



Large Load FERC Show Cause Order

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Corrections made to presentation are reflected in this version as discussed at ESPWG/TPAS/ICAPWG meeting on 7/23

Agenda

- **Schedule**
- **Overview of Order**
- **Current Load Interconnection Process**
- **Overview of Concepts**
 - Definitions
 - Proposed load integration procedures
 - Preliminary market design
- **Overview of proposed planning procedures**
- **Overview of proposed market design**
- **Next Steps: Request for Written Feedback by 7/27**

Show Cause – Response Schedule

- FERC Show Cause Order Issued – 6/18/26
- RA Informational Report Deadline - 7/20/26
- Abeyance Request Deadline - 8/3/26
- Response to Show Cause Order Deadline, Without Abeyance - 8/17/26

FERC Show Cause Order Overview

Background

FERC Show Cause Order on Large Loads

- **On June 18, 2026, FERC issued Show Cause Orders to each FERC-jurisdictional RTO/ISO and their FERC-jurisdictional Transmission Owner (“TO”) members on the topic of large and co-located load integration**
 - This initiated a FERC proceeding under Section 206 of the Federal Power Act
 - TOs have an obligation to respond to matters related to their reserved Section 205 filing rights
- **NYISO has 60 days to respond to FERC’s Show Cause Order (EL26-69)**
 - In doing so, NYISO must demonstrate why its tariff remains just and reasonable despite FERC’s preliminary determinations regarding large and co-located loads, and/or what changes to the Tariff would remedy the identified concerns
- **NYISO may request an abeyance from FERC to place the Show Cause proceeding on hold, within 45 days of the Show Cause Order issuance**
 - FERC may grant such an abeyance for up to 90 days in order to allow time to develop a Section 205 filing
 - A Section 205 process would involve the normal tariff filing process (MIWGs/ESPG, BIC or OC, and MC votes on tariff language, etc.), and would push out the Show Cause Response filing deadline from ~August 17th to ~November 16th
- **NYISO was also required, within 30 days of the issuance of the Order, to submit a report on Resource Adequacy in the NYCA and how NYISO intends to ensure that adequate generation will be available to serve existing and new large loads**
 - The deadline to submit the RA Informational Report was July 20th

FERC's Key Themes

- **Speed to Power**
 - There are barriers in the Load and Generator interconnection and planning study processes that impede speed to power
- **Robustness of Planning/Interconnection Study Processes**
 - NYISO's existing study processes must be able to better analyze the potential transmission security and resource adequacy impacts of large and co-located load integration
- **Cost Allocation/Cost Shifting**
 - NYISO's existing transmission and ancillary service cost allocation methodologies do not allocate costs commensurate with the benefits/costs that individual entities receive/create and FERC has concerns about possible cost-shifts if Large Loads do not pay for Network Upgrades they cause
 - This is especially relevant to co-location arrangements
- **Service Rights, Co-Location, and Load Flexibility**
 - NYISO's study, interconnection, and transmission/resource adequacy service treatments do not account for the unique operating characteristics of large and co-located Loads
- **Ongoing Operational Requirements**
 - NYISO needs to implement additional Real-Time operating requirements for Large Loads to maintain grid reliability

Key Definitions

Large Load

- **FERC defines a “Large Load” as:**
 - (1) new C&I customer, that is
 - (2) located at a single site behind one or more POIs, that has
 - (3) a peak Load of 50 MW or greater
 - (4) interconnects to the transmission system at a voltage level greater than 69kV and
 - (5) is not part of a co-located arrangement

Co-Located Load

- **FERC defines Co-Located Load and Generation as being part of a “Co-Location Arrangement”:**
 - A configuration that refers to end-use customer load that is physically connected to the facilities of an existing or planned generating facility on the interconnection customer’s side of the point of interconnection to the RTO/ISO’s transmission system.
- **NYISO intends to adopt parts of FERC’s definition in its proposed co-location design**
 - This proposal will be detailed later in the presentation

Proximate Load

■ FERC definition

- A Large Load that is sufficiently electrically close to the interconnection customer's requested point of interconnection, such that the impact on the transmission system of the combination of the generating facility and the load, with the exception of the transmission facilities between the two, will be effectively the same as if they were located at the same substation (e.g., large load that is located no more than two substations away from the generating facility).

Show Cause Order Directives

Applications for Service

- **NYISO's application process for Eligible Customers seeking transmission service on behalf of large and co-located loads may need enhancement**
- **FERC advises that NYISO/TOs develop a new application framework that includes:**
 - A rolling application process for transmission service requests associated with large loads
 - Non-refundable application fees
 - Readiness requirements that escalate throughout the study process to deter speculative/duplicative requests for service
 - Clear study timelines and study cost obligations
- **Eligible Customers applying for transmission service on behalf of Large Loads may also be required to include additional information in their request, including:**
 - Information regarding the characteristics of the Large Load for which the Eligible Customer is requesting service (e.g. flexibility, control schemes, etc.)
 - Any substantially similar pending transmission service requests being submitted on behalf of the same large load customer

Enhanced Load Study Process

- **FERC expresses concern that NYISO's Load study process is not mandatory and lacks the sophistication necessary to accurately assess the reliability impacts that Large Loads may have on the NY transmission system**
- **FERC recommends NYISO/TOs create an enhanced, mandatory load study process that:**
 - Clearly and consistently describes the procedures being used to evaluate the impact of providing service to Eligible Customers on behalf of Large Loads, and recognizes the unique operational characteristics of Large Loads
 - Identifies Direct Assignment Facilities and Network Upgrades necessary to provide the requested services reliably
 - Can be completed within 60-90 calendar days upon receipt of an application for said service
 - Automatically assesses whether alternative transmission technologies can be leveraged in mitigating the need for costly Transmission/Network Upgrades, and provides clear justification when they cannot
- **NYISO's tariff should potentially establish a pro forma agreement that memorializes the terms of a large/co-located load's resulting service agreement**

Enhanced Generator Interconnection Process

- **FERC suggests the NYISO may need to revise its Generator interconnection study process to better accommodate co-location and proximate arrangements**
 - New Generator interconnection study process and new interim Generator interconnection service should be able to reflect a Generator's willingness to limit its output to match the hourly forecast of an electrically proximate large load or large co-located load, which may require the use of control/protection systems to limit grid injections
 - NYISO could consider whether such controls would enable an existing Generator with existing ERIS/CRIS to connect a new generating facility and a new large load behind the same POI by ensuring that the net injection of the facility does not exceed the limits specified in the existing generator interconnection agreement
 - The new process should contemplate the operational dynamics of a Generator serving either (1) an electrically proximate large load; or (2) a co-located load, as defined in this order, that has a high peak load (i.e., large co-located loads that are 50 MW or greater).

Ongoing Operational Requirements

- **FERC is concerned about a lack of ongoing operational requirements that would enable the NYISO/TOs to have needed visibility into the Real-Time operations of large and co-located loads**
- **FERC advises that the NYISO should require transmission customers taking service on behalf of a large/co-located load to provide:**
 - Hourly Load forecasts through real-time
 - Real-Time Load telemetry data
 - Other data/communications that would ensure reliability

Ongoing Operational Requirements Cont.

