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Webex Broadcast

Cluster Study Participation Forum

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ISO Tariff: Schedules 22, 23, & 25

- [Schedule 22 – Large Generator Interconnection Procedures](#)

Provides the terms and conditions for interconnecting large generating facilities (more than 20 MW) to the administered transmission system

- [Schedule 23 – Small Generator Interconnection Procedures](#)

Provides the terms and conditions for interconnecting small generating facilities (20 MW or less) to the administered transmission system

- [Schedule 25 – Elective Transmission Upgrade Interconnection Procedures](#)

Provides the terms and conditions for interconnecting a new pool transmission facility, merchant transmission facility or other transmission facility to the administered transmission system. An elective transmission upgrade is not a generator interconnection related upgrade, a regional transmission upgrade, or a market efficiency transmission upgrade

**In the event of a conflict between the contents of this presentation and the Tariff, the Tariff controls*



For more information, visit: [Participate > Rules and Procedures > Transmission, Markets, and Services Tariff > Open Access Transmission Tariff \(OATT\)](#)



Acronyms and Description

ASO	affected system operator	IA	Interconnection Agreement
BESS	battery energy storage system	IBR	inverter based resource
BPS	bulk power system	IC	interconnection customer
CCIS	capacity capability interconnection standard	IR	interconnection request
CETU	cluster-enabling transmission upgrade	IRTT	Interconnection Request Tracking Tool
CEW	Customer Engagement Window	ITO	interconnecting transmission owner
CNI	capacity network import	LGIP	large generator interconnection procedure
CNIC	capacity network import capability	NCIS	network capability interconnection standard
CNIIS	capacity network import interconnection service	NERC	North American Electric Reliability Corporation
CNR	capacity network resource	NRC	network resource capability
CNRC	capacity network resource capability	NRIS	network resource interconnection service
CNRIS	capacity network resource interconnection service	OATT	open access transmission tariff
CRD	commercial readiness deposit	OEM	original equipment manufacturer
CRW	Cluster Request Window	POI	point of interconnection
EMT	electromagnetic transient	PPC	power plant controller
ETU	elective transmission upgrade	PSCAD	power system computer-aided design
FERC	Federal Energy Regulatory Commission	PSSE	Power System Simulation for Engineers
GSU	generator step-up transformer	RFP	request for proposal
HVDC	high voltage direct current	SGIP	Small Generator Interconnection Procedures

Course Topics

- General overview of Cluster Study process
- Cluster Request Window (CRW) requirements and timelines, including:
 - Deposits
 - Election of interconnection service (Network Resource (NR)/Network Import (NI) vs. Capacity Network Resource (CNR)/Capacity Network Import (CNI))
 - Technical data
 - Site control
- Customer Engagement Window (CEW) requirements, deadlines, and timelines
- Details on required technical data and modeling expectations:
 - Power flow
 - Short circuit
 - Stability
 - Electromagnetic transient (EMT) data
 - PSS/E vs. Power System Computer Aided Design (PSCAD) benchmarking report
 - PP5-6 Appendix C-1, C-1A, & C-1B, Appendix C-2 & Appendix F-1

Topics Not Covered

- ❌ State jurisdictional affected system operator (ASO) study coordination
- ❌ Impact of ongoing requests for proposal (RFPs)/solicitations
- ❌ Confidential information regarding specific projects
- ❌ Guidance/discussion regarding specific original equipment manufacturers (OEMs), consultants, or transmission owners
- ❌ Results of previous interconnection studies, including the Transitional Cluster Study



Course Objectives

At the completion of the webinar session, you will be able to:

- Explain the general steps of the Cluster Study process
- Understand what the CRW is and the deadlines associated with it
- Identify all components necessary to submit a valid Interconnection Request (IR)
- Learn the importance of submitting complete and accurate required technical data in a timely manner
- Update on portals for submitting required Cluster Study data and deposits during the CRW
- Understand what the CEW is, the events that take place during the CEW, and the deadlines associated with it



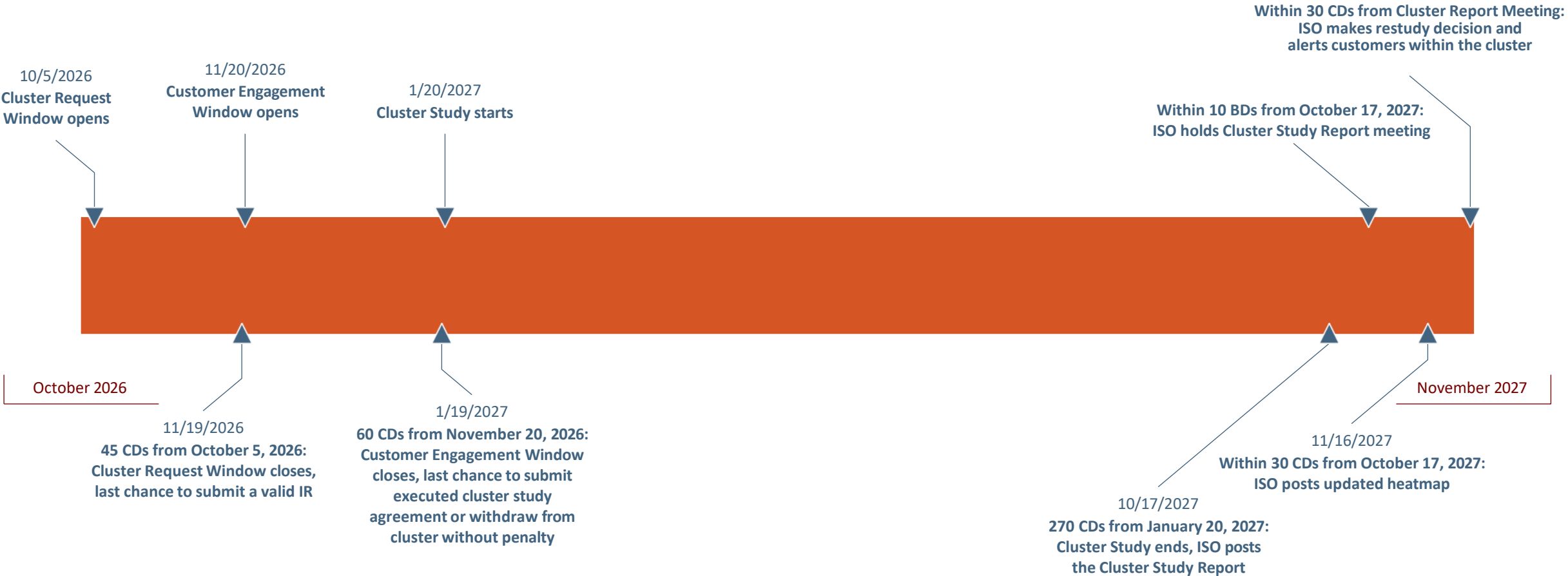
Overview of the Cluster Study

Cluster Study Phases

- There are multiple phases to the full Cluster Study process administered by the ISO
 - This webinar will focus on the first two phases of the Cluster Study: the CRW and the CEW
 - These phases are highlighted below in relation to the overall process



