



Manual ##

Aggregation Manual Part 2

Issued: Month Year

WG/SUBCOMMITTEE DRAFT – NOT FOR COMMITTEE ACTION

1. Registration & Enrollment

An Aggregator is a NYISO Market Participant that may combine facilities across a broad range of Resource types and sizes to participate in the NYISO markets as a single entity – an Aggregation. The Aggregator is required to register as a NYISO Market Participant (if not already registered as a Market Participant) in order to enroll Aggregations with the NYISO, and to enroll the individual facilities to form an Aggregation. The individual facilities are required to satisfy certain requirements to enter, exit, and switch Aggregations. A Distribution Utility will have the opportunity to review and approve each DER and Aggregation that is connected to the utility’s electrical facilities.

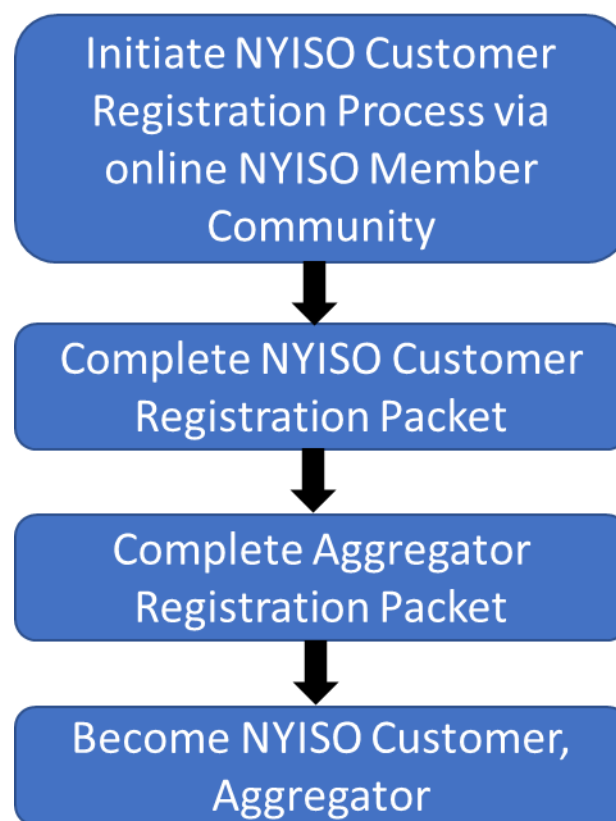


Figure X: Registration Process Flow

1.1. NYISO Aggregator Registration

The Aggregator is the party who represents one or more DER facilities as an Aggregation participating in the NYISO wholesale market. To become an Aggregator, an entity must first become a NYISO Customer, if not already registered. Aggregators must complete the NYISO Customer Registration packet and are subject to all of the general registration requirements applicable to other Customers, including but not limited to submission of credit information, designation of MIS Administrator and users, and notification to the NYISO of corporate affiliations. Please refer to the Market Participant User's Guide for the complete list of responsibilities. Aggregators must also complete the NYISO Aggregator Registration Packet. The NYISO Customer Registration Packet and NYISO Aggregator Registration Packet must be submitted through the Salesforce NYISO Member Community: <https://nyiso.force.com/MemberCommunity/s/>.

To request access to the NYISO Member Community, please submit your name, company name, email and phone number to the [NYISO Registration Department](#).

1.1.1. NYISO Aggregator Registration Packet

In addition to mailing address and basic applicant contact information, the NYISO Aggregator Registration Packet requires applicant's 24/7/365 control center contact information for operational coordination activities, referred to as the 'Operational Contact.' The Operational Contact must be available 24/7/365 to respond to the NYISO and the interconnected utility. The contact information for a Secondary Operational Contact is required as well.

All Aggregators must communicate each Aggregation's operating status through the applicable Transmission Owner (TO) and are advised to contact the applicable TO business account representative for technical requirements associated with establishing TO telemetry. Aggregators opting to communicate with the NYISO solely through the Transmission Owner are not required to submit an Infrastructure and Technology Plan with the Registration Packet.

An Aggregator electing to communicate both to the TO and also directly with the NYISO must submit an Infrastructure and Technology Plan with the Aggregator Registration Packet – the Infrastructure and Technology Plan requires information describing Aggregator control center configuration, system and communications architecture, and data management practices. An Aggregator will need to reference the Direct Communications Procedure in order to set up direct communications with the NYISO. Aggregators are required to complete a CEII (Critical Energy Infrastructure Information) form and an NDA (Nondisclosure Agreement) in order to obtain the Direct Communications Procedure. The CEII and NDA forms are available using the following link: <https://nyiso.tfaforms.net/187>.