- **FERC recommends TOs install and transmission customers pay for phasor measurement units or similar equipment that enables NYISO to monitor Large Loads for impacts of, for example, fast-ramping load that may impact the transmission system too quickly to be captured by conventional data acquisition systems**
- **FERC further advises:**
 - Transmission customers should install, at their own expense, equipment that would give NYISO the ability to remotely disconnect the Load from the grid for reliability
 - The Tariff should specify under what terms and conditions NYISO would exercise such ability
 - NYISO implement Load ramp rate and ride-through requirements with which the transmission customer taking service on behalf of the Large Load must comply
 - NYISO's tariff be revised to specify under which scenarios a Large/Co-Located Load may need to employ control technologies and/or special protection schemes to limit their utilization of the system

Cost Shifting

- **FERC is concerned that NYISO's Tariffs lacks a pro forma cost recovery agreement between the Eligible Customer, NYISO, and the relevant TO**
 - FERC envisions such agreements as a mechanism to protect customers from cost shifts, i.e., if a Large Load triggers Network Upgrades but then operates at a lower demand than expected or does not materialize at all
 - A cost recovery agreement would require the Eligible Customer to make a minimum contribution towards the TO's transmission revenue requirement
 - FERC allows the NYISO to propose alternative forms of cost-shifting protection other than a 3-party agreement
- **FERC advises NYISO to post additional cost information to its website, to aid cost transparency**
 - Aggregate amounts of proposed large load additions in NYISO's footprint
 - Information pertaining to planned Network Upgrades needed to provide service to Eligible Customers on behalf of Large Loads
 - Cost estimates for those Network Upgrades

Preserving Existing Commercial Arrangements

- **FERC acknowledges that there may already exist commercial arrangements between Large Loads and other entities that could be affected by the outcome of the Show Cause Order**
- **FERC directs NYISO to, in complying with the Show Cause Order, strive to preserve existing commercial arrangements to the greatest extent possible**
 - NYISO should suggest a reasonable implementation period for its compliance filing that minimizes disruptions to these existing arrangements
 - NYISO should allow a reasonable amount of time for entities to finalize ongoing agreements that are nearing completion as of the date that the NYISO files tariff revisions

Transmission/Interconnection Service

- **FERC suggests NYISO's tariff may need to be revised to include multiple new types of transmission and interconnection service options**
 - The Tariff lacks service definitions that reflect the unique operating characteristics of flexible Load
 - FERC requires NYISO to address whether it should adopt an interim non-firm network transmission service that may be utilized by Large Loads while Network Upgrades are being constructed as FERC required of PJM
 - NYISO must also consider adding permanent Firm/Non-Firm Contract Demand Transmission Services as in PJM
 - Large Loads may need to employ control/protection schemes to adhere to the terms of PJM-style contract demand services

Co-Located and Proximate Load

- **FERC is concerned that NYISO's tariff does not explain, with sufficient clarity and detail, the rates, terms, and conditions that apply to interconnection customers serving co-located Load**
- **FERC additionally suggests that NYISO's BTM:NG program is no longer just and reasonable because it allows a Host Load to net out its service costs using co-located generation**
 - FERC advised NYISO that it should charge all Loads, co-located or otherwise, for Regulation and Black Start service on a gross demand basis
 - FERC also states that it is inappropriate to allow transmission service costs to be netted using co-located generation due to cost shifting concerns
- **NYISO should also consider what transmission services co-located and proximate Loads should take**

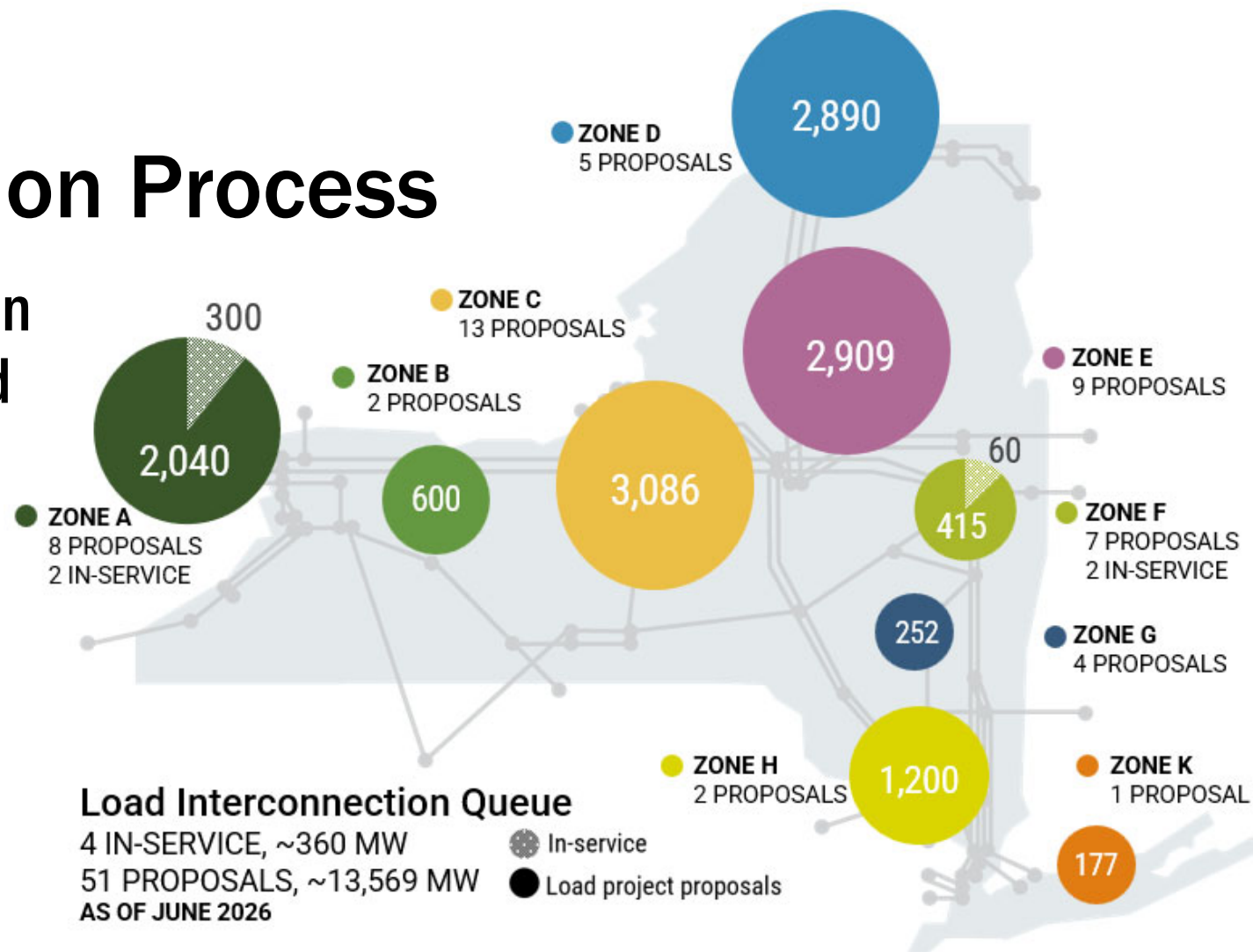
Current Load Interconnection Process

Current Load Interconnection Process

- Study procedures associated with new Load interconnections to the NYS Power System are contained in Section 3.9 of the OATT and described in the Transmission Expansion and Interconnection Manual section 3.5.
- The NYISO Load interconnection procedures apply to Load interconnections that are either:
 - a) greater than 10 MW connecting at a voltage level of 115 kV or above, or
 - b) 80 MW or more connecting at a voltage level below 115 kV
 - Proposed Load interconnections that fall outside these criteria are not subject to the NYISO procedures but instead fall under the Transmission Owner's procedures
- NYISO's role in the Load interconnection process focuses on determining the reliability impacts of Load projects to the system during the System Impact Study (SIS)
 - The Load SIS is informational and non-binding
 - At the completion of the SIS, the Customer may elect to proceed with the Connecting Transmission Owner ("CTO") on the facilities studies and then enter into a two-party interconnection agreement with the CTO

