

## **24 Attachment R - Cost Allocation and Measurement and Verification Methodologies for Demand Reductions Arising Under the Incentivized Day-Ahead Economic Load Curtailment Program**

Under the Incentivized Day-Ahead Economic Load Curtailment Program – also referred to in the ISO Tariffs and ISO Procedures as the Day-Ahead Demand Response Program – (“Program” or “DADRP”), costs incurred by the ISO in covering Demand Reduction Providers’ Curtailment Initiation Costs and making Demand Reduction Incentive Payments for scheduled and verified Demand Reductions are to be recovered under Schedule 1. Measurement and verification of actual Demand Reductions scheduled under the Program shall be conducted in accordance with subsections 24.2, 24.3, and 24.4.

### **24.1 Cost Allocation Methodology for Payments to Demand Reduction Providers under the Program Recovered Pursuant to Schedule 1**

The “Schedule 1 Program Costs” for scheduled and verified Demand Reductions shall be allocated to Transmission Customers, pursuant to the methodology set forth below, on the basis of their Load Ratio Shares and in proportion to the probability, given historical transmission congestion patterns, that a particular Demand Reduction will benefit them by reducing Energy costs in their Load Zones or “Composite Load Zones” (see below).

More specifically, Schedule 1 Program Costs shall be allocated to Transmission Customers each Billing Period as follows:

- a) Schedule 1 Program Costs shall initially be attributed to the Load Zone where the Generator Bus that was used to bid the Demand Reduction associated with them is located.
- b) In determining whether and how Transmission Customers located in particular Load Zones, or Composite Load Zones, have benefited from the Demand

Reduction, and how much they shall be required to pay a share of the associated Schedule 1 Program Costs, the ISO shall account for the effects of congestion at the most frequently constrained NYCA interfaces. When none of these interfaces are constrained Transmission Customers in all Load Zones shall be deemed to have benefited from the Demand Reduction and shall pay a share of the associated Schedule 1 Program Costs. When one or more of the most frequently constrained NYCA interfaces is constrained, then Transmission Customers located in a Load Zone, or Composite Load Zone, that is upstream of the constrained interface, shall be deemed to have benefited from an upstream Demand Reduction and shall be required to pay a share of the associated Schedule 1 Program Costs. Similarly, when one or more of the interfaces is congested, Transmission Customers located in a Load Zone, or Composite Load Zone, that is downstream of a constrained interface, shall be deemed to have benefited from a downstream Demand Reduction and shall be required to pay a share of the associated Schedule 1 Program Costs. By contrast, Transmission Customers that are “separated” from a Demand Reduction by a constrained interface shall be deemed not to have benefited from it and shall not be required to pay a share of the associated Schedule 1 Program Costs.

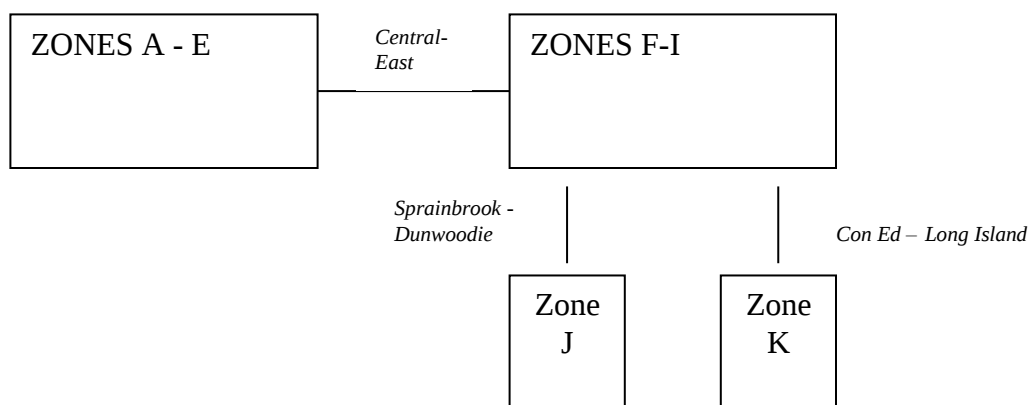
- c) The ISO shall determine the extent of congestion at the most frequently constrained interfaces using a series of equations that calculate the static probability that: (i) no constraints existed in the transmission system serving the Load Zone or Composite Load Zone; (ii) the Composite Load Zone was upstream of a constraint and curtailment pursuant to the Program occurred upstream, and

(iii) the Composite Load Zone was downstream of a constraint and curtailment pursuant to the Program occurred downstream.

