Order 2023 - Improvements to Generator Interconnection Procedures and Agreements

Proposed Compliance Overview

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Project Title: Order No. 2023 Compliance

Proposed Effective Date: March 2024

- ISO New England is preparing its compliance with Federal Energy Regulatory Commission ("FERC") Order No. 2023
- This presentation provides:
  - A summary description of the Order
  - An overview of ISO's proposed compliance
  - Anticipated stakeholder schedule

SUMMARY DESCRIPTION OF ORDER 2023

Order No. 2023 Development

- On July 28, 2023, FERC issued Order No. 2023, an approximately 1500-page unanimous Final Rule adopting significant reforms to the standard Large Generator Interconnection Procedures ("LGIP") and Small Generator Interconnection Procedure ("SGIP")
- The reforms build on the standardized procedures that FERC established in Order Nos. 2003, 2006 and 845 to address interconnection queue backlogs, improve certainty, and prevent undue discrimination for new technologies
- Order No. 2023 adopts most of the reforms proposed in the July 5, 2022 Notice of Proposed Rulemaking ("NOPR")

The Need for Reform

- In Order No. 2023, FERC affirmed their preliminary findings that the existing standardized interconnection procedures and agreements are insufficient to ensure interconnection to the transmission system in a reliable, efficient, transparent, and timely manner
  - The growth of new resources seeking to interconnect and the differing characteristics of those resources have created new challenges for the process
- These new challenges contribute to queue backlogs and uncertainty regarding the cost and timing of interconnecting, increasing costs for consumers, which, in turn, can create reliability issues, as needed new generating facilities are unable to come online in an efficient and timely manner

The Need for Reform, continued

- FERC concludes that, absent reforms, the current process will continue to cause queue backlogs, longer development timelines, and increased uncertainty regarding the cost and timing of interconnecting to the transmission system
  - Accordingly, pursuant to Federal Power Act Section 206, FERC adopted significant, non-regionally tailored, reforms in the standard LGIP and SGIP

Order No. 2023 Compliance

- FERC will evaluate compliance filings in light of the independent entity variations standard
  - Permits ISO-NE to seek to preserve certain variations implemented over the years to improve queue management
  - However, the order requires significant changes to the manner in which ISO-NE administers the interconnection processes, as well as how interconnection customers are expected to participate in those processes
- Order No. 2023 was published in the Federal Register on September 6, 2023, setting a compliance deadline of December 5, 2023

Primary Elements of the Order

Transition to First-Ready First-Served Cluster Process

- Requires that transmission providers make several changes to transition to a first-ready, first-served cluster study process, rather than the current serial first-come, first-served study process
  - Cluster study process
  - Increased financial commitments for interconnection customers to enter and remain in the process
  - New mechanisms for interconnection customers to share interconnection study and upgrade costs
  - Enhanced site control requirements
  - Requirements for interconnection customers to select a definitive point of interconnection
  - Commercial readiness deposit requirements
  - Withdrawal penalties

Primary Elements of the Order, continued

Increase the Speed of Interconnection Processing

- Eliminates the reasonable efforts standard for completing interconnection studies, and establishes firm study deadlines along with financial penalties on transmission providers that fail to meet them
- Adopts a uniform approach to Affected System coordination

Primary Elements of the Order, continued

Incorporate Technological Advancements

- Allow co-location of multiple generating facilities behind a single point of interconnection
- Allow interconnection customers to access surplus interconnection once the original interconnection customer has an executed LGIA (or an unexecuted filed LGIA)
- Allow interconnection customer-provided operating assumptions in interconnection studies that change the proposed charging behavior of an electric storage resource
- Incorporate specific alternative transmission technologies for evaluation during the interconnection study process
- Incorporate modeling and ride-through requirements for non-synchronous generating facilities

REVIEW OF ORDER REQUIREMENTS

ISO's Initial Proposed Compliance

Information Access

Order No. 2023 Requirements	ISO's Proposed Approach

• Feasibility Study is eliminated
• Transmission providers to post and update the heatmap within 30 calendar days after the completion of each cluster study and cluster restudy.
  • Calculated under N-1 conditions and studied based on the power flow model of the transmission system (to approximate (C)NRIS) with specific technical requirements
• FERC did not adopt the Informational Interconnection Study which was suggested in the NOPR
	• Comply with the heatmap requirement
	  • The ISO will focus on compliance with the technically specific requirements for the initial implementation
	  • ISO does not currently have significant mapping capability of this nature – will take some time to establish
	• Heatmap is not required until after the transition period – approximately mid-2025

