



**Manual ##**

# **Aggregation Manual Part 1**

**Issued: Month Year**

**WG/SUBCOMMITTEE DRAFT – NOT FOR COMMITTEE ACTION**

# 1. Background & Overview

This manual describes the procedures by which a Market Participant may group individual facilities located on the New York State Transmission System and/or the distribution systems located in the New York Control Area (“NYCA”) to form a single entity – an Aggregation – for the purpose of participating in the NYISO-administered Energy, Ancillary Services, and Installed Capacity markets. The Aggregation must satisfy all applicable eligibility and performance requirements necessary to participate in the NYISO-administered markets.

The procedures described in this manual apply to Aggregations and to each DER participating in an Aggregation. However, this document is not the sole source of information for Aggregations or a DER. Aggregations are subject to the rules generally applicable to all Resources except where noted. Market Participants should review all applicable market rules and corresponding manuals, guides, and technical bulletins as necessary.

## 1.1. Demand Side Resource Participation in NYISO Markets

Qualified Demand Side Resources may participate in a DER Aggregation. Demand Side Resources may alternatively participate in the NYISO’s Emergency Demand Response Program (“EDRP”) or the Special Case Resource (“SCR”) program. A resource may not simultaneously participate as a DER in an Aggregation and as an EDRP Resource or an SCR. More information about the SCR program and EDRP is available in the NYISO Services Tariff (*e.g.*, Sections 5.12.11 and 22, respectively) and ISO Procedures (*e.g.*, Installed Capacity and Emergency Demand Response Program Manuals).

[A Demand Side Resource may not curtail Critical Electric System Infrastructure Load \(as that term is defined in Section 2.3 of the Market Services Tariff\) as part of participation in an Aggregation. See Market Administration and Control Area Services Tariff Section 2.3 and ICAP Manual Section 4.12 for further information.](#)

# 2. Operational Coordination

The NYISO, Aggregator, applicable Transmission Owner and Distribution Utility shall coordinate scheduling and dispatch for all Distributed Energy Resources participating in the NYISO-administered markets as part of an Aggregation. Aggregations are ‘dispatch-only’, meaning they do not submit commitment parameters (*e.g.*, minimum run-time and start-up costs) and will be treated as always available for dispatch, consistent with their Bids. The coordination protocols established in this Section 2

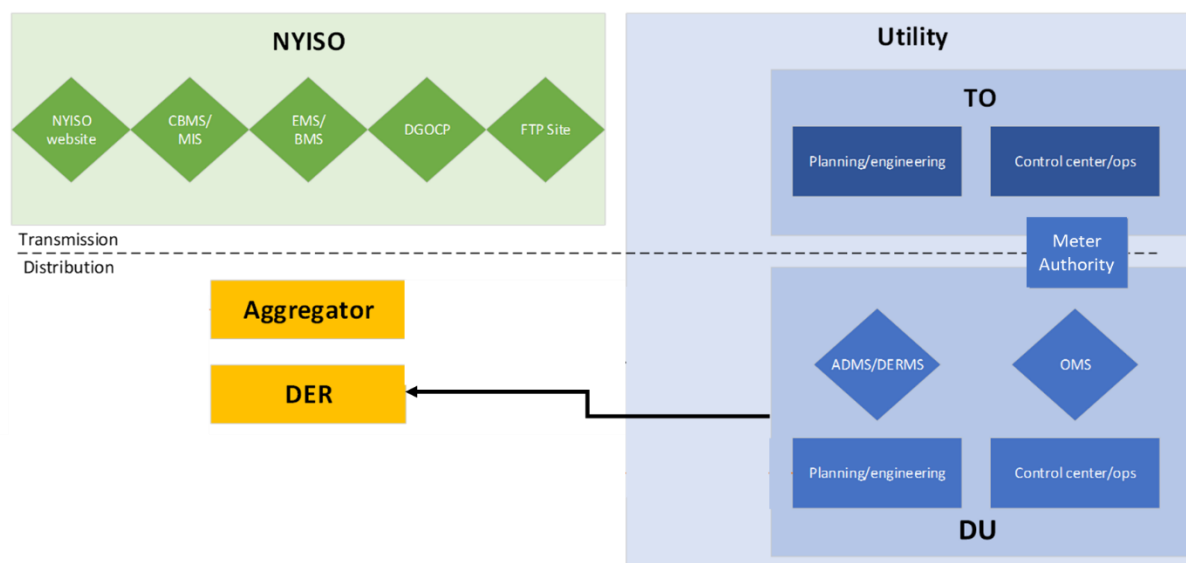
describe required data exchanges, roles and responsibilities of the parties, and the coordination processes applicable to Aggregation participation in the Day-Ahead Market and Real-Time Market. An Aggregator should contact the applicable utility representative for further information on Distribution Utility and Transmission Owner communications and coordination.

*Note: For the Purposes of this Aggregation Manual, the term ‘distribution utility’ means the electric utility that owns and operates a distribution system in the NYCA (including municipalities, LIPA, and electric cooperatives) connecting the NYS Transmission System to retail customers.*

## 2.1. Operating Data Exchange

### 2.1.1. Planned Distribution System Maintenance

The Distribution Utility shall notify a DER when planned distribution system changes are expected to affect the DER’s operation. The Distribution Utility may also notify the Aggregator associated with each affected DER but is not obligated to do so. This combination of notified parties is referred to as “DER/Aggregator” through the remainder of this Aggregation Manual. Planned distribution system changes are defined as any activity that results in an abnormal distribution circuit configuration. Changes may also include distribution system **derates or** outages -due to routine maintenance, scheduled repairs, or other anticipated events that impact the operation or deliverability of an individual DER. The Distribution Utility must notify the DER/Aggregator of all planned distribution system changes that the Distribution Utility anticipates could impact the operation or deliverability of an individual DER or an Aggregation by 3PM two days prior to the day of dispatch (Figure 1). Day-Ahead Market Bids for Aggregations shall reflect distribution system conditions.

