NJ BPU Energy Storage Program – Second Straw Proposal

Comments from Clean Energy States Alliance/Clean Energy Group

"The underlying renewable energy system to which the energy storage project is integrated must be interconnected to the New Jersey electric distribution system pursuant to N.J.A.C. 14:8-2.9, and must be a behind-the-meter, net metered project sized to produce no more than 100% of the host facility's historic annual electric consumption."

COMMENT: Does this mean that the RE system's expected annual output must not exceed the host facility's average historic annual consumption? This may not be a good fit with the resilient power function of the RE + energy storage system. A more appropriate way to size the RE and ES system would be based on the critical loads of the host facility and the length of time these loads need to be supported in the event of grid failure, for example, you might say that a battery should support 100% of facility critical loads for 8 hours without recharge, and the associated RE system must be able to charge said battery in 8 hours while simultaneously supporting 100% of facility critical loads. In some cases this may mean that the RE system capacity needs to be oversized relative to average facility loads. There may also be facilities that are proposing to add load/services, in which case an historic average facility load may not predict future needs (for example, a gas station proposes to add a second canopy, doubling its fueling capacity, at the same time as it installs an energy storage system).

"Applicants receiving grants or loans from the New Jersey Energy Resiliency Bank to finance their energy storage project are not eligible to apply to this program for additional funding."

COMMENT: It has become evident in following other states' programs that financing is a primary hurdle for these projects; also, technical assistance grants for system design or feasibility studies are very helpful. It may be useful to set aside some ERB funds for small technical assistance grants, and to allow follow-up applications to either the ERB or the ES program once a feasibility study has been completed. Also, you may want to consider whether phased projects would be allowable and whether such a project could return with an application for a phase 2 grant a year or two after receiving a phase 1 application.

"Projects that are granted incentive commitments in one solicitation round of a fiscal year may not reapply in the following round, although they are eligible to reapply in a round thereafter."

COMMENT: Is this meant to apply to phased projects? In other words, phased projects are acceptable but must wait a year between applications? If not, what scenario is envisioned here?

“Electricity placed into storage must be generated by the renewable energy system to which the storage is integrated. The storage device may not be charged by electricity imported from the distribution system or generated by other on-site fossil fueled generators.”

COMMENT: As noted in the recent task force meeting, this sentence will need to be changed in order to allow projects to provide ancillary grid services.

“Incentive recipients will be requested to provide NJBPU Staff with data on the performance and efficiency of their storage systems on a quarterly basis including, but not limited to, the total amount of kilowatts and kilowatt-hours charged and discharged each month; overall operating efficiency; the economic benefit the system produces in terms of revenue generated by ancillary services or demand charges avoided by load shifting; and, if applicable, the amount of time the system may have served the host facility’s critical load (as defined by the applicant) during power outages.”

COMMENT: “requested” should be changed to “required” in the above paragraph. If public money is being spent on these projects, the public should benefit from and have access to data about the performance of the projects; furthermore this data should be used to improve future projects awarded funding by the state.

“Applicant must provide the source of funds and amount of any other direct incentives received for the project. Staff may recommend that the Board continue the practice of deducting other direct incentives from total installed cost in the calculation of final incentive amounts.”

“Applicants will be required to submit a list of additional incentives they anticipate applying for, may have applied for or have received. These additional incentives will be considered in calculating the final REIP incentive for which the project may be eligible.”

COMMENT: Clean Energy States Alliance, through its ESTAP program, represents US DOE, which has an interest in supporting energy storage deployment; and CESA’s parent organization, Clean Energy Group, through its Resilient Power Project, represents foundation funders who have similar interests. Through supporting the NJ BPU energy storage effort, we hope to identify state-supported energy storage projects that may be of interest to US DOE and/or to our foundation funders. If such projects are identified, we may wish to offer additional support to these projects, either in the form of grant dollars, technical assistance, or both. If NJ BPU were to deduct the value of our support from total installed cost in the calculation of its final incentive amounts, this would effectively devalue our support of these projects.

Comments Relative to Second BPU Straw Proposal

FY 2015 Energy Storage Program

Our comments this time will be limited to the statement in the Technology Eligibility section:

"Electricity placed into storage must be generated by the renewable energy system to which the storage is integrated. The storage device may not be charged by electricity imported from the distribution system or generated by other on-site fossil fuelled generators."