Costs shall be allocated to each Transmission Customer that is deemed to have benefited from the scheduled and verified Demand Reduction on a Load Ratio Share basis, using Real-Time metered hourly Load data.

- d) The three most frequently constrained interfaces are currently the “Central-East” interface, which divides western from eastern New York State, the Sprainbrook-Dunwoodie interface, which divides New York City and Long Island from the rest of New York State, and the Consolidated Edison Company (“ConEd”) - Long Island interface (including the Y49/Y50 lines), which divides New York City from Long Island. Given these limiting interfaces, four Composite Load Zones currently exist, *i.e.*, West of Central-East (Load Zones A, B, C, D, E), East Upstate Excluding New York City and Long Island (Load Zones F, G, H, I), New York City (Load Zone J), and Long Island (Load Zone K). The geographic configuration of these Composite Load Zones is depicted in the illustration below.

**Relationship Between Frequently Constrained Interfaces and Composite Load Zones**



Based on these factors, Schedule 1 Program Costs shall be allocated to Transmission Customers as follows:

For Transmission Customer m in Load Zones A-E:

$$\begin{aligned}
 &a_1 * (\text{cost}_A + \dots + \text{cost}_K) * \text{load}_m / (\text{load}_A + \dots + \text{load}_K) + && \text{'no constraints'} \\
 &a_2 * (\text{cost}_A + \dots + \text{cost}_E) * \text{load}_m / (\text{load}_A + \dots + \text{load}_E) + && \text{'Central East const'} \\
 &a_3 * (\text{cost}_A + \dots + \text{cost}_I + \text{cost}_K) * \text{load}_m / (\text{load}_A + \dots + \text{load}_I + \text{load}_K) + && \text{'NYC constraint'} \\
 &a_4 * (\text{cost}_A + \dots + \text{cost}_J) * \text{load}_m / (\text{load}_A + \dots + \text{load}_J) + && \text{'LI constraint'} \\
 &a_5 * (\text{cost}_A + \dots + \text{cost}_E) * \text{load}_m / (\text{load}_A + \dots + \text{load}_E) + && \text{'Cent East + NYC'} \\
 &a_6 * (\text{cost}_A + \dots + \text{cost}_E) * \text{load}_m / (\text{load}_A + \dots + \text{load}_E) + && \text{'Cent East + LI'} \\
 &a_7 * (\text{cost}_A + \dots + \text{cost}_I) * \text{load}_m / (\text{load}_A + \dots + \text{load}_I) + && \text{'NYC + LI'} \\
 &a_8 * (\text{cost}_A + \dots + \text{cost}_E) * \text{load}_m / (\text{load}_A + \dots + \text{load}_E) && \text{'Cent East + NYC + LI'}
 \end{aligned}$$

For Transmission Customer m in Load Zones F-I:

$$\begin{aligned}
 &a_1 * (\text{cost}_A + \dots + \text{cost}_K) * \text{load}_m / (\text{load}_A + \dots + \text{load}_K) + && \text{'no constraints'} \\
 &a_2 * (\text{cost}_F + \dots + \text{cost}_K) * \text{load}_m / (\text{load}_F + \dots + \text{load}_K) + && \text{'Central East const'} \\
 &a_3 * (\text{cost}_A + \dots + \text{cost}_I + \text{cost}_K) * \text{load}_m / (\text{load}_A + \dots + \text{load}_I + \text{load}_K) + && \text{'NYC constraint'} \\
 &a_4 * (\text{cost}_A + \dots + \text{cost}_J) * \text{load}_m / (\text{load}_A + \dots + \text{load}_J) + && \text{'LI constraint'} \\
 &a_5 * (\text{cost}_F + \dots + \text{cost}_I + \text{cost}_K) * \text{load}_m / (\text{load}_F + \dots + \text{load}_I + \text{load}_K) + && \text{'Cent East + NYC'} \\
 &a_6 * (\text{cost}_F + \dots + \text{cost}_J) * \text{load}_m / (\text{load}_F + \dots + \text{load}_J) + && \text{'Cent East + LI'} \\
 &a_7 * (\text{cost}_A + \dots + \text{cost}_I) * \text{load}_m / (\text{load}_A + \dots + \text{load}_I) + && \text{'NYC + LI'} \\
 &a_8 * (\text{cost}_F + \dots + \text{cost}_I) * \text{load}_m / (\text{load}_F + \dots + \text{load}_I) && \text{'Cent East + NYC + LI'}
 \end{aligned}$$