Timeline for the Upcoming Cluster Study



Important Dates in 2026/2027 for the Upcoming Cluster Study

10/5/26: Cluster Request Window opens	10/17/27: ISO posts the Cluster Study Report
11/19/26: Cluster Request Window closes, last chance to submit a valid Interconnection Request	10/18/27 - 10/29/27: ISO holds Cluster Study Report meeting
11/20/26 - 1/19/27: Customer Engagement Window, Scoping Meeting will occur within this date range	10/30/27 - 11/29/27: ISO to make Cluster Restudy decision and alert customers within the cluster
1/19/27: Deadline to submit Cluster Study Agreement, last chance to withdraw from Cluster without penalty	11/17/27: ISO posts updated heatmap
1/20 /27- 10/17/27: Cluster Study	11/30/27: Cluster Restudy will begin if deemed necessary

- Dates related to CRW and CEW (i.e., entering the Cluster)
- Dates related to Cluster Study
- Date related to restudy

General Resources

The ISO has resources to supplement and assist customers with questions regarding the upcoming Cluster Study

Resource
Order No. 2023 Key Project Page
Interconnection Process Guide
Cluster Study Calendar
Interconnection Request Studies Page
Post Transitional Cluster Study Milestones and Next Steps

Reminder!

In a Cluster Study setting, the ISO will carefully provide equal access to pertinent information to all applicable Interconnection Customers (ICs)/projects

- This approach supports consistent treatment of all ICs throughout the Cluster Study cycle
- The ISO will be limited in its ability to interact directly with ICs on specific IRs
- Questions, comments, and other communications received from individual ICs may be posted to the ISO's website so that all parties have equal access to information



Cluster Request Window (CRW)

Opening of CRW

On October 5, 2026, the ISO will open the interconnection queue to new IRs:

- The window will be open for 45 Calendar Days (CD) to allow ICs to submit a complete IR package to the ISO for participation in the upcoming initial Cluster Study
- The CRW will close by end of day November 19, 2026
 - Any IR that is found to be incomplete by the ISO as of the close of the CRW will be withdrawn without opportunity to cure
- Requirements for a complete IR will be reviewed later in this presentation



2026 CRW Timeline and Initial IR Review

CRW Opens

CRW Closes



CLUSTER REQUEST WINDOW 45 CD

October 5, 2026

November 19, 2026

What is Required for Submission of a Complete IR?

All the following must be included for an IR to be considered complete:

- Complete IR form (see Appendix 1 of Schedule 22, Schedule 23, or Schedule 25)
 - Includes MW amounts to be studied and type of Interconnection Service requested
- IR Deposit
- Study deposit
- Commercial Readiness Deposit (CRD)
- Proof of site control for the proposed generating facility or ETU
- All technical data required under Appendix 1, Attachment A, and Attachment A-1 of Schedule 22, Schedule 23, or Schedule 25, as further described in ISO-NE Planning Procedure No. 5-6

How to Request Critical Energy Infrastructure Information (CEII)

As part of completing an IR, an IC must have IR CEII access

- All ICs will need to request IR CEII following the steps provided on the [Request CEII Access](#) page of the website
 - Once a request for CEII access is submitted, it may take up to 10 BD for the ISO to review
 - This CEII access is intended only to be used by those entities (and their associates) that have submitted or are preparing to submit an interconnection request



Stay tuned for more details on how to submit an IR

- The ISO is overhauling its software application for receiving and tracking IRs
- The data required to support an IR through the overhauled software application will align with the items discussed in this presentation



The ISO will provide information on how to access this software application ahead of CRW opening

Interconnection Request Selection

ICs must first select the reason that an IR is being submitted; below is an example from Schedule 22 of the options that may be selected

1. This Interconnection Request is for (check one):

- ☐ **A proposed new Large Generating Facility**
- ☐ **An increase in the generating capacity or a modification that has the potential to be a Material Modification of an existing Generating Facility**
- ☐ **Commencement of participation in the wholesale markets by an existing Generating Facility**
- ☐ **A change from Network Resource Interconnection Service to Capacity Network Resource Interconnection Service**

Selecting Interconnection Service in Schedule 22 and 23

2. The types of Interconnection Service requested:

- _____ Network Resource Interconnection Service (energy capability only)
- _____ Capacity Network Resource Interconnection Service (energy capability and capacity capability)
- ☐ Interconnection Customer requests to be downgraded to Network Resource Interconnection Service where violations are identified in the thermal analysis associated with Capacity Network Resource Interconnection Service testing

If the request is for CNRIS, or change from NRIS to CNRIS is requested, the IC **can elect automatic downgrade** to NRIS if analyses associated with CNRIS show violations that are not seen in analyses associated with NRIS

As described below, the IC will also need to provide the amount of MW they are requesting for NRIS, and CNRIS if applicable.



Example – Selection NRIS (i.e., Energy Capability only)

2. The types of Interconnection Service requested:

- ☒ **Network Resource Interconnection Service (energy capability only)**
- ☐ **Capacity Network Resource Interconnection Service (energy capability and capacity capability)**
- ☐ **Interconnection Customer requests to be downgraded to Network Resource Interconnection Service where violations are identified in the thermal analysis associated with Capacity Network Resource Interconnection Service testing**

In this example, the IC selects NRIS for a project



Example – Selection CNRIS (i.e., Energy and Capacity Capability), Automatic Downgrade to NRIS Not Selected

2. The types of Interconnection Service requested:

- _____ Network Resource Interconnection Service (energy capability only)
- ~~_____ X _____~~ Capacity Network Resource Interconnection Service (energy capability and capacity capability)
- ☒ Interconnection Customer requests to be downgraded to Network Resource Interconnection Service where violations are identified in the thermal analysis associated with Capacity Network Resource Interconnection Service testing

In this example, the IC selects CNRIS for a project but does not elect to automatically downgrade to NRIS where violations are identified only in the CNRIS analyses

- The IC will be responsible for all upgrades to address violations identified in the study associated with CNRIS

Example – Selection CNRIS (i.e., Energy and Capacity Capability Automatic), Downgrade to NRIS Selected

2. The types of Interconnection Service requested:

- ☐ Network Resource Interconnection Service (energy capability only)
- ☒ Capacity Network Resource Interconnection Service (energy capability and capacity capability)
- ☒ Interconnection Customer requests to be downgraded to Network Resource Interconnection Service where violations are identified in the thermal analysis associated with Capacity Network Resource Interconnection Service testing

