

Aggregation Manual Updates

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Agenda

- **Background & Overview**
- **Responses to Feedback**
- **Updates to Aggregation Manual**
- **Next Steps**
- **DER Deployment Status**

Background & Overview

- **This presentation describes additional language being added to the Aggregation Manual.**
 - DER and Aggregations
 - Aggregation Enrollment
 - DER Facility Enrollment
- **The order of sections in the Aggregation Manual may change prior to final publication.**
 - All Aggregation Manual ‘parts’ will be combined into a single document for final stakeholder approval and publication.

Background & Overview

- Aggregation Manual Part 2 reflecting the contents of today's presentation is posted with the meeting materials and also under the DER portlet section of the NYISO website: <https://www.nyiso.com/manuals-tech-bulletins-user-guides>

Responses to Feedback

Responses to Feedback

- **Feedback: NYISO should commit to moving the contents of Technical Bulletin 142 to a permanent manual after the deployment of DER.**
 - Response: NYISO commits to exploring which manual is the most appropriate location for the contents of TB142, and will provide an update accordingly
- **Feedback: NYISO should provide a notification to Aggregators when enrollment data is shared with the applicable Distribution Utility for review.**
 - Response: NYISO cannot support this process for the initial deployment of DER, but will explore this enhancement as part of the software development to support Order 2222 compliance
- **Feedback: NYISO should provide additional information regarding market trials and training opportunities for the GOCP for Aggregators.**
 - Response: Please refer to slide 44

Updates to Aggregation Manual

Distributed Energy Resources

Distributed Energy Resources

- **Distributed Energy Resource Definition**
- **A Distributed Energy Resource may be one of the following categories of facilities electrically located in the New York Control Area (“NYCA”):**
 - (i) a facility comprising two or more different technology types located behind a single point of interconnection with a maximum Injection Limit of 20 MW,
 - (ii) a Demand Side Resource, or
 - (iii) a Generator with a maximum Injection Limit of 20 MW.

Distributed Energy Resources

- Distributed Energy Resources may be interconnected either to the NYCA Transmission system or a connecting distribution system.
- For the purposes of this definition, ‘technology types’ refers to any of the following categories of an ‘asset’
 - Demand Side Resource,
 - Generator,
 - Energy Storage Resource,
 - Solar,
 - Wind, or
 - Landfill Gas.
- Individual DER may also be eligible for certain classifications that otherwise apply to standalone Resources in the NYISO-administered markets including
 - Energy Limited Resource,
 - Capacity Limited Resource, or
 - Limited Energy Storage Resource.

Distributed Energy Resources

- **For purposes of the definition of a Distributed Energy Resource, an “individual facility” will be either:**
 - (i) a single facility at a distinct physical location (e.g., street address and utility account number), or
 - (ii) a single physical location with (a) more than one facility with separate utility account numbers and/or points of interconnection with the distribution system, and (b) operated independently from other facilities at that physical location.

Distributed Energy Resources

- **An individual DER that is a Demand Side Resource may employ one of the following Demand Response types in order to facilitate load reduction:**
 - Type C (Curtailment only),
 - Type G (Generation from a Local Generator only), or
 - Type B (A combination of Curtailment and generation from a Local Generator)

Distributed Energy Resources

- **A DER may use a behind-the-meter generation source to facilitate load curtailment and inject excess generation to the grid.**
 - An individual DER capable of both load curtailment and injection will be classified as a ‘Type I’ in the NYISO’s Aggregation System.
 - A DER with injection and curtailment capabilities would be enrolled as two separate assets in the Aggregation System.
- **A DER capable of both load curtailment and injection will have an Economic Customer Baseline Load (ECBL).**
 - An Aggregator is responsible for calculating the ECBL reflective of the load curtailment MW capability of a ‘Type I’ DER.
- **Additionally, the load curtailment MW capability of a ‘Type I’ DER is subject to the Monthly Net Benefit Threshold (MNBT).**
 - A ‘Type I’ DER that facilitates load curtailment in response to a NYISO dispatch shall only be compensated when the LBMP meets or exceeds the NYISO-defined MNBT.