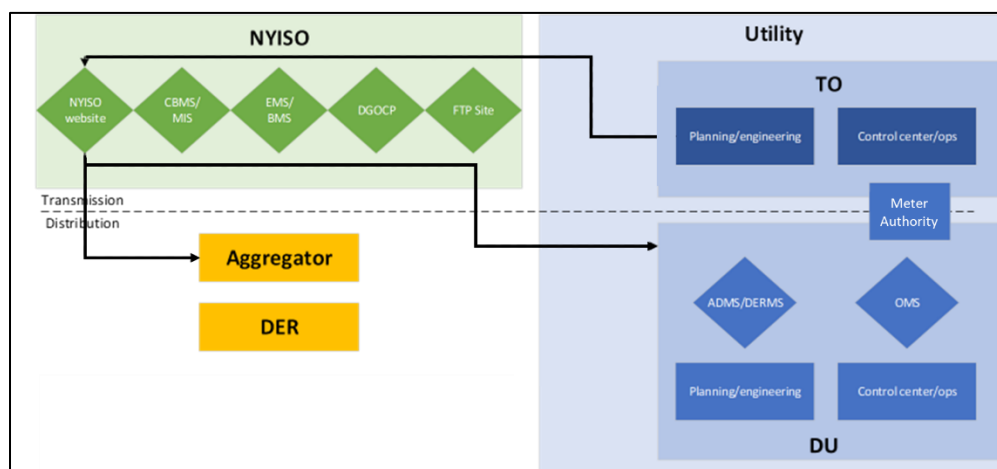


**Figure 1. Planned distribution system maintenance communication.**

If a planned distribution system change causes a full or partial derate to a DER that will be included within an Aggregation's operating plans, the Aggregator shall reflect the impact of that derate in the Aggregation's Day-Ahead and Real-Time Market Bids and shall adjust the Aggregation's operating plans to reflect the impact of each DER affected by such a derate on the capability of the Aggregation.

### 2.1.2. Planned Transmission System Maintenance

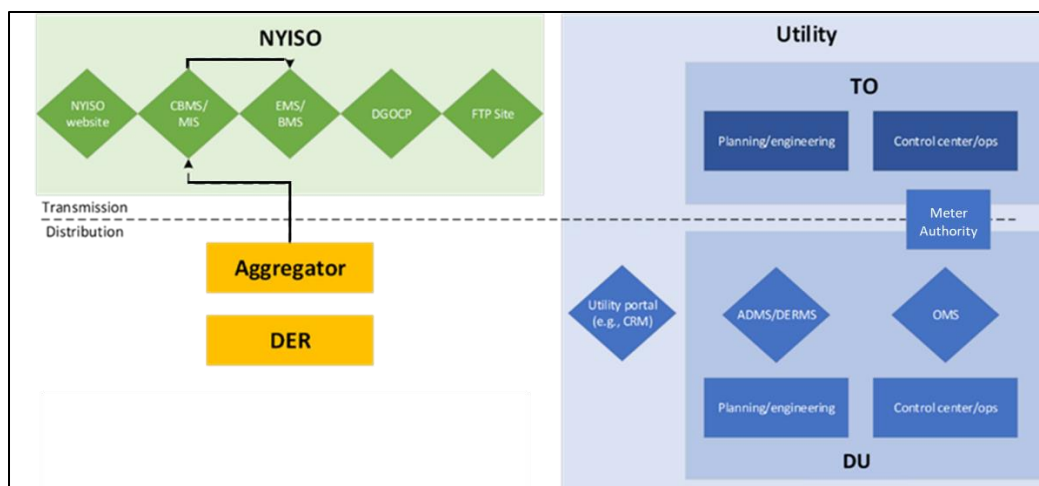
All Transmission System outage information that are approved by the NYISO are publicly available at <https://www.nyiso.com/power-grid-data> under the 'Outage Schedule' page (Figure 2).



**Figure 2. Transmission System outage information availability.**

### 2.1.3. Day-Ahead and Real-Time Market Bids

An Aggregation is a type of Resource, and all bidding obligations apply to the Aggregator and Aggregation, not to the individual facilities comprising the Aggregation. Aggregators and Aggregations will be subject to the NYISO's bidding and scheduling rules applicable to all Resources except where noted (Figure 3).



**Figure 3. Aggregator Day-Ahead and Real-Time bid submission.**

This Section 2.1.3 identifies certain bidding and scheduling requirements specifically applicable to Aggregators and Aggregations. Aggregators are not required to disclose their Bids to a Transmission Owner or Distribution Utility.

Aggregations will be scheduled consistent with their Bids and capabilities, consistent with the treatment of other Resources in the NYISO markets. Aggregations will be eligible to set prices for the services for which they are scheduled and subsequently dispatched. Both Day-Ahead and Real-Time Market Locational-Based Marginal Price (LBMP) will be calculated for each Transmission Node (See Section [xx] of this Aggregation Manual for additional information about Transmission Nodes).

If an Aggregation contains at least one Withdrawal-Eligible Generator (WEG) (e.g., a battery) and seeks to use another Generator in the Aggregation to self-supply some or all of the energy for charging of the WEG(s), each point of the Aggregation's Bid Curve (or, for a Self-Committed Fixed Bid, the Aggregation's Bid) must reflect the net of Energy injections and Energy withdrawals for the bidding increment. Therefore, when an Aggregation's fixed Bid reflects a net injection, the Aggregator shall Bid to supply Energy only for the net MWs it intends to inject onto the grid. Conversely, when an Aggregation's fixed Bid reflects a net withdrawal, the Aggregator shall Bid to withdraw Energy only for the net MWs it intends to withdraw from the grid (Refer to Figure 4). An Aggregation that is offering flexibly may offer an incremental bid curve that reflects the total capabilities of the Aggregation, including the range of withdrawal and injection (Figure 5).