In this example, the IC selects CNRIS for a project but **does** elect to automatically downgrade to NRIS where violations are identified only in the analyses for CNRIS

- If the conditions for automatic downgrade are met:
 - The project will be automatically downgraded to NRIS, the IC will not be responsible for upgrades to address violations identified in the analyses for CNRIS, and the project will not establish CNRIS
 - The IC will only be responsible for upgrades to address violations identified in the analyses for NRIS

Selecting Interconnection Service in Schedule 25

For External controllable OTF or MTF in the importing direction, applicant requests (*check one NI or CNI*):

____ NI Interconnection Service (i.e., energy only): _____ MW

____ CNI Interconnection Service (i.e., capacity and energy): _____ MW

☐ Interconnection Customer requests to be downgraded to NI Interconnection Service where violations are identified in the thermal analysis associated with CNI Interconnection Service testing

An External controllable OTF or MTF needs to specify whether it is requesting NIIS or CNIIS

- If CNIIS is requested, the IC can elect automatic downgrade to NIIS if analyses associated with CNIIS show violations that are not seen in analyses associated with NIIS
- MW values for each type of service must also be specified



Example – Selection NIIS (i.e., Energy Only)

For External controllable OTF or MTF in the importing direction, applicant requests (*check one NI or CNI*):

☒ NI Interconnection Service (i.e., energy only): 500 MW

☐ CNI Interconnection Service (i.e., capacity and energy): _____ MW

☐ Interconnection Customer requests to be downgraded to NI Interconnection Service where violations are identified in the thermal analysis associated with CNI Interconnection Service testing

In this example, the IC requests
500 MW of NIIS for a project



Example – Selection CNIIS (i.e., Energy and Capacity), Automatic Downgrade to NIIS Not Selected

For External controllable OTF or MTF in the importing direction, applicant requests (*check one NI or CNI*):

____ NI Interconnection Service (i.e., energy only): _____ MW

X CNI Interconnection Service (i.e., capacity and energy): **500** MW

☐ Interconnection Customer requests to be downgraded to NI Interconnection Service where violations are identified in the thermal analysis associated with CNI Interconnection Service testing

In this example, the IC requests 500 MW of CNIIS for a project but **does not** elect to automatically downgrade to NIIS where violations are only identified in analyses for CNIIS

- The IC will be responsible for all upgrades to address violations identified in the analyses for CNIIS

Example – Selection CNIIS (i.e., Energy and Capacity), Automatic Downgrade to NIIS Selected

For External controllable OTF or MTF in the importing direction, applicant requests (*check one NI or CNI*):

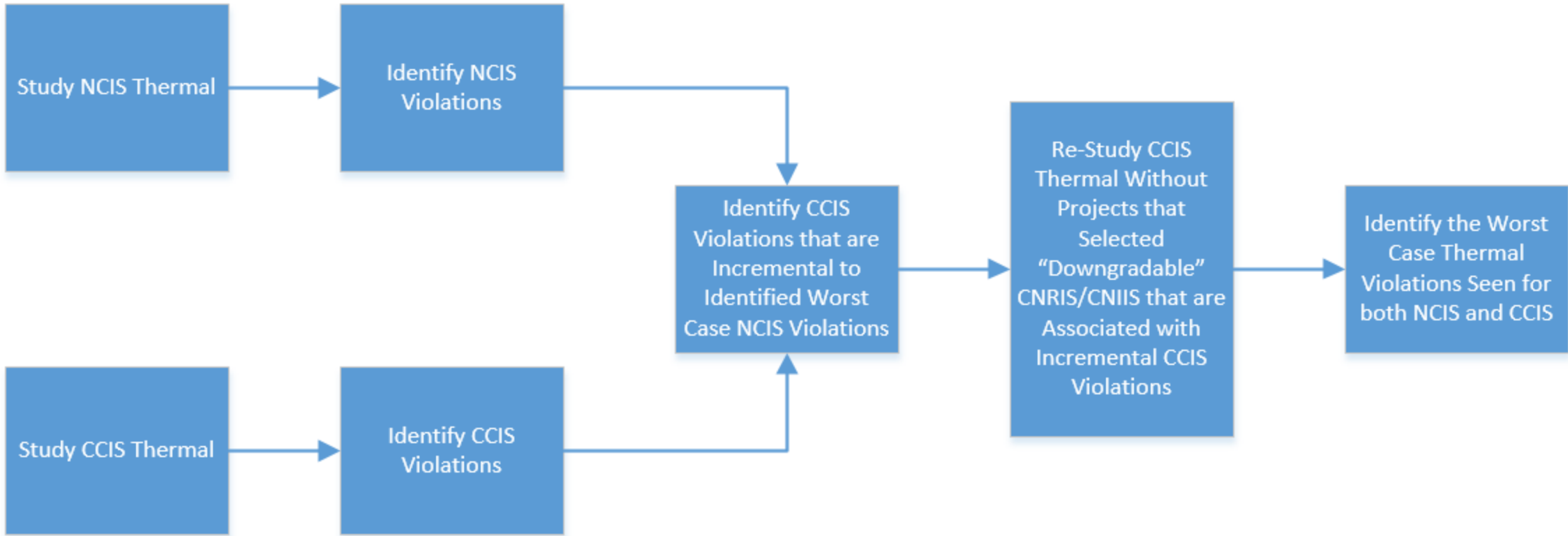
____ NI Interconnection Service (i.e., energy only): _____ MW

X CNI Interconnection Service (i.e., capacity and energy): **500** MW

☒ Interconnection Customer requests to be downgraded to NI Interconnection Service where violations are identified in the thermal analysis associated with CNI Interconnection Service testing

- In this example, the IC requests 500 MW of CNIIS for a project but does elect to automatically downgrade to NIIS where violations are only identified in the analyses for CNIIS
- If the conditions for automatic downgrade are met:
 - The project will be automatically downgraded to NIIS and the project will not establish CNIIS
 - The IC will only be responsible for upgrades to address violation identified in the analyses for NIIS

How Automatic Downgrade to NRIS/NIIS Works



IRs Must Specify Facility Capacity Values For Study

Temperatures ¹	Maximum Gross MW Electrical Output ²	Maximum Net MW Electrical Output ³	Net MW Capability at the Point of Interconnection ⁴
At or above 90 degrees F			
At or above 50 degrees F			
At or above 20 degrees F			
At or above 0 degrees F			

Requested Interconnection Service (in MW):

Service Level ⁵			Requested Net MW Capability at the Point of Interconnection ⁴
CNR Capability Summer			
NR Capability Summer			
CNR Capability Winter			
NR Capability Winter			

- ICs must specify the amount of MW requested for each respective type of service (*i.e.* NRIS/CNRIS or NIIS/CNIIS)
- Note that in the case of CNRIS and CNIIS, an IC may request to be studied at a MW amount below the proposed NRIS/NIIS MW amount
- The ISO will study IRs at the requested levels

The tables from Appendix 1 to Schedule 22 where MW values are specified are provided here as an example.

