

Comments of Solar Grid Storage on Interconnection and Net Metering for solar projects using storage

Background

On August 14, 2014, a meeting of the interconnection and net metering working group was held in Morristown, NJ. At the meeting the EDC's proposed a series of new interconnection requirements and deprivation of net metering for solar installations using storage either solely for backup power or to provide grid services such as frequency regulation under the FERC directed and PJM implemented program for fast responding technologies (see FERC Order 755).

Policy

The New Jersey BPU (BPU) has recently investigated, as part of a wider ranged program to improve resiliency of the grid, mechanisms to encourage solar developers and users to include storage with the installation of their solar systems so that the systems might operate during grid outages and provide continuous, albeit in most circumstances, limited electric power to the customer's home or business. While storage is an attractive addition to any solar installation because of this added functionality, the current cost of storage technologies prevents nearly all customers from including storage with their solar. The BPU has begun to look at incentives to help address this cost barrier.

Meanwhile, FERC has directed ISO's to encourage the use of fast responding technologies like storage to help provide ancillary services to the grid to better respond to the needs of a modern grid. FERC has encouraged and directed ISOs to create markets for those technologies. Certain ancillary services such as frequency regulation (FR) can be provided by storage technologies (or alternatively by adjustments to a customer's consumption or load) and PJM has implemented a program where a customer using load or storage at their site may participate in their ancillary markets including FR. These customer sited facilities provide the same service as a grid connected storage or other fast responding FR technology.

Solar Grid Storage (SGS) has entered this PJM market principally as a mechanism to provide revenues to "buy down" the cost of the storage technology for solar installations. SGS focuses on commercial scale solar installations where a business, local government, or school is looking to gain the enhanced reliability of solar power plus storage. In all cases, the customer finds the cost of adding storage without the offsetting revenues of the FR too expensive even though they are often willing to pay a mild premium for the backup service. However, the market indication to date is that the customer's willingness to pay for backup from storage is less than one-fourth the incremental cost to add storage to solar.

As a policy matter then, the BPU is faced with paying a storage incentive of about three-fourths the added cost of the storage for solar if it wants to see mass adoption of this technology. Much like the BPU did when it started its renowned solar program, it could provide these large incentives and see (as many predict) the cost of storage decline to cost effectiveness as volume of deployment increases. Or, the BPU could save significant sums for the ratepayers and taxpayers of New Jersey by encouraging storage providers to seek revenues from the operation of the storage systems to support grid services like FR. Doing so will both help to implement the FERC directed programs to modernize the grid while

saving significant dollars for the State. If the BPU intends to seek these savings for programmatic deployment of storage with solar, it must ensure that it does not erect regulatory barriers to the use of storage with solar. Where as in this case, the FERC has set up a program that will find uses and pay for a part of that storage deployment, the BPU should fully encourage customers to take advantage of those programs.

Unfortunately, the EDC proposal would create major barriers to storage deployment with solar and as proposed, will discourage customer usage of solar plus storage.

Interconnection

At the aforementioned working group meeting, the New Jersey EDC's presented a proposition that solar plus storage installations be forced to follow the Level 3 interconnection procedures if those systems were intended to provide FR. These procedures add additional and potentially unlimited costs to a solar project and can significantly elongate the time periods required for IC approval. The EDC approach will needlessly complicate the IC process and will add unnecessary costs to storage projects and does not comport with efforts by the BPU to promote solar plus storage. Because the cost of storage is high, any additional costs for interconnection can take a marginally profitable project into the red.

When initially addressing interconnection for stand-alone solar the BPU designed some of the first in the nation streamlined interconnection rules, which became a key to making the NJ solar market function and rapidly expand. The BPU should follow those same principals for solar plus storage and only implement more burdensome requirements on interconnection where absolutely necessary. The burden to demonstrate the necessity should be squarely on the EDC's especially in the case where a solar plus storage installation utilizes the same inverter for both the solar and storage functions. In those cases, SGS submits, the interconnection rules should not be any different than they would be for the simple solar installation.