This statement is inconsistent with the expressed desire in the solicitation to improve~~assist~~ the economics~~- of justifications of~~ electric energy storage by ~~providing~~ enabling~~allowing~~ these assets to provide ancillary services to the grid, namely frequency regulation. To provide regulation service in the down direction, the storage system must necessarily ~~accept~~ absorb excess ~~surplus~~ electric power from the grid. PJM rules require that providers of regulation service be able to respond symmetrically to both up and down regulation requests. To resolve this ~~problem~~ inconsistency ~~you could adopt~~we recommend the following language:

"The net electric energy placed into storage must be generated by renewable sources. The storage device may not be charged by electricity generated by on-site fossil fueled generators. The balanced, bi-directional flow of electric power ~~from and to~~between the grid ~~from~~ and the storage device for provision of ancillary and other services is allowed."

We understand that a major objective of the storage initiative is to "Promote the future integration of energy storage technology into renewable energy systems." by demonstrating the value of storage in enhancing the economics of renewable energy. ~~Enabling alternative uses for the Solar PV Inverter when not accepting solar PV generation (ie overnight or heavy overcast days) is an excellent way to achieve this objective.~~ Two major ~~elements of this~~elements of this~~alternative uses~~ are to allow the storage system to provide emergency backup power during grid outages and load shifting.

Load shifting is described in the Navigant report "Valuing Electricity Storage in Utility Applications" (p. 39) as "storing electricity from renewable sources when the price of electricity is low and discharging the stored electricity when the price of electricity is high." Their base case assumed storage of 500 MW associated with solar and 250 MW associated with wind, (p. 44).

For solar energy, unfortunately, charging necessarily occurs during the day when energy prices tend to be high, so there is little economic benefit, and this approach leaves the storage depleted at night when there is no solar generation, so it cannot provide emergency backup power. The only way to recharge renewably at night is from wind over the grid.

In New Jersey in the winter time there is often virtually no solar energy for prolonged periods, so there can be no peak shifting unless the energy comes from the grid. An arbitrary limitation to no grid recharge will inevitably degrade the economics of storage dramatically, rendering any such demonstration sterile and unscaleable.

~~.~~

The straw proposal addresses the potential conflict, ~~-~~but does not resolve it. The solution is to allow limited recharge of the storage device by renewable wind energy from the grid at night, when in fact the price of electric energy is low, to optimize the value of the renewable energy

provided at high value during the day **and** to enable the storage device to function as an emergency power source. The above language, along with a commitment by the host facility to a renewable power supplier, addresses this problem. It enables a storage facility linked to solar generation to optimize the economics of both wind and solar generation and of the storage facility itself.~~It is critical to the economics of storage that bidirectional power flow be permitted. The objective of power shifting is to resolve problems like the now notorious "Duck curve" in which there is excess PV power from 10 AM to 4 PM, but excess load form 4PM to 8PM. Storage can alleviate this problem but without recharge from the grid the storage is empty and ineffective for emergency backup and frequency regulation overnight.~~

~~Partnerships One is contemplating a response to the forthcoming solicitation summarized in the attached schematic diagram. We believe that this is consistent with the intent of the straw proposal. If we are mistaken, kindly inform us. (They will not accept proprietary information because this must be released in their public d~~

From: Neal Zislin
To: publiccomments@njcleanenergy.com
Subject: Comments - 2nd Straw Proposal FY2015 Energy Storage Competitive Solicitation
Date: Friday, August 22, 2014 10:11:59 AM

Mr. Scott Hunter
Office of Clean Energy
New Jersey Board of Public Utilities
44 South Clinton Avenue
Trenton, NJ 08625

RE: Comments – 2nd Straw Proposal FY 2015 Energy Storage Competitive Solicitation

Dear Scott:

Thank you for extending to stakeholders the opportunity to provide input on the 2nd Straw Proposal for FY 2015 Energy Storage Competitive Solicitation. Renu Energy is pleased to offer these comments and recommendations to the Office of Clean Energy on the subject of the 2nd Straw Proposal of the FY 2015 Energy Storage Competitive Solicitation.

