

Introduction to NYISO Onboarding

Intended for Distributed Energy Resources (DERs)

Market Training Team

Market Training, NYISO

Onboarding of New Resources – DER Education Suite

Q2 2024

eLearning Module



Module Topics



INTRODUCTION TO
NYISO ONBOARDING



ONBOARDING
RESOURCE CHECKLIST



ONBOARDING OF NEW
RESOURCES: DER
EDUCATION SUITE
CONTENTS



USEFUL WEBSITE
INFORMATION



COMMERCIAL
PARTICIPATION
INSIGHTS

Introduction to NYISO Onboarding

- Distributed Energy Resources seeking to sell Energy, Capacity and/or Ancillary Services into the NYISO-Administered markets as part of an Aggregation must complete the formal NYISO onboarding process
- The DER Participation Model will only be available to Aggregations
- Aggregations are facilities comprised of:
 - Two or more different Resource types OR Demand Response
 - *Or* a single Demand Resource
 - *Or* two or more single Resource types
 - *Or* a Generator

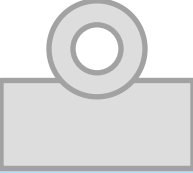
Introduction to NYISO Onboarding

- The onboarding process consists of a series of steps to be taken by the applicant, in collaboration with multiple NYISO departments
- This DER onboarding education suite has been designed to help guide new Aggregators through that process



Onboarding Resource Checklist

In no particular order...

- 
- Interconnection Process
 - Customer Registration Packet
 - Capitalization & Credit Forms
 - Aggregator Registration
 - Communications Testing
 - Reference Levels Established
 - ICAP Enrollment Complete
 - Familiarize w/NYISO Invoicing



Onboarding of New Resources: DER Education Suite Contents

DER Education Suite Table of Contents

Topic	Resource Mode
Introduction to Onboarding	eLearning Module
1. Interconnection	FAQ (PDF)
2. NYISO’s Customer Registration & Aggregator Registration	eLearning Module
3. Credit Requirements	Fact Sheet (PDF)
4. DER Information Community Portal (DERIC)	FAQ (PDF)
5. End-to-End Communications Testing	Fact Sheet (PDF)
6. Market Mitigation & Analysis: Energy Market Reference Levels	Info Graphic (PDF)
7. Outage Scheduling	Info Graphic (PDF)
8. Installed Capacity (ICAP) Enrollment for Participation	Info Graphic (PDF)
9. Metering Requirements	Fact Sheet (PDF)
10. Metering for Settlements	Fact Sheet (PDF)
11. DER Settlements	Quick Reference Sheet (PDF)
12. Resource Appendix: NYISO Onboarding of New Resources DER Participation	Appendix (PDF)

NYISO Website Information

NYISO Document Library



REPORTS

MANUALS, TECH BULLETINS & GUIDES

REGULATORY RESOURCES

Tariffs, FERC Filings & Orders

Reliability Compliance

DELIVERING THE GRID OF THE FUTURE

Reliably managing NY's power grid & wholesale energy markets

LEARN MORE ABOUT US

NYISO Manuals, Tech Bulletins & Guides



The screenshot shows the NYISO website's navigation and content. At the top, the 'LIBRARY' menu item is highlighted with a blue box. Below it, a dark blue overlay contains a list of categories: 'REPORTS', 'MANUALS, TECH BULLETINS & GUIDES' (highlighted with a yellow arrow), 'REGULATORY RESOURCES', 'Tariffs, FERC Filings & Orders', and 'Reliability Compliance'. To the right, a 'Contact Customer Support' box is visible. The main content area features a large heading 'MANUALS, TECH BULLETINS & GUIDES' and a paragraph of introductory text. A table titled 'Manuals, Tech Bulletins & Guides' is shown at the bottom, with columns for 'Name', 'Published', and 'Type'. The table lists three categories: 'Guides', 'Manuals', and 'Technical Bulletins', each with a dropdown arrow.

LIBRARY > MANUALS, TECH BULLETINS & GUIDES

MANUALS, TECH BULLETINS & GUIDES

REPORTS

MANUALS, TECH BULLETINS & GUIDES

REGULATORY RESOURCES

- Tariffs, FERC Filings & Orders
- Reliability Compliance

Contact Customer Support
stakeholder_services@nyiso.com

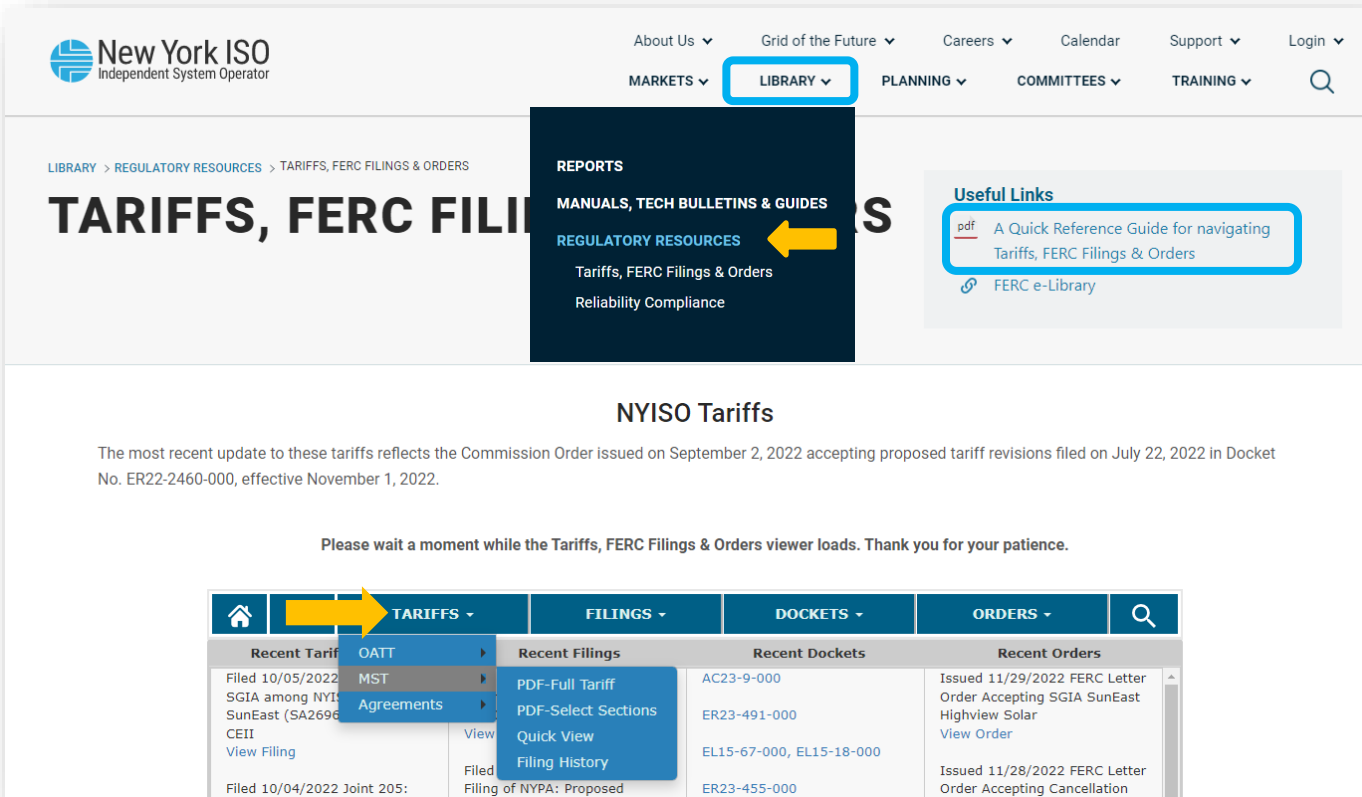
Document Library

- Reports
- Manuals, Tech Bulletins & Guides**
- Regulatory Resources **▼**
 - Tariffs, FERC Filings & Orders
 - Reliability Compliance

NYISO Manuals specify and explain the procedures and policies used to operate the bulk power system of the New York Control Area and to conduct wholesale electricity markets, consistent with the NYISO Tariffs and Agreements. Manuals are organized by subject area and listed alphabetically; manuals with appendices and/or attachments are contained in folders and listed first in each subject area. NYISO Guides serve to assist users with information needed to participate in NYISO Administered Markets. NYISO Technical Bulletins explain changes to, and provide instruction for, NYISO processes and procedures. Refer to the Retired NYISO Technical Bulletins and Manuals link below for a list of retired NYISO documents.

Manuals, Tech Bulletins & Guides		
Name	Published	Type
▼ Guides		
▼ Manuals		
▼ Technical Bulletins		

NYISO Regulatory Resources



The screenshot shows the NYISO website's navigation menu with 'LIBRARY' highlighted. A dropdown menu is open, showing 'REGULATORY RESOURCES' with a yellow arrow pointing to it. Below this, the 'REGULATORY RESOURCES' section is visible, with 'TARIFFS, FERC FILINGS & ORDERS' highlighted. A 'Useful Links' section contains a PDF link for a 'Quick Reference Guide for navigating Tariffs, FERC Filings & Orders' and a 'FERC e-Library' link.

TARIFFS, FERC FILINGS & ORDERS

LIBRARY > REGULATORY RESOURCES > TARIFFS, FERC FILINGS & ORDERS

REGULATORY RESOURCES

- Tariffs, FERC Filings & Orders
- Reliability Compliance

Useful Links

- [pdf](#) A Quick Reference Guide for navigating Tariffs, FERC Filings & Orders
- [FERC e-Library](#)

NYISO Tariffs

The most recent update to these tariffs reflects the Commission Order issued on September 2, 2022 accepting proposed tariff revisions filed on July 22, 2022 in Docket No. ER22-2460-000, effective November 1, 2022.

Please wait a moment while the Tariffs, FERC Filings & Orders viewer loads. Thank you for your patience.

Recent Tariff	Recent Filings	Recent Dockets	Recent Orders
Filed 10/05/2022 SGIA among NY1 SunEast (SA2696) CEII View Filing	OATT MST Agreements View	AC23-9-000 ER23-491-000 EL15-67-000, EL15-18-000 ER23-455-000	Issued 11/29/2022 FERC Letter Order Accepting SGIA SunEast Highview Solar View Order Issued 11/28/2022 FERC Letter Order Accepting Cancellation
Filed 10/04/2022 Joint 205:	Filing of NYPA: Proposed		

NYISO Market Training Resources

MARKET TRAINING

Market Training provides market and project implementation training for market stakeholders and NYISO employees for the purpose of supporting the implementation of the NYISO market.

[COURSE CATALOG & REGISTRATION](#)[ONLINE LEARNING](#)[COURSE MATERIALS & INFOGRAPHICS](#)

Course Catalog & Registration >

NYISO courses are offered online, as well as on-site in Rensselaer, NY. Visit upcoming courses and register online.

Downloads & Helpful Resources

[Course Catalog](#)

Online Learning >

Watch online, narrated courses at our own pace, free of charge. Visit this section to begin your self-paced online learning anywhere, anytime.

Hotels with NYISO Rates

[Comfort Inn | 518.479.3217](#)

Course Material & Infographics >

For your convenience, NYISO posts all course slides for reference and use. Visit this section to view and download past, present and future course material.

Contact Training

[Debbie Doyle | 518.356.6274](#)

Commercial Participation Insights

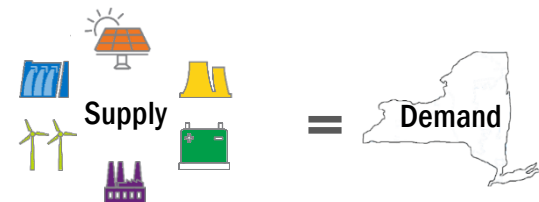
DER Participation Requirements

- **Qualifying for wholesale market participation requires that Aggregations:**
 - Satisfy all enrollment requirements as per tariff rules
 - Satisfy all interconnection requirements
 - Meet a minimum offer size requirement of 100 kW
 - Meet injection and withdrawal rate of at least 0.1 MW for a period of at least one hour
 - Satisfy all data modeling and metering requirements
 - Meet qualifications required for Installed Capacity Market participation

Commercial Participation

■ Wholesale Energy Markets

- Energy production from Resources participating in the NYISO's energy markets are used to meet demand in New York
- Aggregations may enter supply offers into:
 - **Day-Ahead Market:** To procure supply to meet the forecasted load for the next operating day
 - **Real-Time Market:** The Balancing Market to meet any differences between the energy scheduled in the Day-Ahead Market and Real-Time demand



Commercial Participation

■ Ancillary Services

- Aggregations providing Ancillary Services
 - **Support transmission of energy from resources to loads**
 - **Maintain reliable operation of NY State power system**
- Aggregations may qualify to provide:
 - **Operating Reserves**
 - Backup generation in the event of a **real time power system contingency**
 - **Regulation and Frequency Control**
 - Provides 6 second balancing of load and generation to maintain the scheduled Interconnection frequency at 60 Hz



Commercial Participation

■ Installed Capacity Market

- Aggregations participating in the NYISO's Installed Capacity market
 - **Contribute to procuring sufficient resource capability to meet expected maximum energy needs plus an added margin**
- Aggregations that participate in the Installed Capacity (ICAP) Market as suppliers offer to sell capacity:
 - **Offer to sell capacity through NYISO administered auctions, *or* engage in Bilateral Capacity Transactions**
 - **Payments for capacity sales go toward recovering a portion of their fixed costs**



Next Steps

Post Onboarding Next Steps

■ Continued Education Opportunities

- Access Bid-to-Bill eLearning modules
 - Energy Storage Resource Participation Model
 - Co-located Storage Resource Participation Model
 - Behind-the-Meter Net Generation (BTM:NG)
 - Distributed Energy Resource Participation Model (*coming Q3-Q4 2023*)
- Access Web Application eLearning modules
 - Grid Operations Coordination Portal (GOCP) Navigation (*coming Q3-Q4 2023*)
 - Aggregation System Navigation (*coming Q3-Q4 2023*)
- Register and Attend NYISO Instructor-Led Training
 - New York Market Orientation Course (NYMOC)
 - Accounting & Billing Workshop
 - Intermediate Installed Capacity Course



Post Onboarding Next Steps

■ Customer Support

- Reach out to NYISO Stakeholder Services with your questions
 - stakeholder_services@nyiso.com
 - 518-356-6060

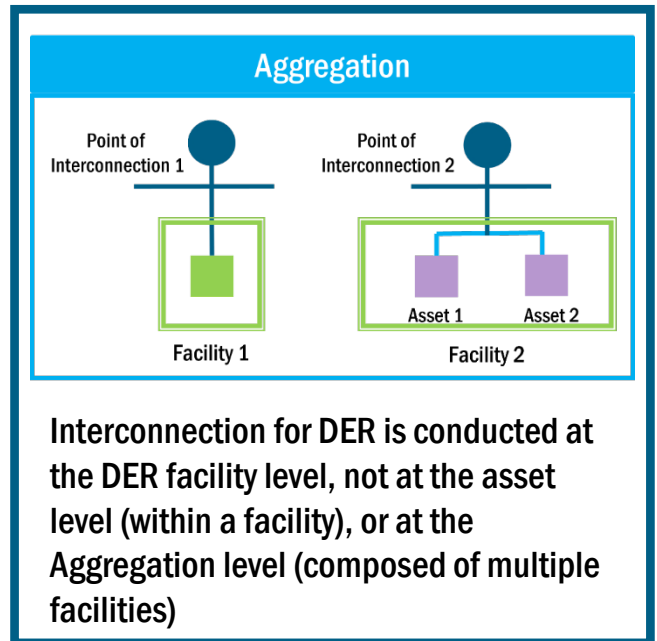
■ Member Relations Services

- Participate in NYISO Shared Governance
 - customer_registration@nyiso.com
 - Meeting Attendance only, *or*
 - Membership with voting rights



Distributed Energy Resources (DER) Interconnection

- All non-Demand Side Resource DER facilities must have a fully executed interconnection agreement (or an unexecuted interconnection agreement filed with FERC) either through:
 - NYISO's Interconnection process, OR
 - An applicable non-NYISO Interconnection process (*e.g.*, Transmission Owner or SIR interconnection process)
- For NYISO market participation, the NYISO requires that the interconnection studies be completed and approved prior to the enrollment of the DER facility in the NYISO's Aggregation System
- The enrollment process draws on the information provided by the Interconnection study process for validation of DER physical and operating characteristics



NYISO's Interconnection Process

- A DER facility can connect to the NY Transmission System or FERC-jurisdictional Distribution System through the NYISO's interconnection process (note that DERs that intend to participate solely as part of an Aggregation are not subject to NYISO's interconnection process)
- For guidance regarding whether an interconnection is FERC-jurisdictional, see Attachment A to the NYISO's Transmission Expansion & Interconnection Manual
- Series of studies and detailed analyses to determine:
 - Whether adding the new resource creates reliability issues on the system
 - System upgrades that may be required to maintain system reliability if project impacts system reliability
 - Cost of the upgrades
- The steps in a DER facility's Interconnection process are the same as any other type of traditional generator submitting an Interconnection Request when the DER facility interconnects to the NY Transmission System or FERC-jurisdictional Distribution System (unless intending to participate solely as part of an Aggregation)
- A DER facility's ERIS and CRIS values will be determined through the Interconnection Process
 - Facilities that are Demand Side Resources are not required to complete the NYISO's interconnection process and are not required to have ERIS or CRIS

Distributed Energy Resources (DER) Interconnection

Non-NYISO Interconnection Process

- DER Facilities that interconnect to the non-FERC-jurisdictional distribution system and intend to participate solely as part of an Aggregation, or that are otherwise not subject to the NYISO's interconnection procedures, obtain the equivalent of ERIS through the non-NYISO Interconnection Procedures such as:
 - Transmission Owner Interconnection process , OR
 - NYS Standardized Interconnection Requirements
 - For further information on the NYS SIR, please see the information at the following link: <https://dps.ny.gov/distributed-generation-information>.
- For CRIS, all DER Facilities must proceed through applicable NYISO CRIS requirements in the NYISO's interconnection procedures, regardless of the interconnection process through which it obtained ERIS.

