficiently deploying program resources by ensuring efficient reservation of scarce incentive dollars

Similarly, SEIA supports the proposed open enrollment approach to awarding incentives in the FY2016 program, which helps to assure certainty and thus reduce soft development costs. SEIA continues to support the Second Straw Proposal's provision for forfeiture of 10% of incentive funding for projects that cannot achieve commercial operation within 12 months and require a 6 month extension.

¹ http://www.chadbourne.com/In_Other_news_Batteries-04-01-2013_projectfinance/

IV. Incorporating Results from the Rutgers LESS Study into the RES Program Design Should be Deferred to FY2017

SEIA recommends that the full \$6 million RES budget be allocated to the proposed incentive program, and the proposed second phase to be developed by Rutgers LESS be deferred to the FY2017 program.

The currently proposed incentive program reflects the findings of Navigant's market assessment, lessons learned from the FY2015 RES program, and significant stakeholder input. While there may be value in incorporating input from the Rutgers LESS to future year program designs, it seems unlikely that the LESS study will be scoped and completed, final recommendations for a phase two RES program proposed, an additional stakeholder process held, and a final phase two FY2016 RES program completed in FY2016, which ends in June 2016.

Instead, the results of that study can more readily be incorporated for the FY2017 program, which will already need to be initially considered in early 2016. This will give developers time to focus on completing successful projects instead of participating in a third program planning process.

Sincerely,

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NEW JERSEY BOARD OF PUBLIC UTILITIES

**FY2016 Renewable Electric Storage Incentive Program
Second Straw Proposal (September 15, 2015)**

Joint Comments of SolarCity Corporation and Eos Energy Storage

SolarCity Corporation and Eos Energy Storage (“SolarCity and Eos”) jointly submit these comments, in support of two key proposals by Board Staff and the Market Manager: basing the prescriptive rebate on energy capacity and allowing RES systems integrated to be integrated with new RE installations. SolarCity offers solar and storage solutions for customers in 19 states and has deployed over 22 MW of solar PV in New Jersey¹; Eos Energy Storage is a New Jersey-based battery storage producer. We appreciate Staff’s continued inclusion of stakeholders in this process and the opportunity to comment on the Second Straw Proposal.

SolarCity and Eos Support Basing the Prescriptive Rebate on Energy Capacity

SolarCity and Eos strongly support the Staff’s proposal that the prescriptive rebate be based on energy capacity (kWh) rather than power capacity (kW). First, we agree with Staff that this change will balance the three goals of the RES program by leveling the economic playing field between systems designed primarily for participation in frequency regulation markets and those designed primarily for emergency back-up and load shifting. Second, we agree that establishing a minimum runtime for systems is not necessary when basing the incentive payment on energy capacity instead of power capacity.

We also agree with Staff’s proposal that the incentive payment be based on the RES system’s energy capacity in kWh as stated on the manufacturer’s specification sheet, but point out that a minimum discharge time cannot be required. Manufacturer spec sheets for energy storage systems will not include a minimum discharge time. Unlike with conventional generation, minimum discharge times are effectively irrelevant for battery storage systems because the minimum discharge is typically less than one second. The characteristics generally included on an energy storage system’s spec sheet include the system’s energy capacity (kWh) and C-rate, which represents the system duration (a C-rate of C/2 represents a system with a 2-hour system duration).

SolarCity and Eos Support Allowing RES Systems To Be Integrated With New RE Installations

SolarCity and Eos strongly support the eligibility of RES systems integrated with new RE installations for several reasons. First, this will allow New Jersey ratepayers without existing RE systems to participate in the RES program. Second, it allows the participation of lower cost projects, as retrofits cost significantly more, and ensures that the maximum number of projects are completed. Third, it allows systems owners to take advantage of the federal Investment Tax Credit, further reducing costs. Fourth, we agree with Staff and other commenters that the

¹ States served as of 8/10/15; MW installed in NJ as of 5/29/15.

amount of solar capacity developed through this program would not materially impact the SREC oversupply situation.

Conclusion

In conclusion, SolarCity and Eos strongly support Staff's proposal to base the rebate program on energy capacity (kWh), which will balance the three program goals of load shifting, back-up power, and frequency regulation. We also agree with Staff's proposal to include RES systems connected to new RE installations in order to minimize costs and maximize program benefits. We look forward to continued engagement with Staff and the Market Monitor and to the success of the FY2016 RES program.

Respectfully submitted,

Betty Watson
Deputy Director, Policy and Electricity Markets
SolarCity Corporation

Ebram Megally
Business Development Manager
Eos Energy Storage

NEW JERSEY BOARD OF PUBLIC UTILITIES

**FY2016 Renewable Electric Storage Incentive Program
Second Straw Proposal (September 15, 2015)**

Comments of SolarCity Corporation

SolarCity wholeheartedly supports the rebate program proposed in this Second Straw Proposal for the FY2016 Renewable Electric Storage (RES) Incentive Program and applauds Board Staff and the Market Manager for their efforts. We appreciate the opportunity to comment on this important proposal. SolarCity strongly supports the prescriptive rebated program based on energy capacity (kWh) to balance the RES program goals of load shifting, back-up power, and frequency regulation. We believe that the proposed program is the best possible result of existing market analyses, stakeholder input, and lessons learned and that the full \$6 million RES Incentive Program budget should be allocated to the program. We also propose several minor changes to the implementation details of the program in order to strengthen participation and ensure successful projects. Finally, we strongly supports Staff's proposal to allow RES systems to be integrated with new RE installations.