The 2nd straw proposal appears to show inconsistency among the program goals, eligibility criteria and the scoring methodology as it pertains to the energy storage systems (ESS) being able to keep critical loads of facilities (public or private) designated as priority status operational during power outages.

Under Program Goals, the straw proposal states

> "Prioritize facilities that are defined as "public and critical" with the goal of keeping critical public functions operational during power outages."

Under Technical Eligibility Criteria, the straw proposal states

> "For purposes of emergency backup, the storage system must be capable of providing power to the host facility's critical load as defined by the Applicant and identified in the application."

Under Stakeholder Discussion, the straw proposal states

> "The Solicitation Evaluation Committee will consider the value of emergency back-up in its evaluation process, but that capability, as well as the associated islanding capability, will not be requirements for this program."

Under Resiliency Category for scoring, the straw proposal awards 20% weighting of the scoring to the ESS being able to provide emergency backup power under normal and islanding situations with the calculated benefits. Therefore, those ESS not equipped to operate in an islanding mode are immediately penalized up to 20% in scoring even though having islanding capability is not a requirement for this program.

The distinction between the ESS having the capacity to deliver electricity to critical facilities under islanding conditions when the grid has become inoperable and the operational

readiness to deliver that emergency electricity when it is needed is important to recognize. Straw proposal does not impose operational readiness for ESS to deliver electricity to a facility providing critical services. Technically, ESS might be capable of delivering X hrs of Y KWs in support of critical services but because the ESS had been depleted during the day in exporting power to the grid or to the facility, it did not provide emergency back-up power as intended. The operational readiness of the ESS to deliver its capacity as an alternative supply of electricity when the grid is down serves as insurance to satisfy the stated program goal.

The straw proposal further states that

> "Nevertheless, Staff believes that the goals set forth in this straw proposal are not mutually exclusive. With proper management, energy storage systems are capable of achieving all of the program's goals."

The goals of delivery of emergency electricity to critical public/private facilities during power outages with the demonstration of opportunities to generate revenue streams that can sustain future investments in energy storage systems without ratepayer contributions as not being mutually exclusive is applicable only if one is examining capacity not the assurance of operational readiness to deliver. First goal exemplifies the insurance of a backup system having full operational readiness to provide electricity when the grid is inoperable. Second goal exemplifies being able to produce revenue on a consistent and predictable basis meaning that the ESS will be partially or totally depleted on a regular basis. These two program goals create conflict.

A recommendation is being made to change the criteria under Economic Incentive to $/KWH per maximum discharge cycle rather than $/KWH of projected annual discharge. Each battery design has an optimal rate of discharge and depth of discharge to produce the most kilowatt-hours per cycle. Forecasting how many kilowatt-hours will be delivered during the year is problematic because it is based on circumstances related to operations, weather, grid performance, etc. that are difficult to quantify in advance.

Regards,

Neal Zislin
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State of New Jersey
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CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

STEFANIE A. BRAND
Director

August 22, 2014

By Hand Delivery and Electronic Mail
Honorable Kristi Izzo, Secretary
New Jersey Board of Public Utilities
44 South Clinton Avenue, 9th Floor
CN 350
Trenton, NJ 08625-0350

Re: 2nd Straw Proposal – Fiscal Year 2015 Energy Storage Program – July 25, 2014

Dear Secretary Izzo:

Please accept this original and ten copies of 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.

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
Sarah H. Steindel, Esq.
Assistant Deputy Rate Counsel

SHS/sm

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Tricia Caliguire, Esq., BPU
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2nd Straw Proposal
Fiscal Year 2015 Energy Program

Rate Counsel Comments

August 22, 2014

The Division of Rate Counsel ("Rate Counsel") would like to thank the Board of Public Utilities ("Board") Office of Clean Energy ("OCE" or "Staff") for the opportunity to present comments in response to the Second Straw Proposal ("2nd Straw Proposal") for a Fiscal Year 2015 ("FY15") Energy Storage Straw Proposal, issued July 25, 2014.