Current Load Interconnection Process

- NYISO presented on key challenges and considerations for revising the Load Interconnection process at the February 3, 2026 ESPWG/TPAS



Overview of Concepts

NYISO's Proposed Definitions

- **Based on language from the FERC order:**

- **Large Load:** Commercial or industrial load located at a single site, behind one or more POIs, that has a peak load of 50 MW or greater connected to the transmission system at a voltage level greater than 69 kV
- **Co-Located Large Load:** a Large Load with a Point of Interconnection that is the same as the generating facility

- **Additional definitions:**

- **Sizeable Load:** Commercial or industrial load located at a single site, behind one or more POIs, that has a peak load of 10-50 MW connected to the transmission system at a voltage level greater than 69 kV
- **Co-Located Sizeable Load:** a Sizeable Load with a Point of Interconnection that is the same as the generating facility

Note: NYISO is considering that Sizeable Loads in close proximity aggregating to a peak load of 50MW or greater connected to the transmission system at a voltage level greater than 69 kV will be classified as Large Loads

Eligible Customer

- **As specified in the Show Cause Order, NYISO defines an Eligible Customer as**
 - (i) An entity that is engaged, or proposes to engage, in the wholesale or retail electric power business including any electric utility, power marketer, Federal power marketing agency, or any person generating Energy for sale for resale is an Eligible Customer[...]
 - (ii) Any retail customer taking unbundled transmission service pursuant to a state requirement that the Transmission Owner offer the transmission service, or pursuant to a voluntary offer of such service by the Transmission Owner, is an Eligible Customer under the Tariff.
- **A Transmission Customer is any Eligible Customer that has executed a Service Agreement or requests a proposed unexecuted Service Agreement to receive Transmission Service under the OATT**
- **The Transmission Customer serving a Large Load or Co-Located Large Load shall be responsible for complying with, and ensuring the Load's compliance with, all applicable NYISO tariff, market, operational, metering, telemetry, scheduling, and settlement requirements.**
 - The Transmission Customer may be the Large or Co-Located Large Load directly participating as its own LSE or the public utility serving as the LSE for the Large Load

New Load Integration Procedures

- **All Large Loads and Sizeable Loads must submit an application**
 - Based on the characteristics of the load (and generation, as applicable), the projects will be routed to the applicable processes (including the Cluster Study for generation, as applicable)
- **Bulk Electric Large Load (“BELL”) procedures apply to:**
 1. Proposed Large Loads
 2. Existing commercial or industrial loads connected at greater than 69 kV proposing to incrementally increase their peak load to greater than or equal to 50 MW compared to their baseline MW value
 3. Existing Large Loads proposing to incrementally increase their peak load by greater than or equal to 10 MW compared to their baseline MW value
- **Bulk Operating Load Tracking (“BOLT”) procedures apply to:**
 1. Proposed Sizeable Loads
 2. Existing commercial or industrial loads connected at greater than 69 kV proposing to incrementally increase their peak load to greater than or equal to 10 MW compared to their baseline MW value
 3. Existing Sizeable Loads proposing to incrementally increase their peak load by greater than or equal to 10 MW compared to their baseline MW value

BELL Procedure Overview

- **Rolling application window**
- **NYISO studies**
 - 90-day Screening and Modeling Period (including Resource Adequacy (“RA”) screening)
 - 90-day System Impact Study (SIS) (including transmission security (“TS”) analyses)
 - Alternative Upgrades Evaluation
- **Facilities studies remain two-party between the Eligible Customer and CTO (with involvement of ATOs and Affected Systems, as needed)**
- **Interconnection Agreements remain two-party between the Eligible Customer and CTO**
- **Operating and telemetry requirements for load customers**
- **Data collection and project tracking processes for TOs**

BOLT Procedure Overview

- Rolling application window
- Transmission Owner studies
- Operating and telemetry requirements for load customers
- Data collection and project tracking processes for TOs

Transition Rules

- The NYISO recognizes FERC's directive that it must respect existing commercial arrangements while implementing new rules
- Because transition rules will be influenced by the still-developing details of the NYISO's substantive approach the NYISO has not yet formulated a transition proposal
- The NYISO welcomes written stakeholder input on this topic

Firm and Non-Firm Withdrawal Service

■ Firm Withdrawal Service:

- Transmission service offered to Large Loads that do not cause RA or TS adverse impacts or have completed the identified RA supply and TS Network Upgrades needed
- Large Loads taking this Firm Withdrawal Service will be treated the same as other customers taking firm service, including having the same curtailment priority
- Large Loads taking Firm Withdrawal Service are subject to emergency operating procedures

■ Non-Firm Withdrawal Service:

- Transmission service offered to Controllable Large Loads that have exceeded the permissible impact in the RA and/or TS evaluations (without having completed the identified mitigation)
- Large Loads taking Non-Firm Withdrawal Service are eligible to withdraw Energy subject to a Mandatory Bid Cap of \$200/MWh which is the mechanism by which these Large Loads are interruptible/curtailed
- Large Loads taking Non-Firm Withdrawal Service are subject to NYISO dispatch and emergency operating procedures
 - Non-Firm Withdrawal Service will have a lower curtailment priority than NYISO's firm transmission service, including Firm Withdrawal Service
- Critical Electric Infrastructure Loads as defined in the Market Services Tariff are not eligible to take Non-Firm Transmission Service

Load & Generation Partners

- **A Large Load may identify one or more Partner Generators**
 - Partnered generators may mitigate some or all adverse impacts observed in resource adequacy screening
 - Partnered generators must be in the same capacity region as the load
 - Partnered generators must complete the interconnection process and obtain CRIS
 - Partner Generators must be proposed projects that do not yet meet the inclusion rules in the Reliability Planning Process

Co-Located Load & Generation

- Eligible Customers must indicate the requested injection and withdrawal limits and appropriate control mechanisms to effectuate those limits
- Co-located generators not seeking ERIS and/or CRIS and not seeking MW injection on to the system may be eligible to bypass the Cluster Study Process
 - Co-located generators seeking ERIS/CRIS must complete Cluster Study to receive ERIS/CRIS

Load Integration Studies

Proposed Bulk Electric Large Load (BELL) Procedures

NYISO BELL Process Overview

Application Fee

Rolling Application Window

NYISO: validate IR, identifies CTO/ATO(s)/Affected System(s)
CTO: POI screening and determination, commercial readiness

Screening & Modeling Period (90 days)

Screening and Modeling Period (60 days)

CTO: physical infeasibility screening, preliminary attachment facilities determined

NYISO: Resource Adequacy screening

Project models built and validated

Study base cases developed

SIS Entry Decision (15 days)

Will customer proceed to SIS?