A prospective Aggregator must successfully register as a NYISO Customer and Aggregator before

enrolling facilities and Aggregations. Facility and Aggregation enrollment occurs in the NYISO Aggregation System, to which Aggregators will receive access after successful registration as a NYISO Customer and Aggregator.

Aggregators planning to use a third party for communication services or scheduling and dispatch of DER facilities are advised to contact Customer Registration to understand how the third party may interact with the NYISO on behalf of the Aggregator. Third party service providers **(except for Meter Services Entities)** are required to register as NYISO Customers or Guests prior to providing services to an Aggregator. For more information on third party service provision related to scheduling of Aggregations and DER, please refer to the Scheduling Service Provider/Agency Agreement form of the NYISO Customer Registration Packet. For more information on third party service provision related to communication services and the details of the Direct Communications Service Provider Agreement, please contact NYISO Customer Registration at the following email address: customer_registration@nyiso.com.

An Aggregator who intends to use a qualified Meter Services Entity (MSE) to perform meter data services, as defined in the Revenue Metering Requirements Manual, for one or more Aggregations need not submit either the Scheduling Service Provider/Agency Agreement or the Direct Communications Service Provider Agreement. However, the MSE must be qualified to provide meter data services per the standards set forth in the NYISO Services Tariff and the Meter Services Entity Manual.

After successful completion of both the Customer Registration and Aggregator Registration procedures, an Aggregator will be established in the NYISO's Market Information System (MIS) based on the contact information provided by the Customer. 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 may commence enrollment of DER and Aggregations.

1.1.2. Pre-Enrollment Activity Checklist

In addition to successfully completing the NYISO Customer Registration and Aggregator Registration processes described in the previous section, Aggregators must ensure that the following tasks are successfully completed prior to attempting to enroll Aggregations of DER in the Aggregation System:

- Interconnection Agreement – All individual DER must have a signed interconnection agreement either through the NYISO’s SGIP or an acceptable non-NYISO interconnection procedure (e.g., NYS SIR). For guidance on this process, please review the NYISO’s *Transmission Expansion and Interconnection Manual*.
- Telemetry communications – An Aggregator must successfully establish telemetry infrastructure connection with the applicable Transmission Owner prior to submitting an Aggregation in the Aggregation System. The Aggregator to TO connection is a prerequisite to the registration and enrollment processes. The NYISO’s Distributed Resources Operations group will work with the NYISO Power System Applications Engineering group, TO, and Aggregator to test communications using the uniquely assigned telemetry point identifiers for each Aggregation. For further information on this process, please see telemetry testing information for Aggregators, outlined in section [X]. The Aggregator should be able to successfully receive and transmit telemetry to the applicable TO over their required preferred protocols (e.g., DNP, IEC, etc.) prior to enrollment of any DER or Aggregation. The telemetry communications testing procedure for individual Aggregations is detailed in Section [X] of this Manual.

2. Interconnection

DER facility interconnection is permitted through either the NYISO Small Generator Interconnection Procedure (SGIP) or through an approved non-NYISO interconnection procedure (e.g., NYS Standardized Interconnection Requirements). The NYISO requires that interconnection studies be complete and approved prior to the submission of enrollment data for a DER in the Aggregation System – the enrollment process draws on the information provided by the interconnection study process for validation of DER physical and operating characteristics. To support the review for reliability and safety conducted for DER connected to a Distribution Utility’s electrical facilities, the Aggregator must provide to the applicable Distribution Utility, upon request, any supplemental interconnection information beyond the requirements explicitly set forth in the NYISO’s Aggregation System and Tariffs, including but not limited to injection and withdrawal limits for 24 hours of the operating day per Appendix K Attachment 1 of the NYS Standardized

Interconnection Requirements (SIR). For further information on the NYS SIR, please see the information at the following link: <https://dps.ny.gov/distributed-generation-information>.

Interconnection requirements for DER focus on the facility level, not the asset level (an asset within a facility) or the Aggregation level (comprised of multiple facilities). In order to address CRIS and interconnection requirements applicable to DERs, additional information specific to Resources with Energy Duration Limitations and multiple assets must be submitted as part of the NYISO’s interconnection process as set forth in Attachments S, X and Z of the OATT. A DER facility that is comprised solely of Demand Side Resources is not required to complete interconnection studies under the NYISO OATT and need not have ERIS or CRIS.

