

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, DER and DER aggregators in order to facilitate the wholesale DER markets while maintaining reliability and power quality.

The incorporation of DER into the wholesale and retail 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, NYISO, aggregators and 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:

- Maintain reliability, power quality and safety for the customers, public and employees.
- Leverage existing technology and practices to facilitate rapid inclusion 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 requirements for processes and monitoring and control are driven by NYISO operation of the transmission system and utility's operation of the transmission and distribution system, market implementation, settlement and verification.

The NYISO and transmission utility will use bid and award information as well as real-time metering to secure the transmission system. The current proposal is to aggregate DER at the nearest transmission node. The impact of these aggregations at these nodes is similar to a larger generator node in the existing wholesale market, and therefore, the process for evaluating awarded schedules and real-time operations is the same as it is today. Specifically, the dispatch of aggregations at the transmission node is based on the NYISO security constrained economic dispatch. The utility and the NYISO will utilize the information to secure the system and to maintain compliance with established operational standards and market rules.

A security-constrained dispatch of individual DER on the distribution system is not possible by the NYISO as they have no visibility or jurisdiction at these voltage levels, and consequently have no way to determine a secure dispatch (the NYISO secures the 230 & 345 kV systems with the exception of some assets down to 115kV). As a result, the DSP will need to establish and follow similar, protocols as the NYISO on the transmission system to secure the distribution system (e.g., analyze dispatch of individual DER to understand impacts to the distribution system). This analysis will be performed at two levels, the feeder level and the individual DER resource level.

Feeder-Level Data

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. At this time, and in accordance with the rules developed as part of the Interconnection Technical Working Group, the Joint Utilities currently are primarily interested in monitoring DER that are net-injecting and/or larger than 50 kW.

DER-Level Data

At the granular individual DER level (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 on outages or rerouted circuits, etc. This will ultimately lead to a more efficient dispatch 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 detailed analysis will create greater efficiency in dispatch and can facilitate ancillary service markets and the evolution into retail markets facilitated by the Distributed System Platform (DSP).

The two levels of data allow the DSP to analyze dispatches more closely to enable greater system efficiency.

Wholesale Day-Ahead Market

The following high-level process outlines the proposed timing and extent of interactions between the DSP, NYISO, aggregator, and 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: DER (who may then forward notification to the ISO, aggregator)

Requirements:

- The DSP will provide information to impacted DER¹ (and perhaps also information about impacted circuits) in order to provide actionable information to the DER. Since resource-specific information is personally identifiable information (PII), this will be provided directly to DER on a confidential basis. The DER would be required to disclose this information to the aggregator. The aggregator or DER may be required to disclose the information to the NYISO (requirement included as part of the agreement between the aggregator and NYISO).

¹ Impacted DER includes those DER that are required to be de-rated, reconfigured, 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.

- The aggregator would use this data to refine the dispatch of the pool of its resources that will comprise its bid at a transmission node.

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 through email communications, this may evolve to an automated portal that enables posting and retrieval of information from a server.

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 commitment at the specific transmission node to the aggregator and DSP based on transmission level constraints and a corresponding economic dispatch. The NYISO will also include this information in the Day Ahead Operating Plan (DAOP) for DSP operations. All information currently available in the existing DAOP will be included.
- If there are issues with the DAOP dispatch of aggregations, the 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 or new processes.

Communication Method: NYISO Bid

~1300 Hours: One Day Prior to Operating Day

From: Aggregator

To: DSP

Requirements:

- The aggregator will communicate its individual DER dispatch to the DSP, with consideration given to the DSP's report at 1500 hours two days prior to operating day on distribution system conditions.
- The individual DER dispatch must be defined by transmission node, normal feeder and location on the feeder. 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 will likely be based on individual DER size and interconnection voltage, potentially using the parameters for visibility set forth in the Supplemental DSIP and will likely be the threshold for evaluation.

- For DR contained within a dispatch, the DSP should be informed at a feeder level of proposed reductions.
- For small PV, the aggregator should send a forecast of injections by feeder
 - Data to be used for high-level analysis of feeder loading, reverse flow determination and voltage profile of feeders.

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, ISO

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 will evaluate the dispatch and identify any 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 once information is known.
 - The DSP will determine if individual DER will need to be re-dispatched to maintain reliability. Since the aggregator already has the system limitations from the DSP prior to the DAM bidding deadlines, re-dispatch would only be expected to address changing system conditions since that time. 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.
- If at any point in the future the DSP has the tools available to perform a security constrained dispatch, this step may be eliminated, and similar to what occurs today in the bulk system the aggregator would instead be expected to respond to real-time re-dispatch and commitments.

Communication Method: Verbal or email

Wholesale Real-Time Market

T-5 minutes and T-6 seconds

From: ISO

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 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 via 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 any individual DER that create or exacerbate system issues (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.
- The DSP may curtail or disconnect an individual DER to preserve reliability and safety at any time. When this is done the DSP will communicate verbally or via email as soon as practicable.

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.
- 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.
- 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 communications need to be communicated to the DSP. 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 of the operating status of each of its assets (e.g., when units are unavailable or when they can return to service).

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.

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