SolarCity Supports Basing the Prescriptive Rebate on Energy Capacity

As we discuss in greater detail in our "Joint Comments of SolarCity Corporation and Eos Energy Storage," also filed today in this proceeding, SolarCity adamantly supports the Staff's proposal that the prescriptive rebate be based on energy capacity (kWh) rather than power capacity (kW). We believe that this will balance the three goals of the RES program and achieve maximum benefits for NJ ratepayers. We agree that the incentive payment should be based on the RES system's energy capacity in kWh according to the manufacturer's specification sheet, but note that a minimum discharge time may not be stated the manufacturer as it is not relevant to battery storage systems.

SolarCity Proposes Allocating the Full \$6 Million Budget to this Rebate Program

SolarCity strongly urges Staff to allocate the full \$6 million budget approved for the FY2016 RES Incentive Program to the proposed rebate program. It would unnecessarily waste stakeholder and Staff efforts to create a second incentive program for FY2016. It is also unlikely that the market assessment, recommendations, stakeholder process, and final program could be completed in time for a program to implemented and result in successful projects in a reasonable timeframe. Instead, the recommendations of any new market assessment should be incorporated to the FY2017 RES Incentive Program.

The proposed rebate program is already based on a thorough market assessment by Navigant Consulting, Inc. in 2012 and the subsequent exhaustive stakeholder input and Staff work through developing the FY2015 and FY2016 programs. Additionally, stakeholders have not questioned the three important use cases arrived at by Navigant's study and experience with Superstorm Sandy- load shifting, frequency regulation, and back-up power. This suggests that while

potentially informational, an additional academic study of the potential use of resources is not necessary. Significantly more useful would be the experience and knowledge gained through deploying and operating RES systems under a fully funded FY2016 rebate program. Therefore, it would be a mistake and a waste of State and stakeholder resources to withhold funds in order to establish a second incentive program for FY2016.

The Rutgers University Laboratory for Energy Smart Systems (LESS) will require a significant amount of time to conduct a second market assessment for electric storage in NJ, particularly considering the broadening of the scope to include biopower and combined heat and power. After the process to agree on study parameters and determinations, the study team will need time to establish recommendations for those incentive programs. Based on those recommendations, Staff must propose a new program to incorporate those recommendations and hold an entirely separate stakeholder process to develop and finalize that program. There is a very high possibility that this entire process would not be completed until well into 2016, leaving only a short time for any resultant program to actually operate and lead to successfully implemented projects.

In addition, this will require considerable effort from both stakeholders and Staff in a process that is completely outside of the current FY2016 RES stakeholder process and the imminent FY2017 process. In addition to such a significant commitment of resources from many parties, this draws developers away from their efforts to develop and complete projects for the FY2016 program currently under discussion. Finally, a second FY2016 program will not benefit from lessons learned from the implementation of the currently proposed FY2016 program as these projects will not have reached completion.

Instead, SolarCity urges Staff to commit as much funding as possible to the currently proposed program that incorporates a valid market assessment, experience gained from the FY2015 program, and was developed based on the significant good faith efforts of stakeholders. Rutgers LESS will then have sufficient time to complete a thorough market assessment that incorporate appropriate stakeholder feedback and make useful recommendations for future incentive programs for all three categories of resources. These recommendations can be incorporated in FY2017 programs through the expected stakeholder processes. This will provide the additional benefits of program consistency, increased market penetration of RES systems and increased understanding of RES system deployment and operation gained through a fully funded FY2016 rebate program.

However, if Staff believes that it is absolutely necessary to withhold some FY2016 funding in order to establish a second FY2016 incentive program, SolarCity would not support the withholding of more than \$1 million for that purpose. In addition, we propose that any portion of FY2016 funding withheld for a second FY2016 program be recommitted to the currently proposed rebate program if the second FY2016 program recommended by some portion of the \$6 million budget for a separate program recommended by Rutgers Laboratory for Energy Smart Systems (LESS), we propose that the reserved portion of the budget be applied to the open enrollment program if the program recommended by Rutgers LESS and refined through the stakeholder process has not been finalized by March 2016. This will ensure that the full benefits

of the RES program are achieved each year and are not delayed or entirely eliminated by lengthy research and stakeholder processes.

SolarCity Supports the Prescriptive Rebate Design with Minor Adjustments

SolarCity supports the use of an open enrollment program with a prescriptive rebate. We also support Staff's proposed incentive level of \$300/kWh of energy capacity with no tiers. While lower than the level proposed in our comments on Staff's May Straw Proposal, we believe the proposed incentive will support RES projects in the state.

In general SolarCity agrees with the proposed implementation of the program. SolarCity believes that several minor adjustments to the proposed program will ensure its success and ensure maximum benefit to New Jersey ratepayers.

- We propose that the open enrollment program begin three months after Board approval of Staff's final proposal. This will allow all entities that would participate in the program to develop projects that accurately incorporate the details of the approved program. A shorter development period could lead to the submission of speculative projects designed without clarity around program details. This could damage the success of the overall program and lead to awarding projects that cannot be successfully completed.
- We propose that a meaningful application fee should be added to increase the likelihood that awarded projects will be completed. The application fee should be assessed at \$5/kWh of energy capacity of the project and refunded to the developer upon completion of the project.
- We support the consideration of applications on a first-come, first-served basis determined by the date applications are received by the Market Monitor.
- We propose that the project developer cap be adjusted up to 50% of the final program budget as it is too restrictive at the proposed level. This will ensure that the program results in the maximum amount of implemented RES projects. As commercially available and proven energy storage solutions are relatively new to the power industry, imposing a low developer cap in a market where few credible developers have the wherewithal to bring their product to that market may unduly limit the funds that can be realistically deployed.
- We support the 12-month deadline for project completion and the ability for projects to receive a 6-month extension. However, we propose that in order for projects to receive an extension, project milestones must be proven, including an application for interconnection and proof of dialogue with the utility showing reasonable progress (as determined by Staff).
- We support the 10% forfeiture of incentive award for those who require a 6-month extension. However, based on its experience interconnection RES projects, SolarCity proposes that three categories of project delays are out of the hands of the developer and

should therefore cause an exemption from the 10% forfeiture: 1) interconnection delays, 2) delays due to questions surrounding NEM eligibility, and 3) force majeure (at Staff's discretion).