ERIS

- ERIS is the basic Interconnection service allowing a Developer to interconnect their wholesale DER to the NYCA Grid
- In accordance with NYISO Minimum Interconnection Standard
- Allows for Energy market participation to enable wholesale grid to receive electric energy from the resource
- DER facilities, except for Demand Side Resources, must obtain ERIS either through NYISO's Interconnection process or obtain an ERIS equivalent value (seasonal Max Net Value) through one of the non-NYISO Interconnection processes mentioned in this factsheet
 - This value is then reviewed through NYISO processes during enrollment, and the distribution utility review

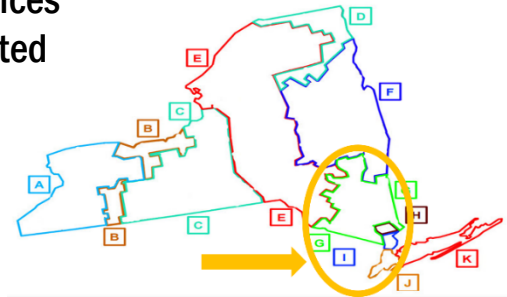
CRIS

- CRIS is one of the eligibility requirements allowing a Developer to participate as an Installed Capacity Supplier
- In accordance with NYISO Deliverability Interconnection Standard
- Allows for Installed Capacity Market participation to enable resource to offer capacity as a supplier
- DER facilities, except for Demand Side Resources, larger than 2 MW must obtain CRIS through deliverability studies even if the DER facility participated in a Non-NYISO interconnection process
 - Resources smaller than 2 MW do not need to participate in a Deliverability study to obtain CRIS
 - For details on the maximum permissible CRIS that can be requested for a DER with an Energy Duration Limitation, please refer to the Aggregation manual

Distributed Energy Resources (DER) Buyer Side Mitigation

When does the Buyer Side Mitigation evaluation take place?

- The purpose of Buyer Side Mitigation: Prevent uneconomic entry from artificially suppressing Installed Capacity prices
 - Buyer Side Mitigation rules only apply for the Mitigated Capacity Zones (New York City and Zones G-J)
- BSM evaluation process occurs concurrently with the NYISO deliverability studies, where CRIS request is evaluated



At what level is Buyer Side Mitigation conducted for DER Participation?

- Buyer Side Mitigation evaluation is conducted at the individual DER facility level for facilities that are in Mitigated Capacity Zones, that form the Aggregations that participate in the NYISO's Installed Capacity market

How are DER facilities evaluated for Buyer Side Mitigation?

- DER Facilities that can provide greater than 2 MW injection to the grid will be evaluated for Buyer Side Mitigation
- Evaluations happen concurrent with the deliverability study process of NYISO's Interconnection process and could lead to offer floors or be granted an exemption depending on study results
- This process is similar to other generator types that go through BSM

Are there any type of DER facilities that do not undergo Buyer Side Mitigation?

- DER facilities that are qualified to satisfy the goals specified in New York State Climate Leadership and Community Protection Act (CLCPA) are excluded from Buyer Side Mitigation evaluations
- For example, Energy Storage Resources (ESRs), Demand Response, Wind and Solar Intermittent Power Resources are all excluded from BSM evaluations
- [Please refer to MST Section 23.2 for a full definition of Excluded Facilities](#)

NYISO Customer Registration and Aggregator Registration

Intended for Distributed Energy Resources (DER)

Market Training Team

Market Training, NYISO

Onboarding of New Resources – DER Education Suite

Q2 2024

eLearning Module

Module contents

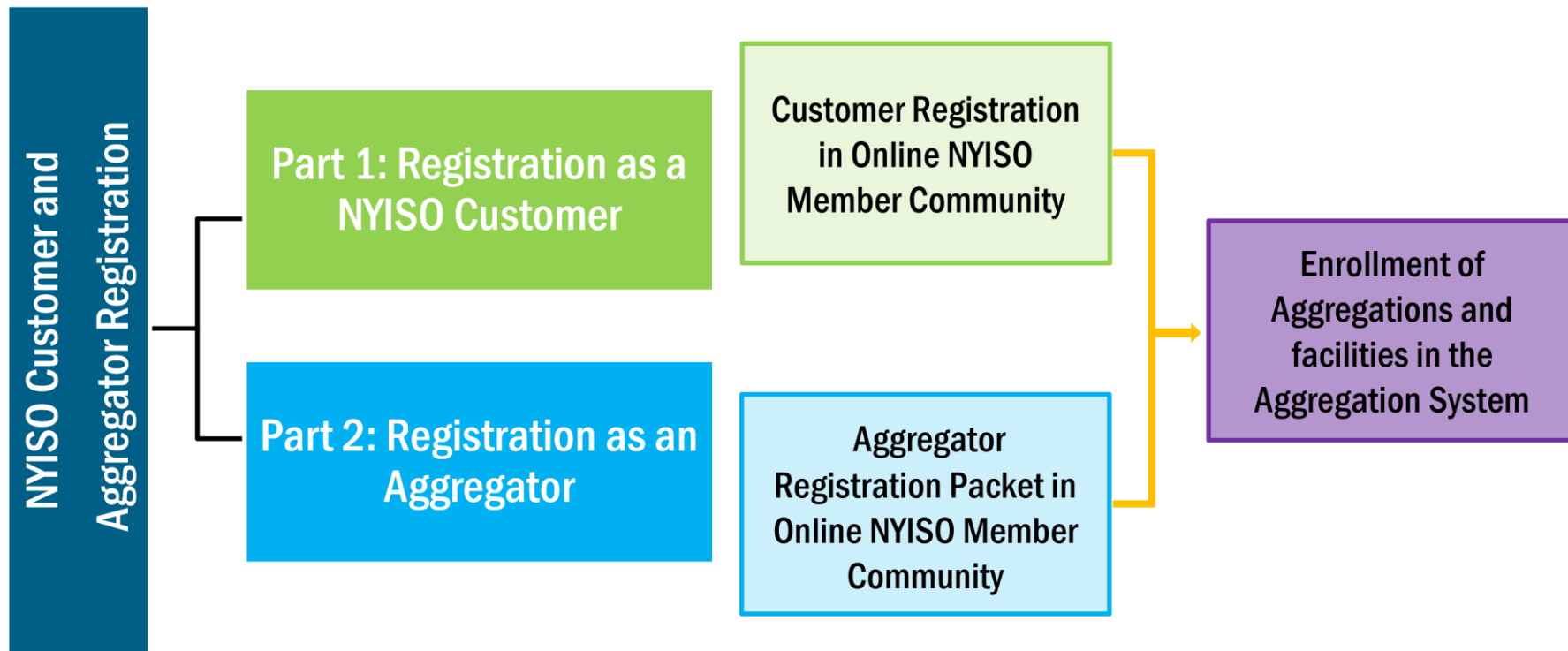
- **Two-Part Process of Registration**
 - NYISO Customer Registration
 - Aggregator Registration
- **Facility and Aggregation Enrollment in the Aggregation (Agg) System**

Overview of NYISO's Registration Process

- The NYISO's registration process for a new applicant entity/organization that wishes to participate in NYISO's Energy, Capacity and/or Ancillary Services, as an Aggregator consists of two main parts:
 - NYISO Customer Registration Process
 - Aggregator Registration process
 - Aggregator: Entity who represents one or more facilities as an Aggregation participating in the NYISO wholesale market
 - An entity/organization that is already a NYISO customer, and would like to participate in the NYISO markets as an Aggregator, and enroll Aggregations needs to only go through the Aggregator Registration Process
- Once this two-part Registration process is complete, the Aggregator will be able to enroll Aggregations and facilities for participation in the NYISO's Agg System interface

Two-Part Process of Customer And Aggregator Registration

Two Part Process of Registration



Part 1: Registration as a NYISO Customer

- **Must be completed by any new applicant that wishes to become a NYISO customer**
- **Applicant must comply with the terms and conditions set forth in the NYISO tariffs and is qualified to take the services provided for in the NYISO tariffs**
 - **Open Access Transmission Tariff (OATT)**
 - **Market Administration and Control Area Services Tariff (MST)**
- **Applicant must complete all Registration requirements to qualify**

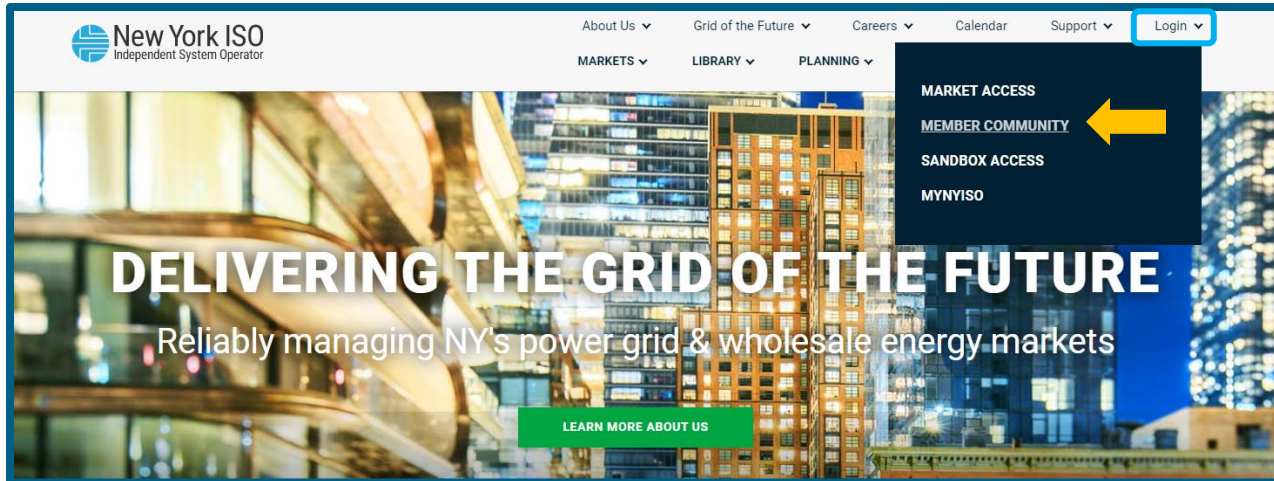
Registration as a NYISO Customer

- There is no Registration, membership, or other fee for a new Aggregator registering to be a NYISO Customer
- Once approved as a NYISO Customer, an Aggregator will incur a share of:
 - NYISO's Operational Costs
 - Other financial obligations pertaining to its role of participation in NYISO's Energy, Ancillary Services and Installed Capacity Markets
- Calculations of Rate share and other financial obligations calculated according to Tariff defined procedures

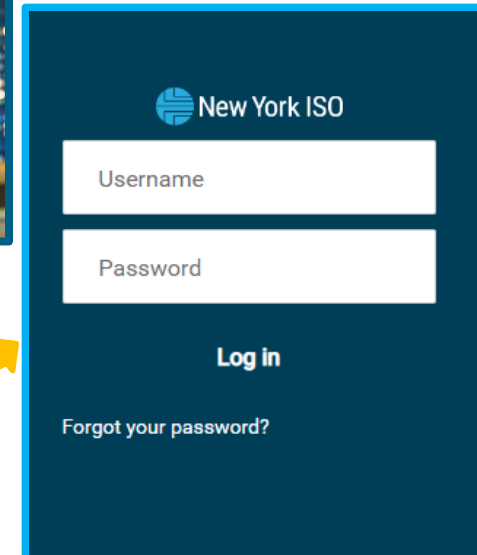
NYISO Customer Registration

- Registration package is submitted through the NYISO's Member Community Online Portal
- Initial Steps:
 1. Applicant's Initial Email inquiry to customer_registration@nyiso.com
 2. Assignment of login credentials for the Member Community Portal for main Administrator and other appropriate users in Organization
 3. Completion of:
 - NYISO Customer Registration Application
 - Service Agreement OATT Attachment A
 - Service Agreement MST Attachment A
 - Satisfy Minimum Participation Criteria
 - Provide Credit Support, as applicable

NYISO Customer Registration



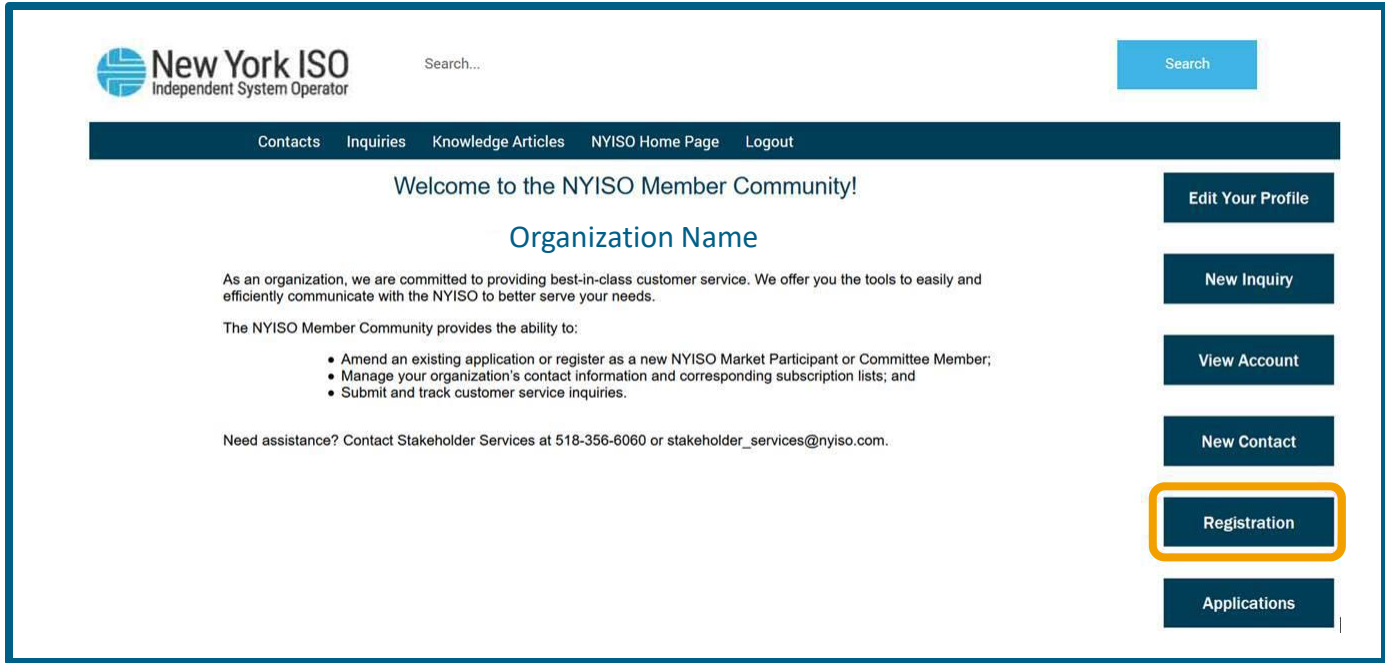
Accessing the NYISO's Member Community Portal



The image shows the NYISO login form. It features the NYISO logo at the top, followed by input fields for "Username" and "Password". Below the fields is a "Log in" button and a link for "Forgot your password?".

NYISO Customer Registration

NYISO Member Community Portal



The screenshot displays the NYISO Member Community Portal interface. At the top left is the NYISO logo (Independent System Operator). To its right is a search bar with the text "Search..." and a blue "Search" button. Below the logo and search bar is a dark blue navigation bar with links for "Contacts", "Inquiries", "Knowledge Articles", "NYISO Home Page", and "Logout".

The main content area features a welcome message: "Welcome to the NYISO Member Community!". Below this is a section titled "Organization Name" with a sub-header "Organization Name". The text reads: "As an organization, we are committed to providing best-in-class customer service. We offer you the tools to easily and efficiently communicate with the NYISO to better serve your needs." It then states: "The NYISO Member Community provides the ability to:" followed by a bulleted list:

- Amend an existing application or register as a new NYISO Market Participant or Committee Member;
- Manage your organization's contact information and corresponding subscription lists; and
- Submit and track customer service inquiries.

At the bottom of the main content area, it says: "Need assistance? Contact Stakeholder Services at 518-356-6060 or stakeholder_services@nyiso.com."

On the right side of the page, there is a vertical column of dark blue buttons: "Edit Your Profile", "New Inquiry", "View Account", "New Contact", "Registration" (highlighted with an orange border), and "Applications".

NYISO Customer Registration

- **Minimum Participation Criteria:**
 - Customer specific eligibility requirements set forth in Tariffs
 - List of parent company and any Affiliates
 - Risk management: Approved risk management policies and procedures
 - Training: Appropriate training to bid/schedule and participate in NYISO administered market areas as an Aggregation
 - Operational capabilities: Personnel resources and technical abilities to respond to NYISO communications and directions
 - Financial capabilities: Appropriate experience and resources to satisfy obligations to NYISO
 - Capitalization: Minimum capitalization requirement

NYISO Customer Registration

- **Minimum Participation Criteria:**
 - **Minimum Capitalization Requirement**
 - **Maintain at least US \$10 million in assets or at least US \$1 million in tangible net worth**
 - **As evidenced by Customer's or its guarantor's most recent audited annual financial statements**
 - **If unable to meet Minimum Capitalization Criteria, post with NYISO either:**
 - **\$200,000 to participate in any/all of the ISO-Administered Markets other than the TCC market, or**
 - **\$500,000 to participate in any/all of the ISO-Administered Markets including the TCC market**
 - **The Customer may not use this security to support any NYISO credit requirements**

NYISO Customer Registration

■ Timeline Facts:

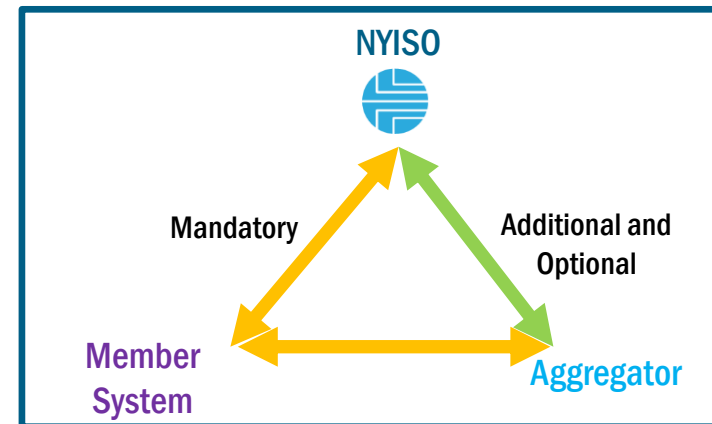
- The primary Registration process of review, validation and approval of a new applicant as a NYISO customer may take up to, or more than, 60 days
- Incomplete applications expire 12 months from the date of receipt by the NYISO or 6 months from the date of NYISO legal approval, whichever is earlier
- The Interconnection Study process does not need to be completed before starting Customer Registration
 - However, by the time Registration is completed, all the steps in the Interconnection process needs to be completed, and the Interconnection Agreement needs to be executed
 - Successfully completed interconnection agreement either through the NYISO's Small Generator Interconnection Process or an acceptable non-NYISO interconnection procedure
 - Standard guidance from NYISO: NYISO Customer Registration process should be initiated at least 60 days before the date the Aggregator wishes to start enrolling Aggregations and facilities in the Agg system

Part 2: Registration as an Aggregator

- Can be done concurrently with the NYISO Customer Registration Process
- Aggregator Registration packet requires:
 - Applicant Operational contact information
 - 24/7/365 control center contact information for operational coordination
 - Alternate Operational contact information also required
 - Operational contact(s) must have access to and be authorized to provide all information requested by NYISO Power System Operations
 - Operational contact(s) must have the ability to control the Aggregator's Aggregations when directed to do so by the NYISO or Transmission Owner

Telemetry Communication Requirements

- Telemetry requirements for end-to-end communication:
 - Six second telemetry basepoints from the NYISO to the aggregation
 - Real time aggregated operational data from each aggregation to the NYISO
- Acceptable configurations for two-way communications
 - **Mandatory:** Aggregators communicate with the NYISO through their respective Member System
 - Aggregators must coordinate with their respective Member Systems to establish the technical requirements for telemetry communication between them
 - **Additional and Optional:** Direct communication between the Aggregator's control center and NYISO
 - Aggregator must submit Infrastructure and Technology Plan as part of Aggregator Registration packet

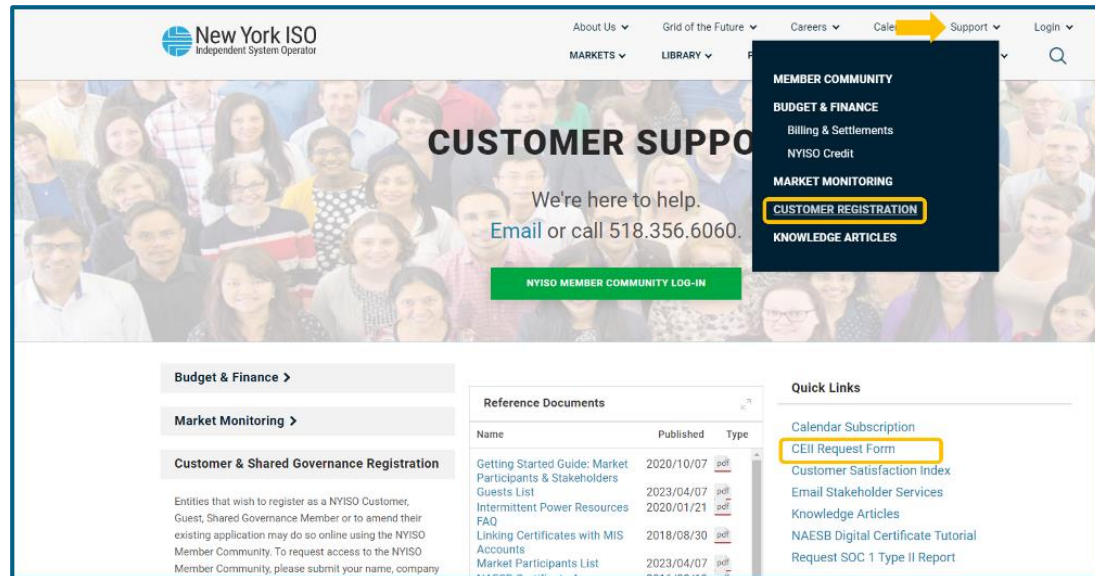


Direct Communication set up

- **Requirements for Direct communication between Aggregators and NYISO**
 - **Submit Infrastructure Technology Plan as part of Aggregation Packet**
 - **Includes information on:**
 - Aggregator control center configuration
 - System and communication architecture
 - Data management practices
- **Two permissible configurations for direct two-way communication between NYISO and the Aggregator Control center:**
 - **Multiprotocol Label Switching (MPLS) network**
 - **Data protocol for MPLS: ICCP**
 - **Software-Defined Wide Area Network (SD-WAN) network**
 - **Data Protocol: ICCP or DNP3**
- **Aggregators must coordinate with the applicable Member System for communication requirements between the Aggregator's Control Center and Member System**

Direct Communication Set-up

- Direct Communications Procedure details procedure to set up direct communications with the NYISO can be obtained by the Aggregator by completing:
 - CEII (Critical Energy Infrastructure Information) form/Nondisclosure Agreement (NDA)

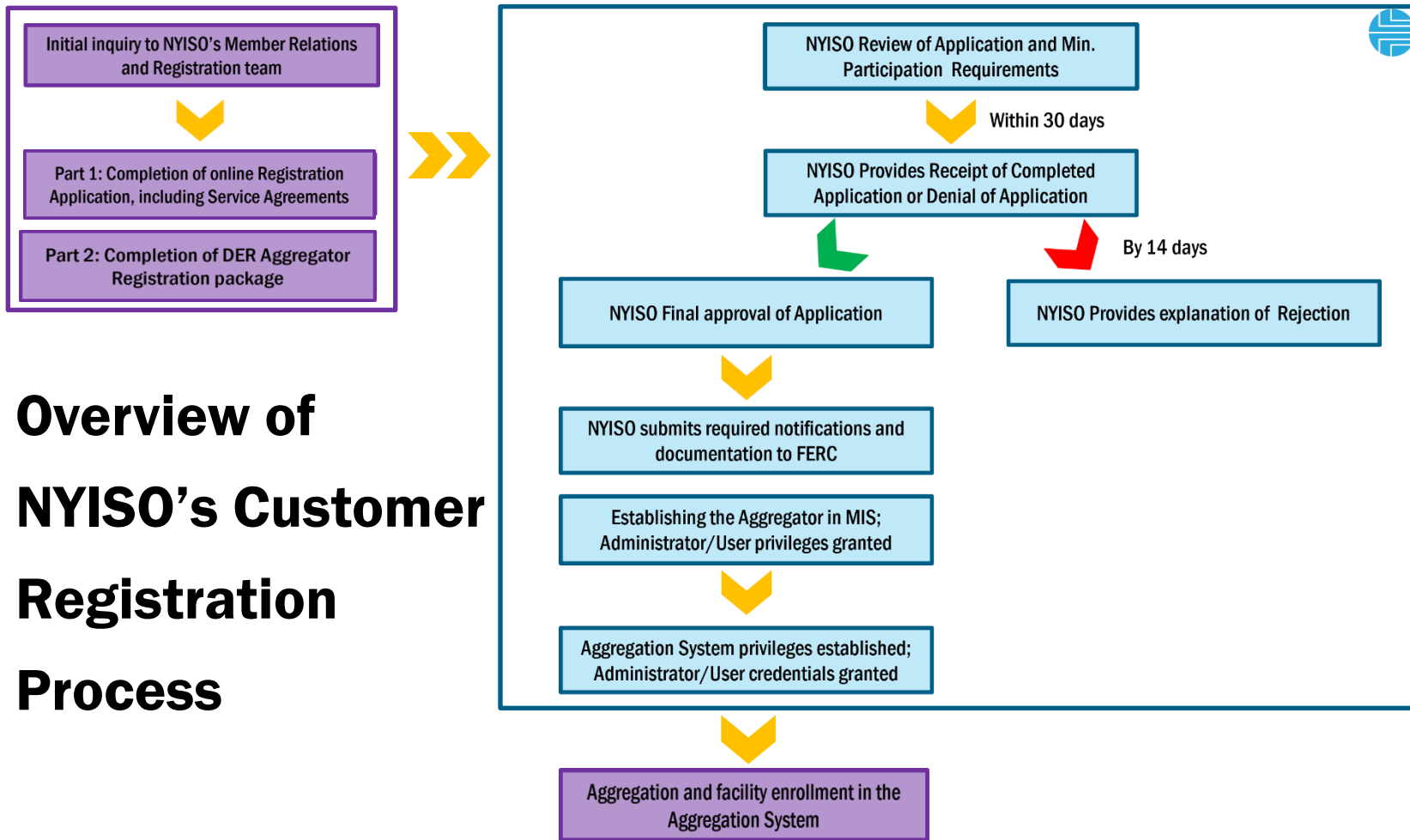


Third Party Service Provision

- **Third party for communication services/scheduling and dispatch for Aggregations**
 - Aggregators must contact Customer Registration to understand how the third party may interact with the NYISO on behalf of the Aggregator
 - Third party service providers must register as NYISO Customers or Guests prior to providing services to an Aggregator
 - Information for third party service provision:
 - **Scheduling of Aggregations and DER: Scheduling Service Provider/Agency Agreement form of the NYISO Customer Registration Packet**
 - **Communication services and the details of the Direct Communications Service Provider Agreement : Email NYISO at customer_registration@nyiso.com**
 - **Exception: Aggregators of DER Aggregations intending to use qualified Meter Services Entity (MSE) to perform meter data services do not need to submit either document mentioned above**

Customer and DER Aggregator Registration Process – Next Steps

- Once Customer Registration and Aggregator Registration procedures are completed, Aggregator will be established in the NYISO's Market Information System (MIS) and other appropriate NYISO systems
 - Aggregation System privileges are granted to the Aggregator's Organization, which allows the MIS Administrator to assign the applicable privileges to designated users representing the Aggregator's Organization
 - The MIS Administrator for the Aggregator's Organization must enter the information to establish each user on behalf of the Organization before granting access privileges
 - Individual users with the appropriate Aggregation System access can now start the Enrollment process for DER facilities and Aggregations



Overview of NYISO's Customer Registration Process

Aggregation and Facility Enrollment - Agg System

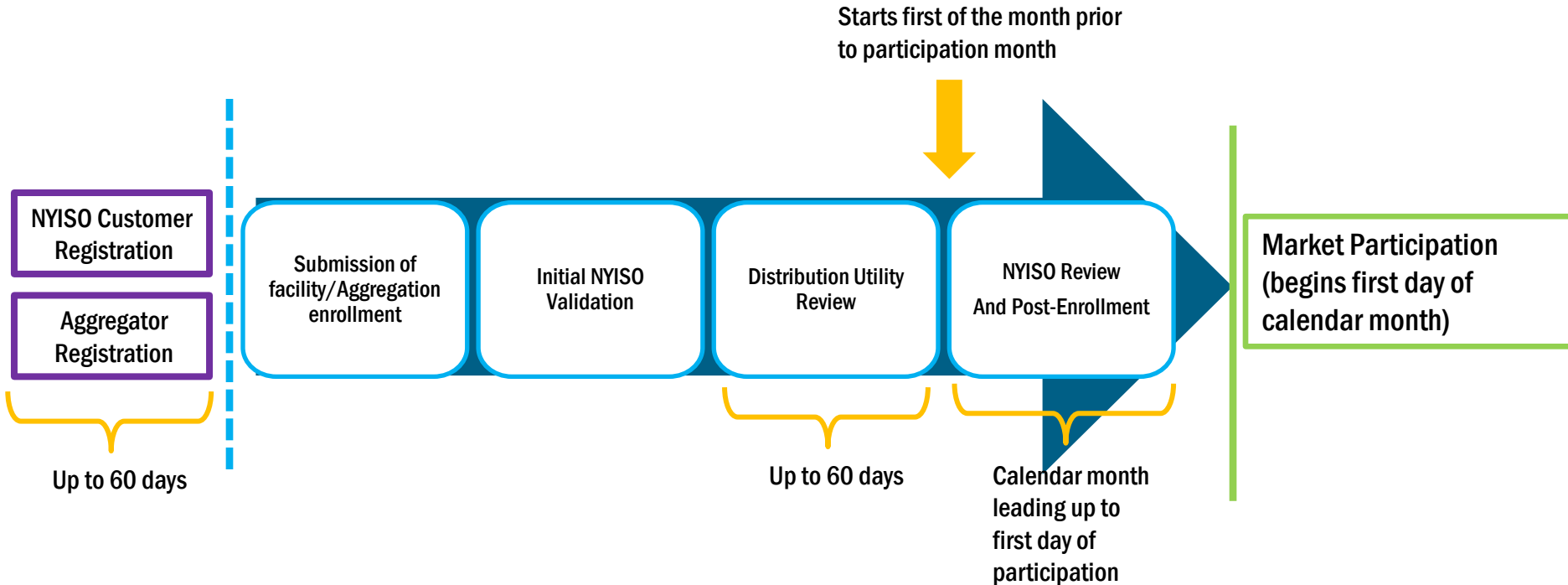
Aggregation and Facility Enrollment

- **NYISO's Aggregation System:**
 - Online interface for Enrollment of Aggregations and facilities for participation in NYISO's Energy, Ancillary Services and Installed Capacity markets and management of enrollment of Aggregations
 - Designated personnel from the Aggregator organization will have access to the Aggregation System
 - Aggregation enrollments may be submitted on a monthly basis
- **Aggregators are responsible for submitting applicable documentation to support the enrollment data for each Aggregation and facility as directed**
 - Complete list of applicable documents provided in the Agg System User's Guide

Pre-Enrollment Checklist

- **Interconnection Agreement:**
 - All individual facilities that will inject Energy onto a distribution system or transmission system must have a signed Interconnection agreement; either through:
 - NYISO's Small Generator Interconnection Procedure (SGIP), or
 - Acceptable non-NYISO Interconnection procedure
 - Demand side facilities do not need an Interconnection Agreement to participate as DER
- **Telemetry communications:**
 - Aggregator must successfully establish telemetry infrastructure connection with the applicable Member System prior to Enrollment in the Agg system
 - Aggregator to Member System connection is a pre-requisite to the Enrollment process
- **Utility pre-enrollment/registration process (Optional):**
 - Aggregators may obtain information and data from their applicable Distribution utility to support its enrollment of DER facilities with NYISO
 - Examples: Non-NYISO Interconnection Agreement information from DU records
 - The applicable DU must be contacted for details on potential access to information

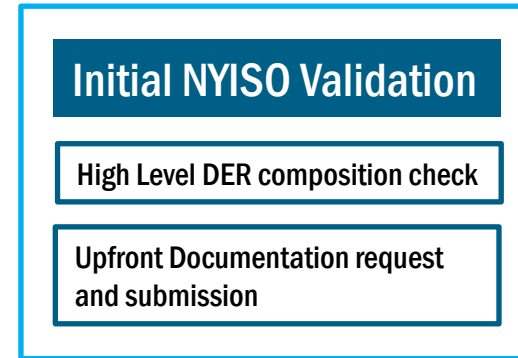
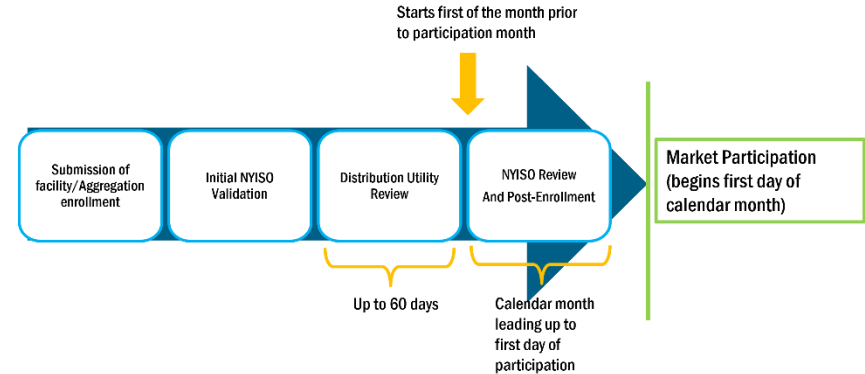
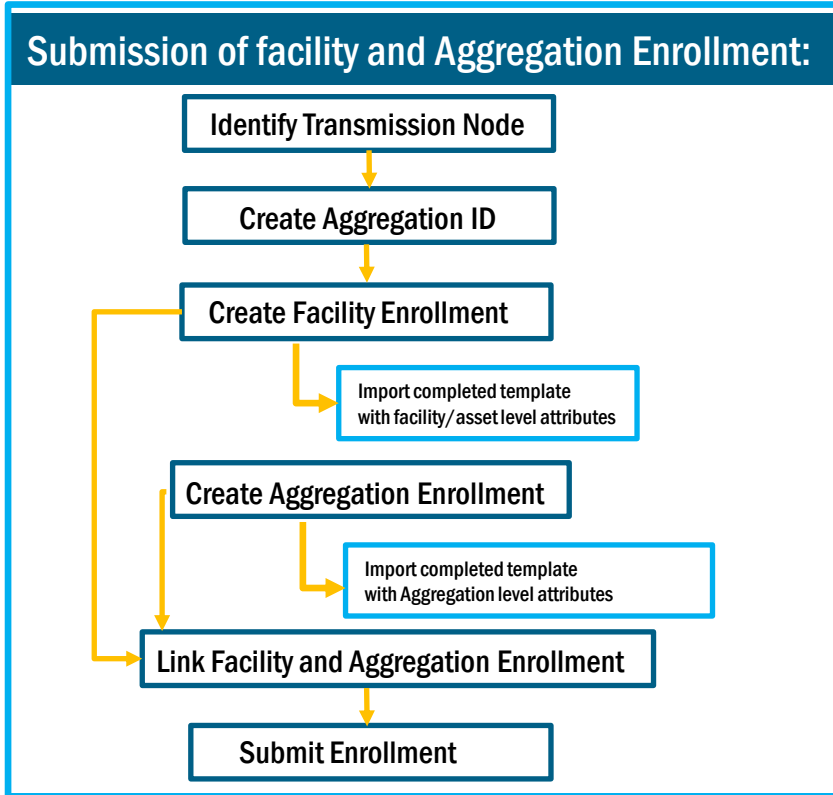
Overview of Enrollment Process in Agg System



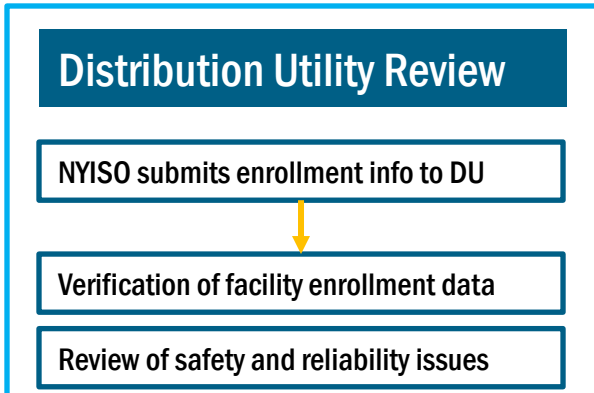
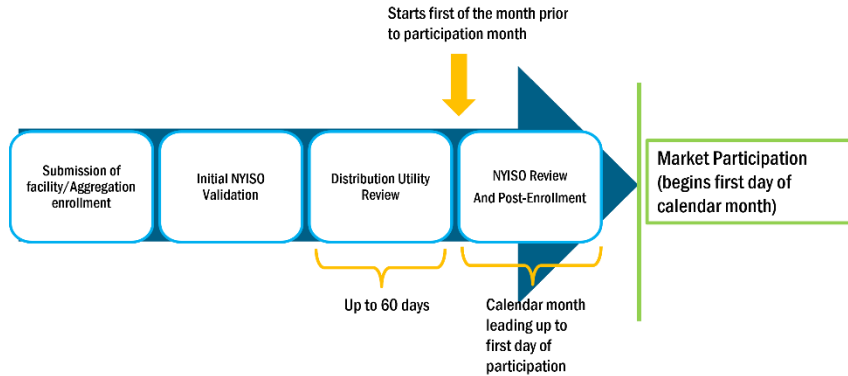
Note: Timelines on this slide are an estimate

Overview of Enrollment Process in Agg System

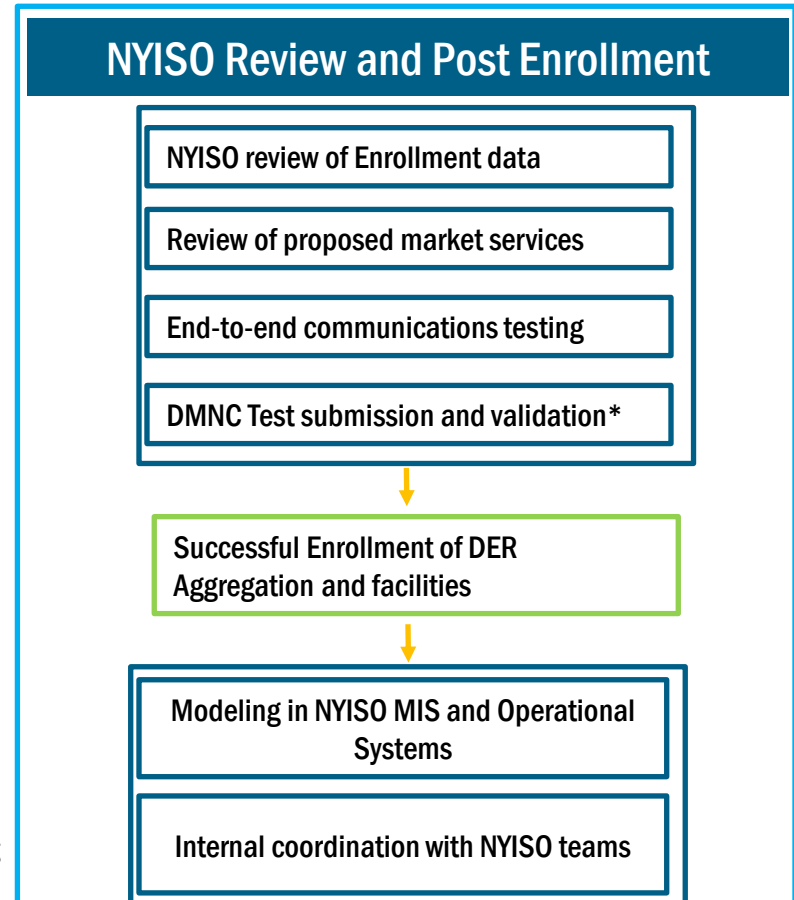
Submission of facility and Aggregation Enrollment:



Overview of Enrollment Process in Agg System



* For existing facilities transitioning to a DER Participation model



Enrollment Process in the Agg System

- For a detailed, step-by-step process of the Enrollment process for Aggregations and facilities in the Agg system, please refer to the following:
 - E-learning module: NYISO's Aggregation System (Agg System) training
 - Aggregation Manual
 - Aggregation System User's Guide

Contact Information

- **Customer Registration and Aggregator Registration:**
 - NYISO's Member Relations team
 - customer_registration@nyiso.com
- **Aggregation and Facility Enrollment in the Agg system:**
 - Distributed Resources Operation Team
 - DER@nyiso.com
- **General NYISO related Inquiries:**
 - Stakeholder Services Team
 - Stakeholder_services@nyiso.com or 518-356-6060

Credit

Market Participants can see their individual market credit requirements within the **Credit Management System**



The Credit Management System (CMS) is a New York Independent System Operator (NYISO) software application designed to allow viewing and maintenance of Credit information by qualified users.



What documentation is required on a periodic and annual basis?

Annual/Periodic Submissions: Summary Matrix

- A. Market Participant authorized to participate in the TCC market
- B. Market Participant NOT authorized to participate in the TCC market
- C. Guarantor who has provided a guarantee to be used as collateral
- D. Guarantor who has provided an unlimited guarantee solely for capitalization purposes
- E. Market Participant who qualifies for and is using Unsecured Credit

Form	Due Date	A	B	C	D	E
NYISO Officer Certification Form and Credit Questionnaire	Annually by 4/30	X	X			X
Annual Financial Statements*	Within 90 days of fiscal year end	X	X	X	X	X
Quarterly Financial Statements	Within 60 days of quarter end			X		X
Risk Policies**	Annually by 4/30	X				
Road Map if requested	Date requested by the NYISO	X				
Affiliate Forms***	Annually by requested due date	X	X			X

- * If the Market Participant is using financial statements to meet their capitalization requirement or is using Unsecured Credit, the annual financial statements must be audited.
- ** If the Market Participant's Risk Policies have not materially changed since the last annual submission, only the Road Map needs to be submitted indicating that there have been no material changes.
- *** If the Market Participant is using Unsecured Credit and they do not submit the Affiliate Form by the date requested, the Unsecured Credit will be removed and secured credit will be required until the form is received.

NYISO's Salesforce - DER Information Community (DERIC) Portal

1. What is the NYISO's Salesforce - DERIC used for?

The DERIC portal is a database of DER facilities that are connected to a Distribution System located in New York State. The information contained in the database is provided by New York Transmission Owners, and is also available from the New York State Department of Public Service Standardized Interconnection Requirements (SIR) Inventory Information (available at <https://dps.ny.gov/distributed-generation-information>). Each month, New York Control Area Transmission Owners update data for new and existing DER facilities (also referred to as projects) contained in the DERIC portal. Upon successful review by NYISO, the DER facility specific information will be maintained in the DERIC portal and may be used for enrollment of DER in an Aggregation for participation in NYISO's Markets. NYISO's Distributed Resources Operations (DRO) team will also use the information maintained in the portal for validation of facility and Aggregations enrollment.

2. What kind of information about DER facilities can be found on the DERIC portal?

The information available for each DER that is subject to the SIR or Transmission Owner interconnection process include the Project Identification number, locational information, electrical connectivity information, DER Generator type, and capacity information.

The main fields of interest to Aggregators, and that can subsequently be used for enrollment in the Agg System are:

- Non-NYISO project number,
- Max Summer Net ERIS - equivalent value,
- Max Winter Net ERIS – equivalent value, and
- Nameplate output

3. How can Aggregators view the DER facility specific information on the DERIC portal?

Aggregator organizations and admins will be provided access privileges and login credentials to the DERIC portal upon successful Registration as a NYISO customer and Aggregator. Aggregators can search all projects by Transmission Owner and/or by the Utility Interconnection number. The information contained in the DERIC portal may be used by Aggregators to review/validate project information for possible enrollment in an Aggregation through the NYISO's Aggregation System.

4. What is the timeline involved for facility specific interconnection records to be available in the DERIC portal?

DER facility specific interconnection records are expected to be available in the DERIC portal 6-8 weeks after the Transmission Owners update their respective project information monthly. Each monthly update will include new projects that have completed their distribution level interconnection agreements and updates to existing projects (including corrected information). For example, facility interconnection data for projects completed or updated by the end of February, will typically be available for Aggregator tracking and review by mid-April.

5. What are the next steps if Aggregators do not find the required information for specific DER facilities in the DERIC portal?

The NYISO obtains all information for the DERIC portal from Transmission Owners. If an Aggregator does not find information on its DER in the portal, it must contact both the NYISO at stakeholder_services@nyiso.com and DER_Portal_Services@nyiso.com, as well as the Ombudsman or representative for the respective Transmission Owner, for resolution.

Once DER facility information is available in DERIC, Aggregators can use the information from the respective Transmission Owner/utility to begin the enrollment process in the NYISO's Aggregation System.

End-to-End Communication Testing

Real-Time Telemetry and Communications set-up

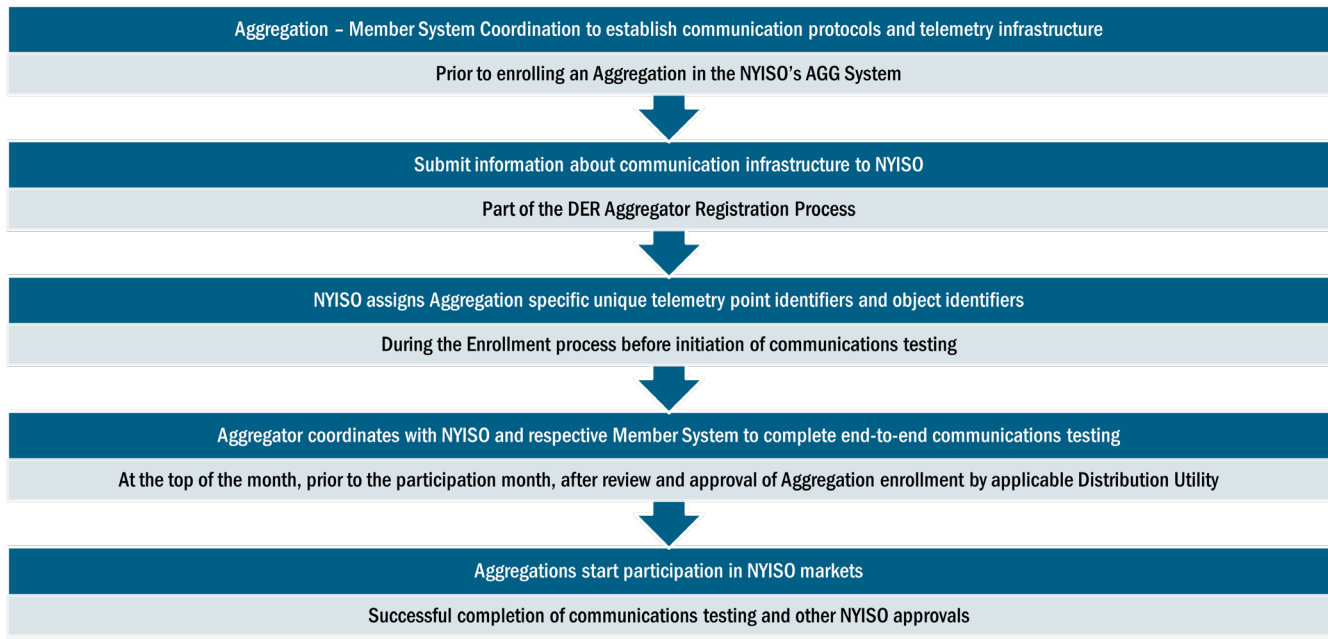
- Six-second telemetry is required for each Aggregation participating in the NYISO Markets.
 - Aggregators must receive real-time telemetry from each individual DER facility with a capability of 100 kW or greater. Aggregators may utilize a NYISO-approved alternative telemetry mechanism for DER facilities with a capability of less than 100 kW.
 - Telemetry data for each individual DER facility must be aggregated and sent to the applicable Member System and NYISO for each Aggregation.
- Please refer to the [NYISO Customer and DER Aggregator Registration module of the DER Onboarding Suite](#) for the two approved paths of communication for telemetry data.
 - Mandatory NYISO > Member System > Aggregator, and
 - Optional NYISO > Aggregator, Member System > Aggregator (in parallel).
- The Aggregator to Member System communication path is a pre-requisite to the Aggregation enrollment process.
 - Real-time communication protocols and telemetry infrastructure connection between the Aggregator and the applicable Member System must be established prior to enrolling an Aggregation in the Aggregation System.
 - NYISO requirements and procedures are detailed in the [Control Center Requirements Manual](#). All prospective Aggregators must consult with the applicable Member System for specific requirements beyond those outlined by NYISO, to establish the required connection.
 - Aggregators requesting direct communication with the NYISO for transmitting data and basepoint information must follow the procedures outlined in the [Direct Communications Manual](#), as well as reach out to NYISO Stakeholder Services to obtain the Critical Energy Infrastructure Information (CEII)/Nondisclosure Agreement (NDA).

End-to-end communications testing

- For additional details, please refer to the [Aggregation Manual Section 7.3.1](#). Aggregations will be assigned one or more unique telemetry Object IDs during the Aggregation Enrollment process.
 - The NYISO Power System Applications Engineering (PSAE) group will predefine telemetry Object ID blocks in Power Systems Explorer/Data Engineering (PSE/DE) for each Member System.
 - These blocks will include a range of points to be assigned to Aggregations that enroll in the applicable Member System's territory.
 - Aggregations (and their respective Member Systems) will receive email communication from the NYISO's Distributed Resources Operations (DRO) group about specific telemetry object IDs.
- Aggregators must coordinate with the respective Member System(s) to schedule and complete the Aggregator to Member System communications testing.

- the NYISO recommends that Aggregators complete communication testing in a timely manner and within the first 5 days of a calendar month, so that the other steps in the process can be completed in time for participation as soon as the start of the following month.
- Aggregator must communicate with the DRO and PSAE groups, as well as their Member System upon successful completion of communications testing.
 - Aggregator should indicate 1) that Member System testing has completed successfully, 2) that the end-to-end test between the Aggregator and NYISO, through the applicable Member System, can be scheduled.
 - The Aggregator should work with NYISO PSAE staff to schedule and coordinate final end-to-end testing of all applicable Aggregations at this time.
- Successful completion of communications testing is required for Aggregation enrollment in the Agg system and must be completed before the Aggregation begins participation.
 - Testing duration depends on the volume of Aggregations and complexity.

Figure: Summary of End-to-end communications testing for Aggregations



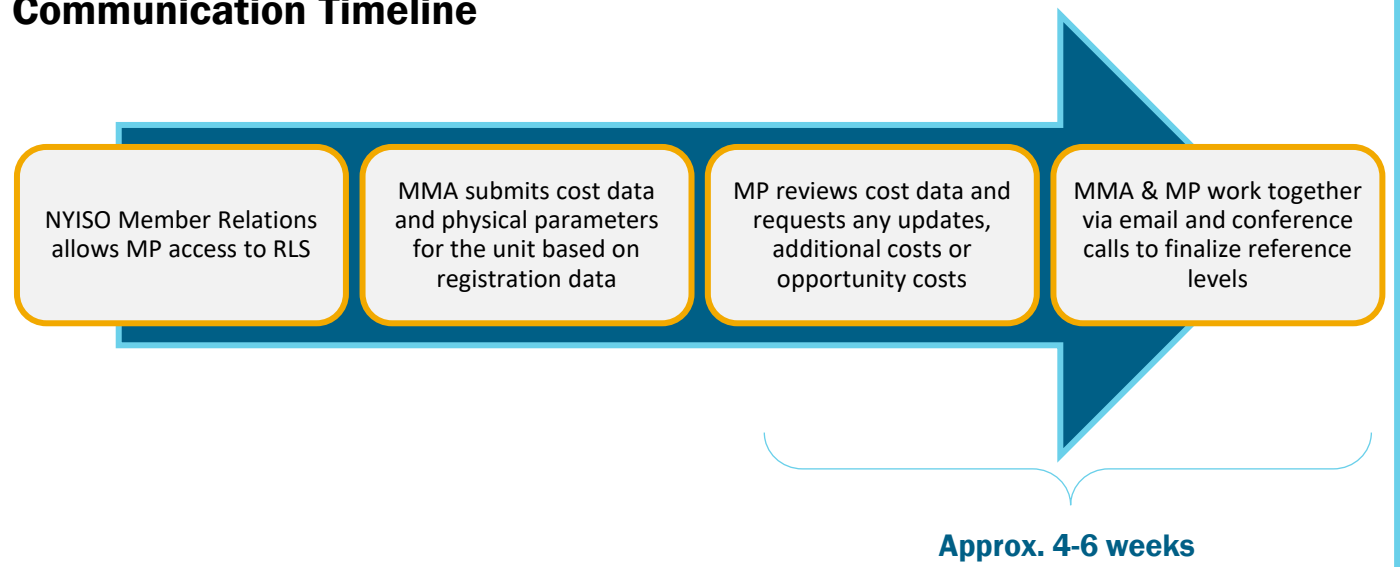
Market Mitigation & Analysis

Energy Reference Levels for DER Participation

What are Energy Reference Levels?

- Thresholds that NYISO establishes that provide Market Participants with a framework for conduct as well as provide NYISO a more defined way to monitor Market Participant conduct
- DER Energy Reference levels are based on NYISO managed cost data submissions submitted via **Reference Level Software (RLS)**
 - **RLS**
 - Access to current and historical reference levels
 - Check status of data submissions and reference level adjustment requests
 - Generates DAM and RT reference levels by unit on a daily and hourly basis

Communication Timeline



Additional Potential Adjustments

Fuel Cost Adjustments

- Temporary updates to reference fuel price and or fuel type that a supplier can submit with its energy bids when a Supplier's fuel cost for an Aggregator will temporarily differ from its indexed burdened fuel reference cost

Opportunity Cost Adjustments

- Temporary updates intended for any unit with regulatory, environmental, technical, or other restrictions that limit their availability, and reflect the net revenues that are expected to be foregone by producing MWh in lower-priced hours, (e.g. *hydroelectric generators with pondage*) Opportunity Costs are discussed and configured before being applied to a Reference Level.

Outage Scheduling



Outage Scheduling is the process by which NYISO evaluates and tracks planned and unplanned changes to operational availability of transmission and generating facilities.

Basis for Outage Scheduling Process

NYCA Reliability

Reliability Rules Compliance

Ensuring Sufficient Capacity

Impact to Neighboring Control Areas

What is required for DER onboarding with the NYISO?

New resources are required to submit a two-year maintenance schedule to the NYISO upon registration.

After the initial two-year maintenance schedule has been submitted, all subsequent updates and submittals should be provided through the Outage Management System (OMS).

Outage Management System (OMS)

- Secure, web-based application used for scheduling and tracking resource outages
 - NOTE:** Market Participants only see the outages that pertain to their own organization

Hardware/Software/Network Specifications

- Details can be found in OMS Training Modules

Additional Specifications upon Registration with the NYISO

- Users must have the following set up with NYISO Member Relations upon registration with the NYISO before Market Participants are able to access OMS through the NYISO website
 - NOTE:** Market Participants do not need these specifications to view the OMS Training Modules on the NYISO website

NAESB Digital Certificate

- Users must have a valid NAESB Digital Certificate installed

Market Information System (MIS)

- OMS users must have specific MIS privileges
 - OMS privileges must be set up for MIS account at the Org Level, **this privilege is assigned by the NYISO**
 - OMS users must also have OMS privileges assigned to the MIS account at the User Level, **this privilege is done by the organization's MIS Administrator**

Distributed Energy Resources (DER) Metering Configurations

DER Facility Revenue Grade Meter Requirements

- DER facilities must have a Revenue Grade Meter at the point of Interconnection to NYS Transmission or Distribution system
- Revenue Grade Metering infrastructure for individual DER facilities within Aggregations shall be based on the guiding examples provided in the [Revenue Metering Requirements Manual](#)

Meter Authority (MA):

- Aggregators of DER facilities must obtain wholesale metering and/or meter data services from Meter Authority (MA)
- Meter Authority: Entity responsible for calibration, maintenance, operation, and reporting of metered data from an electric revenue meter used in the wholesale electricity markets administered by the NYISO;
 - Could be a Member System, Meter Services Entity, or municipal Electric utility
 - See [Metering for Settlements fact sheet](#) for specifications

Submission of revenue grade meter data:

- Submission of Revenue Grade Meter Data will be at the Aggregation level, by the Aggregation's Meter Authority (MA)
- 3 channel Revenue grade metering for Aggregation: Total Injection MWh, Total withdrawal MWh (for charging of ESRs), and Demand Reduction MWh (for Demand Side Resources)



Audit and Verification:

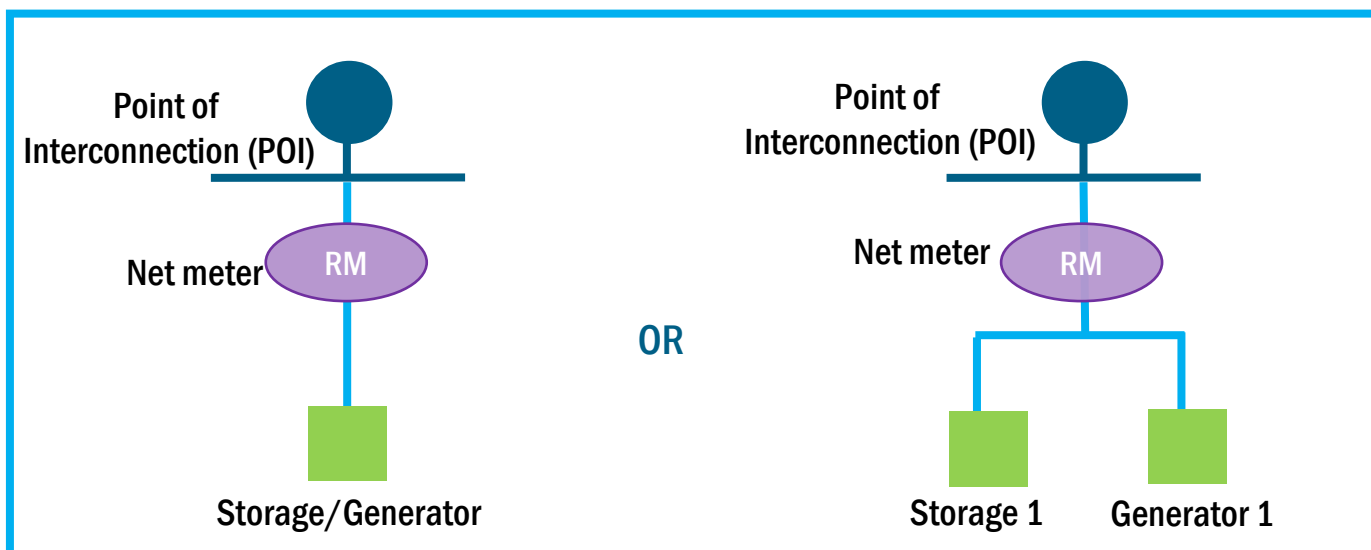
- Revenue grade metering data at the individual DER facility level may be requested by the NYISO for auditing and verification purposes
- Aggregators should verify that the applicable Meter Authority responsible for sharing Revenue Grade Meter Data with the ISO has access to that data for each individual DER facility

DER Facilities Revenue Grade Metering Configurations *

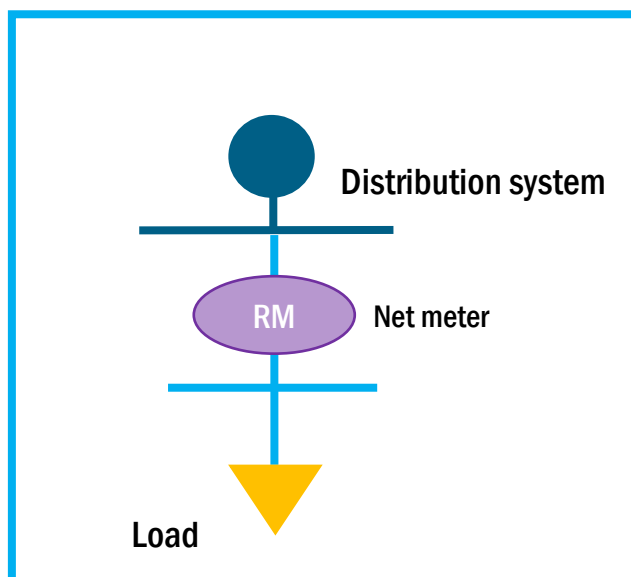
* Sampling of metering configurations, for illustrative purposes only. Alternate configurations possible.

Facility with single asset/multiple assets (no load)

Revenue grade meter data from net meter
 Response split into injection and withdrawal (if Storage is present)

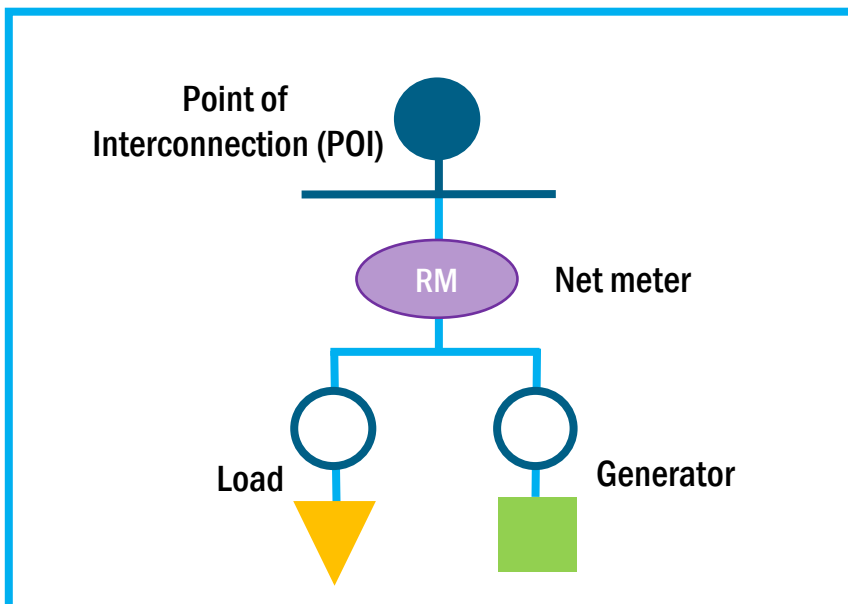


Facility with Load, no onsite generator

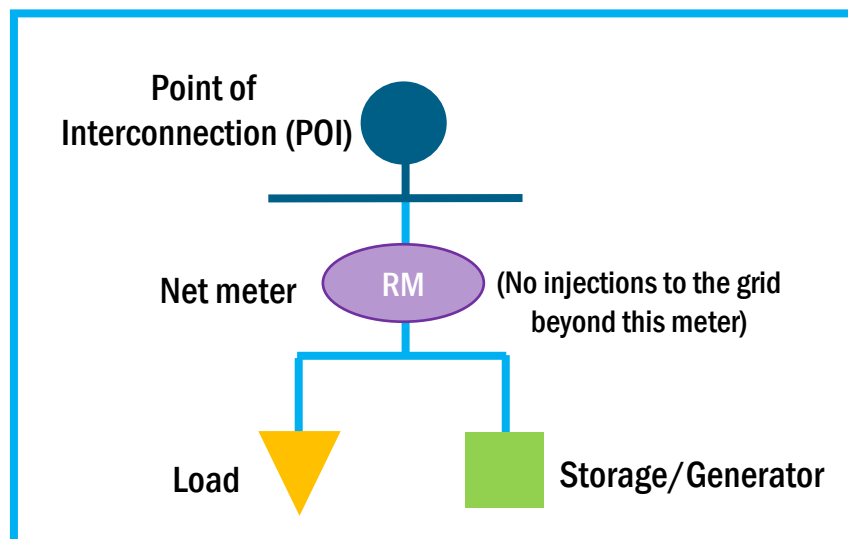


Revenue Grade Meter Data from net meter, performance is measured using a baseline

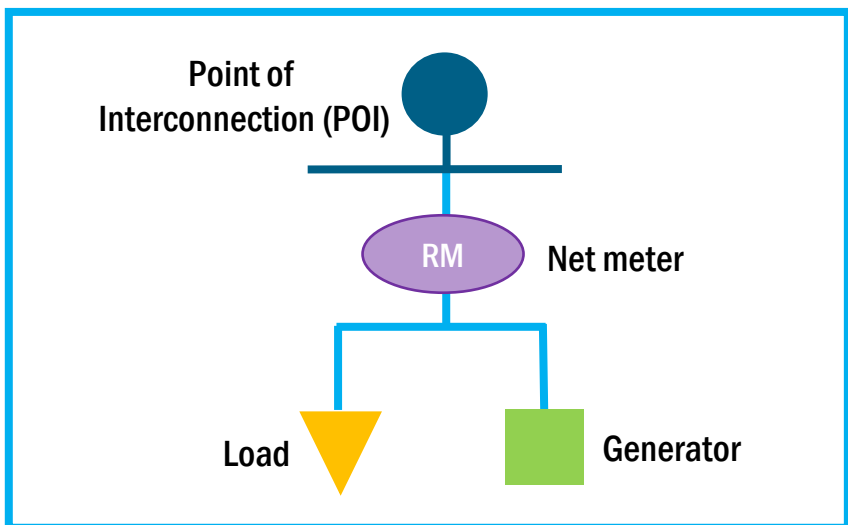
Facility with Load, with onsite generator



Option 1: DER Facility with Load and Generator / Energy Storage Resource; injection onto the Distribution system



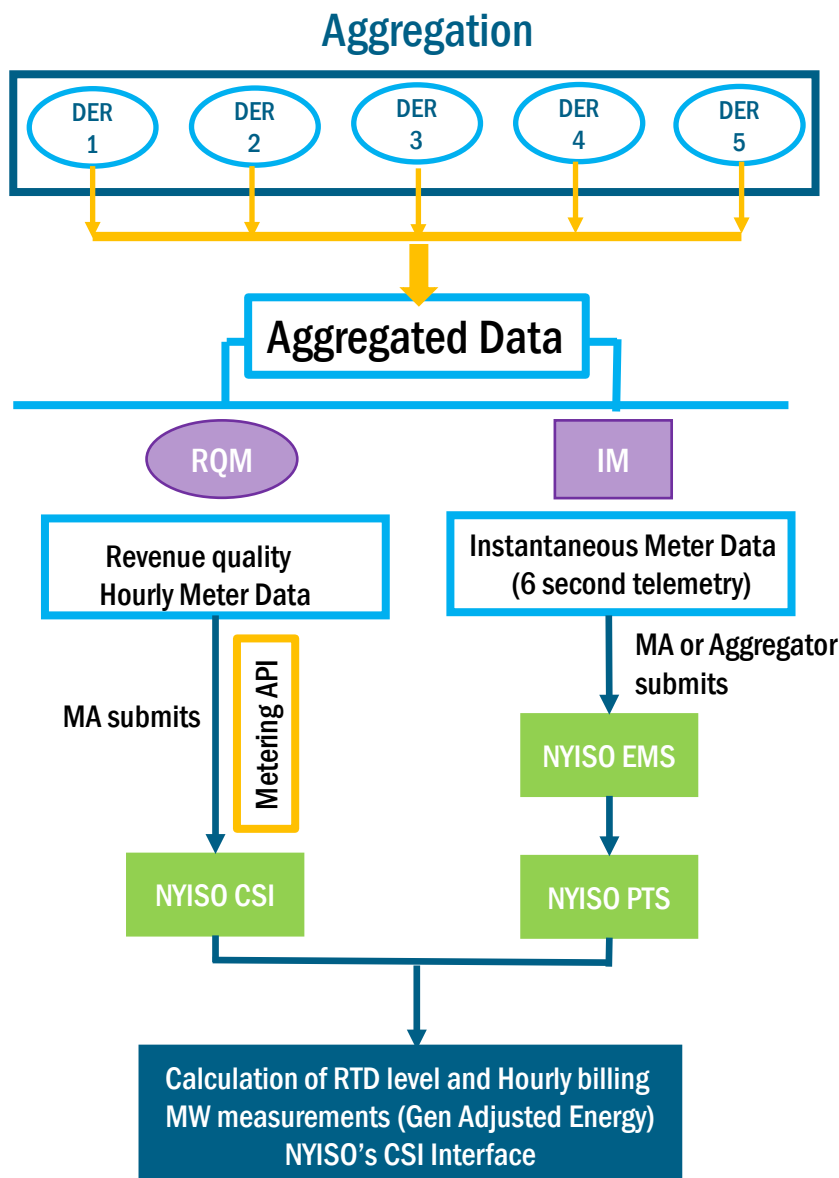
Option 2A: DER Facility with Load and Generator/Energy Storage Resource; when there is no injection onto the Distribution system. This facility will be treated as a Demand Side Resource and performance will be measured from a baseline



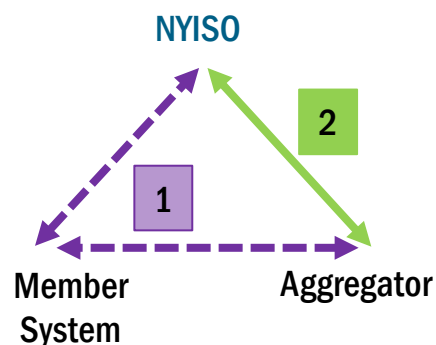
Option 2B: DER Facility with Load and Generator (NO storage); when there is injection onto the grid. Response is split into Demand Reduction and injection responses. Performance will be measured from a baseline.

Metering Data for Real Time Operations and Settlement Processing

Meter Data Submission Schematic



Telemetry Communication with the NYISO



1. Mandatory for all Aggregations

Aggregators communicate with the NYISO through their respective Member System

2. Additional but not Mandatory

Direct two-way communication between NYISO and Aggregator*

*Aggregators directly communicating with NYISO must also maintain parallel communications connection with respective Member System

DER Meter Data Processing - Settlements

- Calculation of the Generator Adjusted Energy includes:
 1. Hourly integration of Instantaneous meter data from the DER Aggregation, and
 2. Profiling process to account for measurement variability between Revenue Grade meter data and Instantaneous telemetry data
- MP should check for discrepancies between MA and PTS hourly interval data in the CSI platform, [refer to Section 4.1.3.2 of the Accounting and Billing Manual for details](#)
- Gen Adjusted Energy calculations used for settlement calculation

Metering Data for Real Time Operations and Settlement Processing

Terms

Meter Authority (MA):

- Entity responsible for calibration, maintenance, operation, and reporting of metered data from an electric revenue meter used in the wholesale electricity markets administered by the NYISO;
- Could be a Member System, MSE or municipal Electric utility; see following page for specifications

Member System:

- The eight Transmission Owners (TOs) that are present in New York State and own, operate and maintain the NY Transmission System

Meter Service Entity (MSE):

- Entity authorized by NYISO to provide metering and meter data services, only for DER Aggregations
- MSE must register as NYISO customer or Guest to participate
- If qualified, Aggregator can function as its own MSE

Metering API

- API - Application Programming Interface;
- System-to-system interface for submission and retrieval of hourly meter data for generation, tie line, and sub-zone data; Required for Aggregations.
- Meter Authority (MA) to submit hourly MWh meter data for Aggregations to NYISO's Customer Settlements Interface (CSI) through the Metering API

EMS:

- NYISO's Energy Management System

Performance Tracking System (PTS):

- Actual energy injections are measured in real time and telemetered to the NYISO typically every six seconds, and integrated to the RTD interval level for Settlements

Customer Settlements Interface (CSI):

- NYISO's online settlement interface that houses all the billing invoices and related information

Metering Data for Real Time Operations and Settlement Processing

Meter Authority (MA) specifications

Aggregators must obtain wholesale metering and/or meter data services from Meter Authority (MA)

MA for Single Resource Type (SRT) Aggregations	MA for DER Aggregations
<ul style="list-style-type: none"> Member Systems (or) Municipal Electric Utility 	<ul style="list-style-type: none"> Member Systems (or) Municipal Electric Utility (or) Meter Services Entity (MSE)

Meter Authority Responsibilities:

- Install Revenue Grade Metering for facilities in SRT and DER Aggregations
 - Read Revenue Grade Metering for facilities in SRT and DER Aggregations
 - Aggregate SRT facility or DER facility meter data, and submit DER Aggregation Settlement Data to NYISO
 - Could aggregate DER facility telemetry data and submit to NYISO*
- * On behalf of Aggregator who is primarily responsible for aggregating and submitting telemetry data for DER Aggregations

Single Resource Type (SRT)

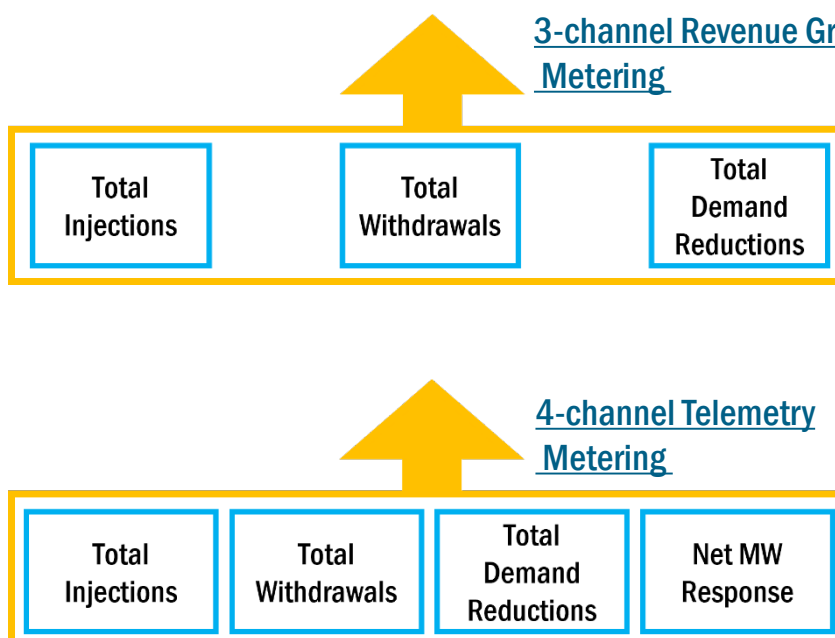
Aggregations:

Aggregation consisting of two or more facilities of the same technology type
E.g.: ESR Aggregation, Solar Aggregation

DER Aggregations:

Aggregation consisting of 2 or more facilities of varying technology types, and/or Demand Reduction facilities
E.g.: ESR + Wind Aggregation, ESR + DR Aggregation

Types of Metering data



Total Injections: Aggregate of all Injections of energy into grid/wholesale markets by all injecting facilities in Aggregation

Total Withdrawals: Aggregate of all Withdrawals of energy from the grid used to charge one or more ESR facilities for later injection back into the grid

Total Demand Reductions: Reductions in load measured by comparing actual load relative to a calculated baseline value (for Demand Side Resources part of DER Aggregation)

Total Response: Sum of the above 3 channels

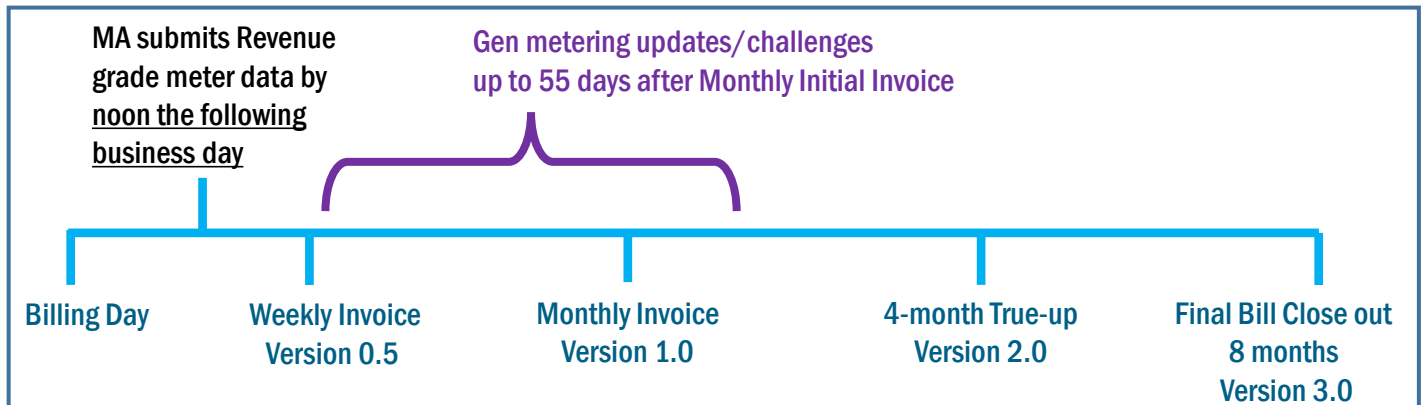
Metering Data for Real Time Operations and Settlement Processing

Billing Invoice Cycle*



* For specific timelines, refer to the [Processing and Invoice Schedule on NYISO Website](#)

Tracking a given Billing period:



Note: Each monthly invoice contains a 4-month true up and final bill close out for prior Billing periods

Billing Invoice information



Flexible Invoice Period (FIP):

- Weekly Invoice, version 0.5
- Contains 7 Billing Days or Fewer
- Issued Wednesday of Each Week
- Starts the 1st of every month
- Typically, a Saturday – Friday Billing Period

Monthly Invoice:

- Issued 5th Business Day of Month
- Initial Month Billing Period
- Updates to FIPs as Needed
- Remaining Initial Month Billing Days not Captured in a FIP

Settlement Interfaces Login



New York ISO
Independent System Operator

About Us Grid of the Future Careers Calendar Support Login

MARKETS LIBRARY PLANNING

MARKETS > MARKET ACCESS LOGIN

MARKET ACCESS LOGIN

SANDBOX ACCESS LOGIN

Settlement Data Applications

- *SDX Upload/Download
- *Customer Settlements Interface
- Settlement Data Application User Guide