Distributed Energy Resources

- **Resource types that are ineligible to participate in an Aggregation include units with PURPA classification, Limited Control Run of River (LCRoR) units, Behind the Meter Net Generation (BTM:NG) Resources, municipally-owned Generators, System Resources, and Control Area System Resources.**
 - A Resource may become eligible to enroll as a DER in an Aggregation if it terminates its status/designation in any of the aforementioned participation models.
- **As described above, an individual DER may not exceed an Injection Limit of 20MW.**
 - An individual Demand Side Resource that participates as a DER has no maximum size requirement.
- **The NYISO requires individual DER that enroll to participate in the wholesale market via an Aggregation to have a minimum capability of 10kW.**

Distributed Energy Resources

- **Pursuant to Services Tariff Section 4.1.10, each DER (including Demand Side Resources) must have a minimum capability of 10 kW.**
 - Where an individual facility includes multiple assets, which are defined by the NYISO as different technologies located at the facility, each individual asset must have a minimum capability of 10 kW.
- **There is no limit on the number of assets comprising an individual DER.**
 - The 10-kW minimum capability is applied to Demand Reduction, Injection, and Withdrawal capabilities separately, pursuant to Services Tariff Sections 4.1.10 and 2.5.
 - Therefore, an individual DER with a combination of assets capable of Demand Reduction, Injection, and Withdrawal shall have the 10-kW minimum capability applied to each of the three response types.
- **Assets classified as Demand Side Resources, ESR, LESR, or IPRs may be reported as a single asset comprised of multiple energy producing/curtailing components.**
 - All components of an asset must share the same generating technology and fuel type in order to enroll as a singular asset with an associated GADS submission record
 - Details on how to enroll assets in the Aggregation System will be included in the Aggregation System User's Guide

Aggregations

Aggregations

- **An Aggregation is a Resource, comprised of two or more individual Generators, Demand Side Resources, or Distributed Energy Resources, or one or more individual Demand Side Resources, at separate points of interconnection and that are grouped and dispatched as a single unit by the ISO, and for which Energy injections, withdrawals and Demand Reductions are modeled at a single Transmission Node.**
- **An Aggregation may be comprised of DER interconnected to either the Transmission System or a distribution system in the NYCA – an Aggregation may include a mix of DER interconnected on the Transmission and distribution systems, but all DER must electrically map to the same Transmission Node.**

Aggregation Types

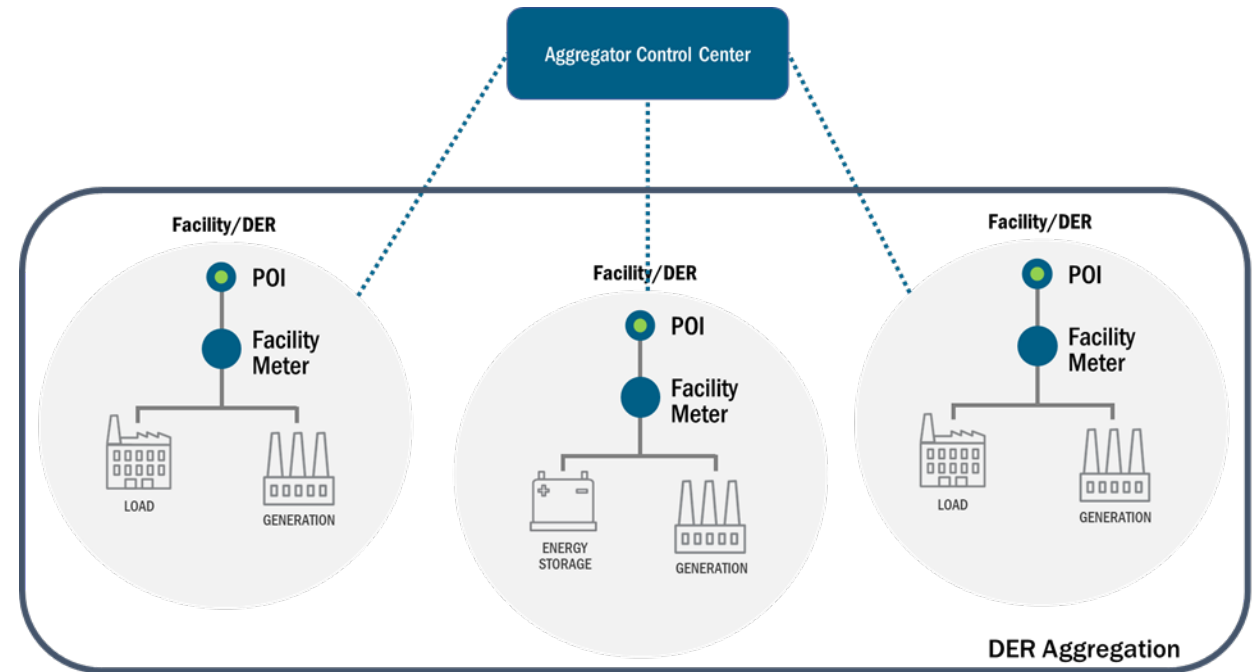
- **An Aggregation may be composed of either a single Resource type or multiple Resource types**
 - Single Resource type Aggregation: an Aggregation composed of a single Resource type (except for Demand Side Resources) will be subject to the rules for that Resource type
 - For example, an Aggregation composed of only Energy Storage Resources will be subject to the NYISO’s ESR participation model
 - An Aggregation of (i) Intermittent Power Resources, (ii) Energy Limited Resources, (iii) Capacity Limited Resources, and (iv) Limited Energy Storage Resources will only be considered a “single Resource type” when each facility in the Aggregation has the same intermittent, Energy limiting, or capacity limiting characteristics.
 - DER Aggregation: an Aggregation composed of a heterogeneous mix of Resource types, or an Aggregation composed of only Demand Side Resources
 - For example, an Aggregation composed of an Energy Storage Resource, a gas turbine, and a Demand Side Resource