- While we support the Level 3 Interconnection Study reimbursement, we note that this does not provide a long-term solution to unnecessarily cumbersome interconnection processes.
- We support the carrying over of project eligibility and technical requirements from the FY2015 program.
- We support Staff's proposed monitoring and reporting requirements.

SolarCity Supports Allowing RES Systems to Be Integrated With New RE Installations

As discussed in our "Joint Comments of SolarCity Corporation and Eos Energy Storage," SolarCity strongly supports the eligibility of RES systems integrated with new RE installations for several reasons. This will open program eligibility to a much broader range of NJ ratepayers and reduce RES system costs, ensuring that the maximum number of projects are completed.

Conclusion

In conclusion, SolarCity strongly supports the rebate program currently proposed by Staff. In fact, we believe that this program represents the best possible outcome based on existing market assessments, extensive stakeholder input, lessons learned from the FY2015 program, and significant effort by Staff. We therefore propose that the full \$6 million RES Incentive Program budget be allocated to the proposed program and that the results of any further academic study be incorporated into an FY2017 RES program. Finally, while we sincerely endorse the proposed program, we suggest minor adjustments to program implementation details to strengthen the program and ensure successful projects that achieve the goals of the program.

Respectfully submitted,

Betty Watson
Deputy Director, Policy and Electricity Markets
SolarCity Corporation

NEW JERSEY BOARD OF PUBLIC UTILITIES

**FY2016 Renewable Electric Storage Incentive Program
Second Straw Proposal (September 15, 2015)**

Additional Comments of SolarCity Corporation

In its second set of comments on the Second Straw Proposal for the FY2016 RES Incentive Program, SolarCity reiterates its support for the proposed rebate program. We continue to highlight the following points, discussed in more detail in our comments on this matter dated September 25, 2015 and our joint comments with Eos Energy Storage, also submitted on that date:

- SolarCity strongly supports basing the prescriptive rebate on energy capacity in order to balance between the three program goals of load shifting, back-up power, and frequency regulation. While SolarCity prefers the higher rebate level of \$350/kWh of energy capacity, as proposed in our initial comments, we believe that the \$300/kWh level proposed by Staff will serve to ensure the use of only the most efficient systems. The 30% cap ensures that if RES system costs are reduced as developers gain experience, the rebate level will automatically be adjusted down as appropriate. We also offer several small adjustments to program implementation details that would help to strengthen the program and ensure success, including beginning the open enrollment period three months after Board approval of the program and increasing the developer cap to 50% of the final funding level of the rebate program.
- We propose that the full FY2016 RES budget of \$6 million be allocated to the proposed rebate program because the current proposal is based on the previous market study, lessons learned from FY2015, and significant stakeholder input. We urge Staff to incorporate results of the Rutgers LESS study into the program design for the FY2017 RES program.
- We support the eligibility of RES systems integrated with new RE installations for several reasons. This will open program eligibility to a much broader range of NJ ratepayers and reduce RES system costs, ensuring that the maximum number of projects is completed.

Based on the discussion at the September 29, 2015 RES Working Group Meeting, SolarCity wishes to submit these additional comments regarding the Second Straw Proposal.

Concern Regarding Power Capacity of RES Systems

During the RES Working Group Meeting, a concern was expressed regarding the need to consider the power capacity (kW) of RES systems in order to ensure that the proposed rebate program based on energy capacity (kWh) was not used inappropriately by a non-battery technology.

As discussed in the meeting, for battery systems, a driving factor increasing the cost of the battery storage system is increased system duration, or the length of time a system could discharge at its maximum power capacity. So, a battery system would not be able to take advantage of a rebate based on energy capacity by minimizing its power capacity and extending the system duration.

However, if Staff wishes to apply some minimum power capacity requirement in order to prevent gaming of the proposed rebate by another technology, it could simply require that the RES system have a minimum power capacity sufficient to serve the facility critical load as agreed to by the facility owner or manager. This is a rational way to apply a minimum requirement because any RES system that minimizes power capacity and maximizes energy capacity is likely designed to provide back-up services for critical facility loads. So, if the power capacity of the RES system is sufficient to meet those critical loads, then the RES system should be capable of serving its intended purpose and eligible for the proposed rebate program.

Scope of Rutgers LESS Study

SolarCity has already urged that the results and recommendations of the Rutgers LESS study be incorporated into the FY2017 RES program in order to allow sufficient time for the most valuable version of the study to be accomplished. To this end, we also propose that Staff consider stakeholder input on the scope of the Rutgers LESS study. While Staff has indicated that this is not typical of previous studies, we suggest that because of the early stage of experience with energy storage systems in the electricity industry, it will be useful to obtain a variety of stakeholder perspectives on the potential use cases and values of energy storage as well as existing barriers. For example, the Massachusetts Department of Energy Resources and Clean Energy Center have recognized the importance of collecting these perspectives and will hold a Stakeholder Workshop in order to allow stakeholders to contribute thoughts and insights on subjects for their joint study on energy storage.

Specifically, SolarCity recommends that any study of the potential for energy storage systems to benefit New Jersey ratepayers and enable the integration of renewable energy generation include an examination of the long-term benefits of shifting top hours of load. Using energy storage and other distributed energy resources to flatten the highest hours of peak load can provide significant long-term savings to consumers and develop the flexible resources needed to effectively integrate variable energy resources.