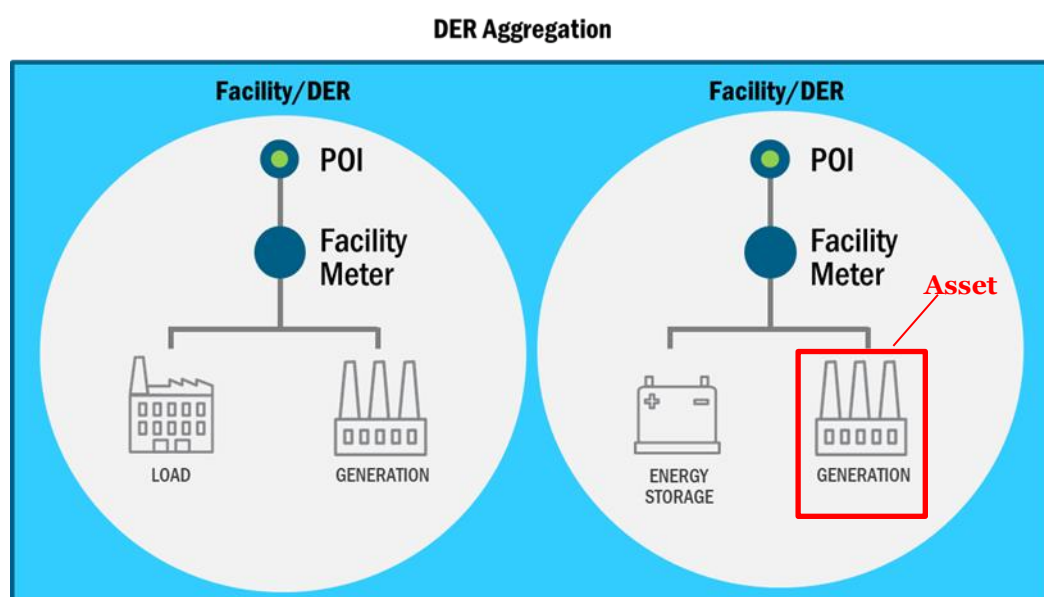


Figure X: Depiction of asset, DER Facility, and Aggregation

2.1. Energy Resource Interconnection Service (ERIS) for DER

ERIS can be obtained through the NYISO’s standard SGIP for individual DER upon the DER’s acceptance of cost responsibility for any upgrades required to mitigate reliability issues posed by the interconnection. The ERIS value is memorialized in its Interconnection Agreement. Please refer to the NYISO’s Transmission Expansion and Interconnection Manual for further details. A DER that is studied through a non-NYISO interconnection procedure (e.g., SIR) may still obtain an ‘ERIS-equivalent’ in the seasonal Max Net value provided by the SIR. For further information on this process, please refer to the Load Forecasting Manual [LINK] and the Aggregation System User’s Guide [LINK].

2.2. Capacity Resource Interconnection Service (CRIS) for DER

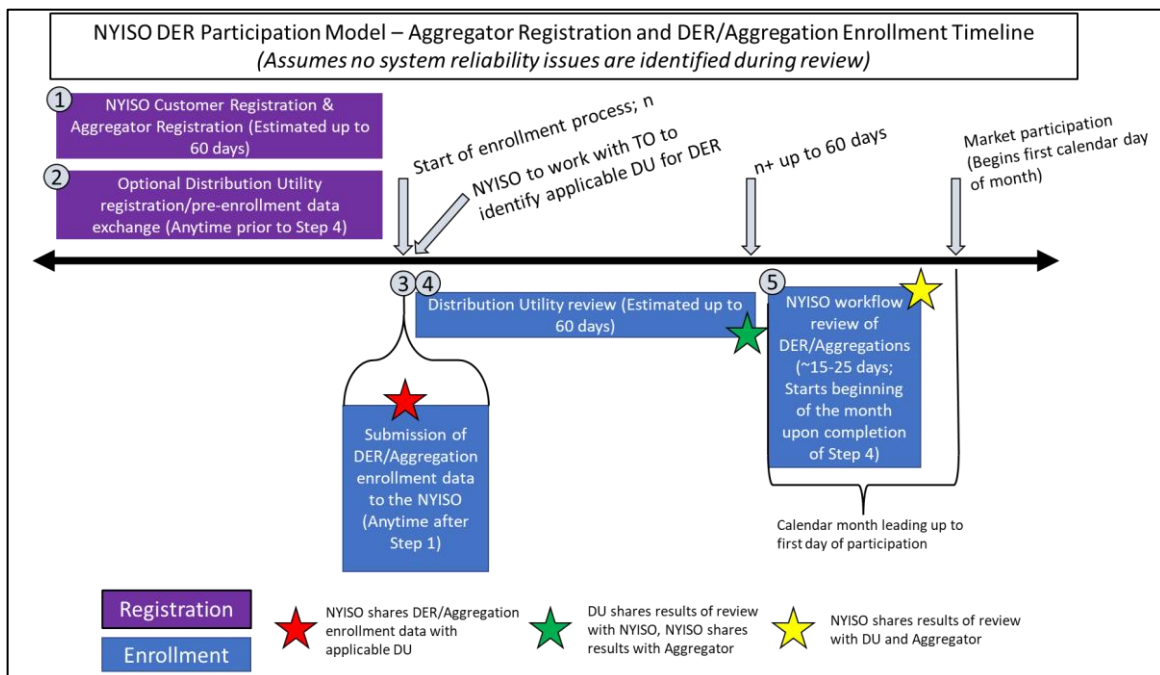
CRIS can be obtained for individual DER via Attachment S of the OATT if the DER accepts cost