Aggregation Types

Aggregation Types	
DER	Single Resource Type (Homogenous)
<ol style="list-style-type: none">1. Heterogenous2. Demand Side Resource(s)	<ol style="list-style-type: none">1. Generator2. Energy Storage Resource (ESR)3. Limited Energy Storage Resource (LESR)4. Solar5. Wind6. Landfill Gas

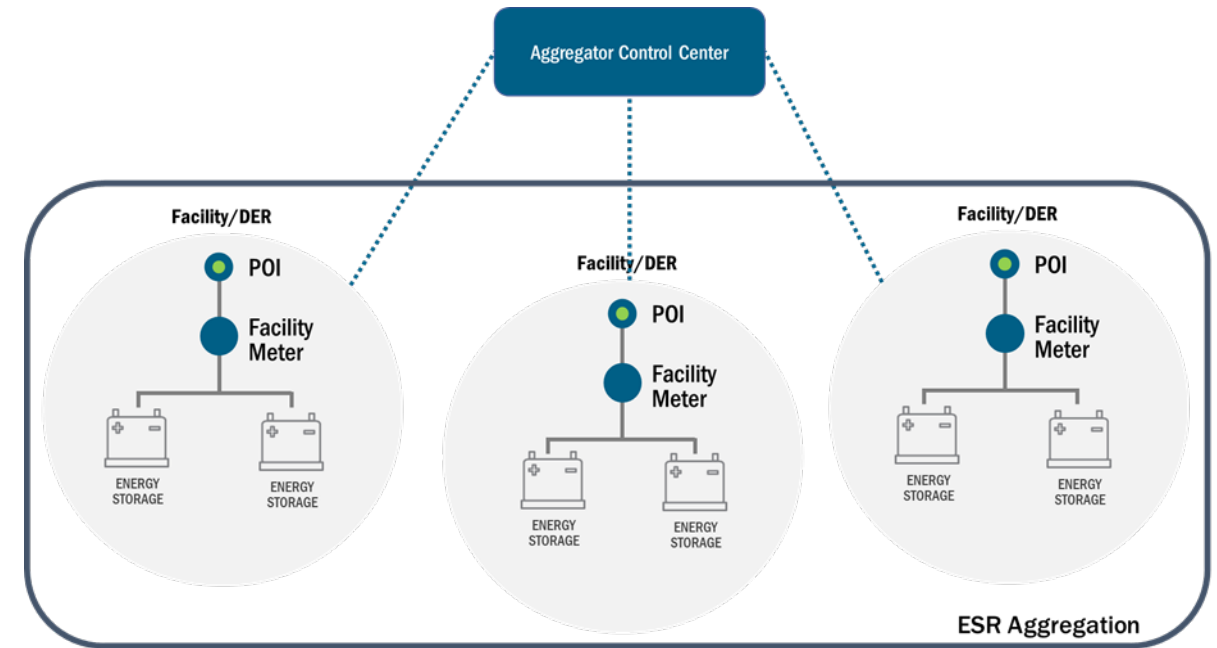
Aggregation Example – DER Aggregation

- An Aggregation that includes more than one Resource type (heterogenous) or only Demand Side Resources will be referred to as a “DER Aggregation.”