What Level of Initial Deposit is Required with the IR?

Project and Interconnection Request Type	Deposit Requirement	Acceptable Forms of Deposit
Large Generator or ETU, NRIS/NIIS	\$50,000	Cash
Large Generator or ETU, CNRIS/CNIIS	\$50,000	Cash
Large Generator or ETU, CNRIS/CNIIS Only	\$50,000	Cash
Small Generator, NRIS	\$15,000	Cash
Small Generator, CNRIS	\$15,000	Cash
Small Generator, CNRIS Only	\$15,000	Cash

- Deposits need to be received by the ISO by the close of the CRW deadline
 - Need to consider any processing times required by financial institutions and the ISO
- Initial deposits become non-refundable 10 BD after the Scoping Meeting, which, as described later in the presentation, is held during the CEW

What Level of Cluster Study Deposit is Required with the IR?

Project and Interconnection Request Type	Deposit Requirement	Acceptable Forms of Deposit
Large Generator or ETU, NRIS/NIIS	\$250,000	Cash
Large Generator or ETU, CNRIS/CNIIS	\$250,000	Cash
Large Generator or ETU, CNRIS/CNIIS Only	\$100,000	Cash
Small Generator, NRIS	\$100,000	Cash
Small Generator, CNRIS	\$100,000	Cash
Small Generator, CNRIS Only	\$50,000	Cash

- Deposits need to be received by the ISO by the close of the CRW deadline
 - Need to consider any processing times required by financial institutions and the ISO
- Any unused amount of the Cluster Study Deposit is refundable

How to Submit the Initial and Cluster Study Deposits

- Customers must request banking details from the ISO Billing Department via email to Billingdept@iso-ne.com. Billing will reply with an email to the IC with a document and a phone number to call to receive the password to view said document containing banking details.
- A Customer Asset Management System (CAMS) ID is required for payment processing. Please make sure to know your CAMS ID, and if you do not have one, instructions are noted on the next slide.

**Note: All study deposits must be cash, in the form of a wire payment.
Checks are not accepted.**



How to set up Customer ID in the CAMS

As part of completing an IR, ICs must request an ISO customer ID to be registered in CAMS

- ICs must complete and submit the Request Generation Interconnect Customer ID, also found on the [Interconnection Process Guide](#)
 - If an IC already has an ISO customer ID, that is the ID and customer name that will be used when submitting an IR
 - Once a request is submitted, it may take up to 10 BD for the ISO to review and process
 - Note: The ISO customer ID name must match across all ISO registrations, submissions, and systems.



What Level of Commercial Readiness Deposit (CRD) is Required with the IR?

Project and Interconnection Request Type	Deposit Requirement	Acceptable Forms of Deposit
Large Generator or ETU, NRIS/NIIS	\$500,000	Cash, Letter of Credit, Surety Bonds, or a combination thereof
Large Generator or ETU, CNRIS/CNIIS	\$500,000	Cash, Letter of Credit, Surety Bonds, or a combination thereof
Large Generator or ETU, CNRIS/CNIIS Only	\$200,000	Cash, Letter of Credit, Surety Bonds, or a combination thereof
Small Generator, NRIS	\$200,000	Cash, Letter of Credit, Surety Bonds, or a combination thereof
Small Generator, CNRIS	\$200,000	Cash, Letter of Credit, Surety Bonds, or a combination thereof
Small Generator, CNRIS Only	\$100,000	Cash, Letter of Credit, Surety Bonds, or a combination thereof

- Withdrawal Penalty will come from the CRD, as described in Section 3.7.1 of Schedules 22 & 23 and Section 3.6.1 of Schedule 25

How to Submit the CRD

CRDs need to be received, reviewed, and accepted by the ISO by the close of the CRW deadline

- ICs should be considerate of any processing times required by financial institutions and the ISO
- ISO Market and Credit Risk has provided [documentation](#) on the steps to submit the CRD that is found on the Order No. 2023 page of the ISO-NE Website
 - Please submit a request to AskISO if you have questions regarding types of financial security accepted or review materials on the ISO's website related to Letters of Credit and Surety Bonds
 - If submitting the CRD in cash, the IC will send a banking request to ISO Billing Department via email to Billingdept@iso-ne.com

What Proof of Site Control is Required to be Submitted with the IR?

- Exclusive site control for 100% of the proposed Generating Facility needs to be provided for requests seeking CNRIS/CNIIS
- In the case of NRIS, a demonstration of either 100% Site Control, or a demonstration of Regulatory Limitations and required deposit(s) consistent with Section 3.4.2 of Schedules 22/23
- Additional documentation needs to be provided if the site control does not meet the following acreage requirements as detailed in PP5-6:

Table H.1 – Minimum Expected Acreage Requirements⁷⁵

<u>Photovoltaic (PV)</u>	<u>Electrical Energy Storage</u>	<u>Onshore Wind</u>	<u>Offshore Wind</u>	<u>Conventional</u>
4 Acres/MW	1 Acres/100 MWh	15 Acres/MW	35 Acres/MW	Attestation

⁷⁵ Values provided according to table H.1 must be based on physical nameplate ratings (i.e. the net MW capability at the Point of Interconnection, which may be higher than the requested levels of Interconnection Service). For PV, onshore wind and offshore wind, MW values are AC and reflect the maximum nameplate rating that can be delivered to the project’s Point of Interconnection. For Electrical Energy Storage, MWh values are useable AC energy, which considers all losses associated with delivering power to the Point of Interconnection.

What Technical Data is Required to be Submitted with the IR?

- All data required in Appendix 1 (Interconnection Request), Attachments A, and A-1 (if project based on Inverter Based Resource (IBR) technology) must be submitted with the IR, which includes:
 - Power System Simulation for Engineers (PSSE) power flow model
 - PSSE stability model
 - ASPEN OneLiner short circuit model
 - PSCAD model
 - Submitted models will be shared, as necessary, with consultants engaged by ISO New England to perform required studies. Therefore, model submission constitutes acceptance of this distribution.
 - PSSE vs. PSCAD benchmarking report (PP5-6, Appendix C-2)
 - Attestations from PP5-6 Appendix C-1, C-1A, C-1B & Appendix F-1
- All submitted models must be compatible with the respective software version in effect at ISO-NE
 - The current list of software and software version used by ISO for interconnection studies is posted at [Modeling Data Software](#)

More detailed information on the technical data requirements is provided later in this presentation