Rate Counsel Comments

The 2nd Straw Proposal is based on an earlier Straw Proposal ("1st Straw Proposal") that was issued by the OCE on January 20, 2014, with several modifications in response to input from various stakeholders. In comments on the 1st Straw Proposal submitted on February 27, 2014, Rate Counsel expressed its support of the OCE's efforts to move from fixed to competitively determined incentives, but noted the following concerns:

- The results of the initial solicitation were difficult to predict, necessitating a careful re-evaluation of this program based on the results of the initial solicitation. Rate Counsel noted that the results of the initial solicitation should allow OCE to evaluate whether energy storage technologies are sufficiently mature and cost-effective to be capable of being self-sustaining with a reasonable investment of ratepayer funds.[1]
- Rate Counsel expressed concerns about Staff's proposal to require all projects to have the ability to provide the host facility's full electric demand for a one- to four-hour period, for the purposes of load shifting and emergency backup. There may be only limited overlap between host sites where energy storage is cost effective and those that are the

[1] Rate Counsel February 27, 2014 Comments, p. 3

most important for storm resiliency. Therefore, in lieu of an absolute "islanding" requirement, Rate Counsel recommended that "islanding" capability be included in among the criteria for ranking applications. Further, Rate Counsel recommended that recognition for "islanding" capability be given only for projects serving public and critical facilities.[2]

Rate Counsel appreciates Staff's consideration of the input of Rate Counsel and other stakeholders in developing the 2nd Straw Proposal, but continues to have the two concerns noted above.

With regard to the first concern, OCE has proposed a longer solicitation time line and other modifications that may help to increase participation in this program. Nevertheless, this remains a new program, and the results of the initial solicitation remain unpredictable. Rate Counsel continues to recommend a careful evaluation of the results of the initial solicitation.

With regard to the second concern above, Staff has modified the proposed "islanding" requirement. Instead of requiring that the storage system have the capability to supply the host facility's full electric load for a specified minimum and maximum duration, OCE is now proposing to require applicants to express their system's storage time either in hours of meeting critical load, or in hours of full capacity for the renewable system to which the storage is connected.[3] Applicants would also provide other information related to "resiliency," including whether the host site is a "public and critical" facility and the number of people that would benefit from the project.[4] "Resiliency" related factors would then be given a combined weight of

[2] Id., p. 3-4
[3] 2nd Straw Proposal, p. 5.
[4] Id., p. 5, 9-10.

20% in the application review process.[5] Rate Counsel supports Staff's proposal to include "islanding" capability and related "resiliency" factors as evaluation criteria rather than as requirements. However, consistent with our earlier comments, Rate Counsel recommends that consideration of such factors be strictly limited to "public and critical" facilities. In other words, no points for "islanding" capability should be awarded to projects that will not provide benefits to the general pubic.

Conclusion

Rate Counsel does not object to the proposed Energy Storage solicitation. However, this program should be carefully re-evaluated based on the results of the solicitation, and only public and critical facilities should be allowed to receive points in the evaluation process for resiliency-related factors.

[5] Id., p.10.

Comments of Solar Grid Storage LLC
To the BPU
Energy Storage 2nd Straw Proposal
August 21, 2014

Solar Grid Storage LLC, a company of long-time solar veterans dedicated to the widespread deployment of solar and clean energy, appreciates the opportunity to provide these comments to the Office of Clean Energy.

We believe the revised Straw is well conceived and that in this version of the Straw, the **two fatal flaws** we identified in our last comments on the first Straw seem to have been addressed. However, we ask for further clarification so that no future interpretation by the EDCs, or others, can thwart the intention of the Board to allow ancillary services such as frequency regulation to take place in net metered PV + storage systems, and that it is an explicitly approved additional use in the Energy Storage Incentive Program.

As a reminder, by allowing ancillary services in PV + storage projects, entities **outside of NJ pay for most of additional storage investments** -- that is, the federal government with it's 30% Investment Tax Credit and Accelerated Depreciation, and PJM with its Ancillary Services markets – not New Jersey ratepayers.

In order to clarify these remaining issues, we urge edits as follows with **p*roposed fixes*** in ***bold red italics:***:

Page 4, third paragraph beginning with "Several stakeholders…."