SGS would note that the approach of the EDC's – to study at length every new solar plus storage installation – is identical to the approach they suggested a decade ago for stand-alone solar installations. Had the BPU followed the EDC approach then, they would have needlessly erected barriers to solar installations and would most likely have failed to meet the aggressive targets set for the solar program. SGS urges the BPU to follow the same approach for this new evolution in solar and avoid complicating the interconnection process for these new installations.

As an alternative, SGS would support the IREC proposal of using a "15% rule" for new installations of solar plus storage. While we believe that there should be no different rules for interconnection than those followed by solar, the 15% rule as proposed is a reasonable compromise. This will allow for a limited number of solar plus storage installations to proceed under Level 2 review and allow, we believe, the EDC's to discover that the solar plus storage installations cause no greater impact on the grid than solar alone. Empirical data gathered from these operating systems can then be used to modify the interconnection rules beyond the 15% rule based on actual operations, not theoretical worst case scenarios proposed by the ECS at the meeting.

Net Metering

The EDC's also proposed a more expansive and expensive metering scheme for solar plus storage that appears to deprive a combined solar plus storage installation of simplified net metering. While the EDC's either don't care or are actively opposing the modernization of solar with storage added through these proposals, the BPU should reject any changes to net metering, recognizing these as a barrier to the addition of storage to solar and inconsistent with the BPU's policy.

Opposing net metering for solar plus storage providing FR services is particularly puzzling. Since the PJM FR signal is balanced over an hour, the principal opposition of the EDC's – namely that a customer might use their battery to swap off peak power for on peak credit – is not valid. PJM ensures that for any power out of a storage device in any hour is matched by storage power into the battery in the same hour so no rate differential game is possible.

Anecdotally, storage devices that connect directly to the grid to provide FR would receive LMP price for power into and power out of their battery in the same hour effectively net metering that power for the grid connected storage facility. Should the BPU adopt the EDC position, it would be effectively saying that a solar plus storage customer does not receive net metering even though solar alone would receive net metering and grid connected storage by itself would also receive net metering. Nothing could be more contrary to the BPU's policy of promoting solar plus storage by saying that everyone else with storage technologies can interact with the grid and receive net metering but customers who follow the BPU's direction to combine solar and storage, do not. There is no basis whatsoever for such a policy other than simple opposition to the very existence of net metering something SGS suspects is the true agenda here.

The BPU should reject the EDC proposal for additional metering and provide simple net metering for solar plus storage customers as a consistent with promoting the use of storage with solar installations in the State. For SREC metering, SGS would recommend that all solar plus storage installations have either a bi-directional SREC meter installed or demonstrate that the SREC meter only measures AC power out of the solar without tracking or being affected by the input and output of the storage device.

Respectfully submitted,

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A.F.Mensah

September 3, 2014

John Teague
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RE: Comments on power point deck titled "Mixed Generation Interconnection, Metering & Settlement"

Mr. Teague and Mr. Hunter,

Our comments primarily focus on: 1) frequency response and the effect on voltage 2) the interconnection process and 3) metering constraints.

Frequency Response and the Effect on Voltage

As the Electric Utilities continue to analyze the effects of FR inverter based systems, they should also consider that those inverters could also assist with grid voltage stabilization, thereby reducing system reconfiguration costs. A.F. Mensah has access to proprietary grid integration models that we could share with Electric Utilities to further assess the benefits of these inverters.

The Interconnection Process

The current PJM process notifies the utility automatically and gives the electric utility 10 business days to respond to a PJM Registration. The process works thus far for centralized and distributed generation. We would recommend a review of this process before deciding on additional interconnection application steps with the Electric Utility or Office of Clean Energy.

Metering Constraints

In Figure 2 and 3, the addition of a meter directly upstream from the "PJM or Frequency" meter is redundant and adds tremendously to project cost.