responsibility for any upgrades required under a deliverability evaluation. A DER 2MW or less can obtain CRIS without going through a deliverability study. DER that are interconnected through a non-NYISO interconnection procedure must also be studied for deliverability by the NYISO in order to obtain CRIS unless the DER is smaller than 2MW. Please refer to the NYISO’s Transmission Expansion and Interconnection Manual for further details [LINK].

A Demand Side Resource seeking to participate in the Capacity market is not required to obtain CRIS – the ICAP of a Demand Side Resource is based on its demonstrated maximum output during a DMNC test, and the enrollment parameters detailed in the Aggregation System User’s Guide, which include the MW demand reduction capability of a Demand Side Resource. When a single DER has multiple assets behind the point of interconnection, the ICAP value of the DER as a whole is the sum of the ICAP of each asset comprising the DER, which ICAP is calculated separately for each asset as described in the ICAP Manual. For more information, please refer to the ICAP Manual [LINK].

For an Aggregation comprised of DER with an energy duration limitation, the maximum permissible CRIS that can be requested for each DER cannot exceed the minimum of the following: (a) its expected maximum injection capability in MW for the Developer-selected duration; (b) the nameplate capacity of the DER (i.e., injection capability of the facility expressed in MW); or (c) the sum of DER’s requested and existing ERIS, as applicable.

3. Distribution Utility Review of DER



3.1.1. Optional Distribution Utility Registration/Pre-Enrollment Data Exchange

Prior to engaging in the NYISO's enrollment and registration process, Aggregators may exchange information and data with a DER's applicable Distribution Utility (DU) in order to support its enrollment of DER with the NYISO. This pre-enrollment process is not required. During this process an Aggregator may seek to verify the data contained in an Interconnection Agreement (if applicable) based on the DU's records. This pre-enrollment communication can aid in expediting the NYISO enrollment process. The Aggregator must submit written confirmation of the Transmission Node for each DER upon import to the Aggregation System, as described in the Aggregation System User's Guide - the applicable Transmission Owner to whose Transmission Node the DER electrically maps shall confirm that the DER is connected to the correct Transmission Node, pursuant to Services Tariff Section 4.1.10.2. For details on what potential system access or information may be available, please contact the applicable DU. A list of contacts for select Distribution Utilities are available on the NYISO's public website at the following: [LINK].

3.1.2. Distribution Utility DER Review

Distribution Utilities will have the opportunity to evaluate the safety and reliability impact(s) each DER and group of DERs may have on the utility's electric facilities. See Services Tariff Section 4.1.10. As described in this Section 3.1.2, Aggregators will be responsible for submitting all requested DER and Aggregation physical and operational data to the NYISO, which will verify that all required information has been provided. A DU will have the opportunity to review the reliability and safety impacts of each DER or group of DERs connected to its electrical facilities. The applicable DU will receive the enrollment data for all DER within an Aggregation connected to its electrical facilities.