For Transmission Customer m in Load Zone J:

$$\begin{aligned}
 &a_1 * (\text{cost}_A + \dots + \text{cost}_K) * \text{load}_m / (\text{load}_A + \dots + \text{load}_K) + && \text{'no constraints'} \\
 &a_2 * (\text{cost}_F + \dots + \text{cost}_K) * \text{load}_m / (\text{load}_F + \dots + \text{load}_K) + && \text{'Central East const'} \\
 &a_3 * \text{cost}_J * \text{load}_m / \text{load}_J + && \text{'NYC constraint'} \\
 &a_4 * (\text{cost}_A + \dots + \text{cost}_J) * \text{load}_m / (\text{load}_A + \dots + \text{load}_J) + && \text{'LI constraint'} \\
 &a_5 * \text{cost}_J * \text{load}_m / \text{load}_J + && \text{'Cent East + NYC'} \\
 &a_6 * (\text{cost}_F + \dots + \text{cost}_J) * \text{load}_m / (\text{load}_F + \dots + \text{load}_J) + && \text{'Cent East + LI'} \\
 &a_7 * \text{cost}_J * \text{load}_m / \text{load}_J + && \text{'NYC + LI'} \\
 &a_8 * \text{cost}_J * \text{load}_m / \text{load}_J && \text{'Cent East + NYC + LI'}
 \end{aligned}$$

For Transmission Customer m in Load Zone K:

$$\begin{aligned}
 &a_1 * (\text{cost}_A + \dots + \text{cost}_K) * \text{load}_m / (\text{load}_A + \dots + \text{load}_K) + && \text{'no constraints'} \\
 &a_2 * (\text{cost}_F + \dots + \text{cost}_K) * \text{load}_m / (\text{load}_F + \dots + \text{load}_K) + && \text{'Central East const'} \\
 &a_3 * (\text{cost}_A + \dots + \text{cost}_I + \text{cost}_K) * \text{load}_m / (\text{load}_A + \dots + \text{load}_I + \text{load}_K) + && \text{'NYC constraint'} \\
 &a_4 * \text{cost}_K * \text{load}_m / \text{load}_K + && \text{'LI constraint'} \\
 &a_5 * (\text{cost}_F + \dots + \text{cost}_I + \text{cost}_K) * \text{load}_m / (\text{load}_F + \dots + \text{load}_I + \text{load}_K) + && \text{'Cent East + NYC'} \\
 &a_6 * \text{cost}_K * \text{load}_m / \text{load}_K + && \text{'Cent East + LI'} \\
 &a_7 * \text{cost}_K * \text{load}_m / \text{load}_K + && \text{'NYC + LI'} \\
 &a_8 * \text{cost}_K * \text{load}_m / \text{load}_K && \text{'Cent East + LI + NYC'}
 \end{aligned}$$

In all cases, the variables are:

- $a_1$  = fraction of time when no constraints exist
- $a_2$  = fraction of time when Central East interface alone is constraining
- $a_3$  = fraction of time when Sprainbrook-Dunwoodie interface alone is constraining

- $a_4$  = fraction of time when Con Ed-Long Island (including the Y49/Y50 lines) interfaces are constraining, but Central East and Sprainbrook-Dunwoodie interfaces are not constraining
- $a_5$  = fraction of time when Central East and Sprainbrook-Dunwoodie interfaces are constraining
- $a_6$  = fraction of time when Central East, Con Ed-Long Island interfaces (including the Y49/Y50 lines) are constraining
- $a_7$  = fraction of time when Sprainbrook-Dunwoodie, Con Ed-Long Island interfaces (including the Y49/Y50 lines) are constraining
- $a_8$  = fraction of time when Central East, Sprainbrook-Dunwoodie, Con Ed-Long Island interfaces (including the Y49/Y50 lines) are constraining
- $cost_{A...K}$  = revenue deficiencies due to DADRP Demand Reductions in Load Zones A...K, calculated on a hourly basis
- $load_m$  = real-time Load for Transmission Customer m, calculated on an hourly basis
- $load_{A...K}$  = real-time Loads for all Transmission Customers in Load Zones A...K, calculated on an hourly basis