This paragraph gives approval of PJM Frequency Regulation but puts it on the EDCs to determine "whether this would be permissible," and, "…as long as size of energy storage system is consistent (to be further defined) with the size of the renewable generator to which it is connected." We would eliminate this ambiguity by changing the language to:

"Provided the storage system is sized at the same capacity as the solar facility, or protection schemes are employed such that the full rated capacity of the solar and storage are the same, there shall be no further restrictions or requirements placed by or approvals needed from the EDC provided that the solar system is interconnected under the applicable interconnection rules for solar generators. Where the storage system uses a separate inverter or power conditioning equipment from the solar with the ability to increase the kVA capacity seen by the grid beyond that of just the solar facility, then the EDC may determine whether an alternative interconnection procedure should be followed or additional controls placed on the combined operation of the solar plus storage system."

On page 5 under "Technology Eligibility," second bullet, this phrase could be interpreted by some (indeed, it has in some of the stakeholder meetings) that the charging and discharging of the battery during Frequency Regulation by the distribution system would prevent Frequency Regulation from being eligible. Knowing this is **NOT** the intent of the program as stipulated elsewhere in the Straw, and expressed in Stakeholder meetings, we propose to change the language to read:

"Electricity placed into storage must be generated by the renewable energy system to which the storage is integrated. The storage device many 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.***

Again, we want to thank the BPU for proposing this program and compliment the BPU staff for a well-conceived and appropriately competitive structure of the program. If revised as we proposed, New Jersey will have the most practical and cost-effective storage incentive program in the country, quickly providing New Jersey ratepayers with meaningful levels of storage and added levels of resiliency for both individual PV + storage customers and the ratepayer paid distribution system in general.

We are happy to respond to any additional questions or comments.

Respectfully submitted,

Thomas Leyden
CEO
Solar Grid Storage LLC
tleyden@solargridstorage.com
609-498-6479 office

August 25, 2014

Hon. Kristy Izzo, Secretary
New Jersey Board of Public Utilities
44 South Clinton Avenue, 9th Floor
P.O. Box 350
Trenton, NJ 08625

Re: Comments of Energy Transformation Consulting on Second Straw Proposal, Fiscal Year 2015 Energy Storage Program (July 25, 2014).

Dear Secretary Izzo:

Enclosed are the comments of Energy Transformation Consulting ("ETC") in connection with the above-caption matter. Please direct any questions on these comments to the signatory below.

Thank you for your consideration in this matter.

Respectfully Submitted,

Shelly-Ann Maye, Esq.
Independent Consultant
Energy Transformation Consulting
(856) 425-5693.
shellyannmaye@energytransformationconsulting.com

I. Background

On July 25, 2014, the New Jersey Board of Public Utilities Staff ("Staff") published its second Straw Proposal on the Fiscal Year 2015 Energy Storage Program.[1] The revised Straw Proposal was the result of written comments submitted in response to the first Straw Proposal, as well as comments received at the March 13, 2014 Energy Storage Stakeholder Group discussions.

Energy Transformation Consulting ("ETC") applauds Staff's efforts in this area, and sees this as an important step in utilizing distributed renewable energy resources and energy storage technologies to increase the resiliency of New Jersey's electric distribution infrastructure.

ETC's comments will focus on one of the criteria used to evaluate proposed projects. As outlined in the revised Straw Proposal, this is the "Economic" criteria, whereby the committee will evaluate the cost effectiveness of proposed projects. ETC believes that Staff and Stakeholders should develop a detailed standard cost-benefit analysis framework that would be used in evaluating the cost effectiveness of proposed projects.

ETC respectfully submits these comments on Staff's 2nd Straw Proposal on the Fiscal Year 2015 Energy Storage Program.

[1] See 2nd Straw Proposal, Fiscal Year 2015 Energy Storage Program, (July 25, 2014).

II. COMMENTS

A. A STANDARDIZED DETAILED COST-BENEFIT ANALYSIS FRAMEWORK WOULD PROVIDE STAKEHOLDERS TRANSPARENCY ON THE MANNER IN WHICH THE EVALUATION COMMITTEE DETERMINES THE COST EFFECTIVENESS OF PROPOSED PROJECTS.

