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February 14, 2020

Luly E. Massaro, Commission Clerk
Rhode Island Public Utilities Commission
89 Jefferson Boulevard
Warwick, Rhode Island 02888

Re: Docket 5000 – In Re: Investigation into the Treatment of Storage as an Electric Distribution System Resource

Dear Ms. Massaro:

Enclosed for filing by the Division of Public Utilities and Carriers (“Division”) in the above-captioned proceeding please find an original and nine (9) copies of the Division’s comments in response to the “Notice to Solicit Comments” issued by the Public Utilities Commission (“PUC”) on January 2, 2020. These comments, which are the result of a collaborative effort by Division staff and retained expert consultants, provide input on the scope of this docket and address the comments previously submitted by other parties on January 30, 2020.

Thank you for your attention in this matter and if you should have any questions kindly contact me at your convenience.

Very truly yours,

Christy Hetherington
Special Assistant Attorney General

Enclosure

cc: Service List

Docket 5000
Investigation into the Treatment of Storage
As an Electric Distribution System Resource

RI Division of Public Utilities Comments
February 14, 2020

On December 17, 2019, the Rhode Island Public Utilities Commission (PUC) opened an Investigation into the Treatment of Storage as an Electric Distribution System Resource under Docket 5000. This memo provides the Division's response to the PUC's Notice to Solicit Comments (Notice) issued on January 2, 2020. The PUC requested comments by January 30, 2020 and National Grid, the Northeast Clean Energy Council (NECEC), and the Office of Energy Resources (OER) provided comments. The Rhode Island Division of Public Utilities and Carriers (Division) requested additional time to prepare its comments and the PUC granted the Division an extension to February 14, 2020. In its approval of this extension, the PUC also requested the Division, in its comments, attempt to respond to any other comments that were filed.

The Notice states that the purpose of these comments is to inform the scope of the docket and an appropriate process for addressing the scope. The Notice identifies six broad topics and directs commenters to list each proposed topic together with an explanation of (a) any problem that currently exists which needs to be solved, (b) whether the proposed topic is a short-term or long-term priority, and (c) whether there are any related dockets or issues that would be affected by the proposed topic. The topics include:

1. identification of the costs and value streams of distributed energy resources under each of the programs in which renewable energy distributed energy resources can currently participate;
2. identification of the costs and value streams of distributed energy resources paired with storage under each of the programs in which renewable energy distributed energy resources can currently participate;
3. understanding whether and how the design and purpose of a paired system changes the costs and value streams;
4. identification of a definition of inappropriate market activity;
5. understanding of concerns with time-of-use rates and implications on the previously identified costs and value streams; and
6. ownership of capacity and ancillary services values.

In **Section I**, the Division offers an expansion of topics to be considered in Docket 5000. In **Section II**, the Division provides comments for each topic raised in the Commission’s Notice, including specific references to the Narragansett Electric Company d/b/a National Grid (the Company) filed comments dated January 30, 2020 (“Company filing”).

Additionally, the notice directs commenters to identify if the proposed topic has been addressed by any other New England public utilities commission or legislature or the New York Public Service Commission, reference the treatment of the proposed topic by other states, and advise the PUC on the treatment and provide any relevant citations. **Section III** provides our response to these requests. We note that the way other states are addressing storage is not necessarily broken out into the same topic areas as in Rhode Island. As a result, we provide a general description of how storage is treated in Massachusetts, Connecticut and New York.

Section I

The Division proposes the following expansion of the topics to be considered in Docket 5000:

1. Define the term “storage.”
2. Complete a technical assessment of storage technologies to be considered including Electromechanical; Mechanical; Thermal; Electrical; and Chemical. This should also categorize the technologies as either a generating resource, demand side management resource or both. Each should identify the increases or reductions in challenges and complexities in distributed energy resource (“DER”) interconnection and operation as they relate to the transmission and distribution system.
3. Evaluate the impact of each storage technology on current interconnection standards.
4. Expand resources by considering the regulatory policies, interconnection requirements, operating standards, and market structure for regions that have incorporated significant amounts of storage such as PJM and California ISO, both with over 300 MW of storage, while ISO-NE is only at 23 MW. Similarly, evaluate how these regions addressed barriers and adopted policies for deployment and acceleration of storage technologies.