MW reduction option

Study Deposit

Affected Systems Notified

Modeling Period (15 days)

Study base cases revised and auxiliary files are developed

SIS scope developed

Scoping Meeting with customers and TOs

SIS scope presented to TPAS/OC

SIS (90 Days)

Bundled study to determine adverse reliability impacts NYISO for BES CTO/ATO for non-BES

CTO/ATO: Identify cost/time estimates for preliminary Network Upgrades

NYISO: Identify preliminary firm and non-firm withdrawal service MW based on observed criteria violations, preliminary impact allocation of violations

Customer Review of SIS results (15 days)

Results Meeting

SIS Results to TPAS /OC

Facilities Study Entry Decision (15 days)

Will customer proceed to FS?

If yes, optional upgrades or non-firm withdrawal service?

MW reduction option

Readiness Deposit

Affected Systems Notified

Alternative Upgrade Evaluation

Update to SIS findings and identified upgrades

CTO/ATO: final upgrades and estimates, (including evaluation of alternative transmission technologies)

NYISO: Update impact allocation for BES issues, identify updates to firm and non-firm withdrawal service MW

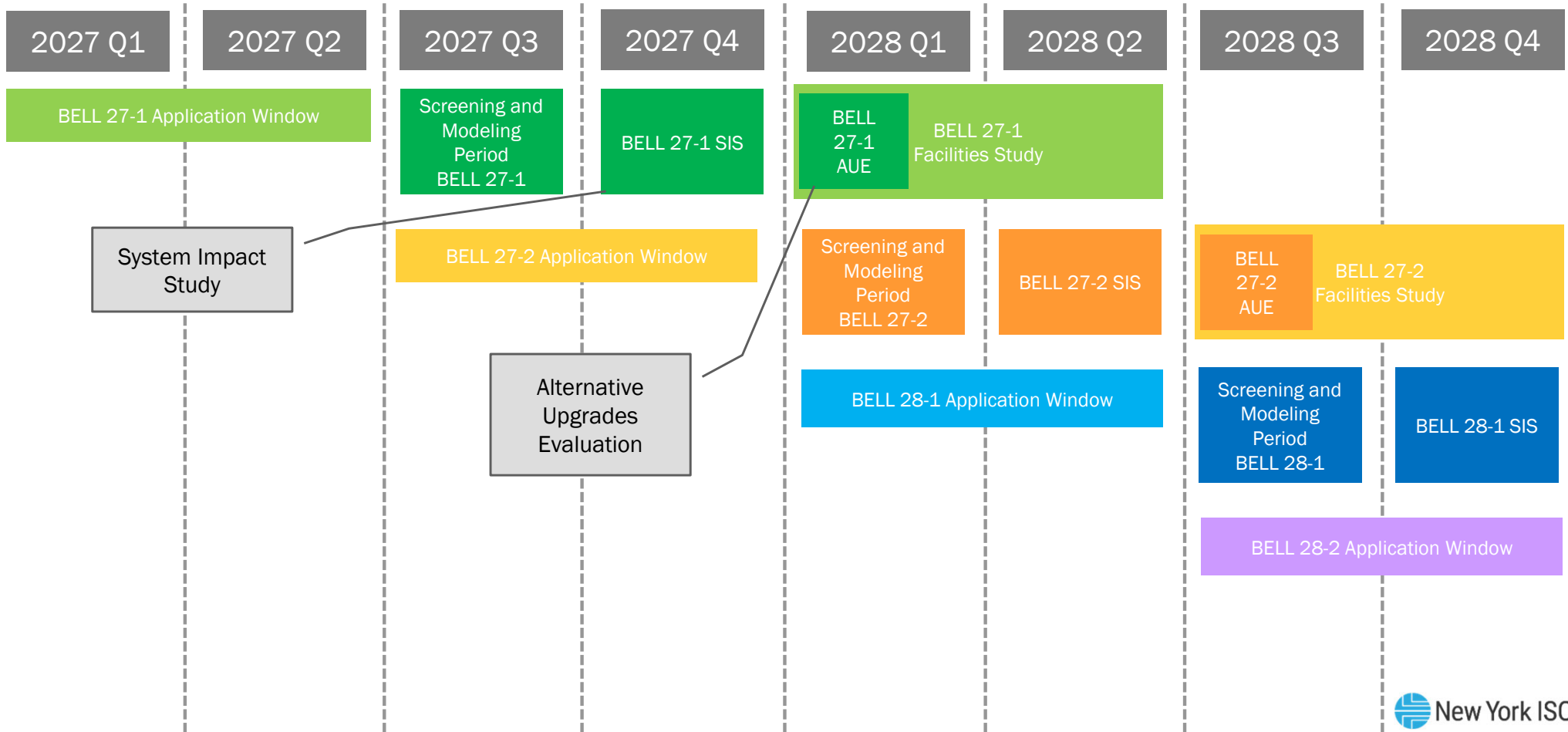
Facilities Study (FS)

CTO/ATO: Negotiation of Interconnection and Construction Agreements and cost allocation based on impact allocation

Security to CTO/ATO

Phase	Window	Task	NYISO	TO
Screening & Modeling Period (90 days)	Application Window (rolling) [Application fee]	Validate applications, identify CTO/ATO(s)/Affected System(s)	X	-
		POI determination, commercial readiness screening	-	X
	Screening (60 days)	Preliminary physical Infeasibility screening	-	X
		Preliminary attachment facilities determined	-	X
		System diagrams	-	X
		Resource adequacy screening	X	-
	SIS Entry Decision – continue with SIS? [Study deposit] (15 days)			
	Validation & Modeling (15 days)	Build powerflow models and auxiliary files	X	-
		Develop contingency definitions	-	X
		SIS scoping	X	X
		SIS scope presented to TPAS/OC	X	-
System Impact Study (90 days)	Base Case Analysis	Steady-state analysis	BES	Non-BES
		Stability analysis	BES	-
		Short circuit analysis	BES	Non-BES
		Transfer analysis	BES	-
	Identification of Potential Upgrades	Preliminary impact allocation	BES	Non-BES
		Preliminary firm/non-firm withdrawal service MW	X	-
		Preliminary Network Upgrades identification and cost/time estimates	-	X
Customer review (15 days)	+	Facilities Study Entry Decision – continue with Facilities Study? [Readiness deposit] (15 days)	+	TPAS/OC
Alternative Upgrade Evaluation	Base Case analysis		BES	Non-BES
	Update impact allocation		BES	Non-BES
	Update firm/non-firm withdrawal service MW		X	-
	Upgrades identification (includes evaluation of alternative transmission technologies)		-	X
	Confirm upgrades		X	-
Facilities Study [Security to CTO/ATO]	Final attachment facilities determined		-	X
	Interconnection Agreement		-	X
	Costs determination/allocation		-	X

Sample Quarterly Schedule



Rolling Applications

- **Eligible Customer:** submits application and data request forms, provides site one-lines up to the POI, and pays application fee
 - Project type and description
 - Power flow modeling parameters
 - Expected seasonal peak forecast for years 1-10, including a representative 24-hr hourly load shapes for each year (and season if materially different from expected peak)
- **NYISO:** validates application
 - Identifies CTO, ATO(s), and Affected System(s), as applicable
- **CTO:** POI determination (if multiple POIs are considered by the Eligible Customer), commercial readiness check

Screening & Modeling Period (90 days)

■ Screening (60 days)

- NYISO: Resource adequacy screening – determine the adverse impact of the project on RA
- NYISO: Builds preliminary models for power flow, short-circuit, transfer studies
- CTO: Preliminary physical infeasibility screening, preliminary attachment facilities determined