In the revised Straw Proposal, Staff articulated that one of the goals of this program is to "prioritize energy storage projects which offer the greatest benefits to New Jersey ratepayers."[2] The Straw Proposal then outlines that one of criteria by which proposed projects will be evaluated is the cost effectiveness of the project. Although the Straw Proposal outlines a set of high level factors that will be taken in consideration in evaluating the cost effectiveness of a proposed project, ETC recommends that Staff considers the feasibility of developing a detailed cost-benefit analysis framework that would apply across the board in evaluating proposed projects. Having a standard detailed cost-benefit analysis framework would result in transparency in the evaluation process, and ensure that where possible, proposed projects are being evaluated for cost effectiveness on a consistent and uniform basis.

B. IN DEVELOPING A COST-BENEFIT ANALYSIS FRAMEWORK FOR THE EVALUATION OF PROPOSED PROJECTS, STAFF SHOULD SOLICIT COMMENTS FROM STAKEHOLDERS ON THE APPROPRIATE INPUTS TO BE INCLUDED IN SUCH A FRAMEWORK.

ETC believes that Staff and the Evaluation Committee should adopt a standard cost-benefit analysis framework that would be used in evaluating the cost effectiveness of all proposed projects. As indicated above, such an approach would facilitate

[2] Id at 3

transparency and consistency in the evaluation process. In developing a standard cost-benefit analysis framework, ETC recommends that Staff use a starting point, the high level metrics outlined in the revised Straw Proposal.[3] From there, Staff should draw from, where appropriate, cost-benefit frameworks that have been established for distributed generation. Examples of inputs that could be included in a standard cost-benefit analysis model are: (1) value of increased electric system reliability; (2) value of reduction of peak power requirements; (3) value associated with the provision of ancillary services; (4) value associated with improvements in power quality; (5) value associated with improvements in infrastructure resiliency[4]; (5) stand-by charges; (6) utility revenue reductions; (7) interconnection costs etc.

ETC would further recommend that Staff also elicit the feedback of stakeholders on the appropriate inputs that should be included in a cost-benefit analysis framework. This includes any relatively hard –to-quantify inputs, such as societal benefits to be derived from proposed projects. The discussions or feedback from stakeholders should not only include the appropriate inputs in a cost-benefit model, but also the appropriate means of valuing each input and the appropriate data source(s) for each input.

ETC appreciates the fact that Staff has set a relatively aggressive timeline for implementing this program, but believes that these steps are necessary in facilitating the transparency of the evaluation process.

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[3] See 2nd Straw Proposal, Fiscal Year 2015 Energy Storage Program, at 9 (July 25, 2014).

[4] The Potential Benefits of Distributed Generation and Rate Related Issues That May Inpede Their Expansion. A Study Pursuant to Section 1817 of the Energy Policy Act of 2005, U.S Department of Energy (February, 2007).

III. CONCLUSION

In conclusion, ETC is largely supportive of the revised Straw Proposal and believes that this is an important step in the use of distributed renewable energy sources and energy storage technologies in improving the resiliency of New Jersey's electric distribution system. ETC believes the process of evaluating the cost effectiveness of proposed projects can be improved by adopting a standard, detailed cost-benefit model. We believe that Staff should elicit feedback from stakeholders on appropriate inputs for such a cost benefit model, the data source(s) for each input, and the way in which each input would be valued. Such an approach would facilitate transparency and consistency in the evaluation process.

ETC appreciates the opportunity to submit these comments and looks forward to continued participation in this process.

Blue Sky Technologies

1967 RT 27 Suite 12, Edison NJ 08817
(732)675-6891 solar@blueskynj.com

Mr. Scott Hunter

New Jersey Office of Clean Energy
New Jersey Board of Public Utilities

RE: Comments on 2nd revised straw proposal FY 2015 Energy Storage Competitive Solicitation

Dear Mr. Hunter

Blue Sky Technologies (BST) thanks OCE and BPU for the opportunity to comment on the 2nd revised straw proposal FY2015 Energy Storage Competitive Solicitation. BST was founded in 2004 and transformed into a solar driven company in 2009. BST is a fully experienced solar contractor company, detailed in E.P.C (Engineer, Procure, and Construction).

BST absolutely agrees that the energy storage incentive program is indeed a brilliant idea for the NJ solar industry. Not only it will stimulate the current market but also encourage potential customers engage solar business. Energy storage is the key to stable and reliable electricity resource and provide emergency energy during GRID power outage. BST believe that energy storage will be a crucial part of present/future solar business, for utility, commercial and residential projects.

