

November 7, 2017

**BY HAND DELIVERY AND ELECTRONIC MAIL**

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

**RE: Docket 4743 - In Re: Petition of Tesla, Inc. and Sunrun, Inc.  
For Declaratory Judgment or an Advisory Ruling on R.I. Gen. Laws § 39-26.4  
Supplemental Response to Division 1-1**

Dear Ms. Massaro:

I have enclosed ten (10) copies of National Grid's<sup>1</sup> supplemental response to Division 1-1 in the above-referenced docket. Please note that the changes in the supplemental response are included in redline.

Thank you for your attention to this filing. If you have any questions, please contact me at 781-907-2121.

Sincerely,



Raquel J. Webster

Enclosures

cc: Docket 4743 Service List  
Jon Hagopian, Esq.  
Steve Scialabba, Division

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<sup>1</sup> The Narragansett Electric Company d/b/a National Grid.

Certificate of Service

I hereby certify that a copy of the cover letter and any materials accompanying this certificate was electronically transmitted to the individuals listed below.

The paper copies of this filing are being hand delivered to the Rhode Island Public Utilities Commission and to the Rhode Island Division of Public Utilities and Carriers.



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Joanne M. Scanlon

November 7, 2017  
Date

**Tesla, Inc. & Sunrun, Inc – Petition for Declaratory Judgment –  
Docket No. 4743**

**List updated 10/7/17**

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**Supplemental Response**  
**Division 1-1**

Request:

Please list and describe in detail any legal, technical, or policy concerns that NGRID has with allowing Solar+Storage systems to be eligible for net metering status. Also, provide any analyses, reports, studies, or other related documents that discuss these concerns.

**Original Response:**

In general, National Grid<sup>1</sup> views the pairing of solar power generation with battery storage (Solar+Storage) as a means for offering a wide range of potential benefits for customers and the electric power system. These systems can be interconnected to the Company's electric power system subject to the Company's interconnection requirements. However, it is unclear whether such Solar+Storage systems are eligible as solar net metering facilities under R.I. Gen. Laws § 39-26.4-2 (Net Metering Statute). The Net Metering Statute does not expressly include Solar+Storage as an eligible renewable resource.<sup>2</sup> If National Grid had provided Solar+Storage facilities with net metering services, it would have been compelled to unilaterally define any restrictions and eligibility requirements needed to ensure that such systems comply with the Net Metering Statute and prevent any manipulation and gaming of the net metering system. The Company did not conclude that this was appropriate in this instance given the nature and scale of the issues presented (as more particularly discussed below). Additionally, such unilateral action by the Company might have imposed different results on its customers.

In addition to the requirements in the Net Metering Statute, the Company has identified a number of policy and other considerations that should be evaluated in determining whether (and, if so, the extent to which) Solar+Storage systems are eligible for net metering, including rate treatment, ISO-NE participation requirements, conditions and criteria imposed on eligibility (such as, without limitation, on system size, battery charging, and energy exports) and the means

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<sup>1</sup> The Narragansett Electric Company d/b/a National Grid (National Grid or Company).

<sup>2</sup> To the extent the battery included in a paired facility charges off the electric grid, in whole or part, the paired solar facility would not qualify as a renewable resource.

**Supplemental Response**  
**Division 1-1, page 2**

for enforcing such criteria, and technical and interconnection requirements (collectively, Policy and Technical Concerns).<sup>3</sup>

Today, solar net metering facilities generally receive almost the full retail value as compensation for the energy that they export to the electric power system. The inclusion of energy storage changes the characteristics of a solar facility by introducing dispatchable energy that is solely controlled by the system owner or operator. This functionality makes it possible to charge batteries at off-peak rates (possibly with non-renewable energy from the electric grid) and dispatch the energy from batteries to the grid at on-peak rates. This situation could occur in two scenarios (i) where the battery charges from the electric grid<sup>4</sup> or (ii) where the battery charges from the solar facility and the customer has the benefit of time-of-use rates. Without adequate enforceable controls,<sup>5</sup> the inclusion of battery storage with a solar facility could increase credit values for net metering customers at a higher cost to all other electricity customers.