■ Customer Decision Period (15 days) [\$\$ Study Deposit]

- Customer determines whether to proceed to SIS and provides Study Deposit

■ Modeling (15 days)

- NYISO: Revises models for power flow, short-circuit, transfer studies. Builds stability models and auxiliary files required for the SIS, starts pre-project case analysis
 - Latest completed STAR base case at start of SIS would be the pre-project case
- CTO: Provides breaker-level diagrams including POI, provides contingency definitions, reviews power flow models
- ATO and Affected Systems: Reviews power flow models and auxiliary files required for the SIS
- NYISO & TOs: Develops SIS scope

■ Scope is presented to TPAS/OC before SIS commences

SIS (90 days)

■ Base Case Analysis

- Including steady-state, stability, short circuit, transfer limits
- NYISO responsible for evaluating Bulk Electric System (“BES”), TOs responsible for evaluating non-BES
- Identify which violations can be resolved by Non-Firm Withdrawal Service, and which must be addressed by upgrades or adjustments to project size from RA and TS analysis

■ Identification of Potential Upgrades & Impact Allocation

- NYISO: calculates BES impact allocation per project
 - Methodology to be developed
- NYISO: preliminary Firm and Non-Firm Withdrawal Service MW based on observed violations
- TOs: identify preliminary potential Network Upgrades, and corresponding cost/time estimates
 - Opportunity to refine upgrades later

Alternative Upgrade Evaluation

- **Confirm RA/TS violations and project contribution to violations**
 - Based the outcomes of the Facilities Study Entry Decision
 - Other base case updates may be considered
 - NYISO responsible for BES, TOs responsible for non-BES
 - NYISO: recalculates project contribution to BES violations and MW for Firm/Non-Firm Withdrawal Services based on observed violations
- **Identification of upgrades**
 - CTO/ATO: refine proposed Network Upgrades
 - Includes evaluation of “alternative transmission technologies”
 - Including cost/time estimates
 - NYISO: affirm that Network Upgrades resolve adverse impacts to the BES

Impact Allocation/Cost Allocation

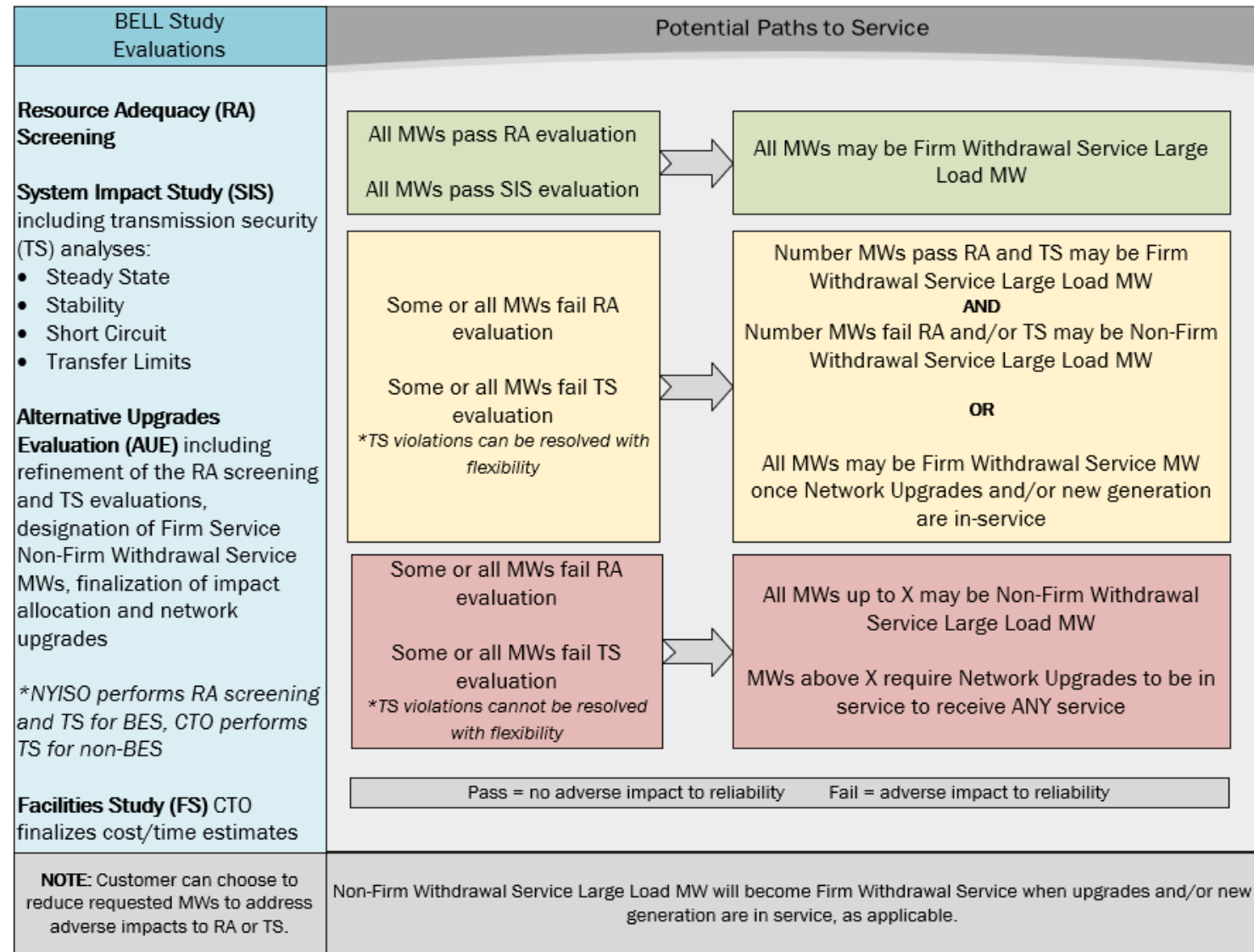
- **NYISO will calculate each project's contribution (impact allocation) to the adverse reliability impacts on BES and share this with the TOs during the Alternative Upgrades Evaluation stage**
- **TOs can use the project contributions to determine the appropriate cost allocation for the Network Upgrades during the Facilities study**

Facilities Studies and Agreements

- **Facilities studies remain two-party between Eligible Customer and CTO (with involvement of ATOs and Affected Systems, as needed)**
 - The NYISO's initial view is that the TOs will continue to be responsible for determining cost allocation of Network Upgrades
- **Interconnection Agreements remain two-party between Eligible Customer and CTO**

BELL

Outcomes



Other Requirements and Processes

Operating and Data Collection Requirements

- **NYISO will review operating and data collection requirements from other ISOs/RTOs and TOs, and work with the TOs and New York State Reliability Council (NYSRC) to develop requirements for Large Loads and Sizeable Loads**
 - NYISO is currently collaborating with NYSRC on UFLS requirements for large loads
- **Operating requirements may include:**
 - Active power ramp-rates, cycling, and recovery
 - Reactive power capability
 - Voltage, frequency, multi-disturbance ride-through
 - Controls to limit withdrawals (and injections if co-located)
 - Remote disconnect ability by NYISO/TOs
- **Data collection requirements may include:**
 - Provision of load forecasts
 - Metering
 - Telemetry
 - Provision of power flow model updates

