JOINT UTILITIES
OF NEW YORK

NYISO DER Participation Model: Utility Visibility to DER Day-ahead Operating Plan

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ICAPWG

Introduction and context

New York's Climate Leadership and Community Protection Act includes a target of having 70% of electricity consumed in New York produced from renewable generation by 2030 (i.e., "70 by 30 target"). As such the Utilities expect a significant percentage of these renewable resources will be connected to the distribution system.

It is critical to establish appropriate day-ahead information sharing requirements and processes between the Aggregator, Utility, and NYISO to ensure that ISO dispatch and DER aggregations can be administered in a way that does not threaten the safe and reliable operation of the utility system. Granular schedules create value for all stakeholders (consumers, DERs, DERAs) by optimizing dispatch.

Rather, the utilities request that day-ahead information be made available so that they can perform analysis to identify and resolve system issues to avoid the operator needing to remedy in real-time.

The Importance of a DER Day-ahead Operating Plan to Ensure Distribution System Reliability

NYISO dispatch information provides sufficient granularity to assess the transmission level congestion, and the utilities apply similar methodologies to conduct load flow analysis and assess the transmission level impact of DER aggregations via the Day-Ahead Operating Plan.

NYISO sends the TOs a Day-Ahead Operating Plan, which includes sufficient granularity for the TOs to assess system impacts based on the cleared resource mix of wholesale generators, demand side resources, and DER aggregations (i.e., the aggregation as a whole, not the individual DER comprising that DERA).

However, the transmission nodes (t-nodes) definitions, and accordingly the NYISO cleared dispatch decisions for future DERAs, are uninformed of distribution level system conditions. There are ~100 proposed NYISO t-nodes, whereas there are thousands of distribution-level feeders and substations, each of which may experience unique system conditions.

The Importance of a DER Day-ahead Operating Plan to Ensure Distribution System Reliability

There are several factors that may further impact the relative risk associated with a lack of situational awareness. For illustrative purposes we include a few below:

1. **System maintenance/outages.** While interconnection studies provide assurance today that DER may participate wholly, on a normal system, they do not provide assurance for safety and reliability under a system that has undergone reconfiguration due to outages or other operational scenarios. In most instances, DER are curtailed under these circumstances, however dispatch can be optimized with improved information.

2. **Flexible interconnections**. Changes to the interconnection process may include options for DER to choose a lower cost interconnection option via a "flexible" or "curtailable" interconnection. This would allow DER to connect beyond hosting capacity limits under the premise that these DER curtail under certain system conditions.

3. **Grid architecture variations:** System topologies and operating practices make granular data paramount to maintaining system security and reliability (e.g., long rural feeders, complex system networks, etc.)

Data requirements for the DER Day-ahead Operating Plan (DDAOP)

The utilities will need visibility to the scheduled (i.e., Day-Ahead) dispatch for each of the individual DERs operating under the NYISO dispatch of the DER aggregation that would be used to meet the aggregations' cleared NYISO bid requirements, as defined in the Table below. We refer to this schedule as the DER day-ahead operating plan (DDAOP.) The DDAOP will be used by the utilities to perform reliability analysis prior to the actual dispatch.

Individual utilities have different methods for how they use the DDAOP data to perform distribution reliability analysis, and we anticipate that the level of rigor and automation supporting that analysis will evolve as new technologies and system capabilities evolve such as ADMS and DERMs.

Components of NYISO Aggregation Needing Communication of Granular Schedule of Products and Service

		Injecting at POI; All Products and Services	Load Modifying (Not Injecting)
Individual DER Nameplate Capacity		>50kW	>500kW
Technology			
	Solar	X	X
	Storage	X	X
	Wind	X	X
	DR		X
	Hybrid	X	X

Means of communicating data:

Each Utility may choose different methods for communication of granular schedules between the Aggregator and the utility. Each of the utilities will establish their own requirements and protocols for data exchange based on the respective Company's security requirements and shall make such requirements available to the Aggregator. The data exchange is expected to utilize a common and agreed upon data format.

The utility will initiate communications with the DER or DER Aggregator to resolve any issues that are identified with the utility granular schedule review. Another DDAOP will not be required unless significant operating changes (I.e. multiple DERs on multiple circuits need to be rescheduled/redispatched) are made.

Format

Format of data should meet the requirements of the NYISO DAOP, though should include an additional data field to identify the individual DER (i.e., Facility ID) as opposed to the DAOP which is organized based on Gen PTID only (i.e., ID for the aggregation as a whole). For instance, for an aggregation that includes 10 DER, the file would contain unique rows indicating the operating plan for each hour for each of the 10 DER, rather than just a single set of rows for the Gen PTID.

- CSV File
- Containing fields in order and format.

Data format example

Gmt Ltz(Date Hr)	Station Name	Gen Name	SubZone Name	Energy	Minimum Operating Limit	Maximum Operating Limit	Regulation	Min10 Spinning Mw	10Min Non-Spin	30Min Spin	30Min Non-Spin	Feeder Number	T Node	Gen Ptid	Facility ID
08-Oct-2022 00	Station A	GenA	NMPC Central	220				0	0	0	0			12345	11111
08-Oct-2022 01	Station A	GenA	NMPC Central	220				0	0	0	0			23515	11111
08-Oct-2022 02	Station A	GenA	NMPC Central	220				0	0	0	0			23515	11111
08-Oct-2022 03	Station A	GenA	NMPC Central	220				0	0	0	0			23515	11111
08-Oct-2022 04	Station A	GenA	NMPC Central	220				0	0	0	0			23515	11111
08-Oct-2022 05	Station A	GenA	NMPC Central	220				0	0	0	0			23515	11111
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08-Oct-2022 00	Station A	GenA	NMPC Central	220				0	0	0	0			23515	11112
08-Oct-2022 01	Station A	GenA	NMPC Central	220				0	0	0	0			23515	11112
08-Oct-2022 02	Station A	GenA	NMPC Central	220				0	0	0	0			23515	11112
08-Oct-2022 03	Station A	GenA	NMPC Central	220				0	0	0	0			23515	11112
08-Oct-2022 04	Station A	GenA	NMPC Central	220				0	0	0	0			23515	11112
08-Oct-2022 05	Station A	GenA	NMPC Central	220				0	0	0	0			23515	11112