For example, the State of New York found that if “the 100 hours of greatest peak demand were flattened, long term avoided capacity and energy savings would range between \$1.2 billion and \$1.7 billion per year.”¹ That estimate includes avoided generation capacity, transmission and distribution investment, and avoided energy payments including line losses. Further, New York calculates that simply increasing the system load factor (system average load divided by system

¹ State of New York Public Service Commission (February 26, 2015), *Order Adopting Regulatory Policy Framework and Implementation Plan*, Case 14-M-0101, p 20.

peak load) from 55% to 56% would produce potential gross benefits of \$150 million to \$219 million per year.²

While New Jersey load is less than that of the state of New York, we calculate that if the 100 hours of New Jersey's greatest peak demand were flattened, long-term avoided capacity market costs could be as high as \$480 million annually.³ This result represents only a portion of the total long-term avoided costs of shifting peak load hours.

Based on the potential for significant ratepayer benefits and improved ability to integrate variable energy resources, a study of the value of energy storage in New Jersey should include identifying the value shifting the top hours of peak load that includes long-term avoided costs of energy, capacity, transmission, and distribution.

In conclusion, SolarCity continues its strong support for the implementation and expansion of the proposed rebate program and urges Staff to consider the many potential use cases and values of energy storage systems in the Rutgers LESS study.

Respectfully submitted,

Betty Watson
Deputy Director, Policy and Electricity Markets
SolarCity Corporation

² State of New York Public Service Commission (August 22, 2014), Developing the REV Market in New York: DPS Staff Straw Proposal on Track One Issues, Case 14-M-0101.

³ Based on 1998-2013 load data and 2017/2018 Net CONE from PJM.

FY2016 NJPBPU Renewable Electric Storage Incentive Program Second Straw Proposal

Environment New Jersey

Environment New Jersey, on behalf of our more than 20,000 citizen members, supports the rebate on energy capacity and allowing RES systems to be integrated with new RE installations. The organization, based in Trenton and New Brunswick, has been as strong advocate for expanded clean energy across New Jersey over the last two decades.

The missing link in the clean energy technology evolution has been a viable, cost-effective and market-ready energy storage system. We clearly aren't there yet, but the success of the field shows that this clearly can be a viable technology and can help bridge the gap to a renewable energy future. The below comments summarize our support for this straw proposal, but these sort of projects need to be continued and expanded to make the fulfill the promise of clean, renewable energy.

Environment New Jersey supports the currently proposed rebate program based on energy capacity because it will enable load shifting and resiliency resources. The rebate program should be expanded to allocate all FY16 funds to the proposed rebate program and implement the Rutgers LESS study recommendations in FY17 and include new RE installations to keep costs lows and make more ratepayers eligible.

Base the Rebate on Energy Capacity: Environment New Jersey supports the BPU's proposal that the rebate be based on energy capacity (kWh) rather than power capacity (kW). First, we agree with staff that this change will balance the three goals of the RES program by leveling the economic playing field between systems designed primarily for participation in frequency regulation markets and those designed primarily for emergency back-up and load shifting. Second, we agree that establishing a minimum runtime for systems is not necessary when basing the incentive payment on energy capacity instead of power capacity.

We also agree with staff's proposal that the incentive payment be based on the RES system's energy capacity in kWh as stated on the manufacturer's specification sheet, but point out that a minimum discharge time cannot be required. Manufacturer spec sheets for energy storage systems will not include a minimum discharge time. Unlike with conventional generation, minimum discharge times are effectively irrelevant for battery storage systems because the minimum discharge is typically less than one second. The characteristics generally included on an energy storage system's spec sheet include the system's energy capacity (kWh) and C-rate, which represents the system duration (a C-rate of $C/2$ represents a system with a 2-hour system duration).

Environment New Jersey Supports Allowing RES Systems To Be Integrated With New RE Installations: Environment New Jersey supports the eligibility of RES systems integrated with new RE installations for several reasons. This will allow New Jersey ratepayers without existing

RE systems to participate in the RES program. Second, it allows the participation of lower cost projects, as retrofits cost significantly more, and ensures that the maximum number of projects are completed. Third, it allows systems owners to take advantage of the Federal Investment Tax Credit (ITC), further reducing costs. Fourth, we agree with staff and other commenters that the amount of solar capacity developed through this program would not materially impact the SREC oversupply situation.

Environment New Jersey supports staff's proposal to base the rebate program on energy capacity (kWh), which will balance the three program goals of load shifting, back-up power, and frequency regulation. We also agree with staff's proposal to include RES systems connected to new RE installations in order to minimize costs and maximize program benefits. We look forward to continued engagement with staff and the market monitor and to the success of the FY2016 RES program.

Sincerely,

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**New Jersey Board Of Public Utilities
Response to SECOND STRAW PROPOSAL
Fiscal Year 2016 Renewable Electric Storage Program
September 15, 2015
Joint Comments from Demand Energy and Swan Creek Energy**

Demand Energy and Swan Creek Energy appreciate the opportunity to jointly submit comments to the Second Straw Proposal for the 2016 Renewable Electric Storage Program.

Demand Energy is an Intelligent Energy Storage company that has successfully developed Behind-The-Meter (BTM) energy storage projects in New York City in Consolidated Edison's (Con Ed) service territory. The company has also successfully developed Solar Integrated Storage projects in Tianjin China, Spokane Washington, and Helena Montana. Demand Energy is now developing several solar integrated storage systems under various programs lead by NYSERDA and Con Ed for the New York City supply system. The drive for resilient solar systems with the ability to manage both energy and power costs for commercial users as well as adding resiliency for operation and safety during extended outages is an area of focus for Demand Energy and Swan Creek.