Section II

The Division provides the following comments to each topic raised in Docket 5000, and where noted, specifically addresses comments provided in the Company filing. Although not directly referencing the filed comments of the Northeast Clean Energy Council and the Rhode Island Office of Energy Resources (collectively, the “Parties”), the Division’s comments also address many of the Parties’ remarks.

1. Identification of the costs and value streams of distributed energy resources under each of the programs in which renewable energy distributed energy resources can currently participate.

- a. Section 1(a), page 2, the Company states:

“The Commission should consider ways to harmonize compensation and value to promote a shift to a more sustainable DER market and which can capture the value of DER for the benefit of all customers.”

Division Comments:

The Division emphasizes that a balance must be achieved in providing incentives to DER owners with the benefit gained by all customers. It is customary to offer incentives to stimulate any market, but adjustments must be considered as the market becomes more robust. The state of Rhode Island is experiencing strong DER development. The growth is a positive contribution to the state’s greenhouse gas reduction goals, yet the proliferation of DERs is now impacting distribution grid operations that require additional Company investment. That investment will be significant under the Grid Modernization Plan (“GMP”), discussed in more detail below. The increasing costs to host DERs along with the mismatch in time of generation with the value of market energy cited in the Company’s comments make this topic especially important to address in this Docket.

2. Identification of the costs and value streams of distributed energy resources paired with storage under each of the programs in which renewable energy DER can currently participate.

- a. Section 2(a), pages 4-5, the Company states:

“Because DER incentives are ultimately paid for by all distribution customers, a standard mechanism must be adopted to ensure that energy storage systems drive incremental value to all customers, but do not allow developers to receive NM or REG payments for non-renewable energy. The Commission should consider methods to ensure that paired solar+storage systems qualifying for NM or REG are only charged from the solar resource; not from brown energy on the grid.”

Division Comments:

The Division concurs with the Company’s recommendation and emphasizes that storage may be paired with technologies beyond solar. This proceeding should examine methods utilized to validate the attributes and timing of energy received from a storage system which become the basis for compensation. Prudent solutions to certify energy and attributes must be considered to avoid potentially excessive costs that may accrue to customers while storage owners receive benefits.

b. Section 2(a), page 5, the Company states:

“In addition, where NM or REG payments are to be paid, the Commission should consider introducing operational requirements to optimize the charging and discharging of storage to produce benefits to the distribution system and customers (i.e. to require charging at low peak hours from the solar resource and discharging at peak hours to reduce costs for all customers). Put another way, the storage allows projects to shift when the energy produced is injected into the grid. The underlying value of that energy is variable, while the compensation for it under existing mechanisms is not.”

Division Comments:

The Division concurs that the potential mismatch in the timing of charging and discharging of storage with compensation should be addressed. Providing the Company with operational control over energy storage is a solution but evaluation must include system impacts from both uncontrolled and controlled energy storage. The Division emphasizes that this is part of a broader issue driven by the state of Rhode Island’s aggressive greenhouse gas emissions reduction goals. The state goals may be met by varying technologies that rely on, and impact, the electric transmission and distribution grid such as DER and DER combined with storage. To prepare for increasing customer adoption of these technologies, the Company has drafted a *2019 Rhode Island Grid Modernization Plan (GMP)*. The GMP “... presents a holistic plan of activities and investments expected to be necessary to manage the distribution electric grid more granularly considering a range of customer distributed energy resource (DER)¹ adoption levels through the period ending in 2030.²”

The Company proposes to ultimately invest hundreds of millions of dollars in its GMP initiative, much of which is planned to build a flexible grid to integrate more clean energy production. The Division’s preliminary review of the draft GMP recognizes that a significant amount of investment is proposed for system improvements that enable DER. However, the GMP does not explicitly address widespread option of storage, which both consumes and delivers energy. The Division believes that this Docket will be a valuable forum to evaluate distribution system interconnection requirements, system impacts, and operational solutions under various uses of energy storage. The results will reveal costs and value streams, and further inform the Company in expanding the GMP to account for both impacts and benefits of the fast-growing energy storage market.

¹ DER is defined here as a resource sited close to customers that can provide electricity generation (e.g., solar PV, wind turbine, CHP) or flexible demand (e.g., energy storage, EVs, electric heat pumps.)

