Ms. Sherri L. Golden RMC
Secretary of the Board
New Jersey Board of Public Utilities
44 S. Clinton Ave. 1st Fl
POB 350
Trenton, NJ 08625-0350

Dec 18, 2024

RE: Docket No. QO22080540
In the Matter of the New Jersey Energy Storage Incentive Programs

Dear Ms. Golden

Thank you for the opportunity to comment on the above referenced docketed matter.

General Comments

The NJBPU SIP seems to be limited to battery electric storage while the NJBPU storage study performed by Rutgers points to other energy storage technologies. One of the most promising is thermal energy storage. NJBPU should modify the SIP to establish a more holistic energy storage program by establishing a SIP for thermal energy networks.

Gris Supply (GS) SIP

There are currently 53,409 MW of battery storage capacity waiting in the PJM queue to interconnect to the grid. Of this total 4,421 MW would to be located in NJ.[1] This is more than double the NJBPU energy storage goal as set forth in the 2018 Clean Energy Act. While a portion of this capacity in the PJM queue may not eventually move forward, it is highly likely that most will proceed given the current cost effectiveness of battery storage as noted by NREL and others.[2] It seem unlikely that grid supply battery energy storage systems (BESS) needs an additional BPU ratepayer incentive.

Per NREL, grid supply (GS) battery energy storage system (BESS) could benefit from regulatory and market clarity to define the compensation structures for their many services to the grid. BPU needs to establish a market regulatory structure to allow GS BESS to be compensated for services on the distribution system by the electric utilities. This would be a more effective and efficient mechanism to advance grid supply BESS and consistent with the competitive energy market structure in New Jersey, established under the Electricity Discount and Energy Competition Act (EDECA) of 1999.[3] In this regard the NJBPU should direct the electric utilities per EDECA to establish a compensation structure for GS BESS in an open and transparent manner similar to the structure in place by the CPUC.

The launch for the GS SIP should be tied to the BPU approving an electric utility open access compensation structure. At a minimum, if BPU decides to proceed with a GS SIP then the incentive should be allocated overtime similar to the renewable energy certificates (REC) or solar REC (SREC). The more efficient and effective way to administer the SIP would be as a REC. The incremental additional incentive needed for GS SIP, over the current SREC II, could be added to the SREC II based on the time dependent performance of adding the stored solar energy to the grid. This would reduce the administrative cost to manage the program and would shorten the time for implementation for the SIP.

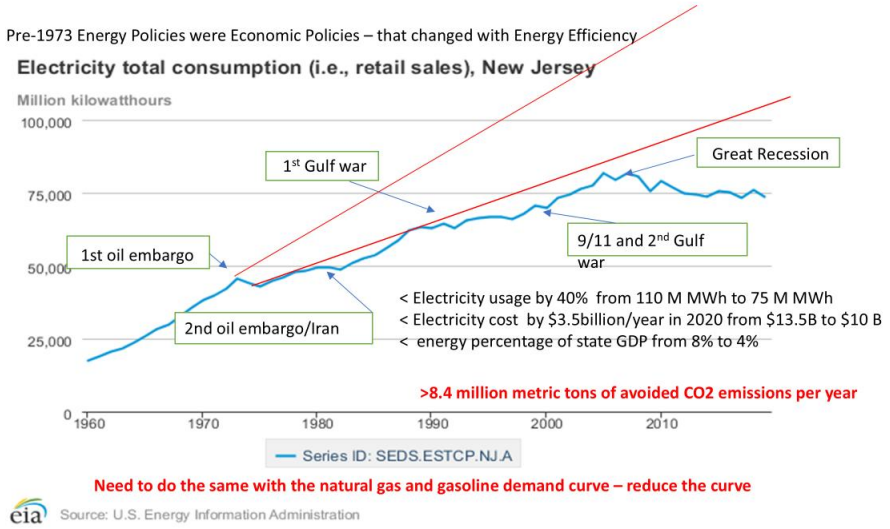
[1] See PJM 2023 NJ State Infrastructure Report at https://www.pjm.com/-/media/library/reports-notices/state-specific-reports/2023/new-jersey.ashx
[2] See https://www.nrel.gov/docs/fy19osti/74426.pdf and https://www.nrel.gov/docs/fy23osti/85332.pdf
[3] See NJSA 48:3-51 et seq