Aggregation Example: Single Resource Type Aggregation

- An Aggregation that is composed of a single Resource type, with the exception of Demand Side Resources (which participates as a DER Aggregation), will be subject to the market rules applicable to that Resource type. For example, an Aggregation comprised entirely of ESR facilities will be subject to all market rules that apply to an ESR.



Aggregation Participation

Aggregation Participation

- **Except for single Resource type LESR Aggregations, Aggregations that want to provide one or more Ancillary Services and/or Capacity must also participate in the Energy market.**
- **Aggregations will be treated as always available for dispatch, consistent with their Bids.**
 - The NYISO will not accept the submission of commitment parameters, nor will it evaluate those commitment parameters.
- **The Aggregation will offer Energy using a bid curve representing the continuous, fully dispatchable, operating range of the Aggregation, or bid curve representing a fixed amount.**

Aggregation Participation

- **Aggregation eligibility to provide one or more of the NYISO’s ancillary service products depends on the composition of the Aggregation.**
- **An Aggregation that seeks to provide any one of the following services must be comprised of DER facilities that are each individually capable of providing said service(s), based on the existing requirements of the NYISO Market Services Tariff and Ancillary Services Manual:**
 - Regulation
 - Operating Reserve
 - Spinning Reserve
 - 10-Minute Non-Synchronized Reserve
 - 30-Minute Reserve
- **Aggregations are not eligible to provide the following Ancillary Services in the NYISO market:**
 - Voltage Support Service
 - Black Start Capability Service
- **An Aggregator may enroll Aggregations of DER to begin Regulation or Reserve market participation at any time after beginning Energy market participation and adhering to the prerequisites and verification testing documented in the NYISO’s Ancillary Services Manual– there are no annual deadlines or notification requirements associated with Regulation or Reserves market participation.**
 - For details regarding Aggregation participation in any of the aforementioned services, please refer to the NYISO’s Ancillary Services Manual.

Aggregation Participation

- Aggregators may qualify Aggregations as ICAP Suppliers in the NYISO market.
- Capacity market participation requirements are available in the NYISO's ICAP Manual and ICAP AMS User's Guide.
- Aggregation participation in the NYISO-administered Capacity market is based on the capabilities of the individual facilities that comprise Aggregations. Aggregations may offer into the Strip, Monthly, and Spot market auctions.
- The NYISO will present additional language to address annual elections and DMNC testing for Aggregations at a future ICAPWG.

Aggregation Enrollment

Aggregation Enrollment

- **An Aggregator that has successfully completed the NYISO Customer Registration and DER Aggregator Registration processes and has contracted with DER that have successfully interconnected to the NYCA may enroll those facilities in an Aggregation.**
 - Enrollment of DER and Aggregations, and subsequent changes to enrollments, is completed using the NYISO's Aggregation System.

Aggregation Enrollment

- **Aggregation enrollments may be submitted on a monthly basis.**
 - Please note: A DER Aggregation must contain at least one facility in order to be submitted, while a Single Resource Type Aggregation must contain at least two facilities in order to be submitted.
- **The Aggregation enrollment process begins with the request for an Aggregation ID in the Aggregation System.**
 - The Aggregation ID is a unique identifier that will be assigned to each Aggregation.
 - Once an Aggregation ID has been assigned, the Aggregator may begin to associate DER facilities to the Aggregation
 - In order to request an Aggregation ID, the Aggregator must have identified the Transmission Node to which the Aggregation and all DER facilities in the Aggregation will electrically map. The requisite data and all instructions describing how to enroll an Aggregation are included in the Aggregation System User's Guide.

