



Program Materials for Connected Solutions for Small Scale Batteries

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Summary

Connected Solutions incentivizes customers to curtail their energy when demand on the New England electric grid is forecasted to be at its peak. Customers are compensated on a pay-for-performance basis for the average kW they curtail during dispatch events.

A summary of the program is given in the table below:

	Summer
Performance Incentive	\$400 per kW-summer
Discharge Events per Season	30 to 60
Months Discharge Events Can Occur	June through September
Time Discharge Events Can Occur	2 p.m. to 7 p.m.
5-year incentive lock	Yes
<ul style="list-style-type: none"> ● Customers can apply for a 0% HEAT Loan for the cost of the battery system with no down payment and a \$25,000 lifetime cap per account number. ● Customers with battery inverter capacity of 50kW or less are eligible for the incentives in this table 	

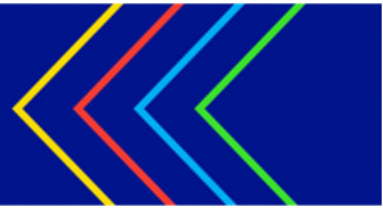
Participation Through an Approved Inverter Manufacturer

To participate in the program, the customer needs to have a battery storage system from an approved inverter manufacturer. The inverter manufacturer in this program are Enphase, Generac, Outback, SolarEdge, and Tesla. The battery implementers are responsible for communicating the need for a demand response event and sending the customer’s battery storage systems discharge rate and state-of-charge to the customers’ program administrator. During a demand response event, the battery will be remotely discharged without the customer’s active participation.

Incentive Payment Process

Incentive payments for summer performance will be made in October or November each year.

Incentive payments will be made to either the customer or their battery integrator depending on the selection made on the CUSTOMER INCENTIVE PAYMENT OPTIONS section of the customer application. Some installers or other parties may offer their customers an upfront discount on the customer battery system in exchange for the customer selecting that their performance incentives are sent to that party. Such negotiations are between the customer and their installer or other party.



Number of Events

Summer Season

The goal of discharge events in the summer season is not only to hit the ISO-NE peak hour, but also to hit the highest daily peaks in July and August. Events will only be called in June and September if the annual peak is forecasted to be in those months. Events will be called in July and August to try to hit the highest 40 peak hours in those months. The National Grid will never call more than 60 events in a summer season.

Eligibility Requirements

To be eligible for this program, the customer must have a National Grid electric service account in Rhode Island, where the demand response savings will be achieved. The customer must also pay into the energy efficiency fund on their electric bill. Most electric customers pay into the energy efficiency fund. Customers whose National Grid electric service monthly bill has a line for “Energy Efficiency Prgms”, are eligible for this program.

To be eligible of this program, the battery storage system must be considered a behind-the-meter (BTM) asset. BTM means a facility that serves an on-site load other than parasitic load or station load utilized to operate the facility.

Enrollment Deadlines

Summer Season

For a customer to ensure they receive their full incentive for the summer season, the customer’s application must be received by the customer program administrator by 11:59 p.m. on June 30 of that year. Customers can still enroll after June 30 for the summer season. However, the customers discharge performance will be set to zero (0 kW average) for any discharge events the customer missed.

Unsubscribing from the Program

Customers who enroll in the Connected Solutions program will remain in the program until they provide written notice to their battery integrator or National Grid that they would like to be removed from the program. Once a summer season starts, the customer must stay enrolled for the entire season to receive the incentive. A customer cannot unenroll part way through a season and receive the performance incentive for fewer events than all the other program participants.

No Transfer of Enrollment

Enrollment in Connected Solutions cannot be transferred from one customer to another. If a customer moves out of their residence/facility, and the new occupant would like to participate in Connected Solutions, they may do so at the incentive rate offered at that time.

Notification of Demand Response Events

Notification of discharge events will be sent directly to the customer’s battery system. The customer normally does not need to take any action for their battery system to respond to a discharge event.