ISO Review of IRs Submitted During CRW

- During the CRW, the ISO will check IRs as they are submitted for completeness and notify the IC if any required components of the submitted IR are incomplete
 - The ISO will acknowledge receipt of, and notify the IC regarding deficiencies with, the IR within five (5) Business Days of receipt of the request
 - ICs must provide the additional requested information needed to constitute a valid request within ten (10) Business Days after receipt of such notice but no later than the close of the CRW
- IR and supplemental data submissions received close to the end of the CRW deadline (i.e., by end of day on November 19, 2026) are not guaranteed to be reviewed by the ISO for completeness before the close of the CRW deadline

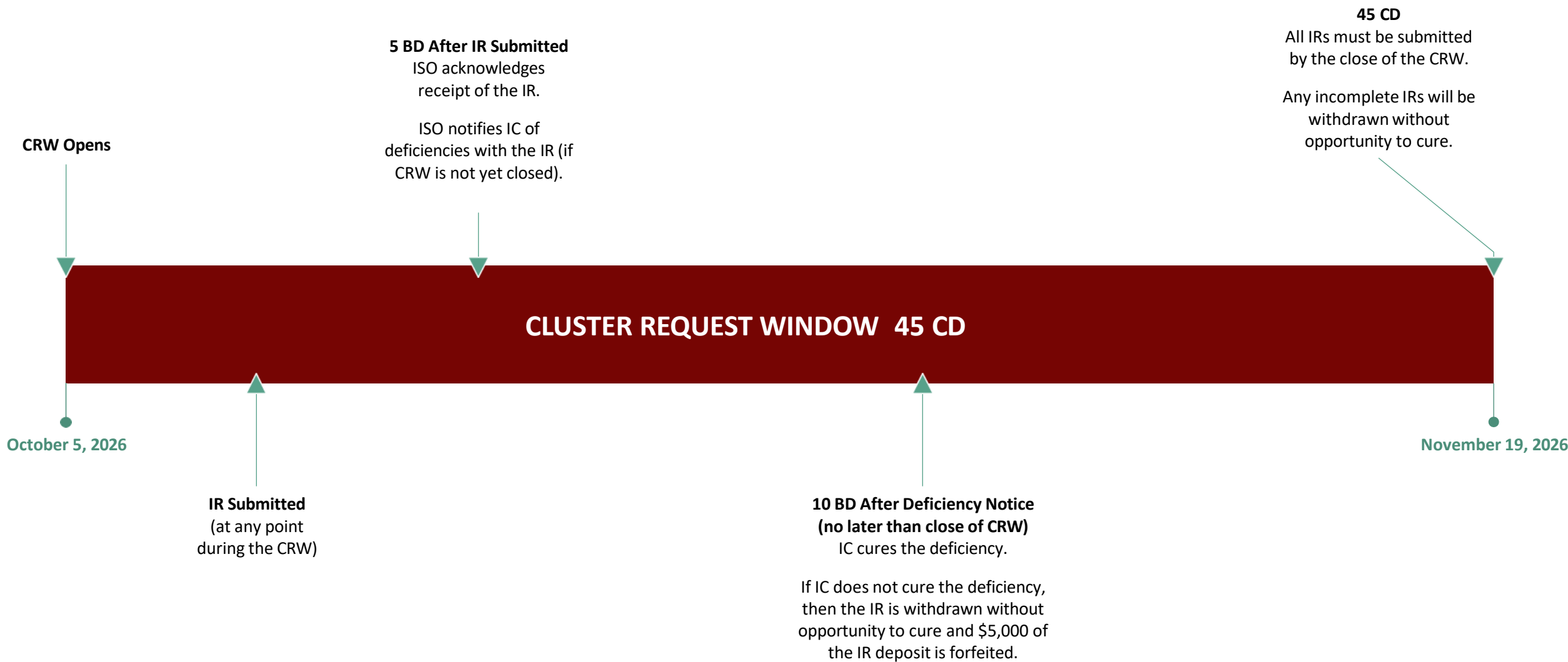


ISO Review of IRs Submitted During CRW, *continued*

- IRs that are determined to not be complete by the close of the CRW deadline will be withdrawn without opportunity to cure
 - In such cases, the ISO will not assess the IC a withdrawal penalty, and any other deposits received will be refunded
- ISO cannot further review data (including technical data) submitted as part of an IR for deficiencies until the start of the CEW (i.e., until after midnight November 20, 2026)

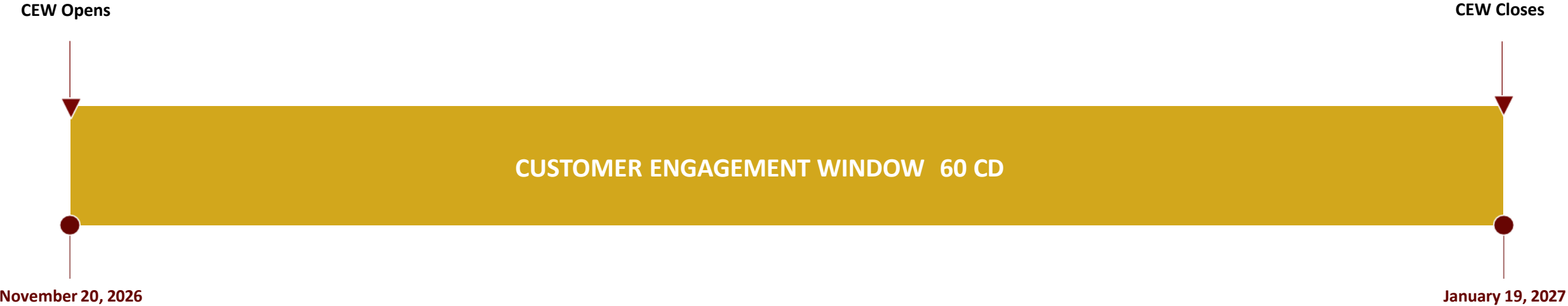


2026 CRW Initial IR Review Timeline



Customer Engagement Window (CEW)

2026 CEW Timeline



Opening of CEW

On November 20, 2026:

- The CRW will close end of day on November 19, 2026 and the CEW will open November 20, 2026
- The CEW will be open for 60 Calendar Days (CD)
 - The ISO will hold a Scoping Meeting with all ICs and Transmission Owners during the CEW
 - The ISO will also begin review of technical data during the CEW
- Within 5 Business Days of opening the CEW, the ISO will issue Cluster Study Agreements (CSAs) to all ICs with complete IRs received during the CRW
- Within 10 BD of November 20, 2026 the ISO will post the public queue as an excel sheet to the public website
- The CEW will close by end of day January 19, 2027
 - Projects have until the end of the CEW to withdraw without being subject to a Withdrawal Penalty
 - *Failure to submit a signed Cluster Study Agreement before the deadline will result in withdrawal of the IR without penalty*