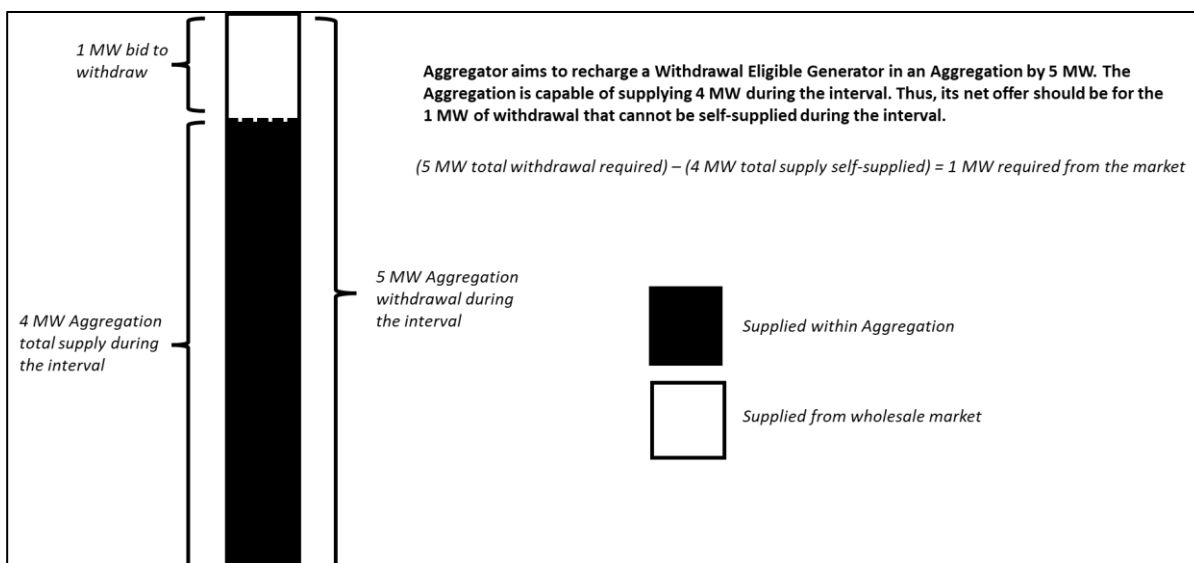


Figure 4. Aggregation Fixed Bidding Example

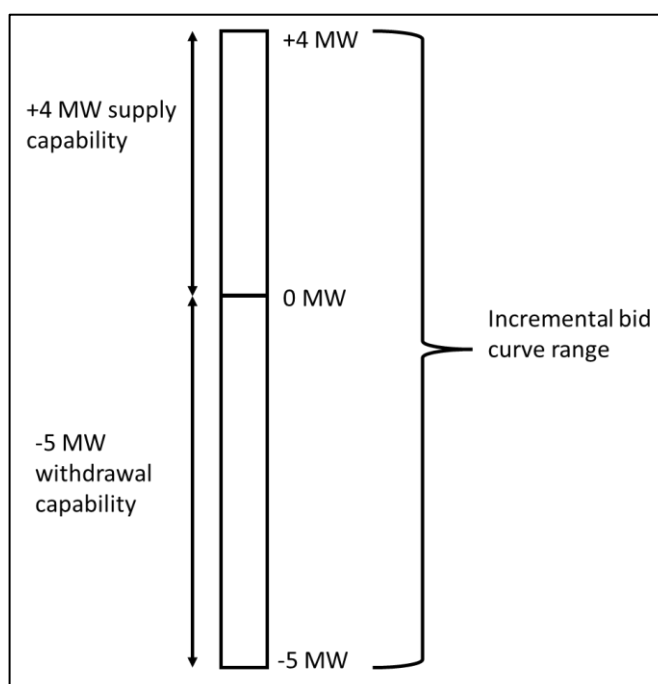


Figure 5: Aggregation Flexible Bidding Example

Aggregators must select a bid mode for each Bid. Certain bid modes are only available to specific Aggregation types, consistent with the rules applicable to the participation model of the Aggregation, as described in Figure 6.

Aggregation Type	Bid Mode(s) Available
<b>DER</b>	Self-Committed-Fixed/Flexible
<b>ESR</b>	ISO-Committed-Flexible, Self-Committed-Fixed/Flexible
<b>LESR</b>	ISO-Committed-Flexible
<b>Generator</b>	Self-Committed-Fixed/Flexible
<b>Wind</b>	Self-Committed-Fixed/Flexible
<b>Solar</b>	Self-Committed-Fixed/Flexible
<b>Landfill Gas</b>	Self-Committed-Fixed/Flexible

**Figure 6. Available Aggregation Bid Modes**

Aggregators are permitted to balance the response of each DER within an Aggregation to meet the NYISO dispatch signal. For example, an Aggregation containing one 5 MW battery and one 4 MW generator offers into the NYISO energy market and is scheduled to withdraw 1 MW in a given interval. The battery may withdraw 5 MW while the generator injects 4 MW, resulting in a net response of -1MW. In this example the Aggregation would be settled as 1 MW of energy withdrawal during the interval.

A homogeneous, single Resource type Aggregation shall comply with the bidding requirements of that particular Resource type, per existing NYISO tariffs and procedures. For example, an Aggregation comprising only of Energy Storage Resources must submit Bids consistent with the rules applicable to Energy Storage Resources (see NYISO’s Market Participant User’s Guide).

#### **2.1.3.1. Day-Ahead Market Bids**

Aggregators submitting Day-Ahead Market Bids for an Aggregation shall submit Bids in accordance with Section 4 of the Market Services Tariff and the Day-Ahead Scheduling Manual. An Aggregation that is an Installed Capacity Supplier must also comply with the scheduling, bidding, or notification requirements identified in Market Services Tariff Sections 5.12.1.6, 5.12.1.10, and 5.12.7.

#### **2.1.3.2. Real-Time Market Bids**

Aggregators submitting Real-Time Market Bids for an Aggregation shall submit Bids in accordance with Section 4 of the Market Services Tariff and the Market Participant User’s Guide. Real-Time Market Bids for an Aggregation that includes Demand Reductions are subject to the Monthly Net Benefit Threshold (see Market Services Tariff Sections 4.4.1.2 and 4.5.7.).

### Monthly Net Benefit Threshold

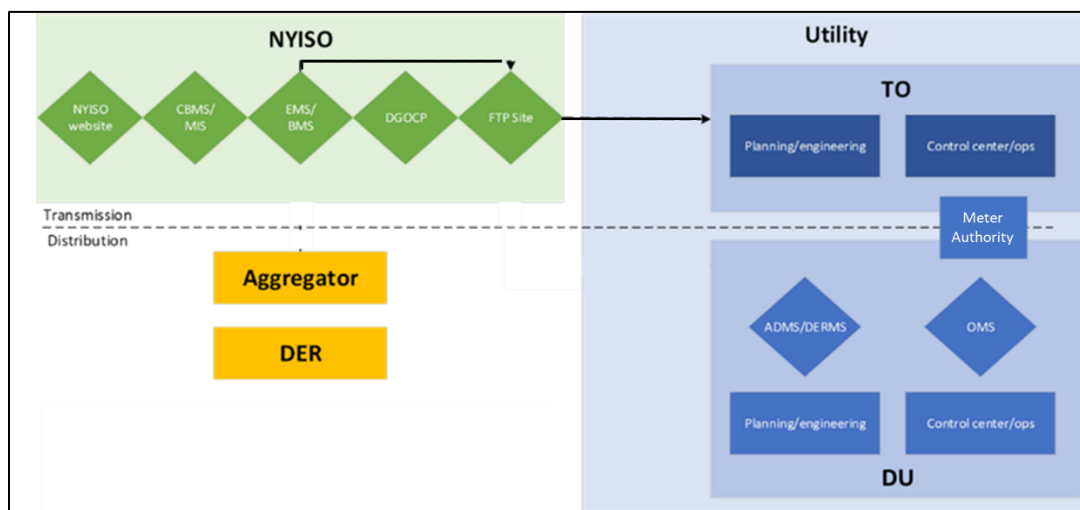
The NYISO shall perform the Net Benefits Test for each month in accordance with Section 4.5.7.1 of the Services Tariff and post the Monthly Net Benefit Threshold (“MNBT”) by the 15th of the preceding month. The ~~Monthly Net Benefits Threshold~~MNBT prices and a detailed stepwise description of the Net Benefits Test is available on the NYISO’s website at: <https://www.nyiso.com/demand-response>.

Demand reductions by Demand Side Resources within an Aggregation are compensable when the Real-Time LBMP exceeds the MNBT, except where otherwise noted in Services Tariff Section 4.5.2.1. An Aggregation may offer into the Day-Ahead Market or Real-Time Market below the ~~Monthly Net Benefit Threshold~~MNBT, however any Demand Reductions performed when the applicable LBMP is below the MNBT shall not be compensated, except where otherwise noted in Services Tariff Section 4.5.2.1. ~~However, Demand Reductions by Demand Side Resources within an Aggregation shall not be eligible for Energy payments, Day Ahead Margin Assurance Payments or Bid Production Cost guarantee payments when the Monthly Net Benefit Threshold price is less than the Real-Time LBMP calculated for an interval at the Aggregation’s Transmission Node.~~

~~A DER Aggregation is not permitted to balance Energy withdrawals by Withdrawal Eligible Generators with Demand Reductions in a Real-Time Market interval if the Transmission Node LBMP for that interval is less than the Monthly Net Benefits Threshold value.~~

#### 2.1.4. Day-Ahead Operating Plan

Per existing market processes, the NYISO shall issue the Day-Ahead Operating Plan (DAOP) reflecting the schedules of Aggregations (not each DER). The DAOP shall be made available to the Transmission Owner via existing NYISO procedures (Figure 7).



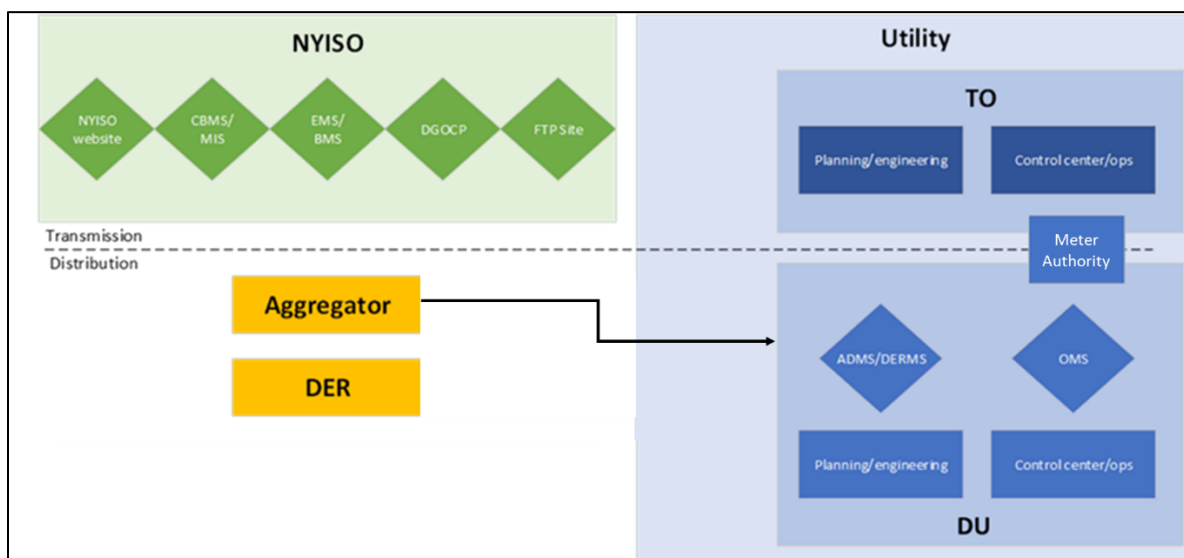


**Figure 7. Day-Ahead Operating Plan communication.**

Transmission Owner users are required to obtain the necessary privileges and access to request the DAOP through an encrypted web-based API, as the information is classified as CEII – Please contact NYISO Stakeholder Services for details on obtaining access at the following link: <https://www.nyiso.com/support>. Aggregators and Distribution Utilities will not have access to the DAOP.

#### 2.1.5. Individual DER Schedule Review and Notice

The Aggregator shall provide the planned schedules for each DER within its portfolio to the applicable Distribution Utility so that the Distribution Utility can verify that each DER or Aggregation’s schedules do not impact the safety and reliability of the distribution system (Figure 8).

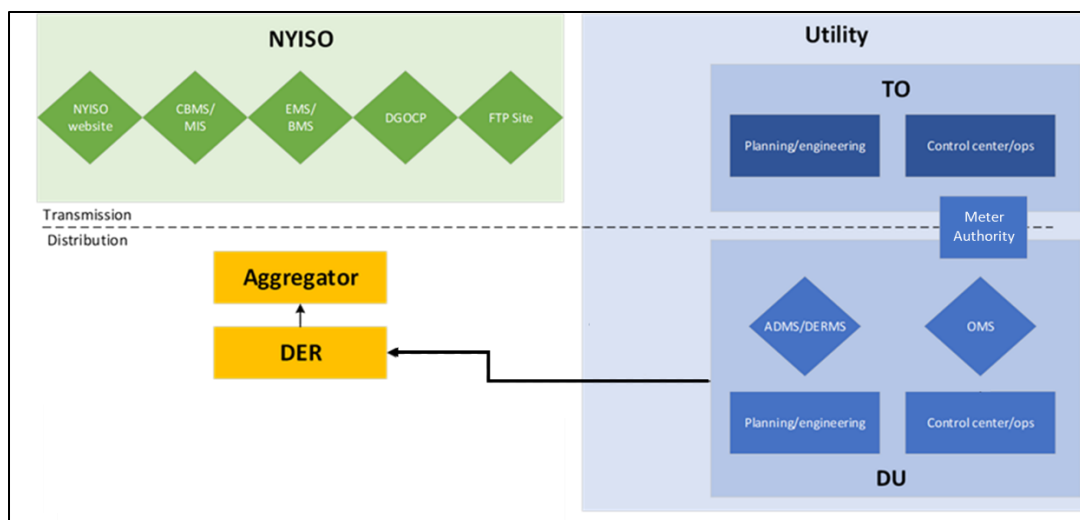


**Figure 8. Individual DER schedules communication to the applicable DU.**

The Distribution Utilities shall communicate any identified reliability or safety concerns to the DER/Aggregator consistent with Section 2.2.1. Communication Between Distribution Utility and Aggregator.

#### 2.1.6. Unplanned Distribution System Conditions

On an ongoing basis, the Distribution Utility will provide notification (utilizing existing communication practices ~~between distribution operations and customer accounts~~) to the DER/Aggregator of any unforeseen conditions on its distribution facilities, actual or anticipated, that the Distribution Utility determines would impact the operation or deliverability of each DER (Figure 9).

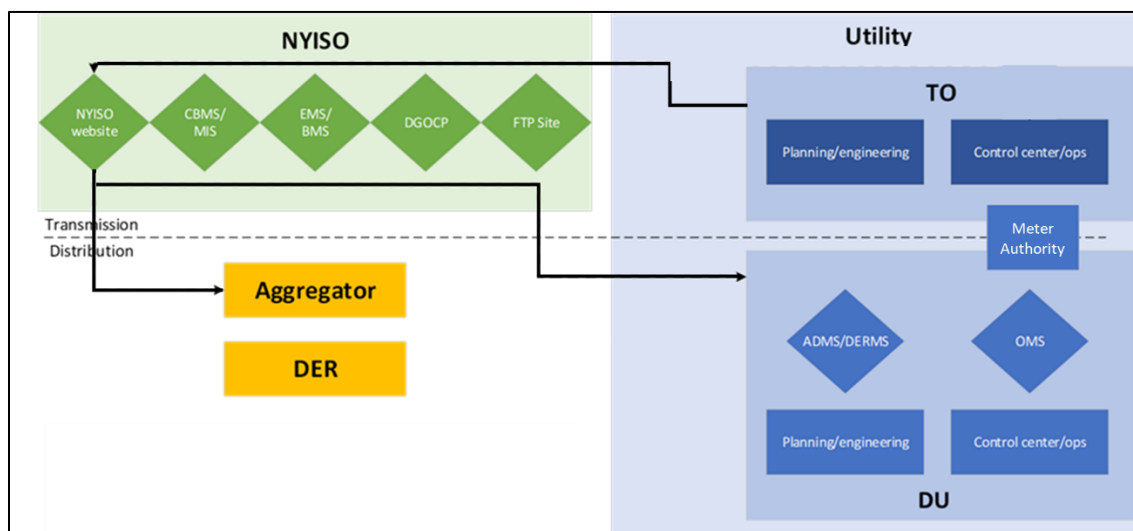


**Figure 9. Unplanned Distribution system conditions communication.**

Distribution system conditions are not required to be reported to the NYISO; rather, the Aggregator should adjust bids/offers for Aggregations to appropriately respond to any service interruptions when possible. If adjustment is not feasible based on the conditions, the Aggregator must report a full or partial outage for the Aggregation using the NYISO's Grid Operations Coordination Portal (GOCP).

#### 2.1.7. Unplanned Transmission System Conditions

On an ongoing basis, the Transmission Owner will provide notification (utilizing existing communication practices ~~between distribution operations and customer accounts~~) to the Aggregator, NYISO, and applicable Distribution Utility of any emerging conditions on the transmission system, actual or anticipated, that would impact the operation or deliverability of each DER (Figure 10).

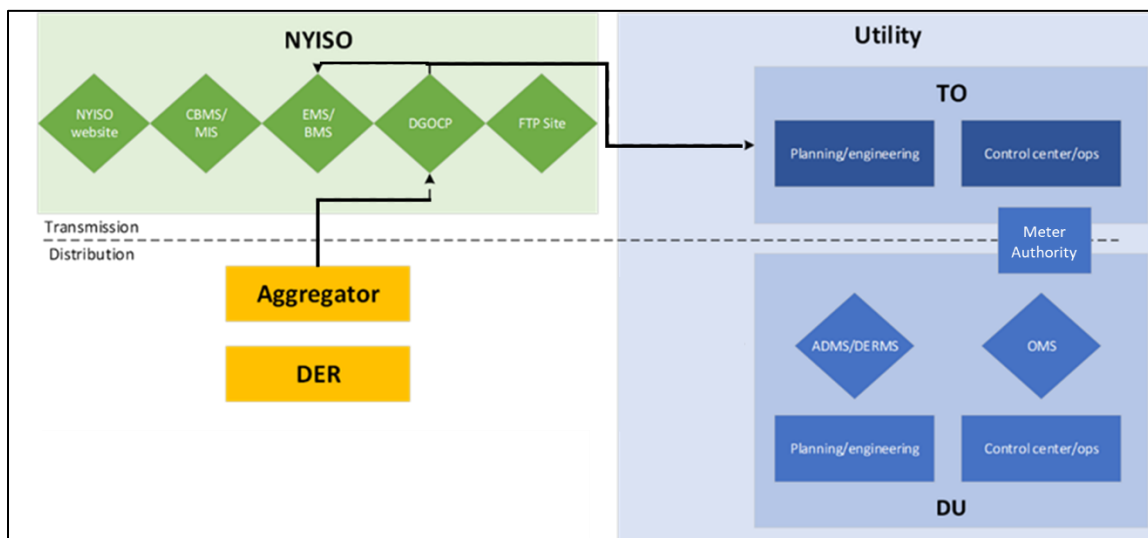


**Figure 10. Unplanned Transmission system conditions communication.**

All Transmission System outage information is publicly available at <https://www.nyiso.com/power-grid-data> under the 'Outage Schedule' page.

### 2.1.8. Outage Reporting

On an ongoing basis, the Aggregator will submit forced outage and planned outage notifications to the NYISO. The Aggregator is responsible for submitting outage information, both planned and unplanned, for all Aggregations in its portfolio (Figure 11).



**Figure 11. Outage reporting communication.**

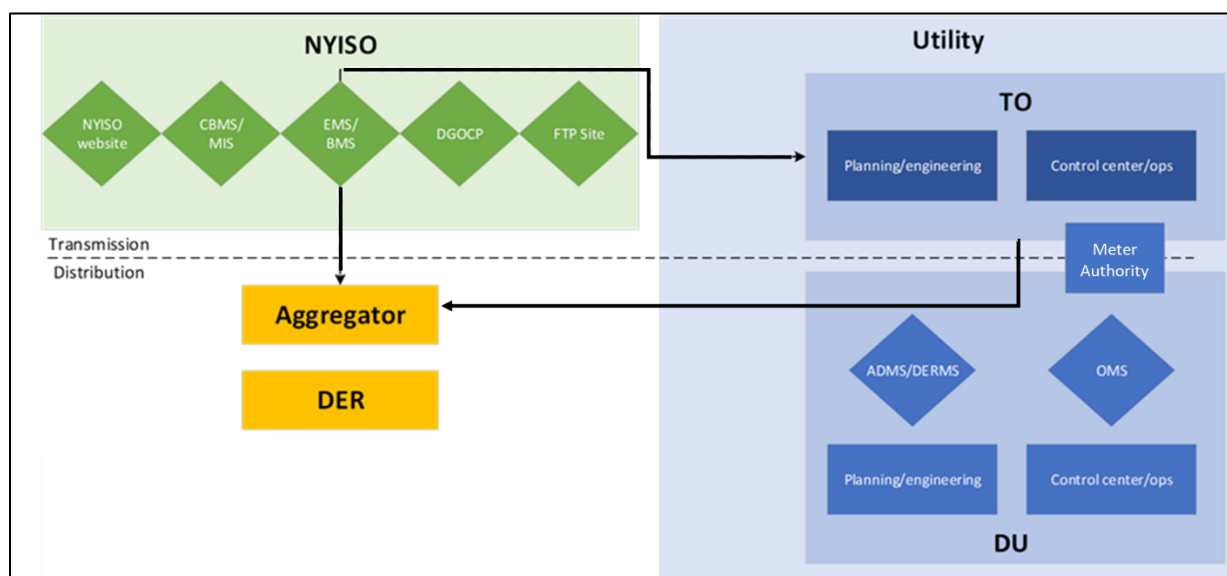
Individual DER outages should not be reported to the NYISO. As described in Outage Scheduling Manual Section 3.2.1, planned outages must be reported to the NYISO as soon as practicable. The submission of outage data to the NYISO does not automatically modify Bids or offers that may be impacted by those outages; the Aggregator is responsible for modifying Bids and offers based on outage information separately.

An Aggregator must notify the NYISO of Forced Outages that affect an Aggregation's ability to meet its schedule. See Section 3.2.4 Forced Generator Outages (Full or Partial) of the Outage Scheduling Manual. To the extent that an Aggregation can utilize one or more DERs not included in its operating plan as replacement for any one or more DERs that are fully or partially derated, the Aggregator is not required to report a Forced Outage.

Aggregation Forced Outages must be submitted to the NYISO Grid Operations Coordination Portal (GOCP) in the event that the Aggregation cannot meet its dispatch. Please refer to the NYISO Grid Operations Coordination Portal (GOCP) User's Guide for more information.

### 2.1.9. Real-Time Dispatch Instructions

The NYISO shall issue dispatch instructions to Aggregators as described in the Transmission and Dispatch Manual. Dispatch instructions for Aggregations will be issued via the applicable Transmission Owner when an Aggregation communicates with the NYISO through the Transmission Owner. Dispatch instructions for Aggregations communicating with the NYISO and Transmission Owner in parallel shall be issued by the NYISO to the Aggregation and Transmission Owner simultaneously (Figure 12).



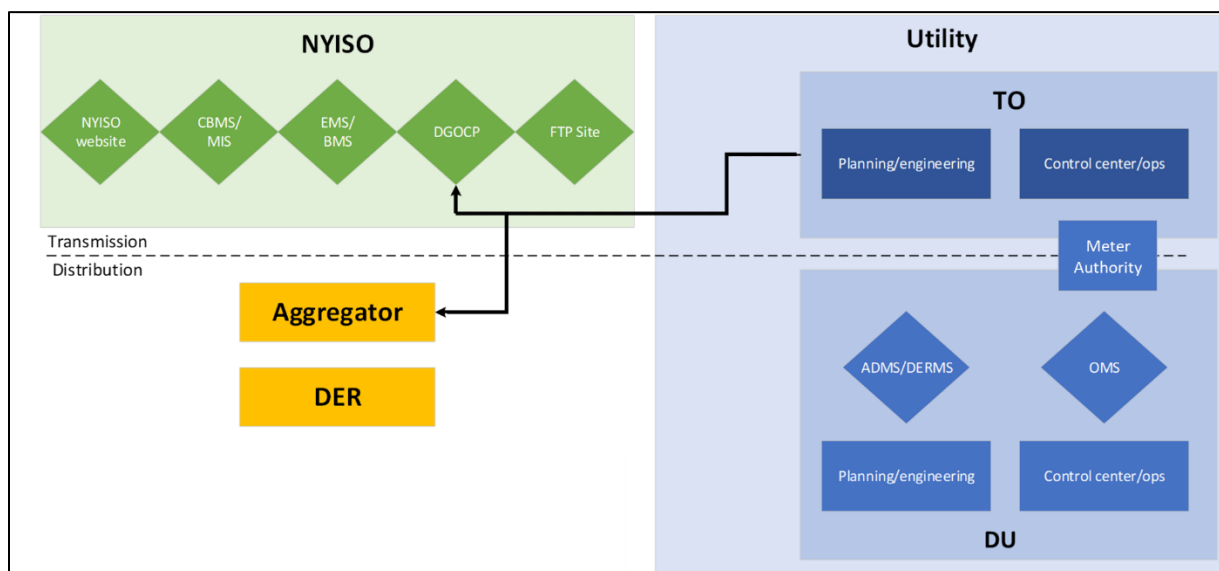
**Figure 12. Dispatch instructions communication.**

These processes are further detailed in the NYISO Direct Communications Manual and NYISO Direct Communications Procedure, and the Control Center Requirements Manual. The manuals are available at the following link: <https://www.nyiso.com/manuals-tech-bulletins-user-guides> (Please contact NYISO Stakeholder Services for details on obtaining the Direct Communications Procedure at the following link: <https://www.nyiso.com/support>).

#### **2.1.10. Supplemental Resource Evaluation for Aggregations (Supplemental Resource Availability) for Distribution or Transmission System Reliability**

Aggregations are dispatch-only Resources and cannot be committed using the conventional SRE processes. However, the NYISO, Transmission Owner (TO) or Distribution Utility may need an Aggregation to provide more Energy than was scheduled as part of the Day Ahead evaluation to reliably operate the electric system. The 'Supplemental Resource Availability,' (SRA) process is a type of SRE logic that is adapted to the dispatch-only nature of Aggregations and is used to make Aggregation capability (above the Day-Ahead Schedule) available for NYISO, TO or DU operators to address reliability issues. The SRA process enables NYISO operators to reserve available dispatch range of dispatch-only resources requiring an Aggregation to have a bid in place for the specified

interval. SRA requests may be made after the close of the Day-Ahead market, and before the Real-Time dispatch interval (Figure 13).



**Figure 13. SRA request communication example.**

To evaluate SRA requests, the NYISO will follow a process similar to the procedures outlined in the *Transmission & Dispatch Operations Manual* Section 6.7.9 to process TO or DU requests for SRE. A TO or DU may not request supplemental availability of an individual DER. Any request for an individual DER must be communicated to the Aggregator directly. The NYISO will not communicate SRA request results to Distribution Utilities.

Transmission Owners are responsible for notifying Distribution Utilities of Aggregations reserved via the SRA process. If a Distribution Utility identifies a distribution system reliability need, the request for an SRA by the NYISO must be submitted via the applicable Transmission Owner. The process for requesting an SRA is detailed in the NYISO's *Grid Operations Coordination Portal (GOCP) User's Guide*.

[Aggregations are expected to respond to corrective actions taken by the NYISO, including but not limited to reserve pick up events – please refer to the NYISO \*Transmission & Dispatch Operations Manual\* for details.](#)

## 2.2. Roles & Responsibilities

DER/Aggregators, Distribution Utilities, and Transmission Owners must be available for real-time operation verbal communication twenty-four hours a day, seven days a week, to maintain distribution and

transmission system safety and reliability. Aggregators are responsible for evaluating current NERC definitions and guidance to ensure compliance with, for example, Generator Operator classification.

#### 2.2.1. Communication Between Distribution Utility and DER/Aggregator

- The Distribution Utility shall report emerging distribution system issues (*e.g.*, feeder reconfigurations) to the DER/Aggregator as soon as practicable.
  - Distribution system issues may require individual DER full or partial derates.
- ~~All operating information (*e.g.*, dispatch signals, telemetry) will be shared between the Aggregator and the Distribution Utility control centers in both Day Ahead and Real Time.~~
- If a DER or Aggregation creates or exacerbates Distribution System issues, the Distribution Utility shall direct the DER and/or Aggregator to curtail or disconnect any individual DERs, when necessary, to preserve reliability and safety.
- All DER curtailment directions to preserve distribution system safety will be communicated to the Aggregator as soon as practical. The Aggregator may operate one or more other DERs in its Aggregation to meet its NYISO schedule provided that the Distribution Utility authorizes the Aggregator's revised operating plan. The DU review of Aggregator operating plans shall only occur for Day Ahead schedules and will not be required for adjustments to schedules in Real Time.

#### 2.2.2. Communication Between Transmission Owner and Aggregator

- The Transmission Owner will report emerging transmission system issues to affected Aggregators as soon as practicable.
  - Transmission system issues may require full or partial derates of one or more individual DERs.
- If a DER or Aggregation creates or exacerbates Transmission System issues, the TO ~~shall must direct the DER and/or Aggregator to curtail or disconnect any individual DER, when necessary, to preserve reliability and safety~~ request an Out of Merit (OOM) for the Aggregation in the NYISO's GOCP – the TO should follow the procedures outlined in the *Transmission & Dispatch Operations Manual Section 6.7.4*.
- All metering and telemetry must be provided to the Transmission Owner consistent with the NYISO's requirements and the Aggregator must notify the Transmission Owner as soon as practicable when the operating status of one or more of its DERs changes (*e.g.*, that a unit is unavailable, or can return to service).

- All curtailments to preserve transmission system safety will be communicated to the Aggregator and NYISO as soon as practical. The Aggregator may then seek Transmission Owner authorization to operate different DERs to meet its NYISO schedule.
- [The TO shall communicate with the Aggregator during a NYISO-initiated audit of an Aggregation pursuant to the procedures defined in NYISO Technical Bulletin 142: Generator Performance Audits.](#)

#### **2.2.3. Communication Between Transmission Owner and NYISO**

- When an Aggregation communicates to the NYISO and TO in parallel, telemetry to and from Aggregations must be sent simultaneously to/from the TO and NYISO. These processes are further detailed in the *NYISO Direct Communications Manual* and *NYISO Direct Communications Procedure*, and the *Control Center Requirements Manual*.
- Real-time communications regarding DER Aggregation operations shall be communicated between the Transmission Owner's designated operating desk and the NYISO control room.
- The Transmission Owner and NYISO shall notify each other as necessary to initiate a Supplemental Resource Availability (SRA) for reliability purposes.
- If a curtailment of an Aggregation by the Transmission Owner becomes necessary to maintain transmission system security, the Transmission Owner shall notify the NYISO by phone, or other agreed upon means.
- [The TO shall communicate with the NYISO during a NYISO-initiated audit of an Aggregation pursuant to the procedures defined in NYISO Technical Bulletin 142: Generator Performance Audits.](#)

#### **2.2.4. Communication Between Aggregator and NYISO**

- If an Aggregation is dispatched under the NYISO's SRA rules, the Aggregator will receive an updated schedule and dispatch instructions from the NYISO to reflect the SRA, either directly or through the applicable TO, depending on the telemetry communication configuration established.
- Aggregators are responsible for submitting offers to the NYISO market software reflective of composite Aggregation capabilities and performance, report outages of Aggregations to NYISO market applications and receive/respond to NYISO dispatch signals.

### **2.3. Coordination Timeline**

**2.3.1. Until 3:00 PM Two Days Before Dispatch**

The Distribution Utility and/or Transmission owner shall notify the DER/Aggregator of planned distribution and/or transmission system maintenance that may impact operations. This information will allow the Aggregator to Bid in a manner consistent with distribution and transmission system conditions.

**2.3.2. Up to 14 Days Prior and Until 5:00 AM on the Day Before Dispatch**

Aggregator may submit and update Day-Ahead Market Bids through the NYISO's Market Information System.

**2.3.3. By 11:00 AM on the Day Before Dispatch**

NYISO will provide Aggregators with Day-Ahead Schedules for its Aggregation(s). Per existing processes, the NYISO shall also provide each Transmission Owner with its Day-Ahead Operating Plan.

**2.3.4. By 12:00 PM on the Day Before Dispatch**

An Aggregator shall communicate the schedules of the individual DERs it intends to dispatch to meet its Day-Ahead Market Schedule to the Distribution Utility. The Distribution Utility will use this information to verify that the Aggregator's dispatch plan reflects applicable distribution system conditions. The Aggregator must include (i) the applicable Transmission Node, (ii) feeder used for each DER, (iii) unique identifier (*e.g.*, utility account number and meter number) for each DER being dispatched, (iv) minimum and maximum operating limits for each DER being dispatched, and (v) the timing of the dispatch. For additional information on this process, the applicable Distribution Utility should be consulted. The Distribution Utilities will use this data to analyze the injections and reductions to understand conditions such as station or feeder issues, equipment loading, voltage profiles, outages and impacts on reconfigured or rerated circuits, compliance with NWA calls, etc.

**2.3.5. After 12:00 PM and No Later than 10:00 PM on the Day Before Dispatch**

The Distribution Utility may review each Aggregator's submitted dispatch plan. If the Distribution Utility determines an Aggregator's planned dispatch is inconsistent with distribution system conditions, the Distribution Utility shall advise the Aggregator as soon as practical. If the Distribution Utility requires the Aggregator to modify its dispatch plan, the Aggregator may need to notify the NYISO of a de-rate and submit Real-Time Market Bids that account for the changed condition.

**2.3.6. Day After Dispatch**



The Aggregation's Meter Authority will send revenue meter data for each hour of the Dispatch Day to the NYISO, according to existing NYISO processes described in the NYISO's Revenue Metering Requirements Manual.

## 3. Transmission Nodes

A Transmission Node is a point on the NYS Transmission System at which Locational Based Marginal Prices ("LBMP") will be calculated for Aggregations. Transmission Nodes reflect a collection of designated load buses on which individual DERs are located and may participate together in an Aggregation. The NYISO DER and Aggregation participation model requires that individual DERs be mapped to a Transmission Node. The NYISO's Security Constrained Unit Commitment, Real-Time Commitment and Real-Time Dispatch software will calculate a LBMP for each Transmission Node. Each Aggregation located at a Transmission Node will be settled at the applicable Transmission Node LBMP. The Transmission Node LBMP shall be calculated consistent with the Services Tariff Section 17 bus calculation method.

Transmission nodes will also facilitate securing the transmission system by providing points at which dispatch may provide relief from a constraint.

Each DER shall be assigned to a single Transmission Node. An Aggregation may only comprise DERs assigned to the same Transmission Node.

### 3.1. Identification

The NYISO shall identify each Transmission Node in consultation with the Member System in whose service territory the Transmission Node is located within the NYCA.

Transmission Nodes are selected from the NYCA Load Nodes modeled by the NYISO. Transmission Nodes are selected such that all Load Nodes of an associated Member System can be associated to a Transmission Node of the same Member System. The NYISO, in consultation with each Member System, shall consider the transmission and distribution system topology and distribution load characteristics of the Member System service territories when identifying each Transmission Node. Each Member System service territory shall have at least one identified Transmission Node within each Load Zone that is partially or wholly contained within its service territory.

#### 3.1.1. Member System Topology Considerations

The distribution system topology considerations identified below, along with each Member System's use of good utility practices, will guide Transmission Node identification. The topology of

each Member System is unique and therefore not all factors may apply. Additional factors may also be considered as distribution systems change.

1. Transmission and/or distribution load pockets
2. Thermal limits of lines and protective equipment
3. Boundaries between Transmission Districts
4. Concentration of load relative to total average system load
5. Distribution area substation topology

Transmission Nodes shall be named for the substation of the identified Load bus along with the voltage class of the station.

### **3.1.2. Active Transmission Node List**

The list of Transmission Nodes is provided as Attachment [placeholder] to this [Aggregation Manual], and under “General Information” at <https://www.nyiso.com/reports-information>.

## **3.2. Transmission Node Changes**

The NYISO and Member Systems will evaluate the factors identified in Section 3.1.1 above to determine whether the set of Transmission Nodes should be modified. The NYISO may add Transmission Nodes when there is a change in the underlying system topology within the electrical area that requires dividing the electrical facilities behind a single Transmission Node into two (or more) Transmission Nodes. Additional Transmission Nodes will be identified if DER penetration impacts either transmission or distribution grid operations. Two or more Transmission Nodes may be consolidated to a single Transmission Node when the NYISO and applicable Member System determine that underlying system conditions have changed such that the existing Transmission Nodes are no longer needed to represent the system’s electrical characteristics.

The NYISO shall publish all changes to the list of Transmission Nodes its public website (at <https://www.nyiso.com/reports-information>) and update Attachment [placeholder] of this [Aggregation Manual] and provide stakeholders with an explanation of all such changes.

### **3.2.1. Transmission Node Change Timeline**

The NYISO will annually review the identified Transmission Nodes with each Member System to determine whether changes are necessary. The results of the annual review will be published at least 90 days prior to the beginning of the Capability Year and effective on the first day of the capability year.

The NYISO will publicly post all changes to the identified Transmission Nodes via an update to Attachment [placeholder] of this [Aggregation Manual] and the posting on the NYISO’s

website. Affected Aggregators shall also be notified as described in the Aggregation System User Guide. In the event of any change to Transmission Nodes, affected DERs will be separated from its Aggregation.

### **3.3. DER Designation to a Transmission Node**

The applicable Member System for the territory to which the DER is interconnected will designate the appropriate Transmission Node for the DER.

The Member System will designate a Transmission Node for a DER where, based on the best electrical engineering judgement available to the Member System, the DER's impact to the Bulk Electric System is most apparent during an analysis under Normal Operating conditions as determined by the Member System. A DER will be assigned to a Transmission Node in the Load Zone to which it is electrically connected.

Aggregators should request any additional information regarding the mapping of Transmission Nodes from the applicable Member System.

#### **3.3.1. DER Transmission Node Designation Changes**

Changes to system topology or operational practices may impact the analysis of the Transmission Node to which a DER is designated. The Member System and the NYISO may redesignate a DER to a new Transmission Node during the Transmission Node change timeline described in section 3.2.1.

The Member System and Aggregator may also work to designate a DER to a different Transmission Node outside of the Transmission Node change timeline.

### **3.4. Transmission Node Operations**

Aggregators must reflect Distribution system changes and outages, and Transmission System outages in their Bids. Aggregation schedules produced by SCUC, RTC, and RTD will not automatically account for Distribution system changes and outages, or Transmission system outages of facilities. Aggregators shall also adjust the Aggregation's operating plans to reflect the impact of each DER affected by electrical outages as a derate on the capability of the Aggregation as described in section **XX**: Operational Coordination.

The NYISO's market software will continuously calculate an LBMP for each Transmission Node regardless of the operating status of the substation to which the Transmission Node is associated.

The Aggregator shall reflect their Aggregation's availability through market bids/offers based on the current conditions of the Distribution/Transmission system.

### 3.5. Aggregator Responsibilities

Aggregators will work with the applicable Member System to determine the ISO-identified Transmission Node, to which each individual DER is connected. The Aggregator will initiate this process with the applicable Transmission Owner and the Aggregator is responsible for certifying their Aggregations and each associated DER are designated to the correct Transmission Node.

After the ISO modifies the list of Transmission Nodes, the Aggregator may re-enroll affected DERs in a new Aggregation utilizing the applicable Transmission Node. Aggregations assigned at an inactive Transmission Node will be retired and the Aggregator shall buy-out of any existing market obligations.

Any disputes arising out of the designation of a DER to a Transmission Node shall be resolved pursuant to Services Tariff Section 11.