The "PJM Meter" already does everything the "Additional Utility Meter" does. It adheres to the ANSI and revenue grade standards and goes through rigorous quality assurance and quality control procedures.

Thank you.

Peter Mendonez, Jr.
A.F. Mensah, Inc., Head of Engineering



September 5, 2014

RE: Comments on EDC proposal regarding interconnection and net metering of solar + storage

Dear Mr. Teague,

The Solar Energy Industries Association (SEIA) respectfully submits these comments in response to the request for comments on the EDC proposal on interconnection and net metering requirements for solar installations using storage as presented at the August 14 meeting of the Interconnection and Net Metering Working Group.

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. SEIA member companies operation in all of New Jersey's market segments – residential, commercial, and utility-scale – and also have an interest in technologies that enable further penetration of solar power, such as energy storage. In addition, SEIA member companies provide solar panels and equipment, financing and other services to a large portion of New Jersey solar projects.

A decade ago, New Jersey lead the country in developing simplified interconnection standards for solar PV systems, balancing the utilities' concerns on safety and reliability with the State's goals to enable the development of a nascent industry. These standards, which included the '15% screen' for simplified interconnection, had a strong impact on FERC and the Small Generator Interconnection Procedures. This standard was instrumental in allowing the nascent solar industry to achieve scale, technology improvement and cost reduction while providing a widely accepted and extremely conservative standard so that such systems would not compromise reliability or safety of the grid.

Once again, New Jersey is on the cutting edge of technology adoption, as it looks to increase the adoption of battery storage. And once again, the BPU has a critical decision to make in order to both maintain the reliability of the distribution system as well as enable the growth of a new technology that is critical to the state's energy future. The EDC's proposed interconnection and net metering rules are overly conservative and will serve to unnecessarily increase the costs of installing battery storage with solar systems, stifling a nascent market and running counter to the State's energy goals. SEIA support's IREC's proposal of using a "15% rule" for new installations of solar + storage as a reasonable compromise. This will allow for a limited number of solar + storage systems to be developed without the costly and time consuming Level 3 interconnection review, and enable the BPU and the EDCs to gather data from the operation of these systems, which we believe will, in time, show that the 15% rule is overly conservative.

Furthermore, we are concerned that the utility proposal for more stringent interconnection review does not appear to be grounded in any specific analysis or actual operation of how solar/storage systems would be deployed in the field. Moreover, modern inverters used for solar PV and

energy storage are inherently capable of providing a variety of modes of dynamic reactive power compensation. These capabilities should be enabled and coordinated with the existing system devices to stiffen distribution system voltages, avoid unnecessary system upgrades, and allow technically feasible amounts of FR to be installed.

Lastly, the EDC proposal for more expansive and expensive metering systems for solar + storage systems is unnecessarily burdensome and would serve as a barrier to the adoption of such systems – running counter to the BPU’s policy goals. As SEIA has stated in previous comments to this Working Group, with regards to a simple solar + storage case, wherein solar is combined with a battery behind one interconnection but no other form of Non-class I renewable energy generation is included, no further metering controls are needed. SEIA continues to assert that this complies with Staff’s principles from both a physical and policy perspective. From a physical perspective, under a simple “solar + storage” scenario, it is impossible for there to be net generation above and beyond what the solar system would create on its own. From a policy perspective, continued use of simplified metering would enable further investment in much needed grid infrastructure and resiliency within New Jersey. Further, by doing so, the BPU would avoid creating unintended barriers to such projects participating in the PJM market for ancillary services, thus leveraging regional resources to enable higher penetration of photovoltaics on New Jersey’s grid.

Sincerely,

A handwritten signature in black ink, appearing to read 'Katie Bolcar Rever', with a long horizontal line extending to the right.

Katie Bolcar Rever
Director, State Affairs
Solar Energy Industries Association
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