The NYISO and Aggregator will consult with the applicable Member System, if necessary, to identify the DU(s) (including municipal electric utilities) responsible for reviewing the DER in an Aggregation. The NYISO will provide the Member System and identified DU(s) with all DER and Aggregation physical and operational enrollment data supplied by the Aggregator. When the NYISO and Aggregator are unable to identify the applicable DU for a given Aggregation, or for one or more individual DER within an Aggregation, the NYISO will consult with the Member System in whose subzone the Aggregation and/or DER is located to identify the DU. The NYISO may share DER identifying information (e.g., physical address, meter number, Utility Account Number, one-line diagrams) with the Member System in order to facilitate DU identification. When a DER's enrollment data identifies that the DER receives service from a Municipal Electric Utility the NYISO may also share DER identifying information with the Municipal Electric Utility to determine the appropriate DU. Once the appropriate DU(s) is identified for each individual DER within an Aggregation, the DU will be responsible for evaluating the reliability and

safety impacts of DER directly connected to its electric facilities. **Aggregator, Transmission Owner, DU, and NYISO responsibilities related to the DU review process are described below.**

~~The NYISO will review the Aggregator's enrollment documentation and work with the Transmission Owner to whose Transmission Node the applicable DER electrically maps in order to identify the appropriate DU. The Transmission Owner and the NYISO will work together, along with the utility to whose electrical system a DER connects, to identify the appropriate DU, for each DER, who is responsible for the reliable and safe operation of the applicable system.~~

3.1.2.1. Aggregator Responsibilities

An Aggregator must provide to the NYISO all Aggregation-specific, and individual DER-specific information identified in the Aggregation System User Guide prior to each DER's enrollment. The Aggregator must receive written confirmation of each DER's applicable Transmission Node, which shall be submitted to the NYISO contemporaneously with the DER's enrollment materials. The NYISO requires any change to DER or Aggregation-specific enrollment data to be submitted to the NYISO Aggregation System, however only "material" changes shall be subject to review by the applicable DU. NYISO will share updated non-material enrollment data with the applicable DU for administrative visibility. When there is a material change to a DER or Aggregation's physical or operational characteristics, the applicable DU will review the safety and reliability impact(s) of the change, if any. This will enable the applicable DU to evaluate the safety and reliability impact of individual DER and Aggregations on its distribution system as individual DER and Aggregations evolve.

A 'material change' to a DER or Aggregation is any change to the physical and operating characteristics identified in Section [X] of the Aggregation System User's Guide. A comprehensive list of all data attributes that, when modified, require a supplemental DU review can be found in the Aggregation System User's Guide Section [X]. Non-material changes, such as changing a phone number, are administrative in nature and are not expected to have operational impacts. The NYISO will review **and accept** non-material changes to DER and Aggregations and share the updated enrollment data with the applicable DU for administrative visibility. An Aggregator must always ensure that changes submitted to the enrollment information for a particular DER are in compliance with the applicable interconnection agreement, pursuant to Services Tariff Section 4.1.10.

The Aggregator must upload enrollment information using the import instructions described in the Aggregation System User's Guide. All imports to the NYISO's Aggregation System must be in Microsoft Excel (.xlsx) file format, using the template provided by the NYISO available within the Aggregation System. The Aggregator shall submit changes to DER enrollment data to the NYISO's Aggregation System based on the

results of the DU review as soon as practicable after receipt of DU review results from the NYISO.

During the DU review, the Aggregator may be required to provide additional supplemental information to the DU to support the review process and must provide the requested information as necessary. **Services Tariff Section 11 contains the NYISO's Dispute Resolution Procedures. These procedures, both formal and informal, are available to parties having a dispute under the ISO's Services Tariff and OATT, the ISO Procedures, or any Agreement entered into under either Tariff. Entities that seek to enroll a DER or Aggregation for participation in the NYISO's participation model will be able to utilize these procedures to resolve related concerns arising under the market rules under the Services Tariff and OATT.**

3.1.2.2. Transmission Owner Responsibilities

The Transmission Owner shall confirm the Transmission Node for each DER and provide written documentation to the Aggregator upon request. To the extent that an Aggregator identifies the incorrect Transmission Node for a particular DER, the TO shall inform the Aggregator of the discrepancy, as defined above in Section X detailing the "Optional Distribution Utility registration/pre-enrollment data exchange."

The TO shall communicate with the NYISO to **identify aid in identification of** the appropriate DU for each DER upon request by the NYISO. The NYISO will not share DER enrollment data with a DU until the identity of the correct Distribution Utility to whose facilities the DER electrically maps is known.