Project Tracking Process

- **Proposal for a new load interconnection webpage on the NYISO website for hosting information on Large Loads and Sizeable Loads including:**
 - Project tracking spreadsheet including project size, in-service date, project type, location, status, etc.
 - Project tracking geographical maps
 - Dashboards with visuals summarizing projects by type, size, status, and location
 - Network Upgrade tracking spreadsheet for projects that have completed an SIS including the type of equipment, cost estimates, and status of Network Upgrades
- **Information on the load interconnection webpage to be updated monthly**

Material Modification

- **Eligible Customers must submit a request for a modification for changes such as:**
 - An incremental increase of MW greater than 10 MW above the baseline MW
 - Changes to load type and operating characteristics
 - Changes to interconnection configuration
 - Changes to co-location arrangements including the addition of new generators, changes to existing or planned generators consistent with the material modification rules for generators
 - Changes to co-located generators may be subject to the generation material modification process
- **The NYISO and CTO will determine if a material modification evaluation is required based on the nature of the modification**

SIS Expiration in BELL

- **The SIS for a project expires if:**
 - The load project does not enter into an Interconnection Agreement (or equivalent milestone indicating acceptance of Network Upgrades) with the CTO within 365 days of the completion of the SIS
 - The load project does not make meaningful progress towards fulfilling the requirements of the Interconnection Agreement
- **Projects with an expired SIS must re-enter the BELL process with a new interconnection request application**

Agreements

Agreements

- The Show Cause Order references several agreements that the NYISO should consider, such as *pro forma* transmission service agreements to memorialize ongoing operational requirements for transmission customers serving large loads, and a *pro forma* cost recovery agreement to mitigate the risk of cost shifting among transmission customers
- The NYISO will propose *pro forma* agreements and/or Tariff revisions as necessary to implement these requirements

Operations & Market Integration

Operations & Market Integration Agenda

- **Interconnection to Operation**
- **Proposals in response to the FERC Order Directives**
 - Firm & Non-Firm Withdrawal Service
 - Real-Time Operations
 - Cost Allocation
 - Facilitating the Partner Program
 - Co-Located Arrangements
 - Co-Located Resource Model
- **Next steps**

Interconnection to Operation

The NYISO Financial Reservation Transmission Service Model

- **The NYISO's Financial Reservation Based Transmission Model is substantially different than the *Pro Forma* OATT Model**
 - The NYISO does not accept or facilitate reservations of physical transmission service within the NYCA
 - Customers that agree to pay congestion costs have the equivalent of pro forma firm service and can only be curtailed for reliability reasons
 - Transmission studies serve a different/complementary purpose in NYISO, they do not govern access to transmission service
 - The NYISO has never provided NITS to any customer since it commenced operations in 1999, there are no "Network Loads" in NY
 - Currently, non-firm service does not exist in NY
- **The NYISO believes that continuing with its financial reservation model is the best option for FERC-jurisdictional markets/transmission service/large loads in the NYISO region and for NY State consumers more broadly and therefore, the NYISO's proposals in response to the Commission's order should be interpreted within the context of its financial based model**

From Interconnection to Operation

- **Outcomes from BELL/BOLT interconnection process that determine market participation opportunities for Large Loads include but are not limited to:**
 - Firm and Non-Firm Withdrawal Service eligibility
 - Terms of any co-located arrangements
 - Other binding commitments

Firm & Non-Firm Withdrawal Service

Market Implications of Firm/Non-Firm Designation

- **Loads taking Firm Withdrawal Service may consume Energy at any price point**
 - Loads taking Firm service that meet applicable registration and qualification requirements may submit Fixed Load bids, qualify as a Demand Side Resource (DER/EDRP/SCR), or offer Price Capped Load bids
- **Loads taking Non-Firm Withdrawal Service (“NFWS”) are subject to mandatory, automatic curtailment when the transmission system becomes constrained**
 - To effectuate this, Large Loads will be subject to a bid cap of \$200/MWh
 - The bid cap does not preclude Non-Firm Loads from offering flexibly at price points below the \$200/MWh bid cap
 - This would be akin to offering the Load as price responsive
- **Loads taking NFWS are ineligible to participate in the NYISO’s Ancillary Service and Capacity markets as Suppliers and would not receive Order No. 745 compensation in the Energy Markets**

Non-Firm Withdrawal Service – Effectuating Curtailment

- **As discussed, any portion of a Load that is taking Non-Firm Withdrawal Service will be required to submit Energy bids in all hours of the DAM and RTM, and all bids will be subject to the \$200/MWh bid cap**
 - **Transmission Security rationale** - The bid limitation will ensure NFWS loads are dispatched to 0 MW load prior to exceeding transmission line ratings. For this calculation, NYISO will adopt the NERC TLR de minimis shift factor threshold of 5%. Any resource offering \$200 and whose shift factor exceeds 5% will be dispatched to 0 MW of load before reaching the \$4,000 shadow price associated with line flows exceeding a line rating
 - **Resource Adequacy rationale** - The bid limitation will ensure NFWS loads are dispatched to 0 MW load prior to dispatching certain contingency reserves. The cap will allow load schedules >0 during shortages of Operating Reserves that facilitate the distribution of reserves across the NYCA while resulting in load schedules of 0 MW prior to dispatching reserves utilized in the IRM study to avoid load shedding
- **Loads taking this service must be dispatchable and controllable**
 - Failure to follow dispatch signals may result in automatic disconnection and penalty

Non-Firm Withdrawal Service – Resource Adequacy Treatment and Charges

- **NYISO proposes that Loads taking Non-Firm Withdrawal Service be excluded from the IRM and LCR studies**
 - Stated differently, Loads taking Non-Firm Service would not contribute to LOLE
 - As these Loads are subject to mandatory curtailment as a physical operational requirement of their operating agreement, NYISO has no obligation to serve them during stressed system conditions
- **As a result, Loads taking this service will be subject only to a System Reliability Benefit Fee (similar to a System Benefits Charge)**
 - This charge to Loads taking Non-Firm Withdrawal Service corresponds to the stability benefits all Loads receive from Resource Adequacy
 - This charge is detailed on the following slide

Non-Firm Withdrawal Service –System Reliability Benefit Fee

- **The System Reliability Benefit Fee acts as a cost allocator for Large Loads receiving the benefit of reliable service when the power system is not under stressed conditions**
 - Reliable service is ensured by the procurement of capacity suppliers with obligations such as bidding into the Day-Ahead Market and complying with outage scheduling protocols
- **System Reliability Benefit Fee (\$/month) = NFWS Load (kW) * (IRM – 1) * Locality Spot Clearing Price (\$/kW-month)**
- **The System Reliability Benefit Fee introduces an incentive for Loads with Non-Firm Withdrawal Service to take actions to acquire Firm Withdrawal Service in order to qualify for additional capacity supply revenue opportunities**
 - Absent this charge, Loads with Non-Firm Withdrawal Service would receive the benefits of reliable system operations without contributing to costs incurred to maintain reliable system operations
- **Revenues collected will be credited to LSEs on a NYCA load-ratio share basis**

Real-Time Operations

Real Time Operations - Load Operating Data

- All data, telemetry, operating information, and control documentation is required to be submitted on a Large Load Facility-specific basis through independently identifiable data streams
- Large and Co-Located Loads will be required to provide all of the following to inform Real-Time operations, scheduling, and settlements:
 - 6 second Real-Time telemetry
 - Hourly Revenue Grade Meter Data
 - DA and hourly RT forecasts
 - PMU data and Phase 1 metering as applicable
 - Separate and direct telemetry of Load at co-located facilities
 - Separate and direct metering of Load at co-located facilities
 - Other information and data NYISO reasonably needs