Aggregation Enrollment

- **An Aggregator is responsible for submitting all documentation necessary to support enrollment of DER in each Aggregation.**
 - All documentation must be submitted to the NYISO Distributed Resources Operations (DRO) group at DER@nyiso.com on or before the same date that the Aggregation enrollment record is imported into the Aggregation System.
 - If the Aggregation's physical or operational characteristics change such that any of the required documentation also changes, the Aggregator is responsible for submitting a new version of the applicable document(s) to the NYISO on or before the date that the updated Aggregation enrollment record is imported into the Aggregation System.
 - The information required for each Aggregation and DER is identified in the Aggregation System User's Guide.
- **The NYISO may also request additional documentation to support the enrollment review process if necessary.**

DER Enrollment

DER Facility Enrollment

- **An Aggregator is responsible for enrolling each individual DER facility, including all composite assets, in the NYISO Aggregation System.**
- **The Aggregator may assign a DER facility to an Aggregation by providing the Aggregation ID of the desired Aggregation on the facility enrollment record.**

DER Facility Enrollment

- **The NYISO will process data for all DER entering an Aggregation once for each month.**
 - The NYISO will review individual DER facilities as part of a holistic Aggregation review workflow, completed each month.
- **DER enrollment data is either 1) provided by the Aggregator manually, or 2) auto-calculated based on the data for all composite assets in the given facility.**
- **The DER enrollment process may begin after an Aggregation ID has been assigned.**
 - The Aggregator is not required to create an Aggregation enrollment record before creating facility enrollment records, however the facilities must be assigned to an Aggregation enrollment in order for all validations to successfully occur.
 - DER facility enrollment data is submitted to the NYISO for review as part of an Aggregation. That is, each DER facility must be associated with/assigned to an Aggregation when the enrollment data is submitted.
 - Each facility will receive a unique Facility ID, assigned by NYISO, used to identify the DER facility throughout the NYISO Aggregation System.
- **The requisite data and all instructions describing how to enroll a facility are included in the Aggregation System User's Guide.**

DER Facility Enrollment

- **An Aggregator is responsible for submitting documentation to support the enrollment data provided to the NYISO for each DER facility. All documentation must be submitted to the NYISO at DER@nyiso.com on or before the same date that the DER facility enrollment record is imported into the Aggregation System.**
 - If the DER facility's physical or operational characteristics change such that any of the required documentation also changes, the Aggregator is responsible for submitting a new version of the applicable document(s) to the NYISO on or before the date that the updated DER facility enrollment record is imported into the Aggregation System.
- **The NYISO may also request additional documentation to support the enrollment review process as needed.**

Duplicate Enrollments

- **There can be only one active enrollment for a given DER facility in the Aggregation System.**
 - The same DER facility may not be enrolled in two Aggregations at once, by the same or different Aggregators.
 - Additionally, a DER may not participate simultaneously in other NYISO programs, e.g., SCR.
 - If an Aggregator is found to be attempting to enroll a facility that is already enrolled as part of the portfolio of a different Aggregator, or if multiple Aggregators attempt to enroll the same facility for a given month, then the NYISO will review the information submitted by the Aggregator for the applicable facility.
- **Please be advised that a duplicate enrollment attempt may result in a temporary separation of the DER facility from the market until the issue can be resolved by NYISO staff.**

Enrollment Review and Management

Participation Model Transitions

- **Generators and Demand Side Resources are permitted to transition to the DER participation model and will be added to an Aggregation on a monthly basis.**
 - Please note that the requirements and important deadlines vary depending on the participation model that the resource currently uses, and when it intends to transition to the DER participation model.
 - Existing Market Participants must register as an Aggregator prior to beginning the DER transition process.
- **The draft Aggregation Manual contains details addressing each of the following transition use cases:**
 - SCR
 - EDRP
 - DSASP/DADRP
 - BTM:NG
 - Existing Non-Demand Side Resources (e.g., a standalone Generator)

NYISO Enrollment Workflow

- **The DER enrollment process includes a 30-day NYISO review period immediately preceding the targeted month of DER participation.**
 - This process starts after all safety and reliability issues identified by the DU are resolved before NYISO will begin its own review.
- **The NYISO will review several aspects of the DER and Aggregation, including but not limited to:**
 - Evaluation of Energy/Capacity Limitations (ELR/CLR Resources)
 - Telemetry communication establishment for individual Aggregations
 - Review of proposed market services (Energy, Ancillary Services, etc.)
 - MW declarations – Injection, Withdrawal, and Demand Reduction
 - Load reduction plan, if applicable
 - Proposed alternative telemetry mechanism(s)
 - Ancillary services verification test preparations
- **The NYISO will complete:**
 - 1) review and approvals of each DER and the total Aggregation to operate in the market, and
 - 2) configuration and testing of the telemetry communication channels necessary from the Aggregator to the TO to the NYISO, and directly between the Aggregator and the NYISO if the Aggregator chooses parallel communications to the TO and NYISO.
- **At the conclusion of this enrollment review period, assuming the review is successful, the Aggregation and all associated DER will be successfully enrolled in the NYISO market, with the DER effective start date being the first month following the month in which the NYISO concludes its review. Aggregators will receive a notification from the NYISO’s Aggregation System that the status of the DER and Aggregation will become ‘Enrolled’ effective on the applicable date. The DU will also receive notice from the NYISO of enrollments for the coming month at the end of the review period.**