The cost of net metering services is borne by all of the Company's customers. See RIPUC No. 2178(IV)(1). The Company is currently registers all stand-alone net metering facilities as settlement-only generators in the wholesale electricity market. The purpose of this registration is to obtain wholesale market revenue for a net metering facility's energy exports, which ultimately offsets some of the cost of the compensation provided to net metering

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<sup>3</sup> The Company's affiliate, Massachusetts Electric Company, has raised these same concerns in dockets before the Massachusetts Department of Public Utilities. *See, SolarCity Corporation*, DPU 15-77 (2015), National Grid Initial Comments at 2; *see also, The Telsa Inc.*, D.P.U. 17-105 (2017). Other states, such as California, Hawaii, New York, and Massachusetts, have considered some of these policy issues and determined that paired facilities may be: (1) ineligible, in some cases; (2) eligible, if the solar project is limited to a certain nameplate capacity or amount of production; (3) eligible, if the relative capacity of the battery as compared to the solar system meets acceptable standards; (4) eligible, subject to technical controls regarding inverters and metering; (5) eligible subject to charging and export restrictions; and/or (5) eligible, subject to "de-rated" net metering credits.

<sup>4</sup> See n.2 above. The Company would have no means of controlling the source of the batteries charge.

<sup>5</sup> The PUC would need to establish a process for customers to certify, ensure, and enforce their compliance with any eligibility restrictions. Based on the Company's understanding of the current method of "controlling" the charge and dispatch of battery storage, i.e. manual control settings, the Company would not have a defined ability to prevent and/or review any changes to these control settings that would ensure that net metering eligibility is maintained.

**Supplemental Response**  
**Division 1-1, page 3**

customers for those exports.<sup>6</sup> Pairing battery storage with solar behind a single net meter could impact the facility's participation in the ISO New England Inc. (ISO-NE) energy market. ISO-NE wholesale electricity market rules require specific metering and interconnection configurations that would allow combined technologies, such as energy storage paired with solar generation, to participate in the wholesale energy market under specific market use cases. These ISO-NE rules currently include, without limitation, a requirement that each technology, i.e. the battery and the solar, be separately metered to participate in the energy market. However, because a typical net metering facility is a single account with a single meter, and not a meter for each technology, it is unlikely to meet ISO-NE's current requirements for combined technologies. Without due consideration of ISO-NE's requirements for such combined technology facilities to participate in the wholesale electricity markets, such pairings could impair the Company's ability to register these assets as settlement-only generators.

For the most part, the Company's Policy and Technical Concerns are mitigated where the paired facility is 25 kW (AC) or less, the battery charges only from the solar facility, and the battery does not export to the Company's electric power system – in essence, the Small Scale Solar+Storage facilities that are the subject of Tesla and Sunrun's Petition.<sup>7</sup>

**Supplemental Response:**

In general, National Grid<sup>8</sup> views the pairing of solar power generation with battery storage (Solar+Storage) as a means for offering a wide range of potential benefits for customers and the electric power system. These systems can be interconnected to the Company's electric power system subject to the Company's interconnection requirements. However, it is unclear whether such Solar+Storage systems are eligible as solar net metering facilities under R.I. Gen. Laws § 39-26.4-2 (Net Metering Statute). The Net Metering Statute does not expressly include

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<sup>6</sup> The Company notes that this wholesale market issue generally does not apply to net metering facilities with a capacity of up to and including 25 kW because projects up to and including 25 kW are not required to have interval meters and, therefore, do not have the hourly data needed to participate in the ISO-NE energy and capacity markets.

<sup>7</sup> To the extent that the PUC is inclined to explore the net metering eligibility of other paired system sizes or configurations, it should do so in a separate investigation taking into consideration the Legal Requirements and the Policy and Technical Concerns identified by the Company.

<sup>8</sup> The Narragansett Electric Company d/b/a National Grid (National Grid or Company).

**Supplemental Response**  
**Division 1-1, page 4**

Solar+Storage as an eligible renewable resource.<sup>9</sup> If National Grid had provided Solar+Storage facilities with net metering services, it would have been compelled to unilaterally define any restrictions and eligibility requirements needed to ensure that such systems comply with the Net Metering Statute and prevent any manipulation and gaming of the net metering system. The Company did not conclude that this was appropriate in this instance given the nature and scale of the issues presented (as more particularly discussed below). Additionally, such unilateral action by the Company might have imposed different results on its customers.