Real-Time Operations - Scheduling

- **Loads taking Firm/Non-Firm Withdrawal Service will be scheduled as follows:**
 - Loads taking Firm Withdrawal Service will bid in the same manner as traditional, existing Load
 - Loads taking Non-Firm Withdrawal Service must be dispatchable and subject to mandatory curtailment
- **For loads co-located with generation, NYISO will model additional scheduling constraints to represent the impact of control/protection schemes on facility injection and withdrawal capabilities**
 - These scheduling constraints will be similar to the existing Co-located Storage Resource (“CSR”) Injection and Withdrawal Scheduling Limits

Control Mechanisms

- **FERC recommends NYISO require Large Loads to pay for and install control mechanisms that serve to mitigate the reliability risks they present to the system**
 - The NYISO/TO reserve the right to remotely disconnect Large Loads when necessary to maintain reliability of the transmission system
 - Firm Withdrawal Service: Load disconnect will be consistent with similarly situated customers.
 - Non-Firm Withdrawal Service: Load will be disconnected to alleviate emergency conditions or to ensure Good Utility Practices
 - Large Loads will be subject to a 20MW/min ramp limit
 - NYISO will also implement a NYCA-wide Large Load Ramp Limit, to limit total movement of Large Loads across the NYCA at one time
- **Control technologies and/or protection systems may be necessary to limit a transmission customer's withdrawals from the transmission system as appropriate**
 - Automatic protection systems may disconnect NFWS load (and generation, if co-located) to avoid injections/withdrawals beyond applicable limits
- **Large Loads will be subject to ride-through requirements**
 - NYISO is still investigating the details of such requirements

Real-Time Operations (cont'd)

■ Settlements

- NYISO will settle the Large Load via the Transmission Customer serving the Large Load
- If a Large Load taking Non-Firm Withdrawal Service fails to follow its dispatch instructions, it will be subject to a deviation charge similar to those applied to Energy Storage Resources

DER Market Enhancements

- **NYISO sees a need to pull forward two aspects of the DER Market Enhancements project into this compliance effort**
 - DER Modeling Improvements
 - Previously presented at the 2/24 MIWG as being part of the Flexible Large Loads project
 - Dispatchable Demand Side Resource (“DSR”) Baseline Enhancements
 - As further discussed in this presentation
- **These two elements align with the directives of the FERC Order because it is critical to accurately measure load performance in order to effectively integrate more large loads into NYISO markets**

DER Modeling Improvements

- **NYISO's DER participation model allows small generators, or Demand Side Resources of any size, to form Aggregations that map to Transmission Nodes**
 - Aggregations are modeled as a single Resource in the network model, which virtually interconnects at a Transmission Node
 - Transmission Nodes correspond to physical interfaces between the Transmission and Distribution system but represent a wider electrically similar footprint, which could contain multiple Load buses
- **NYISO models the impact of Aggregations on transmission flows as occurring across all Load buses contained within its Transmission Node's footprint**
 - This results in proper modeling outcomes for small DER, which are most likely distributed throughout the Transmission Node footprint, and whose aggregate dispatch may affect flows across multiple load buses
 - This approach does not work well for large Demand Side Resources, whose impacts on flows are highly localized
 - Other types of DER Facilities may also have quantifiable local impacts for which the present modeling approach may be inappropriate
- **NYISO will propose to model any Demand Side Resource that is >20MW at a dedicated Node**
 - This precludes any Demand Side Resource exceeding 20MW in size from aggregating with other DER
 - This is necessary to accurately model large Demand Side Resources and avoid operational concerns driven by large Demand Side Resources creating proportionally larger impacts in one part of a transmission node compared to the other facilities in the aggregation, which obscures NYISO's operational visibility and creates challenges in balancing the system

Dispatchable DSR Baseline Enhancements

- **The NYISO proposes a revision to the baseline methodology for Demand Side Resources (DSRs) in a DER Aggregation, which will allow better monitoring of Load performance in this participation model**
 - While the Economic Customer Baseline Load (“ECBL”) is a good indicator of the Load profile for an Aggregation and where it is likely to be hour to hour, at times the ECBL does not match the actual Real-Time Load
- **The NYISO proposes a meter before, meter after approach for the first hour of dispatch. This will capture the actual Load reduction in the initial dispatch intervals**
 - A meter before, meter after baseline was used with the former Demand Side Ancillary Services Program (DSASP) and is currently used for Regulation Service in the DER participation model
- **After dispatch has been received and an hour has passed, Aggregators will then calculate the baseline with the current ECBL methodology**
 - Then, following an hour with no schedule, the baseline methodology will revert to the meter before, meter after approach

Cost Allocation

Cost Allocation

- **In the Show Cause Order, FERC preliminarily finds it just and reasonable to charge all Loads, regardless of service classification or co-located status, charges and fees on a gross Demand basis**
 - FERC describes several instances of cost shifting that result when Loads co-located with Generation are allowed to net BTM Energy supply with Load, resulting in an assessment of net charges to co-located Loads
- **As such, NYISO will assess fees and charges to all Loads, co-located or otherwise, on a gross Demand basis, including but not limited to:**
 - Operating Reserves Charges
 - Black Start Charges
 - VSS Charges
 - Regulation Charges
 - FERC Fees
 - NYISO Budget Fees
 - Residuals
 - BPCG, DAMAP
 - Import Curtailment Guarantees
 - Supplement Event Credits

Facilitating the Partner Program

Facilitating Identification of Partners

- **To facilitate the partnership of a Large Load and a paired Generator and reduce barriers for supply entry, the NYISO may post the following:**
 - Project information for proposed Large Loads, as described in slide 49
 - Information for Generators not yet in service, including the zone, nameplate capacity, and a value representing the Resource's ability to contribute to Resource Adequacy
- **The posted information is intended to allow a Large Load to identify a paired Generator with which to request a deliverability study to attain Firm service**

Co-Located Arrangements

FERC Opinion on Co-Location

- **Co-Location is integral to the provisions of the Show Cause Order**
 - FERC cites Co-Location as a means of firming up Non-Firm Large Loads
 - Physical co-location guarantees the deliverability of Generator capacity to co-located Loads
 - Physical co-location may also mitigate the need for costly Network Upgrades as a prerequisite to Large Load interconnection
 - Protection schemes may allow Loads co-located w/ Generation to avoid Network Upgrades altogether
- **Several existing NYISO programs allow Load to co-locate with Generation, and will be affected by the Order**
 - Behind-the-Meter: Net Generation model
 - DER Participation Model
 - Type G (Generation) Demand Response
 - Type B (Both Curtailment + Generation) Demand Response
 - SCR/EDRP
- **However, the Show Cause Order preliminarily finds that the netting of co-located generation with co-located Load may not be just and reasonable**
 - Gross accounting of Load/Gen performance is required to comply with the cost shifting provisions of the Order
 - Ancillary service, transmission, and other charges must now be assessed on a gross demand basis – co-located Generation cannot be used to offset these charges
 - NYISO therefore believes it necessary to sunset the existing BTM:NG Resource program
- **NYISO will develop a co-located participation model that treats Load and Generation as separate and distinct market entities**