Scoping Meeting

The ISO will hold a Scoping Meeting during the CEW

- The ISO expects to hold the Scoping Meeting during the second half of the CEW
- NDAs will be issued to all ICs with a valid IR to allow for participation in the Scoping Meeting
 - ISO will issue the NDAs 5 BD after the opening of the CEW, at the same it issues CSAs
 - NDAs must be executed and returned to the ISO prior to the Scoping Meeting for ICs to be able to participate
 - The ISO will not accept revisions or changes to the NDA
- All ICs and TOs will be invited to attend on a date to be determined by the ISO
 - During the Scoping Meeting the following will be discussed:
 - An overview of all complete IRs received
 - General discussions on the feasibility of proposed POIs
 - Discussions on general system characteristics and issues
 - Potential Internal Affected Systems/Parties
- If an IR is withdrawn any time after 10 BD from the date the Scoping Meeting is held, any remaining initial deposit funds shall be non-refundable

Technical Data Review

The ISO will notify the IC of any data deficiencies found during data review

- The IC will have 10 BD to cure once the ISO notifies them of a deficiency
- If the IC fails to cure deficiencies within that time, the ISO will issue a formal Notice of Withdrawal where the IC will have an additional 15 BD to cure
 - If the IC fails to cure within the additional 15 BD, and it is during the CEW, the project will be withdrawn without penalty
 - If the IC fails to cure within the additional 15 BD, and it is after the close of the CEW, Withdrawal Penalties will be assessed in accordance to Section 3.7.1 of Schedules 22 & 23 and Section 3.6.1 of Schedule 25



Cluster Study Agreement and Study Cost Allocation

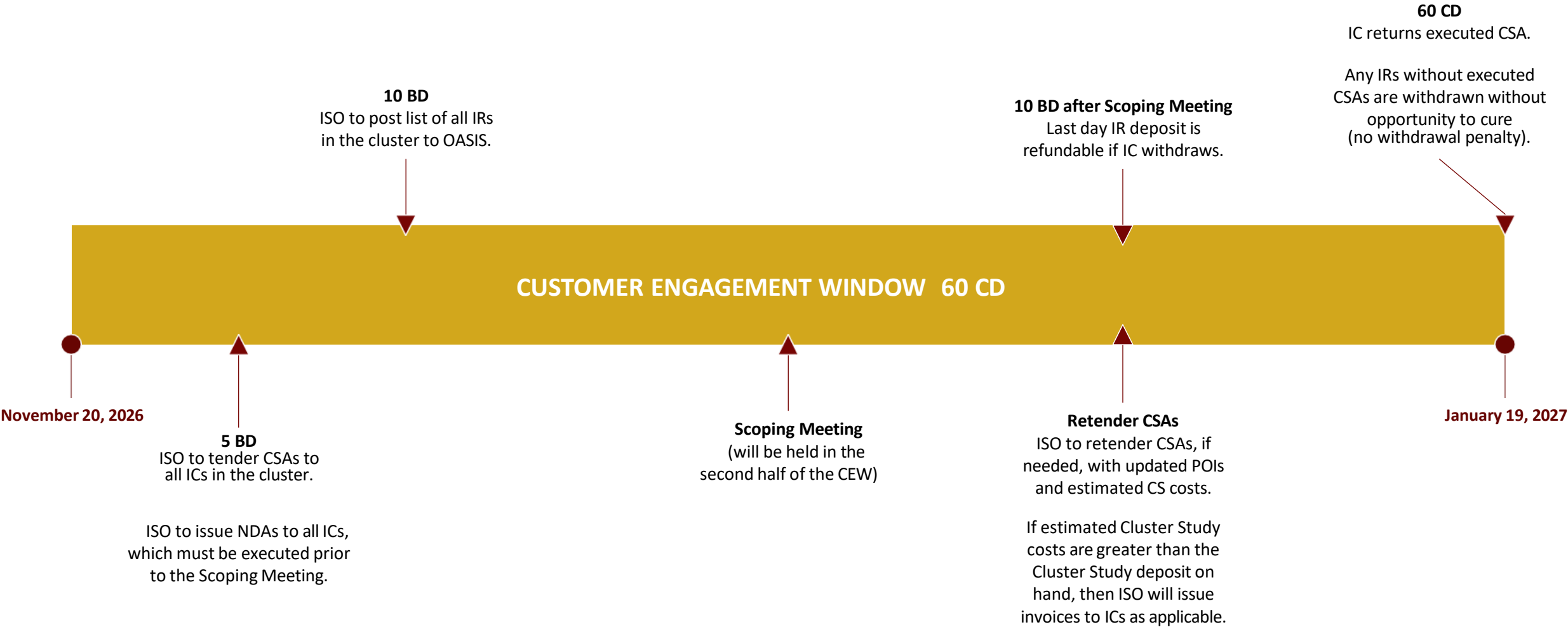
- The IC must execute the CSA by the close of the CEW (i.e., by end of day on January 19, 2027)
 - The CSA must include the definitive POI for the project
- When the ISO issues the CSAs, it will include a good faith, non-binding estimate of the cost of, and the timeline for, completing the Cluster Study
- Section 7.2 of the LGIP, SGIP, and ETU IP explains the cost allocation for projects being studied within the Cluster Study:
 - *"Costs of Cluster Studies shall be allocated to all Interconnection Customers on a 50% per capita, and 50% per MW basis."*
- The ISO uses the above calculation to track study costs for all projects
 - Costs are updated regularly based on applied service dates (i.e., when invoices for work come in month by month)
 - If a project withdraws, allocation of study costs to that project ceases, and final study costs for a project are calculated up to the withdrawal date

Reminder!

- The CEW closes at by end of day on January 19, 2027
 - If an IC withdraws their IR or their IR is deemed by the ISO withdrawn prior to the end of the CEW, they will not be subject Withdrawal Penalties
 - If an IC fails to execute the CSA by the close of the CEW, the ISO will deem the applicable IR withdrawn without opportunity to cure
 - A withdrawn IR will forfeit its initial deposit, but the study deposit and CRD will be returned
- If an IC withdraws their IR or their IR is deemed by the ISO withdrawn after January 19, 2027 (i.e., the date on which Cluster Study Agreements are due) the IR may be subject to Withdrawal Penalties consistent with Section 3.7.1 of Schedules 22 & 23 and Section 3.6.1 of Schedule 25



2026 CEW Timeline



Required Technical Data and Modeling Expectations

Scope of Technical Data Required for a Project

The scope of the technical data required for a project with its submitted IR depends on the service requested:

- **NRIS/CNRIS/NIIS/CNIIS Submittal** – For a new project that has never been studied by the ISO, the IC must submit all required technical data with its IR
- **NRIS to CNRIS** – For a project that has been studied for NRIS prior to the Cluster Study and the IC is selecting a change in service to CNRIS, the previous Interconnection Study must be referenced, but the IC is not required to submit new data. The CS will be performed using the same data the NRIS project was studied with.