In addition to the requirements in the Net Metering Statute, the Company has identified a number of policy and other considerations that should be evaluated in determining whether (and, if so, the extent to which) Solar+Storage systems are eligible for net metering, including rate treatment, ISO-NE participation requirements, conditions and criteria imposed on eligibility (such as, without limitation, on system size, battery charging, and energy exports) and the means for enforcing such criteria, and technical and interconnection requirements (collectively, Policy and Technical Concerns).<sup>10</sup>

Today, solar net metering facilities generally receive almost the full retail value as compensation for the energy that they export to the electric power system. The inclusion of energy storage changes the characteristics of a solar facility by introducing dispatchable energy that is solely controlled by the system owner or operator. This functionality makes it possible to charge batteries at off-peak rates (possibly with non-renewable energy from the electric grid) and dispatch the energy from batteries to the grid at on-peak rates. This situation could occur in two scenarios (i) where the battery charges from the electric grid<sup>11</sup> or (ii) where the battery charges from the solar facility and the customer has the benefit of time-of-use rates. Without adequate

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<sup>9</sup> To the extent the battery included in a paired facility charges off the electric grid, in whole or part, the paired solar facility would not qualify as a renewable resource.

<sup>10</sup> The Company's affiliate, Massachusetts Electric Company, has raised these same concerns in dockets before the Massachusetts Department of Public Utilities. *See, SolarCity Corporation*, DPU 15-77 (2015), National Grid Initial Comments at 2; *see also, The Telsa Inc.*, D.P.U. 17-105 (2017). Other states, such as California, Hawaii, New York, and Massachusetts, have considered some of these policy issues and determined that paired facilities may be: (1) ineligible, in some cases; (2) eligible, if the solar project is limited to a certain nameplate capacity or amount of production; (3) eligible, if the relative capacity of the battery as compared to the solar system meets acceptable standards; (4) eligible, subject to technical controls regarding inverters and metering; (5) eligible subject to charging and export restrictions; and/or (5) eligible, subject to "de-rated" net metering credits.

<sup>11</sup> See n.2 above. The Company would have no means of controlling the source of the batteries charge.

**Supplemental Response**  
**Division 1-1, page 5**

enforceable controls,<sup>12</sup> the inclusion of battery storage with a solar facility could increase credit values for net metering customers at a higher cost to all other electricity customers.

The cost of net metering services is borne by all of the Company's customers. See RIPUC No. 2178(IV)(1). The Company is currently registers all stand-alone net metering facilities as settlement-only generators in the wholesale electricity market. The purpose of this registration is to obtain wholesale market revenue for a net metering facility's energy exports, which ultimately offsets some of the cost of the compensation provided to net metering customers for those exports.<sup>13</sup> Pairing battery storage with solar behind a single net meter could impact the facility's participation in the ISO New England Inc. (ISO-NE) energy market. ISO-NE wholesale electricity market rules require specific metering and interconnection configurations that would allow combined technologies, such as energy storage paired with solar generation, to participate in the wholesale energy market under specific market use cases. These ISO-NE rules currently include, without limitation, a requirement that each technology, i.e. the battery and the solar, be separately metered to participate in the energy market. However, because a typical net metering facility is a single account with a single meter, and not a meter for each technology, it is unlikely to meet ISO-NE's current requirements for combined technologies. Without due consideration of ISO-NE's requirements for such combined technology facilities to participate in the wholesale electricity markets, such pairings could impair the Company's ability to register these assets as settlement-only generators.

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<sup>12</sup> The PUC would need to establish a process for customers to certify, ensure, and enforce their compliance with any eligibility restrictions. Based on the Company's understanding of the current method of "controlling" the charge and dispatch of battery storage, i.e. manual control settings, the Company would not have a defined ability to prevent and/or review any changes to these control settings that would ensure that net metering eligibility is maintained.

<sup>13</sup> The Company notes that this wholesale market issue generally does not apply to net metering facilities with a capacity of up to and including 25 kW because projects up to and including 25 kW are not required to have interval meters and, therefore, do not have the hourly data needed to participate in the ISO-NE energy and capacity markets.



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**Division 1-1, page 6**

For the most part, the Company's Policy and Technical Concerns are mitigated where the paired facility is 25 kW (AC) or less, the battery charges only from the solar facility, and the battery either does not export to the Company's electric power system (EPS) or the battery exports to the EPS subject to specific limitations on rate classifications for such exports<sup>14</sup> – in essence, the Small Scale Solar+Storage facilities that are the subject of Tesla and Sunrun's Petition.<sup>15</sup>

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<sup>14</sup> [See Company's response to PUC 1-2.](#)

<sup>15</sup> To the extent that the PUC is inclined to explore the net metering eligibility of other paired system sizes or configurations, it should do so in a separate investigation taking into consideration the Legal Requirements and the Policy and Technical Concerns identified by the Company.