Distributed or Behind the Meter BESS

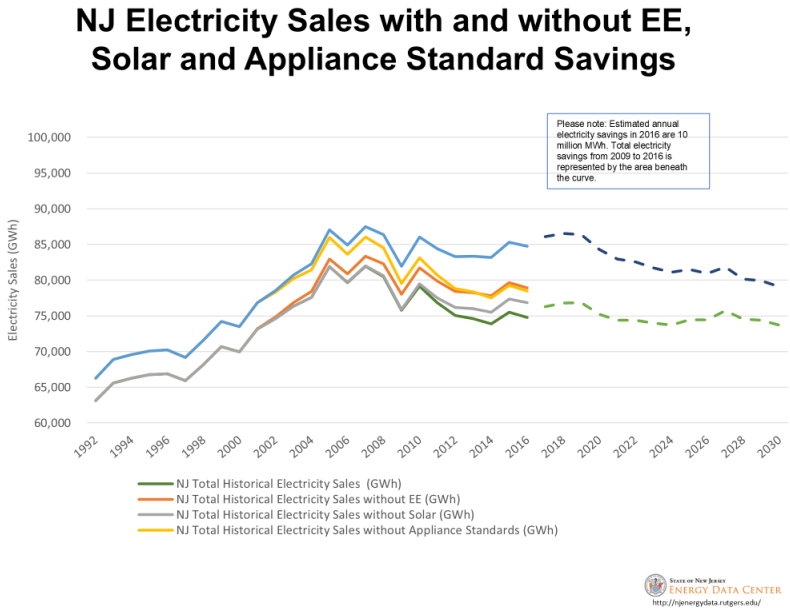
One of the key strategies to managing the increase in New Jersey electricity use and the shift winter peak as modeled in the 2019 EMP is distributed solar and storage. You can see this effect in the two charts below. As noted in the first chart below from mid-1970 to mid-2000 New Jersey's electricity usage doubled. During this doubling of electricity usage neither the public nor the grid operators maintain that the grid could not handle the growth in electricity usage from the increase in central AC and increased plug load. Grid planning just did what was required - plan for the increase.

If we kept on that mid-70's to mid-2000's growth rate by 2010 New Jersey would have been using over 100 million MWh per year. However, from mid-2000 until now electricity usage has flatten out at around 75 million MWh per year. You can see this effect in the second chart. This flattening of the New Jersey load was due to implementation of a statewide energy efficiency program, distributed solar, appliance standards and building energy codes. The New Jersey ratepayers have benefited significantly from these energy savings programs in avoided energy bill costs and avoided infrastructure expansion costs. [4]

The issue is that the transmission grid (PJM) sees distributed solar the same as energy efficiency and peak demand reduction - as a reduction in load not a generation resource. Given that fact, distributed solar and storage can be used as a tool to reduce the impact of increasing electricity usage from transportation and building sector electrification including addressing the shift to a larger winter peak. But the current solar programs must change to meet this new demand and that means changing the current incentive structure for distributed solar and storage. Grid planning to develop this tool to reduce load has to happen at the distribution planning level not the transmission planning level.



[4] The two charts were developed for BPU as part of the 2019 EMP data analysis by the Rutgers Energy Data Center.



The NJBPU has been telling the EDC for 10 years it is time to plan for this potential increase. Goal 5.1.1 of the 2019 EMP required utilities to establish Integrated Distribution Plans (IDP) to expand and enhance the location and amount of distributed energy resources (including solar and storage) and electric vehicle charging on the electric distribution system. The utilities are 5-year behind in implementing this 2019 EMP requirement.

As noted in the 2019 Energy Master Plan (EMP), as New Jersey moves to more building and transportation electrification New Jersey's electric energy usage will double between 2020 and 2050 mainly through increased use of electric vehicles (EV) and cold climate air source heat pumps (ccASHP). This not only includes electric energy increase but an increase in the winter peak.