## 24.2 Measurement of Actual Demand Reduction Scheduled in the Program

The measured amount of Demand Reduction supplied by a Demand Reduction Provider under the Program shall be the difference between the Demand Reduction Provider's baseline load for each scheduled hour, which shall be calculated in accordance with section 24.2.1 and ISO Procedures, and the actual metered hourly load for each scheduled hour.

### 24.2.1 Methodology for the Calculating the Economic Customer Baseline Load for a Resource Scheduled to Reduce Load Under the Program

The ISO shall employ two different calculation methodologies of the Economic Customer Baseline Load ("ECBL") for scheduled Demand Reductions, depending on whether the Demand Reduction is scheduled on a weekend or a weekday.

#### 24.2.1.1 Definitions

**Adjusted Weekday ECBL:** For each hour of the scheduled Demand Reduction, the Adjusted Weekday ECBL shall be equal to the ECBL multiplied by the ECBL In-Day Adjustment Factor calculated for the scheduled Demand Reduction period.

**ECBL In-Day Adjustment Factor:** The ECBL In-Day Adjustment shall be an adjustment factor that is applied to the ECBL for each hour of the scheduled Demand Reduction period.

- a) Calculate the ECBL In-Day Adjustment by dividing the average of the metered load for the two hours of the ECBL In-Day Adjustment Period on the day of the scheduled Demand Reduction by the average of the ECBL for the same two hours.
- b) The ECBL In-Day Adjustment Factor shall be limited to a minimum of 0.8 and a maximum of 1.2.

**ECBL In-Day Adjustment Period:** The ECBL Adjustment Period is the time prior to the scheduled Demand Reduction period that is used to determine the ECBL In-Day Adjustment. The hours to be used in the ECBL Adjustment Period shall be the two consecutive hours that occur four hours prior to the first hour of the scheduled Demand Reduction period, provided that the hours are part of the same calendar day.

To determine the two hours of the ECBL In-Day Adjustment Period:

- a) The fourth hour before the first hour of the scheduled Demand Reduction period shall be the first hour of the ECBL In-Day Adjustment Period, except when the fourth hour before first hour of the scheduled Demand Reduction period occurs on the previous day.
- b) The third hour before the first hour of the scheduled Demand Reduction period shall be the second hour of the ECBL In-Day Adjustment Period, except when the third hour before the first hour of the scheduled Demand Reduction period occurs on the previous day.

- c) When the third and/or fourth hour of the ECBL In-Day Adjustment Period occurs on the previous day, the ISO shall use as a substitute the hour beginning midnight on the day of the scheduled Demand Reduction. Both hours of the ECBL In-Day Adjustment Period may equal the hour beginning midnight on the day of the scheduled Demand Reduction.

**ECBL Weekday Window:** The ECBL Weekday Window is the time period reviewed in determining the ECBL for any hour of scheduled Demand Reduction that takes place on a weekday. It shall consist of the hours from the previous ten weekdays that correspond to each hourly interval of the scheduled Demand Reduction period. Treatment of NERC holidays that occur on weekdays shall be equivalent to all hours scheduled on the NERC holiday.

**ECBL Weekend Window:** The ECBL Weekend Window is the time period reviewed in determining the ECBL for any hour of scheduled Demand Reduction that takes place on a weekend. It shall consist of the hours from the previous three weekend days of the same type (Saturday or Sunday) that correspond to each hourly-interval of the scheduled Demand Reduction period. Treatment of NERC holidays that occur on weekend days shall be equivalent to all hours scheduled on the NERC holiday.