Modeling Data for Schedules 22 and 23

Appendix 1

Interconnection Request	Attachment A – Technical Data	Attachment A-1 – Supplementary Wind and Inverter-Based Generating Facility Form <i>(if applicable)</i>
• Point of interconnection (POI) • Facility technology • Projected in-service date • Requested type and level of service • Battery energy storage system (BESS) charging data if applicable	• Generator ratings and impedance data (as applicable) • Transformer ratings and impedances • PSCAD model [EMT analysis] (if applicable) • PSSE model (as applicable) • Induction generator data (if applicable)	• Geographic map of project • One-line diagram • Collection system detail and aggregate impedance sheets • Inverter and generator step-up transformer (GSU) information • Station transformer information • Protection settings • Unit reactive power control • Power flow model (detailed and equivalent) • Dynamic simulation model • Collection system/transformer tap-setting design

NOTE: Provided EMT models must have no restrictions or limitations that would prevent the ISO from sharing them with its consultants



All these documents can be found at the end of their respective schedule

Modeling Data for Schedule 25 – Elective Transmission Upgrade (ETU)

Appendix 1

Interconnection Request

- Project name
- Specific ETU technology (HVDC/AC/controllable/non-controllable)
- Transfer capability
- Flow (unidirectional/bidirectional)
- Internal or external ETU
- Site control
- Proposed in-service date

Attachment A – Technical Data

- Geographic map and one line diagram
- POI
- AC transmission line data
- DC transmission system data
- Transformer data
- Reactive device data
- Proxy generation data (if applicable)
- PSCAD model for wind and inverter-based proxy gen(if applicable)

NOTE: Provided EMT models must have no restrictions or limitations that would prevent the ISO from sharing them with its consultants



All these documents can be found at the end of their respective schedule

Modeling Data Alignment

Generating Plant Element	Parameter	Alignment Guidelines
Inverter	Power flow data	All models (PSSE, PSCAD, and ASPEN) should contain identical values
	Voltage schedule and control bus	PSSE and PSCAD models should contain identical values
Generator step-up transformer	Positive sequence impedance	All models (PSSE, PSCAD, and ASPEN) should contain identical values
	Zero sequence impedance	ASPEN model should contain values identical to Attachment A-1
	Winding configuration	All models (PSSE, PSCAD, and ASPEN) should be identical
Collector system data	Positive sequence impedance	All models (PSSE, PSCAD, and ASPEN) should contain identical values
	Zero sequence impedance	PSCAD and ASPEN model should contain identical values
<i>Plant-level reactive compensation (if applicable)</i>	Power flow	For static compensation device, PSCAD and PSSE model should contain identical values
		For dynamic reactive device, all models (PSSE, PSCAD, and ASPEN) should align
Main power/station transformer	Positive sequence impedance	All models (PSSE, PSCAD, and ASPEN) should contain identical values
	Zero sequence impedance	ASPEN model should contain values identical to Attachment A-1
	Winding configuration	All models (PSSE, PSCAD, and ASPEN) should be identical
Generator tie line	Positive sequence impedance	All models (PSSE, PSCAD, and ASPEN) should contain identical values
	Zero sequence impedance	PSCAD and ASPEN model should contain identical values

Modeling Data Alignment, *continued*

Dynamic Model Component	Alignment Guidelines
Control flags	PSSE and PSCAD should match
P/Q priority flag	PSSE and PSCAD should match
Voltage regulation bus/ point of measurement	PSSE and PSCAD should match
Frequency control deadband and droop	PSSE and PSCAD should match
Voltage droop <i>(if applicable)</i>	Effective PSSE and PSCAD values should match
Voltage and frequency protection settings	PSSE and PSCAD should match

Technical Data Review for the Cluster Study

After November 19, 2026 the ISO will:

- Evaluate the technical data for accuracy and consistency
- Ensure that attestations from the IC and Original Equipment Manufacturer (OEM) for EMT models, as required by PP5-6 Appendix C-1, have been signed and submitted
- Perform model acceptance testing, as needed, for project technical data submittals; the ISO will use the revised model acceptance test requirements PP5-6 Appendix C-2 (version 15) for this review
- Notify Interconnection Customers of any identified deficiencies consistent with the process described previously

A Note on PP5-6

The current effective version of PP5-6 is version 14. This version is at the time of this forum:

- Undergoing revisions in preparation for the first Cluster Study and comprises of updates to [PP5-6 main body](#), [Appendices C-1 and C-2](#), and new [Appendix F-1](#)
- These revisions will become effective prior to the start of the CRW (i.e., October 5, 2026) and once effective it will become version 15

Any technical data submitted to meet PP5-6 requirement must meet the requirements of the version that will become effective at the start of the CRW (i.e., version 15) with the following exception:

- Given the timing of the updates to Appendix C-2 with respect to the opening of the first CRW, the ISO will accept a benchmarking report based on the existing Appendix C-2 (rev 1.0)
- However, the models for all IBRs that are participating in the first Cluster Study are expected to meet the specified performance requirements for all the model acceptance tests (MATs) (1-18) in the updated Appendix C-2 (rev 2.0)
- All projects entering the first Cluster Study are encouraged to evaluate their models according to the revised requirements and tests in Appendix C-2 (rev 2.0) to reduce the likelihood of needing to address deficiencies identified by the ISO through its own model acceptance tests
 - The ISO will use the revised model acceptance test requirements of the updated Appendix C-2 for its this review

Importance of Accurate and Validated Models for Interconnection Studies,

Including the CS

- ICs must provide accurate and validated project models to the ISO so that the ISO can perform accurate interconnection studies
 - Interconnection studies must be able to assess and model all facilities' ability to respond appropriately to transmission system disturbances
 - Use of accurate and validated models helps prevent potential reliability concerns from facilities that do not perform as modeled during the interconnection process
- Projects with accurate and validated models benefit when all other projects in a Cluster Study also have accurate and validated models
- Accurate and validated models are necessary to minimize study delays and to ensure the ISO conducts Cluster Studies that identify the appropriate and necessary interconnection facilities and network upgrades to accommodate all applicable IRs (and properly allocated costs for network upgrades)
- Data issues (e.g., poorly parametrized, inaccurate, or non-fully validated models) are a common major source of study delays and increased study cost (e.g., study work stoppages to address modeling deficiencies, the need to re-perform study work done with inaccurate models, etc.), which creates uncertainty in the timing and cost of interconnecting to the transmission system and hinders the timely development of new generation



Other CS Related Information

Review of Capacity Capability Interconnection Standard (CCIS) Study Methodology

At the August 19, 2026, NEPOOL Reliability and Transmission Committees, the ISO committed to reviewing the CCIS study methodology in time for use in the first regular CS

