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Secretary of the Board
New Jersey Board of Public Utilities
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RE: Docket Nos. QO22080540
ITMO The New Jersey Energy Storge Incentive Programs - Request for Information (RFI)

Dear Ms. Golden

Thank you for the opportunity to comment on the above referenced docketed matter. We appreciate all the time and effort that the BPU staff have put into helping shape and develop the energy storage incentives program (SIP) straw proposal and RFI. The comments below are intended to assist in that ongoing process to help BPU adopt energy storage incentives.

Overall Comment

1. Performance-based Incentive only.
2. No Utility ownership – the utilities should only operate energy storage systems in the competitive energy market.
3. Minimal incentive for grid supply energy storage with a firm sunset date.
4. Maximum allocation of the storage incentive for overburden communities in a more holistic and integrated clean energy approach.
5. The SIP performance matrix should be based on peak demand reduction of energy.
6. The utilities should be required to submit annual Integrated Distribution Plan (IDP) in 2023 to address any interconnection issues.

1. Utility Ownership/Dispatch Control

The utilities are a monopoly and a monopoly is the complete opposite of a competitive market. They have a legal and fiduciary responsibility to their shareholders as their primary stakeholder not the ratepayers. The utilities are required by law to supply energy to ratepayers in a reasonable and reliable manner but as an investor owner company their primary responsibility is to shareholders. Because of that split responsivities, information on programs goes into a monopoly but little data or information comes out the other side. Monopolies are not transparent actors in the energy competition world. Just like in the initial development of the New Jersey solar market, energy storage program should not be developed within a monopoly structure since it would not be in the best interest of innovation in the energy storage marketplace. The functions of a monopoly should be limited not expanded.

Yes, distribution utilities are absolutely required and provide an extremely important function to interconnect and manage the flow of the performance-based incentive for energy storage facilities. Utilities are great and necessary entities for distributing energy. But the utilities should not be granted or allowed sole operations or access to the SIP. They should not develop implement or manage the SIP. It they pursue the development of energy storage facilities they should do so under their competitive affiliates and compete with the full market.

The utilities, as part of their 2nd Triennium filing, must address energy storage as a key component of their Peak Demand Reduction (PDR) program. But they should not be granted sole implementation or operations of the SIP. Unlike years prior when the communications technology to access PDR equipment such as AC controls were limited to distribution utilities, the communications technology to access PDR equipment such as energy storage is currently widely available to all markets participates. This technology and equipment can be operated in the competitive market with access managed through not by the distribution utilities.

In order to do this effectively, the utilities must be required to submit an Integrated Distribution Plan (IDP) that address energy storage interconnection issues for the current year, and an assessment of the interconnection needs given the current an future projected DER market for the next 5- and 10-year period. The IDP should be required to be submitted on a 3-year cycle consistent with the EE and PDR Triennium filings.

2. Installed Storage Targets, Deployment, and Capacity Blocks

Because of cost issues and available technologies, most energy storage system will be battery storage. For this reason, the BPU should establish a set aside or carve out block of energy storage for thermal energy storage and phase change energy storage systems, in addition to distributed and grid supply energy storage allocation. In the initial set up of the New Jersey Renewable Energy Portfolio System (RPS), most initial renewable energy systems were landfill gas to electricity systems because they were the least cost renewables at the time. Not all renewable under the RPS are created economically equal. To address this, the BPU set up a set aside for solar to help level the renewable economic playing field. The same set aside is needed for thermal storage and phase change storage systems in the BPU's SIP.

The BPU should provide the majority allocation of the energy storage capacity to distributive energy storage and not for grid supply energy storage. Distributive storage, because of its smaller kW size, will be quicker to develop and easier to interconnect to distribution system. This is the same issue for distributive solar: easier to interconnect to the distribution system, even when the various utility interconnection screens are tripped and the utilities set a limit the additional capacity on the feeder. As part of the annual IDP the utilities should provide updated hosting capacity maps on a quarterly basis to provide developers with information on where best to develop distributive storage projects.

While New Jersey key performance metric in any clean energy program should be a CO2 emissions reduction, it may be too complex, at this time, to initiate the SIP based on CO2 emissions reductions. That performance metric should be developed in a more deliberative and stakeholder process. The initial performance-based incentive rate should be based on peak demand reductions, since currently peak demand reductions will result in CO2 reductions on the grid given the current PJM merit order dispatch for electric generators.

In terms of the performance-based incentives specific "performance hours", the BPU should use the current NJDEP NOx peak and off-peak annual and hourly timeframes. While the BPU develops the performance hours as part of tracking the CO2 marginal emissions rate for energy storage facilities, the NJDEP NOx peak and off-peak timeframes are currently verifiable performance metrics.