After fully and carefully reading the 2nd revised straw proposal, we at Blue Sky Technologies hereby provide the following comments and suggestions for the program.

1. There is only 3 million dollars in the fund. In the extreme circumstance, the fund is only enough for 6 projects even with a cap of $500,000 or 30% storage cost. We suggest put aside 1 million (of the total fund) for smaller projects, with cap at $100,000 or 30% storage cost. This avoids comparing apples with oranges since smaller and bigger projects are different.

2. The proposal mentioned that “Prioritize the project that offers the greatest benefit to New Jersey ratepayers”. Please elaborate with more detailed guidelines on how to evaluate the energy, environmental, and social benefits for the project bringing to the ratepayers (p. 6, under Incentive Structure and Maximums).

3. Receiving NJ Energy Resiliency Bank loan or additional grants/incentives will disqualify the projects for this incentive program. Please provide the list of “other grants/incentives” that might affect/disqualify the projects.

4. Technology eligibility states “the storage device may not be charged by electricity imported from distribution system”. In the discussion meetings, players have already commented this is a

Blue Sky Technologies

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requirement very difficult to meet. Even the suggestion to allow battery charging by GRID if charging and discharging are zero in net is not practical since the absolute zero net is hard to be guaranteed. We suggest the projects are eligible if the charging by renewable energy is more than 50% of the charging energy for the batteries.

5. We understand that the project would receive the incentive fund proportionally smaller if the as-built system is smaller than the size in the approved application. We suggest the actual incentive fund be capped at the initially approved amount even if the as-built system size is bigger.

6. What is the appropriate time/stage in the permits/approval process of solar projects in NJ to submit the application for the following three scenarios? Scenario 1, brand new solar electric system installtion and energy storage. Scenario 2, installed solar system with no energy storage. Scenario 3, installed solar system with energy storage but wants to expand the storage capability. What are the system cost bases?

Please consider these questions/suggestions for the final issuance of the program. We, Blue Sky Technologies, are hereby faithfully thank you again for the opportunity to comment on the 2nd revised straw proposal FY 2015 Energy Storage Competitive Solicitation.

Sincerely;

Pin Su, Ph.D.
President
Blue Sky Technologies USA LLC
1967 RT 27, Suite 12
Edison, NJ 08817

August 25, 2014

VIA ELECTRONIC MAIL

Mr. Scott Hunter
Renewable Energy Program Administrator
New Jersey Office of Clean Energy
New Jersey Board of Public Utilities
44 South Clinton Avenue
Post Office Box 350
Trenton, NJ 08625-0350

Re: Fiscal year 2014 Energy Storage Program, 2nd Straw Proposal Comments

Dear Mr. Hunter:

The Environmental Defense Fund ("EDF") thanks New Jersey's Office of Clean Energy ("OCE") and Board of Public Utilities ("BPU") for the opportunity to comment on the July 25, 2014 Energy Storage Program 2nd Straw Proposal ("2nd Straw Proposal"). EDF is a national non-profit membership organization engaged in linking science, economics and law to create innovative, equitable and cost-effective solutions to society's most urgent environmental problems. EDF has more than 750,000 members nationwide and over 32,000 in New Jersey. As an organization, EDF has been active in New Jersey on environmental issues since the 1970's, and has been active throughout this energy storage program development, with comments submitted to the first straw proposal on February 27, 2014.

As stated in EDF's prior comments, we strongly agree with the OCE's determination that energy storage, tied primarily to renewable generation, can serve as an important resource in shifting renewable generation, providing additional frequency regulation, and increasing energy resiliency. EDF also supports the OCE's 2nd Straw Proposal, and appreciates the improvements made by the OCE in the latest version.

In large part, EDF believes that the 2nd Straw Proposal provides the right design elements and requirements to guide this incentive program for energy storage. However, we believe that opportunity exists to strengthen it by: 1) incorporating public disclosure of useful data collected

from incentive recipients; 2) providing more guidance on pairing net-energy metered facilities with storage; and 3) clearly stating energy source requirements for frequency regulation. EDF addresses each recommendation in turn below.