Swan Creek Energy, LLC is a developer of innovative renewable energy projects for both private companies and public agencies interested in cutting costs and reducing greenhouse gas emissions with no required out-of-pocket expense. Swan Creek has developed one of the largest distributed municipal solar projects in the Northeastern United States, one of the largest rooftop solar projects in the United States, and one of the largest energy efficiency relighting projects in New Jersey.

Demand Energy and Swan Creek support the direction that Staff and the Market Manager are recommending with the following comments:

- An open enrollment program with a prescriptive rebate offered on a first come, first serve basis
 - While we believe in the open program and the first come first serve directive, we believe the developers should be limited to the \$450,000 incentive maximum, which would limit larger developers from consuming the entire incentive pool as occurred in California under the Self Generation Incentive Program (SGIP).
- Allocating half of the \$6 million budget to the open enrollment program while retaining the other half for a program later in FY2016 to be recommended by Rutgers Laboratory for Energy Smart Systems (LESS) and refined through the stakeholder process
 - We believe that the issues around grid load management and providing system resiliency is being studied and analyzed by both the private and public sector. Our work in New York has proven to Con Ed that energy storage can deliver needed load reduction for extended periods of time or during demand response events. The markets needs to adopt a less talk/more action approach to getting systems in the ground that prove that grid stress and a resilient distributed energy network is achievable. We believe the entire \$6 million should be directed to projects that can be deployed in 2016.
- Basing the prescriptive rebate on energy capacity (kWh) rather than power capacity (kW)
 - For systems designed for resiliency and load reduction, basing the rebate on energy is the preferred method of measurement.
- Allowing RES systems to be integrated with either existing or new RE installations, and
- Refining the application and monitoring requirements to enable evaluation of the resiliency implications of incentive design, rather than establishing a minimum discharge time for RES systems.

- We agree with the decision to allow storage systems to be added to existing installations as well as for new Renewable Energy (RE) installations. AC coupled storage systems can be retrofitted into existing RE systems and can provide the voltage necessary to allow for “dark start capability”. The integrated solution can respond quickly enough to manage successful operation in a load reduction program or support power for critical power circuits during an outage.

Program Goal

We look at this program as solving two issues:

1. Prove out that solar integrated storage systems can provide the critical power support needed at facilities during periods of extended outages.
2. Demonstrate the ability to absorb excess solar generation and time shift stored energy, reducing the demand for energy during the peak grid hour when the load reduction has the highest system economic value.

The Northeast has had multiple episodes over the past several years where weather events have caused extended outages in areas that disrupted grid delivered energy for days and even weeks at a time. Many were stunned when distributed solar was unable to generate and provide much needed energy to facilities that had expected power during an outage. Since grid interconnection and UL requirements did not allow inverters to support islanded operations, the underlying premise that a distributed generation ecosystem can support critical power was challenged. This has driven the leadership of staff and the market manager to support an incentive necessary to demonstrate that such facilities can be developed and can provide the needed resiliency to build a more robust grid. Demand Energy is developing several critical power solar storage systems in New York and has chosen Princeton Power’s inverter platform to provide the necessary system functionality to create voltage that is required to support black-start operations. A facility that will operate in a stand-alone manner, separated from a dormant electrical grid requires a systems approach. The ability to switch from a grid connected load management system to an islanded isolated operation that is capable of powering critical circuits requires an installation of a transfer switch and the capability to power the local intelligent energy control system from the battery power. Both are imperative for a robust design to ensure operability in standalone mode.

In regards to expanding the ability for developing a distributed energy network that will improve resiliency and security from a more diversified energy grid, solar integrated storage is necessary to approach the types of renewable energy goals that are discussed nationally. The U.S. has deployed 20 GW of solar to date. This represents 2% of the total generation capability of the U.S. power fleet (1000 GW). While under the leadership of the New Jersey Board of Public Utilities, the capacity from solar is a larger percentage but there are now regions within New Jersey where the interconnection capacity may be limited from a metric of kW of interconnected solar per feeder (kW/feeder). The integration issues around the ability of the power grid to absorb excess solar during the solar peak (12 pm to 1 pm) and falling short of delivering the power levels installed during the grid peak (4 pm to 8 pm) is problematic in building a grid with higher renewable energy content. For ISO systems that have large thermal generation operations (like PJM), the ability to respond quickly to intermittent resources and steep ramp rates as required as solar fades at the end of the afternoon creates challenges in supporting peak demand periods that occur in the late afternoon and early evening periods. The ability of a solar integrated storage system to capture lower value energy that is created in the morning hours and time shift and shape the commercial load during the grid peaking periods, builds a more robust and adaptive power system. For energy networks that are concerned with stress below a substation, the ability to time shift solar power to when it has the highest economic value provides a level of flexibility that improves better grid asset utilization. Certain grid sections peak at different operational times. In the

summer, feeders that support large commercial buildings tend to peak between 2 pm to 6 pm. In feeders that support more residential and restaurant loads, the peak tends to occur between 7 pm to 11 pm. The ability to diversify feeder load reduction starts to set up locational based marginal pricing which we believes moves the grid forward to market based model for valuing distributed resources.

Program Objectives

Behind the meter energy storage and the control systems to manage the integration with existing renewable energy systems are established, tested, and ready to build. As soon as the program is set and the incentive structure finalized, the market is prepared to respond. By coupling the installations behind the meter, participants can leverage the economic benefits of commercial load reduction with the support of a \$/kWh incentive to help move the market forward.