Impact of FERC Co-Location Opinion on Demand Side Resources

- **NYISO currently supports several types of Demand Response**
 - Type C – Demand Response effectuated via load curtailment
 - Type G – Demand Response effectuated via the deployment of co-located generation
 - Type B – Demand Response effectuated via a mixture of load curtailment and on-site generation
- **NYISO believes Type G and Type B Demand Response may not be consistent with FERC's opinion on co-location, as these necessitate the netting of Load and Generation to effectuate Demand Response supply**
 - However, FERC states the ISO may establish a materiality threshold below which certain co-located arrangements can continue netting Load with Generation
- **NYISO proposes to limit Type G and Type B Demand Response participation to Loads paired with Generators that have less than 20MW of capability**
 - Loads pairing with Generators that have more than 20MW of capability will need to use the NYISO's new co-location model
 - The <20MW threshold is in line with DER eligibility cutoffs for small Generators

Co-Located Resource Model

Co-Located Resource (CLR) Participation Model

- **NYISO will condense the CSR and BTM:NG Resource models into a singular, modular Co-Located Resource Model**
 - The CLR model is based on the existing CSR co-location framework
 - The CLR model will supplant the existing CSR model – CLR will be able to support the existing CSR use case in the same manner as the existing CSR model
 - The BTM:NG Resource program will be sunset, and its participants will need to transition to the new CLR model, or another participation model as appropriate
- **Type G and Type B Demand Side Resources that do not meet the previously discussed size thresholds may be required to transition to the CLR model as well**

CLR – Modeling

- **The CLR modeling framework is largely identical to the existing CSR modeling framework**
 - All components of a CLR must be physically co-located behind the same POI
 - Each component of a CLR will have a distinct PTID/bid/schedule/settlement and be treated as separate gross assets
 - CLRs will be subject to CLR Injection and Withdrawal Scheduling Limits
 - These limits are identical in function and purpose to the CSR Injection and Withdrawal Scheduling Limits
 - These limits ensure the net sum schedule of all CLR components does not violate the CLR POI Limit

CLR– Program Eligibility

- **The following asset classes will be eligible to co-locate under the CLR model, following the rules of their individual participation models and other applicable requirements:**
 - Firm Load (>20MW)
 - Non-Firm Load (>20MW)
 - Dispatchable Demand Side Resources (DER) (>20MW)
 - ESRs (>1MW)
 - Generators (>1MW)
- **All CLRs must include at least one Generator component**
- **NYISO is reviewing if a cap on the number of different assets that can be co-located behind a single POI is necessary for model stability.**

CLR– Program Eligibility Cont.

- **Co-Located Loads taking Firm or Non-Firm Withdrawal Service maintain similar program eligibilities as a standalone Load taking that service**
 - Co-Located Loads taking Firm Withdrawal Service may:
 - Qualify as Type C Demand Response via standalone DER or SCR/EDRP
 - To effectuate Co-Located Generator scheduling, a Firm Co-Located Load participating as an SCR/EDRP may have additional obligations above and beyond those of a standalone SCR/EDRP
 - Submit Fixed Load Bids
 - Submit Price Capped Load Bids
 - Co-Located Loads taking NFWS:
 - Are still subject to the NFWS mandatory curtailment rules

CLR Telemetry & Metering Requirements

- **NYISO is proposing to require Revenue Grade Metering be installed at the POI of the CLR, and behind-the-meter between any Load and the POI**
- **All CLR components will need to provide 6-second Real-Time telemetry**
 - Components will express their output in terms of the AC equivalent of their flows at the point of interconnection, to account for losses
 - This is an existing CSR requirement

Co-Located Generators Bypassing the Cluster Study

- **As discussed on Slide 34, NYISO plans to give Co-Located Generators the option to bypass the Cluster Study and begin operation without ERIS/CRIS**
 - Without ERIS/CRIS, the Generator lacks the right to export its Energy to the grid, and will be precluded from participating in the NYISO's Ancillary Services and Capacity Markets
 - CLRs containing a Generator that has not gone through the Cluster Study and received ERIS will need to register/bid with a CSR Injection Scheduling Limit of OMW
 - The CLR will also need to install proper control/protection schemes to prevent incidental grid exports
 - The option for a Co-Located Generator to bypass the Cluster Study can be exercised as a means of bridging the gap between the conclusion of the BELL and Cluster Study processes, or it could be leveraged by the Load in perpetuity
- **Co-Located Generators and Co-Located Loads would still be required to bid into their markets according to the relevant set of bidding rules**
 - Like a regular CLR, the Generator and the Load would be subsequently charged and paid for Energy on a gross basis, in line with the rules described for their respective service/technology type
 - Load Co-Located with a Generator component that has bypassed the Cluster Study will need to be classified as Non-Firm, and subject to the mandatory curtailment rules

CLR Generator Interconnection

- Assuming a Co-Located Generator decides to proceed through the Cluster Study/EDS, its interconnection rights would be awarded as follows:
 - CLR ERIS
 - CLR ERIS will be awarded on a gross capability basis to each Co-Located Generator
 - i.e. ERIS is awarded to individual Generators independent of the CLR's POI Limit
 - CLR CRIS
 - The total sum of CRIS awarded across all CLR Generators/ESRs will be limited by the CLR's POI Limit
 - E.g. A CLR with a 100MW POI Limit that is comprised of a 125MW Generator and a 50MW ESR will receive a total CRIS award of 100MW that can be allocated across the two CLR components

CLR – Delineation of Withdrawal Service

- **A Load within a CLR can only qualify for Firm Withdrawal Service up to the CLR's POI Withdrawal Limit**
 - Any Load located behind the POI that exceeds the POI Withdrawal Limit will be required to take Non-Firm Service
 - The terms of Firm Withdrawal Service allow the Load to be fully served by the transmission system, which is not possible if the CLR is import constrained
- **An example:**
 - Suppose a CLR comprised of 150MW of Load located behind a POI with a Withdrawal Limit of 100MW. The Load can rely on the transmission system to serve 100MW of it's Load before the POI becomes constrained. Then, the last 50MW of Load are served on a Non-Firm basis by any generation located behind the POI.

CLR – Resource Adequacy Charges

- **Resource Adequacy charges are assigned to Firm and Non-Firm CLR Loads respectively based on the Resource Adequacy cost allocation rules for their respective service classifications**
 - CLR Loads taking Non-Firm Withdrawal Service will be assigned a System Reliability Benefit Fee
 - CLR Loads taking Firm Withdrawal Service will be assigned an ICAP obligation, as is done today

CLR Energy Market Participation

- **Each Generator and/or Load component comprising a CLR will participate as separate, individual entities in the Energy and Ancillary Services markets**
 - Each component will submit individual Energy and Ancillary Service bids to the NYISO
 - All units comprising a CLR shall be scheduled such that their combined net schedule does not violate the CLR Scheduling Limits
 - This is exactly how the CSR Scheduling Limits work today
- **Loads taking Non-Firm Withdrawal Service as a component of a CLR will need to bid in accordance with the mandatory curtailment requirements outlined elsewhere in this presentation**
- **Demand Side Resources participating in a CLR will be subject to the same bidding requirements as other types of dispatchable Demand Side Resources**
 - Subject to the Monthly Net Benefits Test (“MNBT”) as relevant, baselining requirements, etc.

CLR Scheduling Constraint

- **CLR Scheduling Constraints are identical to the CSR Scheduling Constraints**
 - