

DSP Communications and Coordination Manual



DRAFT FOR DISCUSSION PURPOSES ONLY

This draft DSP Communications and Coordination Manual is for discussion purposes and is meant to document the Joint Utilities' ideas regarding data requirements and communications between the DSP, NYISO, individual DER and DER aggregators in order to facilitate the wholesale DER markets while preserving safety, reliability, and power quality.

The incorporation of DER into the wholesale and distribution market will evolve as the number of distribution-connected resources increases and their impacts and opportunities are more fully understood. The processes and interactions between the utilities as Distributed System Platforms (“DSPs”),¹ NYISO, Aggregators, and individual DER will also evolve. It is anticipated that some processes will initially be manual and become more automated as the investments in and maturity of tools progress. Regardless of the level of automation, utilities require a finite set of data and information to secure the distribution system.

The paper attempts to define data requirements and interaction with three guiding principles:

- Preserve reliability, power quality, and safety for the customers, public, and employees.
- Leverage existing technology and practices to facilitate rapid addition of DER and Aggregators as cost effectively as possible.
- Integrate new technology in a cost-effective manner as tools and processes evolve.

Background: Securing the Transmission and Distribution System

The primary requirements for monitoring and control are driven by operational needs of the NYISO in the operation of the bulk transmission system and DSP in the operation of the non-bulk transmission and distribution systems. These requirements may also be influenced by needs identified in market implementation settlement and verification.

Today, the NYISO and utility will use bid and award information as well as real-time telemetry to secure the bulk and non-bulk transmission system. The current proposal is to allow Aggregators as a DER Coordination Entity (“DCE”) to aggregate DER to a transmission node. The impact of these aggregations at these nodes is assumed to be similar to a larger generator node in the existing wholesale market, and therefore the process for evaluating awarded schedules and real-time operations will be much as it is today. Specifically, for those transmission lines secured by the NYISO,² the dispatch of aggregations at the transmission node will be based on the NYISO security constrained economic dispatch. The NYISO and the DSP will utilize the information to secure the bulk and non-bulk transmission systems and to maintain compliance with established operational standards and market rules.

¹ The utility or the utility as the DSP (used interchangeably) is responsible for operation of the electric system including both the non-bulk transmission and distribution systems.

² See NYISO’s “Facilities Subject to ISO Control & Notification” report for the full list of facilities the NYISO secures: https://www.nyiso.com/public/webdocs/markets_operations/market_data/reports_info/nyiso_secured_facilities.pdf.

A security-constrained dispatch of individual DER on the non-bulk transmission system or the distribution system is not performed and not currently possible by the NYISO as they have no visibility or jurisdiction on these systems, and consequently have no way to determine a secure dispatch. As a result, the DSP will need to establish protocols to secure the distribution system (e.g., analyze dispatch of aggregated DER at the transmission node and of individual DER at the transmission and distribution level to understand impacts to the non-bulk transmission and distribution systems).

Granularity of Data

At a level of granularity to the individual DER (i.e., resources identified by feeder and location), the DSP can analyze the injections or reductions to understand issues such as feeder voltage profile, impact of outages, reconfigured, or re-rated circuits, etc. This will ultimately lead to dispatching of DER that could allow the capacity of DER to go beyond hosting capacity. This granularity of data provides an increased ability to analyze interactions. This can also facilitate participation in the ancillary service markets and the evolution into distribution markets facilitated by the DSP. The DSP may require data as granular as the individual DER level to facilitate modeling efforts.

Since aggregations may be technologically heterogeneous and contain resources of varying size, it may be necessary to understand the total aggregated resource dispatch by feeder. For example, if a feeder contains multiple aggregations with varying DER types (e.g., curtailment, generation, and storage), the only way for the DSP to understand the total impact of the aggregations is at the feeder level. The DSP will have an opportunity to analyze the dispatch schedule by feeder and plan any required mitigation, including curtailment.

Wholesale Day-Ahead Market

The following high-level process outlines the proposed timing and extent of interactions between the DSP, NYISO, Aggregator, and individual DER as part of the NYISO's wholesale day-ahead market (DAM) process.

1500 Hours: Up to Two Days Prior to Operating Day

From: DSP

To: Aggregator or Individual DER (who may then forward notification to the NYISO, Aggregator)

Requirements:

- The DSP will provide information on system impacts that may impact DER³ in order to provide actionable information to the DER. There are two options for providing this notification. One option would involve the DSP providing this information directly to impacted DER who may then forward the impact or information to the Aggregator. The second option would allow the

³ Impacted DER includes those DER that are required to be de-rated or offline due to actual or anticipated distribution system conditions. DER may be impacted by scheduled outages on the feeder, abnormal feeder configuration, or other operating constraints identified by the DSP.

individual DER, as part of the DSP-Aggregator Agreement, to authorize the Aggregator to receive all communications and notifications from the DSP on its behalf.⁴ For each of these options, the Aggregator may be required to disclose the information to the NYISO (requirement included as part of the agreement between the Aggregator and NYISO).

- The Aggregator would use this information to adjust the dispatch of its resources that will comprise its bid.

Communication Method: Flexibility in market design should allow for the communications method to evolve. While the DSP today provides information about distribution constraints impacting operations either through direct, phone, mail, or email contact with the customer, DER, or Aggregator, this may evolve to an automated portal.