In setting the marginal CO2 emissions rate the BPU should develop a New Jersey specific marginal emissions rate and not use the PJM marginal emissions rate. The current PJM annual generation production is approximately 43% natural gas, 33% nuclear, 14% coal, 8% renewables and 1% oil compared to the PJM reported New Jersey annual generation rate of 52% nuclear, 44% natural gas and 4% renewables. The EIA reported annual generation profile is approximately 45% nuclear, 45% natural gas and 10% renewables. The difference between the PJM and EIA New Jersey generation rate is EIA accounts for distributive solar while PJM does not. In setting the marginal CO2 emissions rate, it will be important that the rate be set on a performance that New Jersey can impact directly – unlike the PJM marginal emission rate..

While maturity of a energy storage projects is important, especially related to interconnection of the facility to the grid, it is not the only criteria. Location in terms of relieving congestion and supplying resiliency to criterial facilities are also important criteria that should be considered in establishing the SIP. Maturity can be used as a tool against smaller installers by the national solar and storage companies.

In terms of the design of the SIP to avoid or minimize interconnection delays the solution is require the submittal of IDP by all utilities now. The BPU should require annual filings by the utilities of an IDP that updates the hosting capacity maps and the advanced host capacity analytical evaluation process on a quarterly basis.

3. Incentive Structure

The RFI is looking for input on the BPU's Storage Incentive Program (SIP) proposal for a split and amount between a Fixed Incentive and a Performance-base Incentive. Currently, while installation costs are coming down just as in the solar market, energy storage especially battery energy storage is expensive. Providing upfront fixed incentives just as in the solar initial rebate market will be expensive and costly to the ratepayer. Providing **only** a performance-based incentive is the most administratively efficient and cost-effective way to set up the BPU SIP.

If the BPU provides a fixed incentive it must raise that exact amount in the annual NJCEP budget. The ratepayer sees the direct impact of the SIP Fixed Incentive budget as an increase in rates in that year. The increase in rates is based on the funding required to raise the fixed incentive portion of the SIP budget. In a performance-based only system, that total amount of funding to the customer is acquired over several years depending on the length of the performance-based incentive. The total cost to the ratepayer is the same over time but the annual rate impact is significantly smaller.

As an example:

> If the BPU needed to raise $100 million for the annual fixed incentive portion of the SIP budget the rate impact in that year would be approximately 1%
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> If the BPU needed to raise $100 million for the annual performance-based only incentive portion of the SIP budget and the performance period were 5 years the annual rate impact would be approximately 0.2% per year for 5 years.

The BPU could set a larger SIP budget and install a larger number of energy storage projects with greater capacity, if the BPU developed the SIP with a performance-based only incentive. In the example above, the BPU's could increase the SIP annual budget by 5 times and still have an approximately 1% annual rate impact.

In addition, given that the BPU has developed and implemented several certificate-based programs including Class I and Class II Renewable Energy Certificates (REC), Solar REC (SREC) Offshore Wind REC (OREC) and Zero Emission Certificates (ZEC), the BPU has a long and deep knowledge and experience base in operating certificate-based systems. The SIP incentive could be the Energy Storage Incentive Certificate or ESIC. Given the above, the ESIC would be the most administratively efficient and most cost-effective way to develop and implement the SIP with the lowest impact to ratepayers. The BPU should establish a performance-based **only** energy storage incentive program.

4. Overburdened Community Incentives

Under the current Comfort Partners Whole House (CPWH) pilot the BPU should add high efficiency shell measures, cold climate high efficiency heat pump heating systems, high efficiency heat pump water

heaters and induction stoves to applicable CPWH customer.[1] The heat pump heating system should not be a hybrid natural gas system. It should be a standalone heat pump only system that could include backup resistance heating. The downside of this expansion of the current CPWH pilot may be that the addition of heat pumps and induction stove may increase the CPWH customer's energy bill costs.[2]

To offset this potential, the BPU through the federal Greenhouse Gas Reduction Fund (GGRF) if awarded should be used to offset this potential increase in energy cost by installing an amount of solar on the customers roof, where applicable, to account for the additional or incremental electricity that would be used with the upgrade of heat pumps equipment and induction stoves. This incremental amount of solar would be fully subsidized by through the GGRF.

As an example: If the CPWH customer average electric bills showed an annual electricity usage of 7,200 kWh per year and the upgrade with heat pump technology and induction stoves was estimated to increase the total electricity usage to 10,500 kWh per year, the BPU through the GGRF, would install 3 kW of solar on the CPWH customers roof at zero cost.[3] The sizing would be based on PV Watts estimates on the incremental increase in electricity usage.