1. Monitoring and Reporting

EDF supports the OCE's inclusion of a monitoring and reporting section in the 2nd Straw Proposal. Ensuring that program results can be analyzed and translated will aid in better understanding where and how energy storage can provide benefits to the electric grid, consumers, and the state. EDF recommends that in addition to requiring monitoring and reporting as described in the 2nd Straw Proposal, the data so gathered should be made publicly available, taking into account that certain information may in part need to remain confidential.

Public access to monitoring and reporting data would both be consistent with the overall intent of this program and help to enrich the knowledge base among interested parties. As the 2nd Straw Proposal notes, NJCEP program development is a transparent and inclusive process.[1] The 2nd Straw Proposal goes on to state that an overall program goal is to "demonstrate energy storage technology benefits and revenue streams toward developing markets that can be sustained without further ratepayer contribution."[2] Providing interested parties with the monitoring and reporting data stemming from this program would make such "demonstration" of performance useful to technology developers and market participants. It would likewise help to increase overall understanding among interested parties concerning technologies that are relatively new in New Jersey.

2. NEM Clarity for Storage with Renewable Energy Resources

New Jersey has emerged as a solar leader in the United States, in part by having some of the best net-energy metering (NEM) rules and interconnection standards in the country. As New Jersey rolls out its first energy storage program, EDF encourages the OCE to seize this opportunity and ensure that the integration of energy storage systems with renewables behind the meter is performed in a clear, consistent, and streamlined manner across the state without burdensome terms or timelines. Based on the discussion at the Energy Working Group Meeting on July 29, 2014, we understand that the OCE intends to defer a determination as to how energy storage will interact with NEM rules to the EDCs. However, leaving the questions surrounding the interconnection of net-metered systems with storage systems entirely with the EDCs might yield a fragmented set of policy solutions that could stall investments and technology adoption in the long-term. Guidance on how to pair energy storage systems with NEM-eligible generation facilities will go a long way in ensuring that the benefits of energy storage technology are demonstrated without unnecessary delay, and provide a foundation for a more robust energy storage market.

3. Non-Renewable Energy for Frequency Regulation

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[1] 2nd Straw Proposal, p.1.
[2] *Id.* at p.3.

EDF supports using renewable energy to the greatest extent possible to power the contemplated energy storage systems. However, EDF also recognizes the benefits provided to the central grid through storage-enabled frequency regulation as well as the economic benefits to the storage project derived from the ability to bid the frequency regulation into the PJM ancillary services market – economic benefits which, as the 2nd Straw Proposal observes, could make or break the economic viability of projects.[3] It is EDF's understanding, when frequency regulation is provided by a demand-side resource, that resource must sometimes increase its consumption of grid power in response to a signal from the RTO in order to provide regulation in the proper direction. We further understand, based on the discussion at the Energy Working Group Meeting on July 29, 2014, that the OCE does contemplate accepting proposals that will draw some percentage of power from non-renewable resources to accommodate frequency regulation.

However, the original straw proposal would in effect have prevented the deployment of storage to provide frequency regulation insofar as it required that storage systems to be tied 100% to renewable resources[4] – a design requirement that is reiterated in the 2nd Straw Proposal.[5] Indeed, the 2nd Straw Proposal is internally contradictory on this point; it asserts that participation in the PJM frequency regulation market should be possible for resources deployed under the program,[6] but then requires that the energy storage must be tied entirely to renewable energy.[7] To ensure that the "make or break" opportunity to provide Frequency Regulation is not unavailable to applicants, this contradiction should be resolved in a manner consistent with OCE's stated intention of accommodating the needs of the frequency regulation market.

Conclusion

EDF thanks the OCE for the opportunity to submit the foregoing comments. EDF encourages the OCE to continue using a forward thinking and market-based approach to identify ways in which distributed clean energy resources can provide a number of benefits. Doing so will ensure that multiple State objectives can be met through clean energy projects and designs.

Respectfully signed and submitted on August 25, 2014

ENVIRONMENTAL DEFENSE FUND

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[3] *Id.* at 4.
[4] OCE Straw Proposal, Fiscal Year 2014 Energy Storage Program (January 28, 2014).
[5] 2nd Straw Proposal at 5.
[6] *Id.* at 3-4.
[7] *Id.* at 5.

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