Cluster Study Process

1. **Cluster Request Window (45 Calendar Days (CD))**
   Interconnection Requests include: application, application fee, study deposit, commercial readiness deposit and demonstration of 90% site control, point of interconnection, CNRIS/NRIS election

2. **Cluster Engagement Window (60 CDs)**
   Single Cluster Study Scoping meeting with all ICs
   Non-disclosure agreements
   Cluster Study Agreement

3. **Cluster Study (270 CDs)***
   Power flow, short circuit, stability (& EMT analysis)
   IRs are equally queued
   Non-binding cost estimates for network upgrades

4. **Cluster Restudy (if required) (150 CDs)**
   Additional deposit for 5% of network upgrade cost assignment from the Cluster Study
   Power flow, short circuit, stability, EMT analysis
   Updated network upgrade cost assignment

Cluster Study Cost Allocation
Network Upgrade Cost Allocation
(see companion presentation on Order No. 2023 Transition for additional details)

*ISO will request a independent entity variation to allow 270 days for the completion of the Cluster Study

Cluster Study Process, continued

Order No. 2023 Requirements (see graphic on previous slide)	ISO's Proposed Approach

• Cluster Request Window
• Cluster Engagement Window
• Cluster Study
• Cluster Restudy
	• Adopt these changes with the following exceptions:
	  • ISO will request 270 calendar days (instead of the Order's 150 CDs) to complete the Cluster Study
	  • Consistent with established timeline for System Impact Studies in New England
	  • Establish a uniform study deposit amount of $250,000*, consistent with existing New England LGIP requirements
	• ISO anticipates opening the first Cluster Request Window in mid-2025
	  • After the completion of the Transitional Cluster Study

*Independent entity variation

Order No. 2023 proposes study deposits that vary with Generating Facility size

Cluster Study Process – ISO-NE Implementation

- Single, region-wide cluster "window"
  - IRs for all portions of the region would be submitted and studied at the same time
- However, IRs would be studied separately to the extent possible and would only be studied in groups when there is electrical proximity and/or there is likelihood that the IRs would share allocation for an upgrade
  - Proportional methodology used for cost allocation will include thresholds to establish responsibility
- The exact local system stresses that are evaluated will still depend on the locations of the IRs under study

Site Control

Order No. 2023 Requirements	ISO's Proposed Approach
• IC must provide evidence of 90% site control at the time of interconnection request, and evidence of 100% site control at the time of executing the FSA and when executing, or requesting the unexecuted filing of, the LGIA • Eliminates the option to provide a deposit in lieu of site control with IR, except in limited circumstances where an IC demonstrates a "regulatory limitation" to obtaining site control • Transmission Provider to publicly maintain per MW acreage requirements for each generating facility technology type	• Adopt these changes

Commercial Readiness Deposits

Order No. 2023 Requirements	ISO's Proposed Approach
• IC to make the following readiness deposits	• Adopt these changes

Stage of Process	Readiness Deposit
IR	2 x Study Deposit
Cluster Restudy Entry	5% network upgrade assignment
Facilities Study Entry	Additional 5% network upgrade assignment
IA Execution	20 % network upgrade assignment

Withdrawal Penalties

Order No. 2023 Requirements	ISO's Proposed Approach
• IC penalties for withdrawal • Paid to other ICs remaining in the cluster to cover study and upgrade costs	• Adopt these changes

Phase of Withdrawal	Total Withdrawal Penalty (if greater than study deposit)
Initial Cluster Study	2 x Study Costs
Cluster Restudy	5% network upgrade assignment
Facilities Study	10% network upgrade assignment
Post-IA Execution	20 % network upgrade assignment

Elimination of Reasonable Efforts Standard

Order No. 2023 Requirements	ISO's Proposed Approach
• Transmission Provider penalties when studies are delayed beyond the tariff deadline • Paid, pro-rata to ICs in the study that did not withdraw	• Adopt these changes

Stage of Process	Study Delay Penalty
Cluster Study	$1,000/day
Cluster Restudy	$2,000/day
Affected System Study	$2,000/day
Facility Study	$2,500/day

Elimination of Reasonable Efforts Standard,
Additional Notes

- No penalty would be imposed until the 3rd cluster study
- Automatic 2 week additional grace period is allowed on all study timelines
- Deadline can be extended if all parties agree
- Penalties are capped at the total initial study deposit
- Penalties can be appealed to FERC and would be considered on the following bases:
  - extenuating circumstances outside the transmission provider's control, such as delays in affected system study results;
  - efforts of the transmission provider to mitigate delays; and
  - the extent to which the transmission provider has proposed process enhancements either in the stakeholder process or at the Commission to prevent future delays
- ISO may submit an FPA section 205 filing to propose a default structure for recovering study delay penalties and/or make individual FPA section 205 filings to recover the costs of any specific study delay penalties