The majority (approximately 70%) of a ccASHP electricity usage will occur in the heating mode. While the performance of the ccASHP is reduced during very cold weather, the efficiency of the ccASHP in the cooling mode is increased significantly over a non ASHP AC unit which actually reduces the summer peak.[5] The Building Decarbonization Coalition in their June 2023 report "Why Cooling is Key" estimated this at a 29% reduction in electricity usage because of the ccASHP in the cooling mode.

The good news is there is ample time to plan for this transition in the increase in electricity and increase in the winter peak. Per PJM's latest update 2024 Long -Term Load Forecast to 10-year summer annual load increase is 1.6% and the winter annual load increase is 1.9%. The 15-year annual load forecast is a summer peak increase of 1.6% and a winter peak increase of 1.8%. For the Eastern Mid-Atlantic (E-MAAC) which includes all 4 New Jersey electric distribution companies. The summer annual load forecast is 0.7% and 1.0% for the 10- and 15-

[5] See ACEEE Integrating load reduction with heat pump design to reduce the cost and risk of residential decarbonization ttps://www.aceee.org/sites/default/files/proceedings/ssb24/pdfs/Integrating%20load%20reduction%20with%20heat%20pump%20design%20to%20reduce%20the%20cost%20and%20risk%20of%20residential%20decarbonization.pdf

year forecast and for the winter annual load forecast it is 2.6% and 2.5% for the 10- and 15-year forecast. The individual EDC are as follows:

Utility	Summer – 10-year	Winter 10-year	Sumer 15-year	Winter 15-years
ACE	0.5%	2.8%	0.8%	2.8%
JCPL	1.1%	4.7%	1.5%	4.3%
PSE&G	1.1%	3.8%	1.3%	3.5%
	0.3%	3.2%	0.6%	3.0%

The 10-year and 15-year New Jersey winter peak is increasing 3 times faster than the New Jersey summer peak. However, the New Jersey winter peak across all 4 New Jersey EDC territories in the PJM E-MAAC does not exceed the current existing summer capacity until 2033 for two EDCs and for two EDCs, the 15-year winter peak does not approach the current existing summer peak until after 2040. This means there is time to appropriately plan for this increase.

The current BPU Clean Energy distributed solar and storage programs and incentives are not currently designed to advance the strategy to minimize the increase in the New Jersey winter peak over the next 10 to 15 years. One, is there is no incentive structure for distributed battery energy storage systems but there is time to build one. The other is the current solar incentive program including DER solar is based on annual average energy generation which is calculated monthly by PJM-GATS and not seasonal load. To use solar and storage as a tool to manage load growth, specifically winter load growth, the BPU needs to develop a DER BESS SIP and redesign the DER solar incentive program.

In terms of ratepayer impact, the more efficient and cost-effective way to provide the solar incentive is to do so over time as an SREC as opposed to an upfront incentive as a rebate. The annual rate impact of an SREC is small compared to the annual rate impact of an upfront all-in rebate. But this time dependent issue requires that the SREC be designed with greater detail to account for the time value of money. The solar incentive through the SREC is designed to get an appropriate return on investment (ROI) for the developer and installer to build more solar. It is not currently designed to implement multiple and integrated state energy policies like building and transportation electrification in a holistic manner.

The current solar program is designed as a single silo incentive to maximize the generation of SREC and advance a larger ROI. To maximize the SREC means solar is constructed south-facing at 0 to 40° slopes or tilt angle to maximize annual energy generation (and return on investment). And the current SIP follows this single silo incentive approach to respond to this summer load only.

This leads to situations that states like California are experiencing with the impact of the Duck Curve on the grid. DER storage can assist in minimizing that impact but currently that is an expensive way to do so. The summer peak Duck Curve impact can be minimized, at the same time as minimizing the increase in the New Jersey winter peak, by a few tweaks to the current DER programs. One is developing and implementing a DER BESS SIP.

The way to minimize the cost and the time needed to startup the DER BESS is to manage the distributed storage incentive within the SREC program. In this manner a DER SIP would get a higher value than the current SREC if the solar adds stored energy when the grid operating in the range of peak condition. This would not be limited to a peak hour or day but a range of grid peaking conditions to help keep the overall annual generation in a target range. But in that case the DER SIP SREC needs to have a time and date differentiation. The simplest way to do this is by differentiating the SREC based on when and where on the grid the SREC is generated

Prior to SREC II, all SRECs were the same regardless of when, where or how they were created. In SREC II the NJBPU added a sector-factor to SRECs, noting that net metered residential SRECs were different than net metered non-residential SRECs, than carport SREC, grid supply SRECs or community solar SRECs.