- The ISO will review the study methodology and stresses used in the Interconnection Studies, specifically those associated with CCIS testing
- Any modifications to the methodology and resulting changes to PP5-6 must ensure that the CCIS standard defined in the Tariff is met
- Any changes to study methodologies will take place through stakeholder discussions and must carefully examine impacts on reliability, possible future congestion, and the service provided to currently connected ICs
- The ISO intends to undertake this review with the Reliability Committee

Transitional Cluster Restudy Decision

On August 25, 2026, the ISO posted a memo to its website to address the next steps after the Transitional Cluster Study (TCS)

- The ISO has determined it must evaluate if a restudy of the TCS is needed
 - The evaluation and determination of the need for, and extent of, restudy will be announced after required LGIA/SGIA Deposits have been submitted consistent with the guidance in that memo
 - If a restudy is determined to be necessary, it will be conducted in parallel with the formation of the base case for the first regular Cluster Study and the early parts of that study

NOTE: The ISO will use the same study methodology used for the TCS, as detailed in Planning Procedure 5-6, for any needed restudy of the TCS

Lessons Learned and Heatmap Tool

Lessons Learned

- As committed to in the Order No. 2023 Compliance Proposal, the ISO will hold a TCS related lessons-learned meeting with stakeholders
 - This meeting will be scheduled in late Q4 2026
 - Topics may include, but not limited to: the CS Process, characteristics of the New England system, potential communications improvements, potential information resources and tools to better allow ICs to anticipate and replicate study results, and possible process changes to provide upstream information and offramp opportunities

Heatmap Tool

- The ISO intends to launch the heatmap tool in September 2026
- This tool will meet the requirements of Order No. 2023, and will help inform IC decisions regarding potential POIs

Cluster Study Participation Forum Q&A -September 8, 2026

Question	Answer
A project that already has an executed LGIA for NRIS (including power flow, PSCAD, ASPEN one Liner), if the project is just requesting an IR for CNRIS only (same project size and interconnection), are all these studies required again?	Projects that request to augment from NRIS to CNRIS will only be studied for CNRIS (i.e., they will not be evaluated again under the Network Interconnection Standard).
Can I make changes to my technical data prior to the end of the CEW?	Certain changes will be accepted, but a project would not be able to increase the amount of requested Interconnection Service. It's worth noting that the POI must be confirmed by the end of the CEW and any required technical information, models, model acceptance testing documentation, and certifications associated with the change from when the IR was submitted during the CRW must be submitted to support that change.
Can you clarify what is the site control proof requirement (and specifically if a deposit in lieu of site control is permissible) for CNRIS / CNIIS only projects? Slide 35 covers CNRIS / CNIIS and NRIS options.	A deposit in lieu of site control is permissible exclusively for NRIS only IRs and needs to be provided alongside proof of Regulatory Limitations. Proof of 100% Site Control is needed for the Generating Facility itself or the terminal location(s) for the proposed ETU.
Can you please clarify what OTF and MTF stand for? They are not on the acronyms sheet.	MTF stands for Merchant Transmission Facility and OTF stands for Other Transmission Facility.
Does the Geographic map require a PE stamp?	No, the Geographic map does not require a PE stamp.
How much total deposit does an individual project need to submit?	This question will be answered later on in the presentation.
If an SOG is already registered and has been operating but does not have CNRIS, does it need to go through the cluster study process to obtain CNRIS?	This depends on whether the SOG is transmission connected or distribution connected. If it's transmission connected, then a request to establish CNRIS would be subject to the ISO's interconnection process, and therefore be required to participate in a Cluster Study. If it's distribution connected but has an IA with ISO then the ISO will evaluate how to handle on a case-by-case basis. If it is distribution connected and was never subject to the ISO's interconnection rules, it would establish equivalent CNRIS under Section II.48.5.2 of the OATT.
If I am submitting an objective ETU, do I have to submit all the data in the IR?	This would depend on if any equipment is proposed to be added as part of the ETU (HVDC, STATCOM, etc.). If any equipment is introduced as part of the project, the technical data requirements would apply and need to be provided with the IR in order to be considered valid.
If I checked the box to automatically downgrade from CNRIS to NRIS if there are violations, when will ISO give me that information?	This information would be contained in the Cluster Study Report issued to the ICs 270 CD from the start of the Cluster Study.
If the interconnection customer identifies modifications are needed to meet Appendix C-2 rev 2.0, for a project that met rev 1.0 requirements, will ISO accept revisions after the CRW considering the delay in releasing C-2 rev 2.0?	Yes, if the ISO identifies a deficiency with the provided modeling data, which would need to be cured within the timeframes provided in the Tariff. Note that the ISO will be reviewing all provided models according to the Appendix C-2 rev 2.0 requirements that are currently in front of stakeholders. Although not required, ICs can mitigate the risk of model deficiencies if the models and documentation provided with their IRs meet the Appendix C-2 rev 2.0 requirements.
Is the Commercial Readiness Deposit required if the project is already commercial but is requesting CNRIS	Yes, a CRD is required for all IRs. Please see the table on the earlier slide.
What if I don't want to sign a NDA, am I required to attend the Scoping Meeting?	An NDA will be issued with the CSA and if the IC does not sign prior to the Scoping Meeting, then they would not be able to attend. Attending the Scoping Meeting is not required to remain active in the queue but is highly recommended in order to be able to receive pertinent information regarding your project and to help inform certain business decisions prior to submission of a Cluster Study Agreement before the end of the CEW, after which Withdrawal Penalties will come into play for IRs that proceed to the study phase of the Cluster Study.
What type of detail is needed in the Geographic Map? Is this just property boundaries or do you need layout of equipment, setback etc..?	The ISO will evaluate individual requests as they come in, but at a minimum the Geographic Map needs to show property boundaries, rough equipment layout, and a line indicating the collector/feeder routes. It should also show the location of the Generating Facility and how it is expected to interconnect to the proposed POI, but not in the same detail as the one line.
Where do I find more info about the heat map tool Alex just mentioned?	Once we have the information ready, it will be posted to the Interconnection Services side of the ISO-NE website.
Will interconnection customers have a choice to pursue CNRIS based on the costs of the CNRIS upgrades? For example, if the CNRIS upgrade is economically viable, will that be a choice or is it an automatic change based on the IR?	Please refer to the earlier slides. Upon submittal of the IR, IC decides whether to elect NRIS or CNRIS. If IC elects CNRIS, then IC can elect to check the box to automatically downgrade the IR to NRIS if upgrades are identified. The downgrade from CNRIS to NRIS is automatic upon identification of violations in the CNRIS analysis that aren't seen in the NRIS analysis. Upgrades to identify such violations will not be identified due to the needed study process flow, as discussed on an earlier slide (slide 27), to identify final violations and then identify related upgrades.

Contact Participant Support & Solutions



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