Affected Systems Process

Order No. 2023 Requirements	ISO's Proposed Approach

• Order establishes a formal Affected Systems process with the following components:
  • Notification requirements and timeline
  • Affected System Study
  • Affected System Study Agreement
  • Affected System Facilities Construction Agreement
  • Cost allocation
  • Relative "queue position"
	• Adopt these changes
	  • These provision will apply to the coordination with neighboring (FERC regulated) Transmission Provider
	  • In our case – NYISO
	  • These provisions do not refer to the process used to manage affected systems for internal entities within New England pursuant to Section I.3.9 and the associated Planning Procedures

Increasing Flexibility

Order No. 2023 Requirements	ISO's Proposed Approach

• More than one generating facility can co-locate on a shared site behind a single point of interconnection and share a single IR
  • Can be owned by a single IC with multiple generating facilities sharing a site, or by multiple ICs that have agreement that allows for shared use
• Before the Facilities Study phase, instead of automatically rejecting, proposed facility additions to IRs must be evaluated prior to deeming it material
  • Addition cannot change the originally requested service level
• ICs can access the surplus interconnection service process once an LGIA is executed
	• Adopt these changes

Operating Assumptions for Storage

Order No. 2023 Requirements	ISO's Proposed Approach

• At the request of the IC, use certain operating assumptions in study processes that reflect the proposed charging behavior of an electric storage resource
• Allow ICs to resubmit their operating assumptions if the TP finds the originally proposed operating assumptions are in conflict with good utility practice
• The operating assumptions must be initially submitted as part of the initial IR
• Require the IC to install additional control technologies (software and/or hardware)
	• ISO is preparing an alternative proposal* (independent entity variation)
	  • No longer study storage resources charging at peak-load conditions
	  • Avoid incorporating additional control technologies

*Will present at the October 17 Transmission Committee meeting

Grid Enhancing Technologies

Order No. 2023 Requirements	ISO's Proposed Approach

• TPs must consider alternative transmission technologies while conducting studies during the interconnection process for all ICs in a cluster
  • Static synchronous compensators, static VAR compensators, advanced power flow control devices, transmission switching, synchronous condensers, voltage source converters, advanced conductors, and tower lifting
  • Dynamic line ratings not included
• TPs have the sole discretion to determine whether a particular technology is appropriate and reliable as a network upgrade for a given cluster.
• Explanation of the evaluation of the enumerated alternative transmission technologies to be included in study report
	• Adopt these changes

Equipment Models and Ride Through Requirements

Order No. 2023 Requirements	ISO's Proposed Approach

• Required with the Interconnection Request:
  • validated user-defined root mean square ("RMS") positive sequence dynamic model
  • appropriately parameterized generic library RMS positive sequence dynamic model
  • validated electromagnetic transient ("EMT") model
• Ride through performance consistent with NERC standards
	• Adopt these changes
	  • Order No. 2023 requires the submittal of user-defined models
	  • These should only be submitted in the case where one exists for the equipment (many proposals only use a library model)
	  • ISO-NE will not utilize user-defined models when identifying the final study results and will not incorporate new user-defined models in the base cases going forward

ISO-NE INCLUSIONS AND CONFORMANCE

Proposed Inclusions

- SGIP and Elective Transmission Upgrade (ETU) IP will be conformed with the Order No. 2023 cluster process
- Features of the ETU process will be maintained
  - Ability to "link" with ETUs to achieve interconnection and/or deliverability
- Cluster Enabling Transmission Upgrade (CETU) process will be maintained
  - CETU Regional Planning Study
  - Ability of ETU to take the place of a CETU
- Achieving a capacity interconnection will take place fully within the interconnection process

Anticipated Stakeholder Schedule*

Stakeholder Committee and Date	Scheduled Project Milestone
Transmission Committee **August 22, 2023**	NEPOOL Counsel's Overview Presentation
Transmission Committee **September 27, 2023**	ISO-NE Overview on Order 2023, Discussion of Capacity Interconnection Service Considerations, and Discussion of Transition Process
Transmission Committee **October 17, 2023**	ISO-NE Presentation, Detailed Work Plan Review & Initial Tariff Redlines Stakeholder Amendments
Transmission Committee **November 9, 2023**	ISO-NE Tariff Redline Review & Discussion Stakeholder Amendments and Vote
Participants Committee **November 16, 2023**	Vote

Compliance filing December 5, 2023

* Assumes no extension. Schedule subject to change.

Questions