**Weekday Proxy:** The Weekday Proxy is a value that is substituted for the metered load for any hour in any ECBL Weekday Window in which a Demand Reduction was scheduled. It shall be determined by (1) establishing a new ECBL Weekday Window for that hour consisting of the corresponding hours in the ten weekdays preceding the day the Demand Reduction occurred, and (2) repeating the steps described at section 24.2.1.2 b, c, d, and e.

**Weekend Proxy:** The Weekend Proxy is a value that is substituted for the metered load for any hour in any ECBL Weekend Window in which a Demand Reduction was scheduled. It shall be

determined by (1) establishing a new ECBL Weekend Window for that hour consisting of the corresponding hours in the three weekends preceding the day the Demand Reduction occurred, and (2) repeating the steps described at section 24.2.1.2 b, c, d, and e.

#### **24.2.1.2 Methodology for the Calculating the Economic Customer Baseline Load for Demand Reductions Scheduled on a Weekday**

To determine the ECBL for an hour of scheduled Demand Reduction (a “Target Hour”) that occurs on a weekday:

- a) Select the hours that comprise the ECBL Weekday Window for that Target Hour.
- b) Select the metered load value for each hour in the ECBL Weekday Window where no scheduled Demand Reduction occurred pursuant to this Program.
- c) For each hour of the ECBL Weekday Window where a scheduled Demand Reduction occurred, select the Weekday Proxy for that hour and day in place of the actual metered load for that hour.
- d) Rank in descending order the metered load and Weekday Proxy values determined in steps b and c.
- e) Calculate the average of the fifth and sixth ranked values. The value as so calculated shall be the ECBL for the Target Hour.
- f) Apply the ECBL In-Day Adjustment Factor to the ECBL to determine the Adjusted Weekday ECBL for the Target Hour.

#### **24.2.1.3 Methodology for the Calculating the Economic Customer Baseline Load for a Resource’s Demand Reduction Scheduled Under the Program on a Weekend**

To determine the ECBL for a Target Hour that occurs on a weekend:

- a) Select the hours that comprise the ECBL Weekend Window for the Target Hour.

- b) Select the metered load value for each hour in the ECBL Weekend Window where no scheduled Demand Reduction occurred pursuant to this Program.
- c) For each hour of the ECBL Weekend Window where a Scheduled Demand Reduction occurred, select the ECBL Weekend Proxy for that hour and day in place of the actual metered load for the hour.
- d) Rank in descending order the metered load and ECBL Weekend Proxy values determined in steps b and c.
- e) Calculate the average of the metered load and ECBL Proxy values. The value so calculated is the ECBL for the Target Hour.
- f) Apply the ECBL In-Day Adjustment Factor to the ECBL to calculate the Adjusted Weekend ECBL for the Target Hour.

### **24.3 Verification of Actual Demand Reduction Scheduled in the Program**

Demand Reduction calculated using the Economic Customer Baseline Load methodology is subject to verification by the ISO. Demand Reduction Providers shall report the data at the time and in the format required by the ISO pursuant to Section 24.4. If a Demand Reduction Provider fails to report the required data to the ISO in accordance with Section 24.4, the Demand Reduction Provider will be subject to penalties associated with a failure to supply the scheduled Demand Reductions and may lose its eligibility to participate in the Program. All Demand Reduction data are subject to audit by the ISO. If the ISO determines that it has made an erroneous payment to a Demand Reduction Provider, it shall have the right to recover it either by reducing other payments to that Demand Reduction Provider or by any other lawful means.

### **24.4 Data Reporting Requirements for Demand Reduction Providers**

The Demand Reduction Provider must submit to the ISO the information specified in this

Section 24.4 for each Demand Side Resource that it has enrolled either as an individual DADRP resource or with other Demand Side Resources as part of a single, aggregated DADRP resource. The Demand Reduction Provider must submit this information for the purpose of enrolling, registering, making settlements, and verifying the participation of each Demand Side Resource in the ISO's Energy market. To enroll and participate in the DADRP, a Demand Side Resource must have NYPSC-approved, revenue-quality, hourly-interval meters sufficient to calculate its net Load. If the Demand Side Resource has a Local Generator at its site, it must also have an hourly-interval meter that measures the total output of the Local Generator within a 2% accuracy threshold, regardless of whether at initial enrollment the Local Generator is intended to be used to provide Demand Reduction in the DADRP.