The CPWH customer would get 15 years of SREC II at $90 per MWh for an annual subsidy of $270 per year plus the offset of 3,300 kWh at the retail rate. This would more than offset any potential increase in the CPWH customer's energy bill. This would also include the reduction in the CPWH customer's energy bill from the reduction in their natural gas, fuel oil or propane bill. [4]

Clearly a cost-effective installation that would help to advance the objectives of the CPWH pilot and assist in meeting the goals set in EO 316 specifically related to LI disadvantaged customers. In this manner BPU would track the exact impact on the CPWH customers energy demand and costs and that impact on their energy burden. This information and data from the expansion of the CPWH pilot utilizing GGRF for solar could be used to expand the full CPWB program in the future.

To address the grid issues, the BPU should develop and implement the SIP to install a battery storage system for the CPWH customer's homes that installed solar under the GGRF. The battery storage system would be sized to store the amount of solar electricity generated by the GGRF solar system. In the example above this would be a battery storage system that could store and provide approximately 9 kWh of electricity.[5]

In addition, the BPU through the SIP should install Grid Interaction Efficient Building (GEB) technology to help to manage the additional heat pump technology, solar and battery storage to provide minimal incremental impact to the electric distribution system. In this manner, the CPWH pilot could assist the BPU's Grid Modernization Program to advance grid load flexibility technologies and demand response as opposed to electric utility grid resource acquisition, at a savings to ratepayers. The GEB technology could also help to track the CPWH energy bill costs and burden.

For customers in overburdened communities that do not have property access to install solar, the SIP should be developed to provide a significant energy storage incentive for NJBPU Community Solar projects that are built, and operated in overburdened communities and owned by the overburdened neighborhood. To advance the Community Solar ownership model, the BPU should offer, through the SIP, a simple energy storage financing incentive funded through the performance-based energy storage incentive. This energy storage incentive would be in addition to the current Community Solar incentives, and provided only to neighborhood organizations to build and own a Community Solar project with storage

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[1] Applicable simply refers to the fact that not every single-family home may have the right solar orientation. The ideal solar orientation would be a southern exposure (an Azimuth of 180°) but could be a westerly or a easterly exposure An Azimuth of 90° or 270°)

[2] The increase in energy bill cost in switching from natural gas to cold climate high efficiency heat pumps depends mainly on the natural gas rate in the natural gas territory the CPWH customer is in.

[3] Assuming a southern exposure and a 20-degree slope at 1,100 kWh per kW of solar installed.

[4] At an average of 1000 therms per year for a SFH this could be approximately $1,300 per year.

[5] Calculated at 3,300 over 365 days at an average of 9 kWh per day would be able to store the full average electric energy generated by the 3 kW system.

in overburden communities. These solar projects would be ownership only models and only provide panels to customers that installed heat pump technology and induction stoves through the CPWH program. The BPU could track and use the data in the expanded CPWH pilot with solar and energy storage to expand the pilot to the full CPWH program.

The BPU has to start developing and implementing clean energy programs in a more holistic and integrated manner – combining all clean energy technologies and equipment in one unified clean energy program and not in separate and individual siloed clean energy program. The best place to start developing and implementing that holistic and integrated clean energy programs is in overburdened communities to help bring the clean energy economy to environmental and economically disadvantages communities to level the clean energy field. This would help to improve energy storages access to a larger values stack and vice versa.

In terms of FERC Order 2222 there are a number of issues with implementation aof the Order. Even after implementation, it is not clear yet how it will impact distributed energy storage. The BPU should develop and implement the SIP with an eye on the implementation of FERC Order 2222 but not wait on the ISOs to fully implement their approved programs. Just like the ISOs development of peak demand reduction programs, the reality of implementation may not match the current rhetoric surrounding FERC Order 2222.

In terms of the proposed definition for energy while a good and complete definition, the BPU may consider making it clear that energy is an encompassing term and is not a limiting term and includes all thermal and electrical energy sources. In addition, the BPU should define DER in a board manner that includes the following

> *DER means any resource located on the distribution system, any subsystem thereof or behind a customer meter, including but not limited to electric storage resources, distributed generation, demand response, energy efficiency, thermal storage, and electric vehicles and their charging supply equipment.*

While the proposed declining blocks appears to be a reasonable allocation, the BPU should annually reviewed and set the caps based on current costs. In addition, the BPU's initial SIP should be more heavily allocated to the distributed energy storage as opposed to the current grid supply allocation. If the BPU maintained the current Grid Supply and Distributed Storage allocation the performance incentive for Grid Supply should be set below the distribution storage performance-based incentive. There should be a two-tiered performance-based incentive with Grid Supply getting the lower incentive to reflect the Grid supply projects higher ability to access more market-based benefits, especially with the implementation of FERC Order 2222.

Thank you for the opportunity to comment on the BPU's SIP proposals and RFI. We appreciate all the time and effort that the BPU staff put into developing the RFI and straw and submit the above comments to assist in advancing the State's progress towards the 2019 EMP goal of 100% clean energy by 2050. Please feel free to contact me on any further follow-up.

Very Truly yours

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