MARKET ACCESS

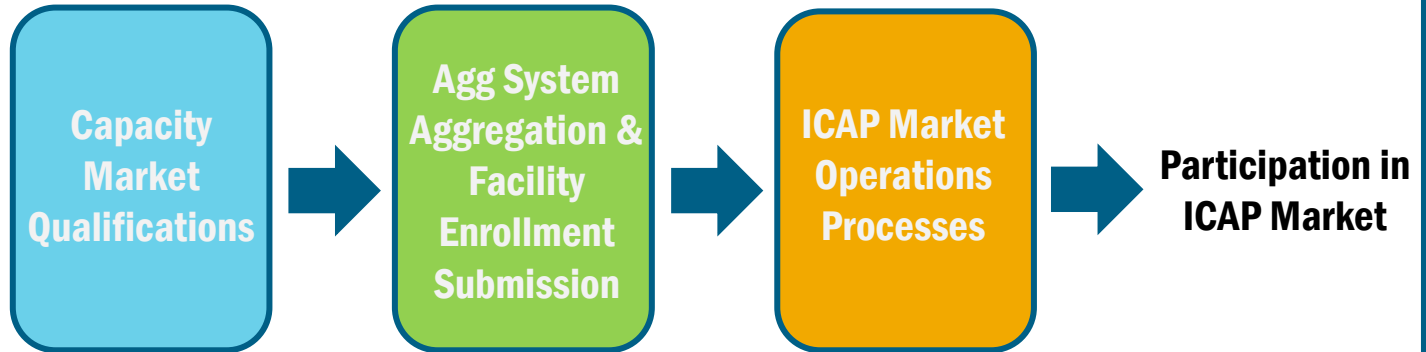
MEMBER COMMUNITY

SANDBOX ACCESS

MYNYISO

Installed Capacity Market

General Process from Registration up to Auction Participation for new ICAP participants entering the ICAP Market in DER Aggregation



Capacity Market Qualifications

- Satisfaction of all registration requirements as per tariff rules
- Effective Interconnection Agreement for each DER that will inject Energy that allows wholesale market participation
- Have a minimum supply capability of 0.1 MW or greater (per Aggregation)

Agg System Aggregation & Facility Enrollment Submission



- Access to Agg system will be granted at the completion of the NYISO Registration Process
- Aggregator must complete ALL required fields and attach required documents as detailed in the Registration forms and **Aggregation Manual**
- Aggregation submits checklist of documents into the Aggregation System:
 - Intent to offer letter
 - Static Plant Data (*applicable to wind and solar resources*)
 - Generating Availability Data System (GADS) Design template
 - Outage schedules two years forward from the anticipated date of first offer into the capacity market

Note: For a complete list of all applicable data submissions required to be submitted to the Agg System for participation in the Installed Capacity (ICAP) Market, refer to the **Agg System User Guide**

ICAP Market Operations Processes

- UCAP is calculated for resource using CRIS, DMNC, and class average derating factor
- UCAP available for Aggregations to offer into ICAP Market within the ICAP AMS

Installed Capacity Market

General Process from Registration up to Auction Participation for existing ICAP participants entering the ICAP Market in DER Aggregation

1. NYISO Aggregator Registration in Salesforce

- Amending existing registration, includes completing and attaching the Aggregator Packet and Aggregation Infrastructure Technology Packet (*if applicable*)
 - For more information, refer to the [Registration Module](#) of this Onboarding Suite

2. AGG System Aggregation & Facility Enrollment Submission

- Access to Agg system will be granted at the completion of the NYISO Aggregator Registration Process
- Aggregator must complete ALL required fields and attach required documents as detailed in the Aggregation Manual

3. Participation model type updated in ICAP AMS

- End current participation model prior to the start of participation in Aggregation
 - SCR: Ensure all effective dates in DRIS are set up to end participation on the last day of the month preceding the DER participation start at the first of the month (**Note:** *Additional SCR testing requirements need to be addressed as part of transition to DER participation*)
 - Generators: Ensure applicable bid flags have been removed from MIS, and removal of UCAP available from the ICAP AMS
 - Contact Member Relations team at least 30 days prior

4. ICAP Market Operations Processes

- UCAP is calculated using CRIS, DMNC, and derating factor
 - For existing stand-alone generators
 - Single Resource Type Aggregation: Current derating factor is carried over
 - DER Aggregations: Class average derating factor is used
 - For SCR: Provisional DMNC to be used, either the upper ACL or unit's previous DMNC rating
 - **Note:** Entire Aggregation will need to conduct DMNC to validate; Refer to both [ICAP Manual](#) and [Aggregation Manual](#) for additional details
- UCAP now available for aggregation to sell into the ICAP Market

5. Participation in ICAP Market

Settlements



Potential Settlements for DERs Based on Participation

	Energy Market	Supplemental Supplier Payments	Cost-Based Ancillary Services	Market Based Ancillary Services	Installed Capacity
DAM Energy	✓				
Balancing Energy	✓				
TSC & NTAC Charges	✓				
DAM BPCG		✓			
RT BPCG		✓			
DAMAP		✓			
Rate Schedule 1			✓		
DAM Regulation Capacity				✓	
Balancing Regulation Capacity				✓	
RT Regulation Movement				✓	
Regulation Performance Charge				✓	
Regulation Revenue Adjustment				✓	
DAM Operating Reserves Availability				✓	
Balancing Reserve Availability				✓	
Auction Settlement					✓

Legend

Acronym	Full Term
DAM	Day Ahead Market
TSC	Transmission Service Charge
NTAC	New York Power Authority Transmission Adjustment Charge
BPCG	Bid Production Cost Guarantee
RT	Real Time
DAMAP	Day Ahead Margin Assurance Payment

Formulas describing each settlement type can be found in the Accounting & Billing Manual

RESOURCE APPENDIX: ONBOARDING OF NEW NYISO RESOURCES

DER Participation

Version:

1.0

Revision Date:

05/16/2023

This document was prepared by:

NYISO Market Training

New York Independent System Operator
10 Krey Blvd
Rensselaer, NY 12144
(518) 356-6060
www.nyiso.com

Disclaimer

The information contained within this guide, along with the other NYISO documents, is intended to be used for informational purposes and is subject to change. The NYISO is not responsible for the user's reliance on these publications or for any erroneous or misleading material.

Table of Contents

1. NYISO’S INTERCONNECTION PROCESS	2
A. NYISO INTERCONNECTION TRAINING.....	2
B. TRANSMISSION EXPANSION INTERCONNECTION MANUAL	3
C. TRANSMISSION EXPANSION INTERCONNECTION GUIDE.....	3
D. NYISO TARIFF - OPEN ACCESS & TRANSMISSION TARIFF (OATT)	3
E. AGGREGATION MANUAL.....	4
1.1 BUYER-SIDE MITIGATION	5
A. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)	5
2. NYISO CUSTOMER REGISTRATION & AGGREGATOR REGISTRATION	6
A. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)	6
B. REFERENCE DOCUMENTATION ON NYISO CUSTOMER SUPPORT WEBPAGE	6
C. AGGREGATION MANUAL.....	7
D. AGGREGATION SYSTEM USER'S GUIDE.....	7
3. CREDIT REQUIREMENTS.....	8

A. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)	8
B. CREDIT DEPARTMENT FAQ	8

4. DER INFORMATION COMMUNITY (DERIC) 9

A. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)	9
B. LOAD FORECASTING MANUAL.....	9
C. AGGREGATION MANUAL.....	10

5. COMMUNICATIONS TESTING & OPERATIONS

MODELING 11

A. WIND AND SOLAR PLANT OPERATOR DATA USER’S GUIDE.....	11
B. CONTROL CENTER REQUIREMENTS MANUAL.....	11
C. DIRECT COMMUNICATIONS PROCEDURE.....	11
D. ANCILLARY SERVICES MANUAL.....	12
E. NEW GENERATION UNITS OPERATING DURING THE START-UP TESTING PHASE.....	12
F. AGGREGATION MANUAL.....	12
G. AGGREGATION SYSTEM USER'S GUIDE.....	13

6. MARKET MITIGATION & ANALYSIS ENERGY

REFERENCE LEVELS 14

A. NAESB DIGITAL CERTIFICATE TUTORIAL.....	14
B. REFERENCE LEVEL MANUAL.....	14

C. REFERENCE LEVEL SOFTWARE USER’S GUIDE	14
D. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)	15

7. OUTAGE SCHEDULING..... 16

A. NYISO TARIFF – OPEN ACCESS & TRANSMISSION TARIFF (OATT)	16
B. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)	16
C. OUTAGE SCHEDULING MANUAL	16
D. OUTAGE SCHEDULER USER’S GUIDE	17
E. MARKET PARTICIPANTS USER GUIDE	17
F. INSTALLED CAPACITY MANUAL	17
G. OUTAGE SCHEDULER TRAINING: OUTAGE SCHEDULER (OMS) SYSTEM – GENERATOR OWNER (GO) EDITION.....	18
H. OUTAGE SCHEDULER TRAINING: OUTAGE SCHEDULER (OMS) SYSTEM – TRANSMISSION OWNER (TO) EDITION	18

8. METERING CONFIGURATION.....19

A. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)	19
B. REVENUE METERING REQUIREMENTS MANUAL	19
C. CONTROL CENTER REQUIREMENTS MANUAL.....	20
D. AGGREGATION MANUAL.....	20

9. METERING FOR SETTLEMENTS..... 21

A. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)	21
B. REVENUE METERING REQUIREMENTS MANUAL	21
C. CONTROL CENTER REQUIREMENTS MANUAL.....	22
D. ACCOUNTING & BILLING MT-304 COURSE MATERIALS	22
E.. METER DATA SUBMISSION TIMELINE	22
F. PROCESSING AND INVOICE SCHEDULING	23
G. ACCOUNTING & BILLING MANUAL	23
H. AGGREGATION MANUAL.....	23

10. INSTALLED CAPACITY (ICAP) ENROLLMENT FOR PARTICIPATION **24**

A. INSTALLED CAPACITY MANUAL	24
B. AGGREGATION MANUAL.....	24
C. AGGREGATION SYSTEM USER'S GUIDE.....	24

11. DER SETTLEMENTS..... **26**

A. ACCOUNTING AND BILLING MANUAL	26
B. REVENUE METERING REQUIREMENTS MANUAL	26
C. BUSINESS INTELLIGENCE TASK FORCE (BITF) PRESENTATIONS	26
D. DECISION SUPPORT SYSTEM (DSS) TRAINING	27
E. AGGREGATION MANUAL.....	27

12. ADDITIONAL RESOURCES FOR DER 28

A. ENERGY STORAGE RESOURCE (ESR) PARTICIPATION MODEL E-LEARNING MODULE 28

B. STATION POWER TRAINING MODULE..... 28

C. STATION POWER METERING, DATA AND PROGRAM REQUIREMENTS 28

D. FUTURE DER MARKET TRIAL AND PARTICIPATION MODEL TRAINING MATERIAL 29

13. CONTACT INFORMATION 30

A. CUSTOMER SERVICES..... 30

B. CUSTOMER REGISTRATION 30

1. NYISO'S INTERCONNECTION PROCESS

A. NYISO INTERCONNECTION TRAINING

Series of five eLearning chapters that encompass:

- **Chapter 1:** This module provides an overview of the purpose behind the interconnection process, addresses key terms, identifies the various stages of the interconnection process and introduces the web portal used to support the NYISO Interconnection Process.
- **Chapter 2:** This module explains the initial kick off of an interconnection request, provides information on gaining access the “Interconnection Projects Community” portal, identifies the steps for submitting a formal interconnection request, details the eSignature requirement, addresses the relevance of NYISO’s acknowledgement of an interconnection request, and walks through the request validation results of a submitted interconnection request.
- **Chapter 3:** This module includes the detailed steps associated with the feasibility and system reliability impact study process, a compare and contrast review of the different interconnection study options, and the detailed steps associated with the system reliability impact study.
- **Chapter 4:** This explains the purpose behind the class year study, details the components of the class year study and describes corresponding reporting requirements.
- **Chapter 5:** This module identifies supplier next steps regarding pre and post commercial responsibilities that must be completed to result in the commercial participation in NYISO’s Installed Capacity Energy and the Ancillary Services Market.

Navigation Path:

NYISO Website → Training → Online Learning → NYISO Interconnection Process

B. TRANSMISSION EXPANSION INTERCONNECTION MANUAL

The purpose of this Transmission Expansion and Interconnection Manual (“TEI Manual”) is to provide interested parties with a road map of the NYISO’s transmission expansion and interconnection process. The manual also describes the study criteria, guidelines, procedures, and practices used in the processes.

Navigation Path:

NYISO Website → Manuals, Tech Bulletins & Guides → Manuals → Planning → Transmission Expansion and Interconnection Manual

C. TRANSMISSION EXPANSION AND INTERCONNECTION GUIDE

The purpose of this guide is to provide developers with an introduction to and a high-level summary of various NYISO interconnection procedures.

Navigation Path:

NYISO Website → Manuals, Tech Bulletins & Guides → Guides → Transmission Expansion and Interconnection Guide

D. NYISO TARIFF – OPEN ACCESS & TRANSMISSION TARIFF (OATT)

This eLearning module defines “Outage Scheduling,” and covers the basis for NYISO Outage Scheduling Process. This training also features:

- Attachment X: Large Facility Interconnection Procedures
- Attachment Z: Small Facility Interconnection Procedures
- Attachment S: Rules to allocate responsibility for the cost of New Interconnection Studies

Navigation Path:

NYISO Website → Library → Regulatory Resources → Tariffs, FERC Filings & Orders → Tariffs → OATT

E. AGGREGATION MANUAL

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.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals
→ Operations

1.1 BUYER-SIDE MITIGATION

A. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)

This document sets forth the provisions applicable to the services provided by the ISO related to its administration of competitive markets for the sale and purchase of Energy and Capacity and for the payments to Suppliers who provide Ancillary Services to the ISO in the ISO Administered Markets (“Market Services”) and the ISO’s provision of Control Area Services (“Control Area Services”), including services relating:

- Attachment H, ISO Market Power Mitigation Measures

Navigation Path:

NYISO Website → Library → Regulatory Resources → Tariffs, FERC Filings & Orders → Tariffs → MST

2. NYISO CUSTOMER REGISTRATION & AGGREGATOR REGISTRATION

A. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)

This document sets forth the provisions applicable to the services provided by the ISO related to its administration of competitive markets for the sale and purchase of Energy and Capacity and for the payments to Suppliers who provide Ancillary Services to the ISO in the ISO Administered Markets (“Market Services”) and the ISO’s provision of Control Area Services (“Control Area Services”), including services relating:

- Section 9 Application and Registration Procedure
- Attachment K: Creditworthiness Requirements for Customers

Navigation Path:

NYISO Website → Library → Regulatory Resources → Tariffs, FERC Filings & Orders → Tariffs → MST

B. REFERENCE DOCUMENTATION ON NYISO CUSTOMER SUPPORT WEBPAGE

- NAESB Digital Certificate Tutorial
- MIS Access
- Admin set up
- Linking Certificates with MIS
- Member Community Reference Guide
- Member Community Access

Navigation Path:

NYISO Website → Support

C. AGGREGATION MANUAL

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.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals
→ Operations

D. AGGREGATION SYSTEM USER’S GUIDE

This guide was created for designated personnel from the Aggregator organization that has access to the Aggregation System or Agg System. NYISO’s Aggregation System is the online interface for Aggregations and facilities for participation in NYISO’s Energy, Ancillary Services, and Installed Capacity markets and management of enrollment of Aggregations.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Guides

3. CREDIT REQUIREMENTS

A. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)

This document sets forth the provisions applicable to the services provided by the ISO related to its administration of competitive markets for the sale and purchase of Energy and Capacity and for the payments to Suppliers who provide Ancillary Services to the ISO in the ISO Administered Markets (“Market Services”) and the ISO’s provision of Control Area Services (“Control Area Services”), including services relating:

- Attachment K Creditworthiness Requirements for Customers

Navigation Path:

NYISO Website → Library → Regulatory Resources → Tariffs, FERC Filings & Orders → Tariffs → MST

B. CREDIT DEPARTMENT FAQ

The NYISO Credit FAQ Document covers the following topics:

- Collateral
- Cash Deposits
- Letter of Credit
- Surety Bonds
- Credit Management System (CMS)
- Annual/Periodic Submissions
- New Applicants – Items needed for Credit Approval

Navigation Path:

NYISO Website → Support → Budget & Finance → NYISO Credit → NYISO Credit FAQ

4. DER INFORMATION COMMUNITY (DERIC)

A. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)

This document sets forth the provisions applicable to the services provided by the ISO related to its administration of competitive markets for the sale and purchase of Energy and Capacity and for the payments to Suppliers who provide Ancillary Services to the ISO in the ISO Administered Markets (“Market Services”) and the ISO’s provision of Control Area Services (“Control Area Services”), including services relating:

Navigation Path:

NYISO Website → Library → Regulatory Resources → Tariffs, FERC Filings & Orders → Tariffs → MST

B. LOAD FORECASTING MANUAL

This manual has three main purposes: The first purpose is to set forth the data reporting, weather-normalization methodology, and load forecasting methodology requirements that are prescribed in the NYISO Market Administration and Control Area Services Tariff (*Services Tariff*) Sections 5.10 and 5.11 and used in the calculation of the NYCA Installed Capacity (“ICAP”) forecast. The second purpose is to set forth the data submissions required by the NYISO to prepare the ICAP Market Load Forecasts and its filings to NPCC, NERC, FERC, and other reliability and regulatory bodies. And the third purpose is to set forth the data submissions required by the NYISO to forecast the impacts of Large Load Facilities subject to reporting requirements described in Appendix A.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals → Planning → Load Forecasting Manual

C. AGGREGATION MANUAL

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.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals
→ Operations

5. COMMUNICATIONS TESTING & OPERATIONS MODELING

A. WIND AND SOLAR PLANT OPERATOR DATA USER'S GUIDE

This guide focuses on the data reporting required of Intermittent Power Resources that depend on wind or solar energy as their fuel to support the integration of renewable energy into the New York Control Area.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Guides → Wind and Solar Plant Operator Data User's Guide

B. CONTROL CENTER REQUIREMENTS MANUAL

This Manual focuses on the computer, communications, and metering systems required for reliable and economic operations of the New York Independent System Operator (NYISO).