The simplest way to develop a DER BESS is by differentiating the SREC based on when and where on the grid the SREC is generated. Just like what happens now in SREC II by differentiating the SREC by sectors, the DER SIP can differentiate to account for when and where stored solar energy is added to the grid. As an example (but not a specific recommendation) the net metered residential SREC II could be sub-divided into an SREC value during normal grid periods and an additional value during peak congestions days and hours. In addition, the SREC can be differentiated by the environmental benefits of when and where the SREC is generated. This is possible because PJM-EIS GATS can now time stamp the hour as well as the location of the REC generation that includes the fuel source of the REC.

Per Ken Schuyler President of PJM-EIS notes that PJM-EIS GATS can provide hourly time stamped certificates for PJM generation since March 2023. Certificates in PJM were generated based on how much energy a generation resource produced in a month. But GATS can now produce hourly time stamped certificates to reflect not only where the certificate was generated (what states and fuel source) but the hour and date of when the energy was generated. [6] The requirements for requiring time stamped REC is set forth the PJM-EIS guidance Generation Attribute Tracking System Hourly Certificate. [7]

The DER BESS SIP should be designed to advance solar and storage that not only responds to the current summer peak but one that can respond to the shift to a larger winter peak from transportation and building electrification. This means increasing the SREC to advance DER BESS and increasing the SREC to encourage installations that maximizes solar generation during the winter month by increasing the tilt angle greater than 60° or vertical installations of solar panels with DER BESS.

It may not appear at first glance to be cost effective to increase the SREC to incentivize less total energy generation over the year to maximize winter generation. However, the change to addressing the shift in a growing winter peak as stressed by PJM planners and members, would more than benefit New Jersey ratepayers by reducing the need for increased transmission and distribution infrastructure.

The BPU should establish a DER BESS SIP instead of a GS BESS SIP or at a minimum before the initiation of GS BESS SIP because of the current near-term benefits of reducing summer load and for the long-term benefits to be able to address the shifting winter peak from building and transportation electrification.

The BPU should incorporate the DER BESS incentive as a part of or as a component to the current SREC II program differentiated through PJM-EIS GATS newly established time stamped process. The SREC generated during the time periods as determined by BPU to reduce overall peak electric usage and peak environmental impacts should be able to encourage and incentive the construction of DER BESS.

The establishment of the DER BESS incentive as part of the SREC program can be performed in a timely manner as it is simply the expansion of an existing fully staffed SREC program. This would not only minimize the time to develop the DER BESS SIP but minimize the administrative

[6] See PJM Inside the Lines Feb 2023 https://insidelines.pjm.com/pjm-eis-to-produce-energy-certificates-hourly/
[7] See https://www.pjm-eis.com/getting-started/rec-creation and https://www.pjm-eis.com/-/media/DotCom/pjm-eis/rec-creation/hourly-certification-info-sheet.pdf

cost since the current SREC cost are incorporated as part of the utility societal benefits collections and as part of PJM- EIS GATS. One way to minimize this administrative cost is to have the utilities establish an SREC user fee similar to the PJM-EIS GATS user fee. In this manner the users and direct beneficiaries of the SREC program pay directly to utilize the program and reduce ratepayer impacts.

A DER BESS SIP that is established through a time stamped GATS process can not only address today's peak usage and environmental impacts of electricity usage but be able to adapt to shifting peak usage and timeframes for major environmental impacts from electric generation source in overall electricity usage.

Thank you for the opportunity to provide comments on this very important clean energy issue to advance DER solar and storage through the development of a DER BESS SIP. The above comments are submitted to assist in advancing the State's progress towards its goal of 100% clean energy. Please feel free to contact me on any further follow-up.

Very Truly Yours

Michael Winka

Michael Winka
227 Cold Soil Rd
Princeton, NJ 08540
609 778 8717
mwinka@comcast.net