Program Funding Levels and Budget

Demand Energy believes that the markets for behind the meter energy storage systems that are designed for resiliency and load reduction are ready for growth in New Jersey. California, Hawaii, and New York are already moving forward with market-based incentives or rate structures that support these types of systems today. A split of 50% for market incentives and 50% for market research seems distorted. This is a market that is looking for proven installations. The technology is ready, the control systems are ready and threats from weather events continue. While we appreciate and support educational research, the private market consulting services are full of analysis and reports that help all concerned parties understand the value proposition of storage and how it can help build a more resilient grid and provide savings from market based rate design. We believe supporting a wide variety of installations that can prove to the market that these systems contain an element of "obtanium" will go further to advance the establishment of these resources as a tool to help design the distributed energy network of the future. We believe a ratio of 80% projects / 20% market research will better serve ratepayers in 2016.

Project Eligibility Requirements

Demand Energy believes that both new installations and existing systems can benefit from being eligible. While several have argued reasons why one or the other should be excluded, we believe that the ability to show that resilient systems can be developed from both existing and new RE systems is key to increasing grid robustness. We disagree with the discussion that retrofitting existing systems with storage is more costly. AC coupled storage systems are viable and in operation today. The ability to prove this point to the market also allows existing systems to evolve in helping to build a more resilient grid. The recent threat of Hurricane Juaquin in October caused a level of anxiety about how stalled the market has been in the effort to provide solutions that would allow renewable energy systems to support facilities during outages. By way of example, one of our current customers pointed out that the value of being able to support critical power circuits during an extended outage was "Priceless".

We agree with Staff and the Market Manager that the additional project eligibility requirements proposed to be carried over from the FY2015 program are appropriate.

Technical Requirements

We agree with the technical requirements as outlined by staff and the Market Manager. Our experience has taught us that a system that is designed for load reduction tends to be optimal when the power to energy ratio is 1 to 4. This means that a 100 kW Power system with 400 kWh of daily useable energy

seems to fit the business case of load reduction as a rough rule of thumb in both New York and California markets. A key point for battery systems is the difference between nameplate energy capacity and useable energy capacity. Battery cycle life is a function of depth of discharge for various battery chemistries. When designing a load reduction system, we look at the average annual depth of discharge for estimating the projected battery life of the system. We design our systems to be easily “refueled” as the battery component is used up, leaving intact the balance of systems (racking, environmental controls, battery monitoring, safety circuits, intelligent controls, and power conversion). This allows us to design for longer system life for multiple years of operation if the battery is consumed based upon standalone battery pricing versus complete system economics. When looking at critical power support, we look at the nameplate or the total energy available for the battery bank. The difference gives us more run time of the system in a critical power event and allows us to size the ratio of solar production to battery storage capacity in order to supply an optimized design for critical power systems. The anticipated number of days or hours that a system will be operated in a critical power mode versus a load reduction program are elements that we use in selecting the size of energy (kWh) that a system will need to fit the business economics.

Program Delivery

We agree with Staff and the Market Manager that an open enrollment program with a prescriptive rebate is better suited to serve as the plan to execute the next series of projects under the 2016 program. Basing the incentive on the system’s energy capacity is a fair way to allocate the goal of building a load reduction program that enables a more robust resiliency network. The ability to support longer critical power events and recharge from the renewable energy resources builds a more durable distributed energy grid.

Incentive Structure and Maximum

We agree with Staff and the Market Manager that an incentive level that is based upon \$300 per kWh of energy capacity is appropriate.

We also agree that the maximum incentive should be limited to lesser of \$300,000 or 30% of the project’s total installed cost. The \$300,000 maximum is based on a system with an energy capacity of 1,000 kWh (1 MWh).

We also agree with the maximum incentive to be capped at \$450,000 that applies to multiple projects under the ownership of a single site host, developer/installer or other ownership entity within one program year.

We also agree that applicants who require a six-month extension beyond the initial 12-month approval period shall forfeit 10% of their incentive award.

Application Process

We agree with the rules and guidelines proposed by Staff and Market Manager.

Level 3 Interconnection Study Reimbursement

We are assuming that the interconnection study for load management/resiliency will be minimal when compared to the study required by the EDC for Frequency Response systems. The goal of a load

reduction system is to not export energy onto the grid and reduce the loading on the grid during the system peaks. Should the EDC still require the same level of study for load reduction systems, we would expect that Staff and the Market Manager would offer the same payment incentive as for the FR systems which is that the applicants may be reimbursed for 50% of the cost of any Level 3 interconnection study required by an EDC.

Monitoring and Reporting

We agree with the requirements for monitoring and reporting.

###

A.F.Mensah

AF Mensah Inc., (AFM) appreciates the opportunity to present our views and suggestions to the NJ Board of Public Utilities (BPU), Board Staff and the Market Manager on the document entitled "SECOND STRAW PROPOSAL Fiscal Year 2016 Renewable Electric Storage Program". AFM plans to presents its brief comments and suggestions to the second straw proposal based on the major changes recommended below

- **An open enrollment program with a prescriptive rebate offered on a first come, first serve basis.**

AFM agrees with this recommendation.

- **Allocating half of the \$6 million budget to the open enrollment program while retaining the other half for a program later in FY2016 to be recommended by Rutgers Laboratory for Energy Smart Systems (LESS) and refined through the stakeholder process.**

AFM agrees with the BPU recently approved study by LESS for the overall assessment of NJCEP's renewable electric storage, biopower and combined heat and power incentive programs.

What is of concern to AFM is the recommendation to keep 50% of the FY2016 \$6M budget in abeyance until the study is completed by LESS. It is unclear at the time of this straw proposal how long that study may take. Based on this, AFM feels that all of the \$6M FY2016 funding be made available at the on start of the program and that the recommendations by LESS be used in the development of the FY2017 funding program.

- **Basing the prescriptive rebate on energy capacity (kWh) rather than power capacity (kW).**

AFM agrees with this recommendation.

- **Allowing RES systems to be integrated with either existing or new RE installations.**

AFM agrees with this recommendation.