- *Computer Systems*
- *Metering Policy and Certification*
- *Voice Communications*

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals → Administrative → Control Center Requirements

C. DIRECT COMMUNICATIONS PROCEDURE

The Direct Communications Procedure describes the communication options available to generation owners, demand-side resources, limited energy storage resources, and other suppliers that provide energy and ancillary services to the NYISO markets; outlines the Initial Installation Procedure; and documents Operational Procedures for communications facilities.

- The Direct Communications Procedure is a secured document not available on the NYISO website. To request authorization to receive the Direct Communications Procedure, please contact Stakeholder_services@nyiso.com

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals → Operations → Direct Communications Manual

D. ANCILLARY SERVICES MANUAL

The purpose of this Manual is to provide an overview of the Ancillary Services available in the New York market along with settlement process associated with each of the available ancillary services.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals → Operations → Ancillary Services Manual

E. NEW GENERATION UNITS OPERATING DURING THE START-UP TESTING PHASE

This Technical Bulletin describes procedures for new generating units to operate in testing mode prior to commercial operation.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Technical Bulletins → TB 116 – New Generation Units Operating During the Start-Up Testing Phase

F. AGGREGATION MANUAL

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 for a single entity – an Aggregation – for the purpose of participating in the NYISO-administered Energy, Ancillary Services, and Installed Capacity markets.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals
→ Operations

G. AGGREGATION SYSTEM USER'S GUIDE

This guide was created for designated personnel from the Aggregator organization that has access to the Aggregation System or Agg System. NYISO's Aggregation System is the online interface for Aggregations and facilities for participation in NYISO's Energy, Ancillary Services, and Installed Capacity markets and management of enrollment of Aggregations.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Guides

6. MARKET MITIGATION & ANALYSIS: ENERGY REFERENCE LEVELS

A. NAESB DIGITAL CERTIFICATE TUTORIAL

This e-Learning module is geared toward guiding Market Participants (MPs) on how to obtain and implement the use of a digital certificate to access NYISO markets and applications.

Navigation Path:

NYISO Website → Training → Online Learning → NAESB Digital Certificate Tutorial

B. REFERENCE LEVEL MANUAL

This manual describes the NYISO's Reference Level Processes and details various timelines that apply to the submission, review, approval, and update of cost-based data and to mitigation consultations.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals → Operations → Reference Level Manual

C. REFERENCE LEVEL SOFTWARE USER'S GUIDE

This user guide is intended for Market Participants (MPs) who are users of the NYISO Reference Level Software (RLS) application.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Guides → Reference Level Software User's Guide

D. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)

This document sets forth the provisions applicable to the services provided by the ISO related to its administration of competitive markets for the sale and purchase of Energy and Capacity and for the payments to Suppliers who provide Ancillary Services to the ISO in the ISO Administered Markets (“Market Services”) and the ISO’s provision of Control Area Services (“Control Area Services”), including services relating:

- Attachment H, ISO Market Power Mitigation Measures

Navigation Path:

NYISO Website → Library → Regulatory Resources → Tariffs, FERC Filings & Orders → Tariffs → MST

7. OUTAGE SCHEDULING

A. NYISO TARIFF – OPEN ACCESS & TRANSMISSION TARIFF (OATT)

This eLearning module defines “Outage Scheduling,” and covers the basis for NYISO Outage Scheduling Process. This training also features:

- Section 9.6, Transmission Reliability Margin (“TRM”)

Navigation Path:

NYISO Website → Library → Regulatory Resources → Tariffs, FERC Filings & Orders → Tariffs → OATT

B. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)

This document sets forth the provisions applicable to the services provided by the ISO related to its administration of competitive markets for the sale and purchase of Energy and Capacity and for the payments to Suppliers who provide Ancillary Services to the ISO in the ISO Administered Markets (“Market Services”) and the ISO’s provision of Control Area Services (“Control Area Services”), including services relating:

- *Section 5.18 Generator Outages and Generator Obligations While in These Outages*
- *Section 5.12 Requirements Applicable to Installed Capacity Suppliers*

Navigation Path:

NYISO Website → Library → Regulatory Resources → Tariffs, FERC Filings & Orders → Tariffs → MST

C. OUTAGE SCHEDULING MANUAL

This Outage Scheduling Manual is intended for the New York Independent System Operator (NYISO) staff and those entities who are responsible for

notifying the NYISO of planned and unexpected changes to the operational availability of their transmission and generating facilities.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals → Outage Scheduling Manual

D. OUTAGE SCHEDULER USER'S GUIDE

This user guide is intended for Market Participants (MPs) and Transmission Owners (TOs) who are users of the NYISO Outage Scheduler (OMS) System.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Guides → Outage Scheduler User's Guide

E. MARKET PARTICIPANTS USER GUIDE

This Guide provides Market Participants with the information needed to participate in New York Independent System Operator (NYISO) Markets.

- *Section 7.4 Generator and Ancillary Services Bids*

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Guides → Market Participant User's Guide

F. INSTALLED CAPACITY MANUAL

The Installed Capacity Manual contains the procedures that will be followed by the NYISO and its Customers with regard to the Installed Capacity markets and auctions administered by the NYISO pursuant to the NYISO Market Administration and Control Area Services Tariff (Services Tariff).

- *Section 4.3 Maintenance Scheduling Requirements*
- *Section 4.8 Bidding, Scheduling, and Notification Requirements*
- *Attachment K: Reportable Operating Data*

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals
→ Operations → Installed Capacity Manual

G. OUTAGE SCHEDULER TRAINING: OUTAGE SCHEDULER (OMS) SYSTEM – GENERATOR OWNER (GO) EDITION

This e-Learning module provides a walk-through of the Outage Scheduler (OMS) System for Generator Owners. Topics covered include accessing and logging into the OMS System, environment navigation, creating a new outage request (Generation O.R.E.), tracking a request, as well as modifying a request.

Navigation Path:

NYISO Website → Training → Online Learning → Outage Scheduler (OMS) System → Generator Owner (GO) Edition

H. OUTAGE SCHEDULER TRAINING: OUTAGE SCHEDULER (OMS) SYSTEM – TRANSMISSION OWNER (TO) EDITION

This e-Learning module provides a walk-through of the Outage Scheduler (OMS) System for Transmission Owners. Topics covered include accessing and logging into the OMS System, environment navigation, accessing the conflict calendar, creating a new outage request (Transmission O.R.E.), tracking a request, as well as modifying a request.

Navigation Path:

NYISO Website → Training → Online Learning → Outage Scheduler (OMS) System → Transmission Owner (TO) Edition

8. METERING CONFIGURATION

A. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)

This document sets forth the provisions applicable to the services provided by the ISO related to its administration of competitive markets for the sale and purchase of Energy and Capacity and for the payments to Suppliers who provide Ancillary Services to the ISO in the ISO Administered Markets (“Market Services”) and the ISO’s provision of Control Area Services (“Control Area Services”), including services relating:

- 13 Metering

Navigation Path:

NYISO Website → Library → Regulatory Resources → Tariffs, FERC Filings & Orders → Tariffs → MST → Metering 13

B. REVENUE METERING REQUIREMENTS MANUAL

The material in this manual defines the standards for the revenue metering systems required for conducting accurate financial settlements of the New York Independent System Operator, Inc. (NYISO) – administered wholesale electric energy markets. Additionally, it defines the responsibilities for Meter Authorities (MA) and describes the processes for data processing, analysis, and dispute resolution.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals → Administrative → Revenue Metering Requirements

C. CONTROL CENTER REQUIREMENTS MANUAL

This Manual focuses on the computer, communications, and metering systems required for reliable and economic operations of the New York Independent System Operator (NYISO).

- Computer Systems
- Metering Policy and Certification
- Voice Communications

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals
→ Administrative → Control Center Requirements

D. AGGREGATION MANUAL

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.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals
→ Operations

9. METERING FOR SETTLEMENTS

A. NYISO TARIFF – MARKET ADMINISTRATION AND CONTROL AREA SERVICES TARIFF (MST)

This document sets forth the provisions applicable to the services provided by the ISO related to its administration of competitive markets for the sale and purchase of Energy and Capacity and for the payments to Suppliers who provide Ancillary Services to the ISO in the ISO Administered Markets (“Market Services”) and the ISO’s provision of Control Area Services (“Control Area Services”), including services relating:

- 13 Metering

Navigation Path:

NYISO Website → Library → Regulatory Resources → Tariffs, FERC Filings & Orders → Tariffs → MST → Metering 13.2.4

B. REVENUE METERING REQUIREMENTS MANUAL

The material in this manual defines the standards for the revenue metering systems required for conducting accurate financial settlements of the New York Independent System Operator, Inc. (NYISO) – administered wholesale electric energy markets. Additionally, it defines the responsibilities for Meter Authorities (MA) and describes the processes for data processing, analysis, and dispute resolution.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals → Administrative → Revenue Metering Requirements

C. CONTROL CENTER REQUIREMENTS MANUAL

This Manual focuses on the computer, communications, and metering systems required for reliable and economic operations of the New York Independent System Operator (NYISO).

- Computer Systems
- Metering Policy and Certification
- Voice Communications

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals → Administrative → Control Center Requirements

D. ACCOUNTING & BILLING MT-304 COURSE MATERIALS

This course provides detailed knowledge of the settlements associated with Power Suppliers, Load Serving Entities, Transactions, Virtual Trading, Demand Response and Transmission Owners.

- Metering Fundamentals
- Settlements Reports Overview

Navigation Path:

NYISO Website → Training → Course Materials & Infographics → Training Course Materials → Accounting & Billing MT-304

E. METER DATA SUBMISSION TIMELINE

The Meter Data Review section of the website hosts the following information in PDF:

- Daily Lock-down Schedule
- Meter System Contacts
- Hourly Tie-line Generator, LSE Bus Meter Data Revision, & Lock-down Schedule
- Meter Data Management Protocols

Navigation Path:

NYISO Website → Support → Budget & Finance → Billing & Settlements → Processing and Invoice Schedule → Meter Data Review

F. PROCESSING AND INVOICE SCHEDULING

This schedule provides dates for the following:

- 4-Month Cycle Settlement Months
- NYISO Flexible Billing Period Invoice

Navigation Path:

NYISO Website → Support → Budget & Finance → Billing & Settlements → Processing and Invoice Schedule → Close-out Schedule

NYISO Website → Support → Budget & Finance → Billing & Settlements → Processing and Invoice Schedule → Flexible Invoicing Schedule

G. ACCOUNTING & BILLING MANUAL

This document focuses on the settlement, invoicing and clearing processes for wholesale market transactions encompassing the NYISO-administered Energy, Transmission Service, and Ancillary Services markets.

- *Section 4.1.3.2: Adjustment of Actual Energy Injections and Actual Energy Withdrawals to Revenue Quality Metered Values*

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals → Administrative → Accounting and Billing

H. AGGREGATION MANUAL

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.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals → Operations

10. INSTALLED CAPACITY (ICAP) ENROLLMENT FOR PARTICIPATION

A. INSTALLED CAPACITY MANUAL

The Installed Capacity Manual contains the procedures that will be followed by the NYISO and its Customers with regard to the Installed Capacity markets and auctions administered by the NYISO pursuant to the NYISO Market Administration and Control Area Services Tariff (Services Tariff).

- *Attachment D: Dependable Maximum Net Capability (DMNC)*
- *Attachment F: Intent to Offer Letter*

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals
→ Operations → Installed Capacity Manual

B. AGGREGATION MANUAL

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.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals
→ Operations

C. AGGREGATION SYSTEM USER’S GUIDE

This guide was created for designated personnel from the Aggregator organization that has access to the Aggregation System or Agg System. NYISO’s Aggregation System is the online interface for Aggregations and

facilities for participation in NYISO's Energy, Ancillary Services, and Installed Capacity markets and management of enrollment of Aggregations.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Guides

11. DER SETTLEMENTS

A. ACCOUNTING AND BILLING MANUAL

This document focuses on the settlement, invoicing and clearing processes for wholesale market transactions encompassing the NYISO-administered Energy, Transmission Service, and Ancillary Services markets.

- *Section 1 Settlement and Invoicing Process*
- *Section 2 Market Participant Responsibilities and Controls*

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals → Administrative → Accounting and Billing

B. REVENUE METERING REQUIREMENTS MANUAL

Services Tariff Section 13 permits Member Systems and third parties – known as Meter Services Entities (MSEs) – to provide metering and meter data services to Demand Reduction Providers, DSASP Providers, Responsible Interface Parties (RIPs) and Curtailment Service Providers (CSPs).

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals → Administrative → Revenue Metering Requirements

C. BUSINESS INTELLIGENCE TASK FORCE (BITF) PRESENTATIONS

BITF is a forum for stakeholders to exchange information pertaining to NYISO software enhancements and associated software training courses.

Navigation Path:

NYISO Website → Committees → Business Issues Committee → Business Intelligence Task Force

D. DECISION SUPPORT SYSTEM (DSS) TRAINING

Series of four eLearning modules that encompass:

- **Session 1:** This e-Learning module explains the purpose and benefits behind DSS, identifies reports available, and explains how to access it.
- **Session 2:** This e-Learning module steps through logging into DSS, the DSS homepage options, resources within DSS, and DSS data versioning.
- **Session 3:** This e-Learning module demonstrates how to access DSS corporate reports, utilize Automated Data Delivery Files, and identified supporting documentation.
- **Session 4:** This e-Learning module explains the organization of DSS Data, and teaches basic custom query building.

Navigation Path:

NYISO Website → Training → Online Learning → DSS

E. AGGREGATION MANUAL

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.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → Manuals
→ Operations

12. ADDITIONAL RESOURCES FOR DER

A. ENERGY STORAGE RESOURCE (ESR) PARTICIPATION MODEL E-LEARNING MODULE

This e-Learning module provides an overview of the Energy Storage Resources Participation model. Topics being covered include some background information leading up to this model's implementation, key information surrounding participation requirements for ESRs in the energy, ancillary services, and installed capacity markets, and important ESR mitigation measures.

Navigation Path:

NYISO Website → Training → Online Learning → Energy Storage Resources Participation Model

B. STATION POWER TRAINING MODULE

This intermediate level e-Learning module explains the function of Station Power, various types of Station Power, requirements for Station Power, as well as the registration process for participation in the Station Power Program.

Navigation Path:

NYISO Website → Training → Online Learning → Energy Storage Resources Participation Model

C. STATION POWER METERING, DATA AND PROGRAM REQUIREMENTS

This intermediate level e-Learning module explains the function of Station Power, various types of Station Power, requirements for Station Power, as well as the registration process for participation in the Station Power Program.

Navigation Path:

NYISO Website → Training → Online Learning → Energy Storage Resources Participation Model

D. FUTURE DER MARKET TRIAL AND PARTICIPATION MODEL TRAINING MATERIAL

The documents posted in this section are for Working Group and Subcommittee review as part of NYISO's efforts to update its technical documents in support of the deployment of the DER Participation Model.

Navigation Path:

NYISO Website → Library → Manuals, Tech Bulletins & Guides → DER Project Documents Under Review

13. CONTACT INFORMATION

A. CUSTOMER SERVICES

Contact: stakeholder_services@nyiso.com

B. CUSTOMER REGISTRATION

Contact: customer_registration@nyiso.com