#### **24.4.1 Data Reporting Requirements for Enrollment of Demand Side Resources Participating as DADRP Resources**

The Demand Reduction Provider shall provide to the ISO the following information for each Demand Side Resource that is seeking to enroll, either individually or collectively with other Demand Side Resources, as a DADRP resource participating in the ISO's Energy market, which shall include providing information regarding each of the Demand Side Resource's interval meters required under Section 24.4:

- a. As-left meter test criteria, as prescribed in the New York Department of Public Service 16 NYCRR Part 92 Operating Procedure;
- b. Documentation to validate installation of interval meter equipment;
- c. Interval metering installation individual, company, and professional engineering license information;
- d. Make and model of installed interval metering device(s);
- e. Accuracy of installed interval metering device(s);

- f. Interval meter Current Transformer (CT) and Potential Transformer (PT) type designation, if applicable;
- g. CT Ratio, if applicable;
- h. Use of pulse data recorder as an interval metering device, if applicable;
- i. Pulse data recorder multiplier, if applicable;
- j. Any other type of meter multiplier used in the translation of data collected by the device for measuring demand, kWh, and/or MWh, if applicable;
- k. Its service address;
- l. Its Load Serving Entity;
- m. Its Transmission Owner;
- n. Its meter authority/Meter Data Service Provider;
- o. Demand Side Resource's maximum Winter and Summer reduction MW;
- p. Business classification of the Demand Side Resource (based on ISO-defined categories or national standards for business classification); and
- q. A description of any Local Generator at its site, including the Local Generator's system, its primary fuel type, the year in which it was built, the year of any retrofit, its nameplate capacity, and its horsepower, if applicable.

#### **24.4.2 Data Reporting Requirements for Verification of Energy Reductions of DADRP Resources Scheduled in the ISO's Energy Market**

The meter authority or Meter Data Service Provider of the Demand Reduction Provider shall provide the ISO with the following required data from each interval meter required under Section 24.4 for each Demand Side Resource that is registered, either individually or collectively with other Demand Side Resources, as a DADRP resource, to verify the scheduled Load reduction of a DADRP resource in the ISO's Energy market:

- a) Totalized net hourly Load reduction data of the DADRP resource (*i.e.*, the net hourly Load reduction data totalized across all Demand Side Resources that are registered, either individually or collectively with other Demand Side Resources, as a DADRP resource) for the period of the scheduled Load reduction of the DADRP resource in the format required for reporting to the ISO's Settlement Data Exchange application;
- b) Hourly-interval metered Load data for each of the individual Demand Side Resources that is registered as part of a single DADRP resource, for all hours of the day on the days of the scheduled Load reduction of the DADRP resource; and
- c) Hourly-interval metered Load data for each of the individual Demand Side Resources that is registered as part of a single DADRP resource, for all hours of each of the thirty days preceding the day in which the DADRP resource is scheduled.

The meter authority or Meter Data Service Provider of the Demand Reduction Provider shall comply with the following when reporting Demand Reduction metering data to the ISO:

- a) Section 7.4.1 of the ISO Services Tariff;
- b) Section 13 of the ISO Services Tariff; and
- c) The ISO's Meter Data Management Protocols as provided on the ISO's website.

#### **24.4.3 Additional Data Required Upon Request**

To verify the participation of each Demand Side Resource that is enrolled, either individually or collectively with other Demand Side Resources, as a DADRP resource in the ISO's Energy market, Demand Reduction Providers and/or their meter authority/Meter Data Service Provider shall provide the ISO upon the ISO's request such additional information that

may be required, including, but not limited, to the following:

- a) Any data reporting requirements of Attachments H and O to the ISO Services Tariff;
- b) Any data reporting requirements of Section 3.4 of the ISO Services Tariff;
- c) Historical Load documentation;
- d) Load data history for Pre- and Post-Validation, Edit and Estimation (VEE);
- e) Up to three months of historical Load data when enrolling a Demand Side Resource to participate in the ISO's Energy market;
- f) New and existing metering documentation, including, but not limited to:
  - 1. Calibration records;
  - 2. Time check;
  - 3. Sum check;
  - 4. High/Low check; and
  - 5. Zero value check.