- **Refining the application and monitoring requirements to enable evaluation of the resiliency implications of incentive design, rather than establishing a minimum discharge time for RES systems.**

AFM agrees with this recommendation.

A.F.Mensah

- **Level 3 Interconnection Study Reimbursement:**

AFM continues to question the need for a Level 3 Interconnection study by the EDC's in the state of NJ especially for battery storage units that comply with UL 1741 and IEEE 1547 design standards. We support the reimbursement for conducting the Level 3 study but recommend to the board that the finding be incorporated into a long term solution that will alleviate the need to conduct such a study in the future.

In conclusion, AFM looks forward to continued engagement with Board Staff and the Market Manager on this process and to the success of the FY2016 RES program.

Respectfully submitted,

Adje Mensah, CEO, AF Mensah Inc.

252 Nassau Street 2nd Floor

Princeton NJ 08542

www.afmensah.com

Clean Energy States Alliance and Clean Energy Group Comments to New Jersey BPU and the Market Manager regarding the second straw proposal for the FY2016 Renewable Electric Storage Incentive Program

CEG/CESA supports the following proposed changes to the previous straw proposal:

- An open enrollment program with a prescriptive rebate offered on a first come, first serve basis
- Allocating half of the \$6 million budget to the open enrollment program while retaining the other half for a program later in FY2016 to be recommended by Rutgers Laboratory for Energy Smart Systems (LESS) and refined through the stakeholder process
- Basing the prescriptive rebate on energy capacity (kWh) rather than power capacity (kW)
- Allowing RES systems to be integrated with either existing or new RE installations

With regard to the final proposed change:

- Refining the application and monitoring requirements to enable evaluation of the resiliency implications of incentive design, rather than establishing a minimum discharge time for RES systems.

It is a bit unclear what this point means. If it means that the BPU would evaluate the resiliency benefit offered by each proposed RES system prior to deciding whether to make an award to that system, we support this idea; however, we still think it would be helpful for the BPU to provide some guidelines indicating a range of acceptable or expected duration of islanded operation for various facility types.

Also, although it is not addressed among the proposed changes to the proposal, we continue to believe that there is a compelling public interest in publishing as much information as possible about energy systems supported by public funds, including economic and technical data.

We appreciate the opportunity to comment on this straw proposal. Questions may be directed to Todd Olinsky-Paul, at Todd@cleanegroup.org



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CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

STEFANIE A. BRAND
Director

October 13, 2015

Hon. Irene Kim Asbury, Secretary
New Jersey Board of Public Utilities
44 South Clinton Avenue, 9th Floor
P.O. Box 350
Trenton, New Jersey 08625

Re: Comments of the New Jersey Division of Rate Counsel
Re: Second Straw Proposal for Fiscal Year 2016 Renewable Electric
Storage Incentive Program October 13, 2015

Dear Secretary Asbury:

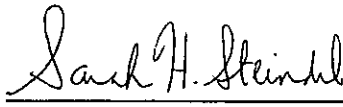
Please accept this original and ten copies of as Comments submitted on behalf of the New Jersey Division of Rate Counsel ("Rate Counsel") in connection with the above-captioned matter. Copies of the comments are being provided to all parties on the e-service list by electronic mail and hard copies will be provided upon request to our office.

Hon. Irene Kim Asbury, Secretary
October 13, 2015
Page 2

We are enclosing one additional copy of the comments. Please stamp and date the extra copy as "filed" and return it in our self-addressed stamped envelope. Thank you for your consideration and assistance.

Respectfully submitted,

STEFANIE A. BRAND
Director, Division of Rate Counsel

By: 

Sarah H. Steindel, Esq.
Assistant Deputy Rate Counsel

SHS/sm

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**Comments of the New Jersey Division of Rate Counsel
Re: Second Straw Proposal for Fiscal Year 2016
Renewable Electric Storage Incentive Program
October 13, 2015**

The Division of Rate Counsel would like to thank the Board of Public Utilities (“Board”) and its Office of Clean Energy (“OCE” or “Staff”) for the opportunity to present comments in response to the OCE’s Second Straw Proposal for a Fiscal Year 2016 Renewable Electric Storage Incentive Program Straw Proposal (“Second Straw Proposal”) issued by OCE on September 15, 2015.

INTRODUCTION

OCE’s Renewable Electric Storage Incentive Program, formerly referred to as the Energy Storage Program, originated with a proposal in the Fiscal Year 2014 Clean Energy Program (“NJCEP”) Compliance filings, which was adopted by the Board in June 2013. I/M/O the Clean Energy Programs and Budgets for the Fiscal Year 2014, BPU Dkt. No. EO12050376V, Order at 7, 32 (June 23, 2013) (“FY14 Budget Order”).¹ As noted in OCE’s May 7, 2015 Straw Proposal for a Fiscal Year 2016 storage program (the “First Straw Proposal”), a competitive solicitation conducted in Fiscal Year 2015 resulted in awards totaling \$3 million to 13 projects.²

In the First Straw Proposal, Staff proposed a fundamental change in the structure of the program from a solicitation process to an open enrollment process with administratively prescribed rebate amounts.³ Rate Counsel opposed this proposed change in comments submitted on May 29, 2015.

In the Second Straw Proposal, OCE notes that the Board recently approved a grant to the Rutgers University Laboratory for Energy Smart Systems (“LESS”) to conduct a market

¹ First Straw Proposal, p. 1.

² First Straw Proposal, p. 2.

³ First Straw Proposal, p. 7.

assessment of OCE incentive programs including the Renewable Electric Storage program.⁴ According to the LESS website, this grant was in the amount of \$150,000.⁵ OCE is proposing to allocate half of the \$6 million budgeted for energy storage incentives in the current fiscal year to a non-competitive grant program with administratively determined rebate amounts, with the remaining half to be allocated to a program to be developed based on the results of LESS's research.