Battery System Maintenance, Internet Connection, and Durability

Customers, their battery implementer, or other vendor are responsible for maintaining the customer’s battery system so that it can respond to dispatch events. The incentives in this program are calculated using the actual dispatch (in average kW over the duration of dispatch events) of the customer’s battery system. If a battery system is not properly maintained, the internet connection to the battery system is not maintained, or any other aspect that would cause the battery system to discharge less, the incentive amount could be affected. Battery systems do degrade over time, causing them to be able to discharge less power and/or energy. This will also affect the incentive amount. Customers and their vendors should consider the financial risk of poor performance of their battery systems before enrolling in the Connected Solutions program.

Length and Time of Demand Response Events

Discharge events can last 2 or 3 hours. All events happen between 2pm and 7pm.

Days for Demand Response Events

Discharge events are called on weekdays – Monday through Friday. Events will not be called on the following holidays.

Dispatch Season	Holiday	Date
Winter	New Year’s Day	January 1
Winter	Birthday of Martin Luther King Jr.	January 21
Winter	Birthday of George Washington (President’s Day)	February 18
Summer	Independence Day	July 4
Summer	Labor Day	First Monday of September
Winter	Christmas Day	December 25

No Dispatch Events Before Large Storms

We realize many customers purchase energy storage systems in part for backup power during power outages. Most power outages in our region happen during the winter time. The customer’s Program Administrator will not call a demand response event during an outage or for the 2 days preceding predicted severe outage events (Type 1 and Type 2 events as defined in the current National Grid Emergency Response Plan).

Incentive Rates and Average Performance

The incentive rate for each option is shown in the table below.

	Summer
Performance Incentive	\$400 per kW-summer

The incentive rate refers to the average curtailment amount across all events of the dispatch season.

Performance per event is equal to the average discharge rate of the battery in kW-AC over the length of the event minus the baseline as described below.



Performance for an event may not be increased by curtailing solar production to increase the battery discharge rate. For example, if the total production of the solar system and battery system is limited by the inverter size, the solar system cannot be limited during demand response events so that the battery can discharge more. Doing this would not decrease the load on the grid and would be against the goals of this program.

The table below shows the results of a fictional customer's curtailment performance over a summer season that had four demand response events over the whole summer. In reality, summer dispatch seasons have many more events.

Event	Performed Curtailment Amount
Event 1	2 kW
Event 2	3 kW
Event 3	3 kW
Event 4	0 kW

The customer's average performance over the summer would be:

$$\text{Average Season Performance} = \frac{2kW + 3kW + 3kW + 0kW}{4} = 2.0kW$$

The total incentive amount to be paid for this fictional customer would be:

$$2kW \cdot \frac{\$400}{kW} = \$800$$

Baseline:

To calculate a customer's performance during a demand response event, it is necessary to calculate what a customer's battery system typically discharges in order to estimate what the discharge would have been if no demand response event was called.

ISO-NE uses a similar last 10-of-10 model in their active demand response programs. This method looks at the customer's last 10 similar days. Similar days are of the same day type (weekday or weekend) that are not holidays and where no Residential Battery DR event from the program administrators was called.

Example of baseline set by battery system discharges in the 10 similar days before a DR event

Time Interval	10 similar days before event	...	2 similar days before event	holiday	weekend	weekend	Day of another DR event	1 similar day before event	Customer's Baseline
4pm - 7pm	2kW		3kW	Not counted in average				4kW	3kW

There is no baseline adjustment based on event day discharge for the residential battery measure.

Demand Response Performance

Performance is calculated by subtracting the battery system's baseline from the average discharge from the battery system during the demand response event.