3.1.2.3. NYISO Responsibilities

Once the Aggregator's data upload is complete, the NYISO will confirm completeness of the enrollment data in the Aggregation System – this validation occurs automatically upon import to the System and returns error messages to the extent that a given data attribute is incorrectly formatted, inappropriate characters are used, data length fields are exceeded, or the information is otherwise incomplete. The NYISO's evaluation does not ensure accuracy of all data provided. Upon successful **import submission** to the Aggregation System of all enrollment information, the NYISO will conduct a manual export of the data provided by the Aggregator to produce a Microsoft Excel (.xlsx) file that will be provided to the applicable DU. The NYISO's export and sharing of enrollment data will occur upon successful import and completeness confirmation. The DU will receive notification that the information has been shared.

The NYISO will send the results of each DU review to the applicable Aggregator. The Aggregator and DU shall coordinate as necessary to resolve safety and/or reliability concerns identified by the DU's review. The Aggregator shall submit any DER or Aggregation physical and operating data changes to the NYISO's Aggregation System, which shall remain the official data repository and must always reflect changes or modifications as a result of the deliberations between the Aggregator and DU. Aggregators must re-submit DER enrollment data to the NYISO's Aggregation System after resolving safety and/or reliability concerns,

which will initiate the review process again.

3.1.2.4. Distribution Utility Responsibilities

The DU to whose electric facilities a DER maps will receive the Aggregator's submitted data, including the physical and operational data identified in Appendix [X] of the Aggregation System User's Guide that is applicable to a given Aggregation and the DER facilities within that Aggregation. The DU is expected to begin its safety and reliability review once the data has been transmitted by the NYISO. The DU may require the Aggregator to provide additional information during this time to supplement the information gathered in the NYISO's Aggregation System.

The DU is responsible for communicating the outcome of the review to the NYISO using a standard attestation template, which will require the DU to articulate the results of the review, either in the form of an approval, or a denial accompanied by the reason for denial and required mitigation to resolve the safety or reliability issue(s) identified. The DU's review shall verify that the operating characteristics of the DER and Aggregations **comply with NYISO and/or Distribution Utility metering configurations, do not violate existing interconnection agreements, comply with NYISO and/or Distribution Utility metering configurations, or and** otherwise do not cause safety and reliability concerns. Please refer to Services Tariff Section 4.1.10 for the NYISO requirements associated with the DU review process. **It is anticipated that Distribution Utilities should will** complete their safety and reliability review and provide the results of that review to the NYISO within 60 calendar days, **but the 60-day review period is a recommended maximum amount of time, and DU review may take longer in practice.** If the DU finds DER/Aggregation information to be incomplete or inaccurate, it will notify the NYISO as soon as practicable, which notification will terminate the **60-day** review period. A new **60-day** review period will begin when the Aggregator resubmits the enrollment data to the NYISO's Aggregation System. **It is important to note that the 60-day DU review period is a recommended maximum amount of time. DU review may take longer in practice.**

If the DU does not identify any safety or reliability issues, the DER and Aggregation will move on to a final review by NYISO staff before beginning market participation on the first day of the month following completion of the NYISO's review. However, if one or more safety or reliability issues is identified during the DU review period, the DU is responsible for notifying the NYISO via the applicable form, which the NYISO would then provide to the Aggregator. The Aggregator is responsible for initiating communications with the DU to resolve the identified concerns and resubmitting its application as appropriate through the NYISO. Upon learning that safety and reliability issues have been identified by the DU, the NYISO will perform the 'unsubmit' function, as described in the Aggregation System User's Guide, for the Aggregation in the Aggregation System. Unsubmitting a DER and/or Aggregation removes the DER/Aggregation from its

previous status of 'Submitted,' allowing the Aggregator to make adjustments to the enrollment data to mitigate the concerns identified by the DU as needed. It is the responsibility of the Aggregator to then resubmit all DER physical and operating data, including changes where necessary, to the Aggregation System.

If the Aggregator wishes to proceed with enrollment of the Aggregation, then the Aggregator must 1) correct the issues identified by the DU, and 2) re-submit to the Aggregation System the enrollment data record for each Aggregation for which a safety and/or reliability issue was identified by the DU. The review process of the revised Aggregation will begin at that time, with the NYISO transmitting revised data to the applicable DU for re-review. As noted above, the subsequent review restarts the 60-day timeline; however, the DU will make a best effort to expedite the subsequent review process. This ~~iterative process may iterate, if necessary, but no~~-a DER, or if necessary, an Aggregation will not be permitted to begin operating in the NYISO-administered wholesale market until the DU verifies that the operation of that Aggregation would not cause any safety or reliability issues. ~~will continue until the DU verifies that no safety or reliability issues would exist if the Aggregation began operating in the NYISO-administered wholesale market.~~