² Grid Modernization Plan for Narragansett Electric Company d/b/a National Grid; Draft for External Review dated 12/5/19, page 4.

3. Understanding whether and how the design and purpose of a paired system changes the costs and value streams.

a. Section 3(a), page 8, the Company states:

“There are several issues the Commission should consider with respect to the design and purpose of paired systems. First, the Commission should understand the impacts of increasing on-site solar generation, which may be in the State’s best interests, but balance that to the increased costs to all customers.”

Division Comments:

The Division agrees with the Company’s recommendation to balance State interests with increased costs to all customers. A fundamental component is understanding the value streams and costs for paired systems which goes beyond payments for energy or associated attributes. The Division’s previous comments on energy storage also lend to paired systems. The system impacts and operational requirements to accommodate paired systems, whether controlled by the Company or facility owner, must be analyzed under various use cases. The analysis is critical to the Company’s distribution planning process which drives investments under various initiatives including the SRP, ISR Plan, and GMP. A better understanding of paired system configurations, such as how energy storage may optimize non-firm resources and reduce system capacity constraints, will enhance the Company’s investment decisions which translate to customer cost efficiencies.

b. Section 3(a), page 8, the Company states:

“State policy should be developed in a manner that is consistent with the requirements of FERC Order 841 in order to fully capture the value of storage in the wholesale market.”

Division Comments:

The Division supports State requirements that are consistent with FERC requirements. The Division emphasizes that cost causation must be considered in adopting policies that enable energy storage participation in wholesale markets. The costs incurred by the Company to facilitate interconnection and participation in wholesale markets should be the responsibility of the facility owner, and that facility owner would receive revenues from the market in which they participate. Alternately, if the facility owner participates in a state regulated program, it would be subject to state regulated interconnection guidelines and costs, and receive the program benefits. The Division cautions that attempting to craft structures that allow a facility to simultaneously participate in a wholesale market while receiving revenue streams from state regulatory programs invites duplicative payments for which the distribution company would not receive value.

- c. Section 3(a), page 9, the Company states:
“It will be important to understand how paired systems are being configured and how they intend to operate, including in wholesale markets, so that appropriate metering configurations can be offered.”

Division Comments:

The Division concurs with the need for appropriate metering while ensuring that costs, particularly for meter data management for those facilities that participate in wholesale markets, are appropriately assigned.

4. Identification of a definition of inappropriate market activity.

- a. Section 4, page 10, the Company states:
“The first problem that needs to be solved is establishing a clear definition of “inappropriate market activity.” Once a definition is established and inappropriate conduct is identified, monitoring and enforcement methods need to be established.”

Division Comments:

The Division agrees that inappropriate market activity requires more definition. Pending further clarification, the Division emphasizes the need for clear delineation on facility registration and whether a facility participates, and receives compensation, from a wholesale market or under a state jurisdictional program. Any attempt to monetize the same facility output or attributes in multiple programs, thereby receiving duplicative payment, is inappropriate market activity. The methodology to certify such activity must be robust yet cost effective and should not be assessed to customers that do not own facilities. In addition, the facility registration also directs interconnection requirements where FERC guidelines govern wholesale participants. Any attempt by a facility to manipulate interconnection status to circumvent operational requirements or costs should be considered inappropriate market activity.

5. Understanding of concerns with time-of-use rates and implications on the previously identified costs and value streams.

Division Comments:

The Division recognizes that costs and value streams, for both energy related products and distribution system operations, are impacted by demand and usage factors that vary throughout a day. Time-of-use rates will be crucial to appropriately applying those charges or providing compensation. The Division is not prepared to raise concerns until these costs and value streams are further identified within this Docket.

6. Ownership of capacity and ancillary services values.

Division Comments:

The Division reserves comment until further information is collected in this Docket but cautions that tracking and monetizing intangible attributes can be complex and costly which must be considered when addressing ownership rights in dynamic markets.

Section III

Below, we review key storage activities in Massachusetts, Connecticut, and New York and provide relevant citations:

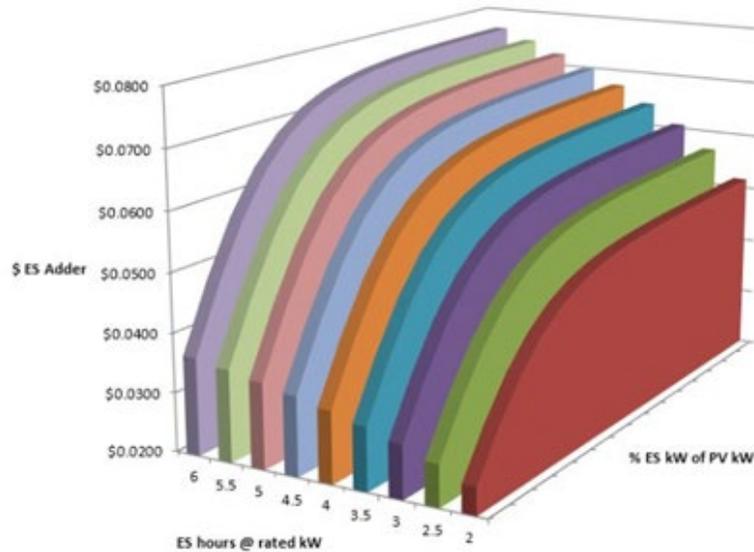
Massachusetts

The Commonwealth of Massachusetts has focused on increasing the incentives available for energy storage systems in recent years. The Massachusetts Department of Energy Resources (DOER) Energy Storage Initiative launched various energy storage funding programs and incentives.³ The current and proposed programs that incentivize increased adoption of energy storage include: the energy storage adder incorporated in the Solar Massachusetts Renewable Target (SMART) Program and the proposed Clean Peak Standard (CPS).

The energy storage adder included in the SMART program allows for additional compensation, above the base solar compensation rate, that is dependent on the energy storage system's capacity and power specifications. Figure 1 is a visualization created by DOER on how the energy storage adder increases based on the duration and power relative to the local PV system. For example, if the storage system is long duration and charges exclusively from the local solar generation, it will receive the highest possible amount from the energy storage adder.

³ Mass.gov. Energy Storage Initiative. Available at: <https://www.mass.gov/energy-storage-initiative>.

Figure 1: SMART Program Energy Storage Adder Blocks

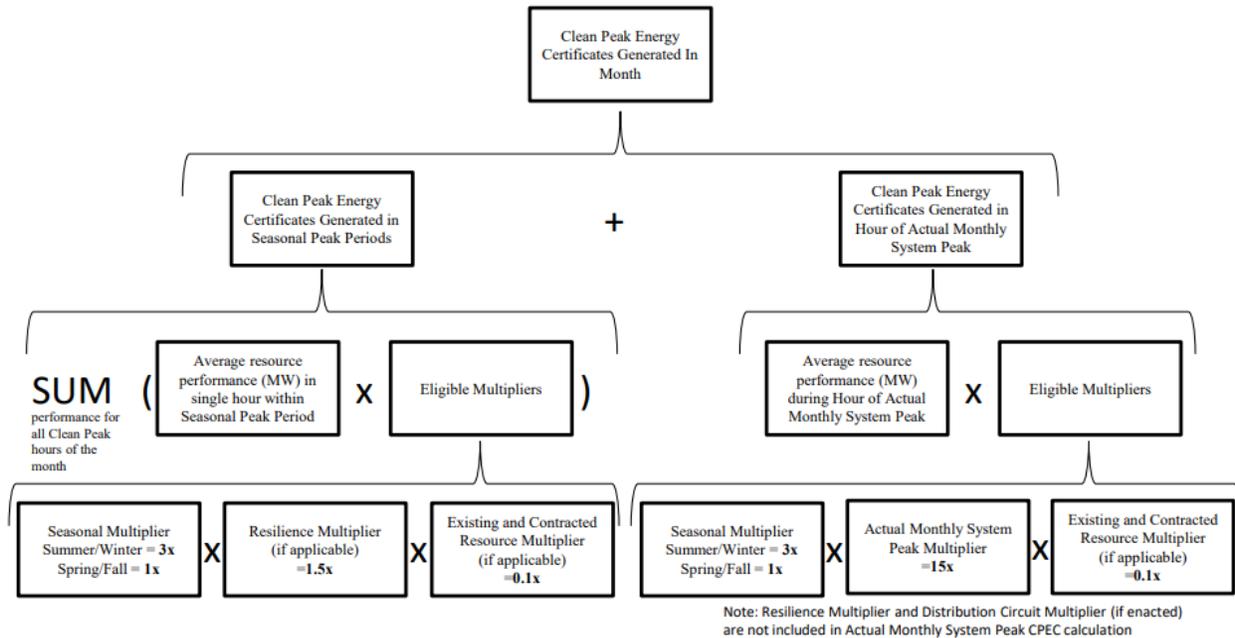


Source: Weaver, John. *Massachusetts' SMART program is a go, but the details matter*. *PV Magazine*. September 2018. Available at: <https://pv-magazine-usa.com/2018/09/28/massachusetts-smart-program-is-a-go/>.

An additional incentive for energy storage in Massachusetts is the proposed Massachusetts Clean Peak Standard (CPS) which provides additional revenue streams for energy storage systems in parallel with and beyond those systems qualifying under the SMART program. Under the proposed CPS, a Clean Peak Resource includes new renewables, existing renewables that pair contractually or physically with a new energy storage, new energy storage resources that charge primarily from renewables, and demand response resources.⁴ The current proposal allows qualifying systems to generate Clean Peak Energy Certificates (CPECs) for energy exported to the grid, or alternatively, demand reduced, during predefined Seasonal Peak Periods (SPP). CPECs can then generate multipliers based on season, actual monthly system peak, resilience provisions, and—possibly in the future—location on the distribution system. Figure 2 presents the proposed formula to calculate monthly CPECs earned. This incentive program provides price signals to storage systems to align their dispatch behavior with the state's climate and resiliency goals. This is currently the only storage incentive in the nation that provides a revenue stream for the resilience benefits that energy storage can provide.

⁴ Massachusetts Department of Energy Resources (DOER). 225 CMR 21 Clean Peak Standard Regulation. September 2019. Available at: <https://www.mass.gov/doc/225-cmr-21-clean-peak-standard-regulation/download>.

Figure 2: How Clean Peak Energy Certificates Are Calculated



Source: Department of Energy Resources (DOER). 225 CMR 21 Clean Peak Standard Regulation. September 2019. Available at: <https://www.mass.gov/doc/225-cmr-21-clean-peak-standard-regulation/download>.

Connecticut

In October of 2019, the Connecticut Public Utilities Regulatory Authority (PURA) opened Docket No. 17-12-03RE03 to investigate the impact of electric storage on its Framework for an Equitable Modern Grid., which is a subtopic of the PURA’s investigation into distribution system planning of the electric distribution companies.⁵ The Equitable Modern Grid Framework is investigating how distribution companies can equitably modernize the grid to provide societal and economic benefits to ratepayers in Connecticut. The PURA has identified energy storage as a particular topic of interest in its proposed framework.

New York

In 2017, the New York State Public Utility Commission replaced its net energy metering policy with the Value of Distributed Energy Resources (VDER).⁶ VDER compensates participants

⁵ PURA Investigation into Distribution System Planning of the Electric Distribution Companies – Electric Storage, Docket 17-12-03RE03, available at: [http://www.dpuc.state.ct.us/DOCKCURR.NSF/\(Web+Main+View/All+Dockets\)?OpenView&StartKey=17-12-03RE03](http://www.dpuc.state.ct.us/DOCKCURR.NSF/(Web+Main+View/All+Dockets)?OpenView&StartKey=17-12-03RE03).

⁶ State of New York Public Service Commission. Order on Net Energy Metering Transition, Phase One of Value of Distributed Energy Resources, and Related Matters. Case 15-E-0751.

using a Value Stack Tariff that is not calculated based on the volume of energy provided, but is determined based on various other factors including: locational-based marginal pricing, capacity (ICAP), environmental value, demand reduction value, and locational adders. Under this tariff, an energy storage system that does not charge exclusively from a renewable generation source forgoes the environmental or “E” value stream under the Value Stack Tariff. Furthermore, if the storage system does not charge exclusively from renewable generation, the system is subject to a mandatory hourly energy pricing construct for the grid-sourced energy. This construct aims to align incentives for both energy consumption and injection. However, it is important to note that the market rules governing energy storage systems in New York fall in NY-ISO territory and vary from the ISO-NE rules that will govern energy storage systems installed in Rhode Island.