Aggregation & DER Management

- **After an Aggregation and DER are enrolled in the NYISO market, an Aggregator may modify the characteristics of the Aggregation or DER.**
 - This process is described in the Aggregation System User’s Guide.
- **An Aggregator may also change the composition of an Aggregation:**
 - An Aggregator may Add a new facility to an Aggregation by associating the applicable Aggregation ID with the DER facility enrollment record in the Aggregation System.
 - An Aggregator may remove a DER facility from an Aggregation by removing the Aggregation ID from the DER facility enrollment record, thereby disassociating the Aggregation and DER data.
 - The Aggregator may remove a DER facility from one Aggregation, and then add the DER facility to a different Aggregation.
- **The Aggregator also has the ability to separate an Aggregation from the markets, which withdraws the Aggregation from all market participation effective at the beginning of the next calendar month.**
 - Aggregation separation is not subject to review and approval by the NYISO or DU.
 - Aggregators will be responsible for all existing obligations of its Aggregations such as penalties, existing bids, or schedules.

Next Steps

Next Steps

- **The NYISO intends to review any final modifications to the Aggregation Manual at ICAPWG in May or June, prior to pursuing a vote at BIC and OC.**
- **Please provide any feedback on the language presented today by COB Wednesday, May 24.**
- **Please send any questions that were not addressed during this presentation to: DER_Feedback@nyiso.com**

DER Deployment Status

2023 DER Deployment Milestones

- **April 27: NYISO began accepting Customer Registration for Aggregators.**
- **Tariff is expected to become effective summer 2023 – enrollment of DER and Aggregations begins**
- **Date of Enrollment + Workflow Reviews: Distribution Utility review and NYISO workflow begins upon submission of Aggregation and DER enrollment data to the Aggregation System; expected to take approximately 90 days.**

Manuals and Guides

- **The NYISO will return to present the following remaining manuals throughout Q2 in preparation for DER deployment:**
 - Aggregation Manual – Brief summary of mitigation rules for Aggregations; addressing feedback
 - Reference Level Manual – Reviewed at the May 8, 2023, ICAPWG; training provided on May 12, 2023
 - ICAP Manual – No additional updates anticipated, addressing feedback
- **User's Guides are not reviewed in Working Groups.**
 - The NYISO intends to publish the following User's Guides throughout prior to deployment:
 - Aggregation System User's Guide
 - Market Participant User's Guide
 - GOCP User's Guide
 - Wind and Solar Plant Data User's Guide
 - RLS User's Guide
 - AMS Automated Market User's Guide
 - DRIS User's Guide
- **The Direct Communications Procedure (CEII) is updated to reflect the DER participation model and is available for stakeholder request via stakeholder services online form request:**
 - <https://nyiso.tfaforms.net/187>

NYISO DER Market Training Information

- **Current target training schedule – *Subject to change***

Training	Target Training Date(s)	Announcement target date
GOCP Market Trials Training for TO Users (Complete)	April 26 – May 03	Complete
GOCP Market Trials for TO Users	May 09-11; May 16-18	Complete
GOCP Market Trials for Aggregator Users	May 23 – 25	May 9 – Registration open through May 16
DER Onboarding Suite	June 16	June 16 – eLearning, fact sheets, infographics, FAQs available
GOCP Standalone Training (3 unique modules for Aggregator, DSO, TO)	June 16	June 16 – eLearning available
DER Bid-to-Bill Participation	June 29; August 14 – August 25	June 29 – eLearning overview available July 24 – August 10 – registration open for August WebEx training

Our Mission & Vision



Mission

Ensure power system reliability and competitive markets for New York in a clean energy future



Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation

Questions?