0500 Hours: One Day Prior to Operating Day

From: Aggregator

To: NYISO

Requirements: Each Aggregator will submit a bid in accordance with market rules.

Communication Method: NYISO Bid

1100 Hours: One Day Prior to Operating Day

From: NYISO

To: Aggregator, DSP

Requirements:

- The NYISO will provide the day-ahead aggregated level commitments at each specific transmission node to the Aggregator and DSP. The NYISO will also include this information in the Day Ahead Operating Plan (DAOP) for utility transmission and DSP operations. All information currently available in the existing DAOP will be included.
- If there are issues with the DAOP dispatch of aggregations, the transmission utility and DSP will communicate with the NYISO, similar to current processes, to re-dispatch at a transmission node level.
- DSP operators will continue to have access to this plan through existing processes.

Communication Method: NYISO Market Information System (“MIS”) (or other approved means of communication)

~1300 Hours: One Day Prior to Operating Day

From: Aggregator

To: DSP

Requirements:

⁴ Under the second option, and in accordance with the utility interconnection process, the individual DER will be the party held responsible if it fails to comply with a DSP notification (i.e., even if the Aggregator fails to convey the DSP notification to the individual DER).

- The Aggregator will communicate its individual DER dispatch that relates to the aggregation to the DSP so that the DSP can verify that consideration was given to the DSP's report on distribution system conditions.
- The individual DER dispatch must be defined by transmission node, normal feeder, and account number. This can be communicated via CSV in similar format to the NYISO DAOP (this format allows adoption of existing DSP tools used in the current process).
- The scope of DER dispatch should include the proposed minimum and maximum operating limits for the DER and the timing of the dispatch.

Communication Method: Spreadsheet – email (to be defined; looking for an easy way to load this into energy management systems for analysis).

~1500 Hours: One Day Prior to Operating Day

From: DSP

To: Aggregator, NYISO

Requirements:

DSP Evaluation of Dispatch

- The DSP will review the Aggregator's dispatch of DER within each aggregation to evaluate its feasibility with respect to distribution system limitations. The DSP may also evaluate the dispatch to identify any other reliability or potential power quality issues as a result of the Aggregator's dispatch. This will occur sometime after 1300 hours one day prior to operating day.
 - The DSP will determine if individual DER will need to be re-dispatched to either meet the previously communicated operating restrictions or due to changes in system conditions or to otherwise preserve reliability. The DSP will communicate the issues to the NYISO and the Aggregator via email.
 - This could include evaluations of NWA needs.
- Any resulting Aggregator re-dispatch will be communicated in a similar manner as described above and will require re-evaluation until a suitable dispatch is agreed upon.

Communication Method: Verbal or email

Wholesale Real-Time Market

T-5 minutes and T-6 seconds

From: NYISO

To: Aggregator

Requirements: The NYISO will communicate to the Aggregator the real-time aggregation dispatch.

Communication Method: Telemetry

Ongoing DSP Communications

- The DSP will report emergent feeder reconfigurations as soon as practicable to the individual DER or Aggregator via communication methods established above. This may include the curtailment of individual DER committed in the NYISO day-ahead process.
- All required information used for operations will be shared internally between the DSP's Control Centers. Each DSP may need to establish internal protocols to share this information between their transmission and distribution control room operations.
- The communication will likely be via email or voice communications with the expectation that this will evolve over time to a more automated system.
- Any changes to the day-ahead individual DER dispatch that occurs in real time will need to be communicated to the DSP for re-evaluation. The re-dispatch will need to be in a similar format to that provided day-ahead.
- The DSP will curtail or disconnect any individual DER, that creates or exacerbates system issues, to preserve reliability and safety at any time (e.g., power quality or loading). The curtailments will be communicated to the NYISO and the Aggregator as soon as practical. The communication will likely be email or voice communication.

Ongoing DSP-NYISO Communications

- All communications with the NYISO regarding DER participation in the wholesale market will go through each DSP's designated operating desk.
- To the extent that curtailment of individual DER by the DSP becomes necessary to maintain distribution system security, and if those resources are participating in NYISO's wholesale markets, the NYISO will receive notification by phone. If more automation becomes necessary, the means of communicating such events may be reevaluated.

Ongoing DSP-Aggregator Communications

- Any changes to the day-ahead individual DER dispatch status that comprises the aggregation that occurs in real time will need to be communicated to the DSP for re-evaluation.
- All metering and telemetry data need to be communicated to the DSP.⁵ It may be acceptable for the Aggregators and the individual DER to have simultaneous communication paths with the individual DSP.
- All Aggregators must be available for real-time operational verbal communications 24/7 to preserve distribution system safety and reliability.
- Aggregators will be obligated to notify the DSP when the operating status of any of its assets changes (e.g., when units are unavailable or when they can return to service).

⁵ For each individual DER, Aggregator shall provide the DSP with metered and telemetry data consistent with the requirements established as part of the Interconnection Technical Working Group and/or requirements of the interconnecting DSP. This data can be obtained from facilities installed to meet prior telemetry or metering requirements as part of the individual DER interconnection process. If the NYISO requirements result in additional data, the DSP may request access to that data.

Ongoing Aggregator-NYISO Communications

If the DSP reports any new distribution system constraints upon evaluating the Aggregator's dispatch and the Aggregator can't meet its upper operating limit ("UOL") by recruiting new resources, the Aggregator will communicate with the NYISO.

DRAFT