Rate Counsel continues to oppose the implementation of a non-competitive process. The program as proposed in the Second Straw Proposal will not achieve the objectives of incentivizing energy storage in the most cost-effective manner. Further, it is not clear that the program as proposed will assure that ratepayer funds are expended only on those project that support the development of renewable energy resources in New Jersey. Instead of implementing the proposed interim program, OCE should await the outcome of the LESS research before expending more ratepayer funds on energy storage. If the entire \$6 million Fiscal Year 2016 budget for this program can not be fully expended as a result, the excess should be returned to ratepayers or re-allocated to other programs that provide proven benefits to ratepayers.

RATE COUNSEL COMMENTS

I. Proposed Change From Competitive Process to Open Enrollment

In the First Straw Proposal, OCE considered three “program delivery options” for the energy storage program for Fiscal Year 2016: (1) the same competitive solicitation process that was used in Fiscal Year 2015, (2) a “rolling solicitation” that would retain an evaluation process but would have an open enrollment period rather than a limited window for submitting applications, and (3) a “traditional” open enrollment process with administratively determined

⁴ Second Straw Proposal, p. 2.

⁵ <http://cait.rutgers.edu/less/research>

rebate amounts. As is explained in more detail in Rate Counsel’s May 29, 2015 comments on the First Straw Proposal, the competitive process was the only one with the advantages of “ensur[ing] that only the most cost-effective projects are funded” and providing “[m]ore effective budget management and control.”⁶ The First Straw Proposal also explicitly recognized that the option being proposed now, open enrollment with prescriptive rebates, will “[f]und all projects that submit complete applications regardless of cost effectiveness” and may provide higher-than-necessary incentives.⁷ A competitive solicitation process continues to be the approach that offers the greatest benefits to ratepayers. While an open enrollment process with administratively determined rebates may be more convenient and flexible for applicants and program administrators, such a process does not ensure that ratepayers are not paying incentives that are higher than necessary.

II. Integration With Renewable Generation

As acknowledged in the First Straw Proposal, energy storage is neither energy efficiency nor renewable energy, and therefore is appropriate for NJCEP funding only if it serves to support the development of renewable energy markets.⁸ OCE has recognized that storage projects participating in the PJM Interconnection (“PJM”) ancillary services markets may have less capacity available for load shifting and emergency backup for the renewable facility they were installed to support.⁹ Rate Counsel has previously expressed concern about the use of New

⁶ Rate Counsel May 29, 2015 Comments on First Straw Proposal, p. 3; First Straw Proposal, p. 5.

⁷ First Straw Proposal, p. 6.

⁸ First Straw Proposal, p. 2.

⁹ First Straw Proposal, p. 8.

Jersey ratepayer funds to support projects that may be used to alleviate wholesale transmission-level operational constraints.¹⁰

According to the Second Straw Proposal, all of the energy storage incentives awarded in Fiscal Year 2015 were designed to participate in the PJM frequency regulation market.¹¹ These systems typically are designed with very short discharge times, which limit their value as tools for load shifting or emergency back-up.¹² The Second Straw Proposal recognizes that this is an issue for concern, and has proposed an incentive structure intended to “level the economic playing field between systems designed primarily for frequency regulation and those designed primarily for emergency back-up or load shifting.”¹³ Instead of an incentive based on the capacity of the storage system in kilowatts, as proposed in the First Straw Proposal, OCE is now proposing an incentive based on the total energy that the battery system is capable of storing when fully charged. Specifically, OCE is proposing an incentive of \$300 per kilowatt-hour of energy capacity, with a maximum incentive of the lesser of \$300,000 or 30% of the project’s installed cost.¹⁴

It is not clear that the proposed incentive structure will assure that ratepayer funds are expended only on projects that support renewable energy. Incentives based on a system’s total energy storage capacity rather than its capacity in kilowatts may “level the playing field” as suggested by OCE. However, the Second Straw Proposal does not present any meaningful analysis to show that the proposed incentive level of \$300 per kilowatt hour of energy storage

¹⁰ I/M/O the Comprehensive Energy Efficiency and Renewable Energy Resource Analysis for the 2013-2016 Clean Energy Program, BPU Dkt. No. EO11050324V, Rate Counsel Comments, p. 20-21 (Nov. 7, 2011).

¹¹ Second Straw Proposal, p. 5.

¹² See Second Straw Proposal, p. 4.

¹³ Second Straw Proposal, p. 4, 5.

¹⁴ Second Straw Proposal, p. 5.

capacity would be effective in limiting incentives to projects providing substantial load-shifting and emergency back-up benefits. Rate Counsel notes also that OCE considered, but rejected, proposals to require a minimum two-hour discharge time for projects receiving incentives from this program. The only explanation offered for this decision was that Staff and the NCJEP Market Manager agreed with the intent of these proposals but “are not convinced that setting a two-hour minimum discharge time should be a technical requirement for this program.”¹⁵

Any program adopted by OCE should provide more assurance that ratepayer funds will be properly used to promote the development of renewable energy markets. The analysis expected to be provided by the Rutgers LESS research may be helpful in developing a program that will achieve this objective.

CONCLUSION

For the foregoing reasons, Rate Counsel opposes OCE’s proposal to implement a non-competitive application process for its Renewable Electric Storage Incentive Program. Instead, the Board should await the result of the analysis of this program that is underway at the Rutgers LESS, and use the results of LESS’s research to develop a competitive solicitation designed to provide incentives only to those projects that support renewable energy. If the delay results in an inability to spend the entire \$6 million budgeted for energy storage for this fiscal year, the excess funds can be returned to ratepayers or allocated to programs that provide demonstrated ratepayers benefits.

¹⁵ Second Straw Proposal. p. 4.