Example of an event day performance:

Time Interval	Event Day Discharge	Customer's Baseline	Event Day Performance
4pm - 7pm	5kW	3kW	$\text{Performance} = \text{Event Day} - \text{Baseline}$ $2\text{kW} = 5\text{kW} - 3\text{kW}$

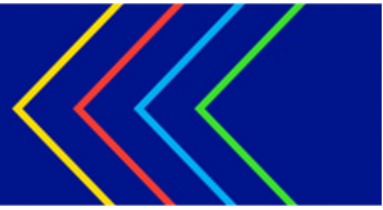
If the battery system discharged less power during the event than the baseline period, the system will be given a 0 kW performance for that event. If a customer opts out of an event or has some communication or other issue that prevents them from discharging during an event, they will be given a 0 kW performance for that event. These will affect the customer's average performance and incentive.

The average season performance for winter discharge events would be calculated using the same process.

Approved inverter manufacturers must provide 24x7 15-minute interval, or more granular data, for the entire demand response season which performance is being calculated in order to receive fees or for their customers to receive performance-based incentives. This data is used to calculate performance and to evaluate the effectiveness of the baseline method.

5-Year Incentive Lock

The customers' incentive rate is locked in for the first 5 consecutive years that the customer is in the program. Even if the incentive rate for new customers changes during the first 5 years of the customer's participation, the incentive rate for that customer will remain the same. After the 5th year of participation, the program administrators may still plan to offer an incentive for customers to discharge their battery system at the right dates and times. However, those future incentive rates are not yet set.



Co-Participation in ISO-NE Demand Resource Programs

One of the benefits of the Connected Solutions program is the decrease in the long-term requirement for capacity (generation) in the ISO-NE markets, also known as the installed capacity requirement (ICR). Customers are not allowed to co-participate in Connected Solutions and any ISO-NE program that would cause the customer's curtailment in the Connected Solutions program to be reconstituted in the ICR, because this would negate one of the core goals of Connected Solutions.

Co-Participation in Net Metering

Customers may co-participate in Net Metering and Connected Solutions. Net Metering provides an incentive for electricity generated from renewable sources, like solar.

Net Metering customers can discharge their battery systems to respond to Connected Solutions events and earn incentives. As long as it is not restricted by the customer interconnection service agreement, customers can export their net battery system power to the grid during Connected Solutions events to earn incentives.

Co-Participation in Renewable Energy Growth Program

Customers may co-participate in the Renewable Energy Growth (REG or RE-Growth) and Connected Solutions. RE-Growth provides an incentive for electricity generated from renewable sources, like solar.

RE-Growth customers can discharge their battery systems to respond to Connected Solutions events and earn incentives. The battery system must be configured so that the battery discharge is not measured by the RE Growth production meter. However, as long as it is not restricted by the customer interconnection service agreement, customers can export their net battery system power to the grid during Connected Solutions events to earn incentives.

Exporting Power to the Electrical Grid

Renewable Energy Plus Storage

Customers with interconnected renewable energy systems, such as solar PV and wind turbines, and energy storage systems, like batteries, may participate in Connected Solutions. The investment tax credit (ITC), also known as the federal solar tax credit, provides additional incentives for energy storage systems that are charged by renewable energy systems. However, the ITC may have restrictions on how much the battery systems needs to be charged by a renewable resource. Additionally, the customer's National Grid interconnection service agreement may have restrictions on discharging battery systems to the grid that were not charged by a renewable resource.

Storage Only Systems



Customers who don't have a renewable energy system but do have an energy storage system that charges from the electricity grid may participate in ConnectedSolutions. However, there may be restrictions in the customers interconnection service agreement that prevent them from exporting power to the grid.

Enrollment Process

To enroll in the program, the customer or their implementer must complete an application form. This form is available on the National Grid website. Alternatively, the customer may complete a ConnectedSolutions application form provided by their inverter manufacturer.

Testing

A performance test event is not planned in this program. However, National Grid may elect to run communication tests to ensure all notification processes are functioning.

Terms and Conditions

These program materials and participation in **ConnectedSolutions** are pursuant to and subject to the Terms and Conditions in effect for customer applications at the time that the application is approved by the Program Administrator. See the **ConnectedSolutions** application for more details.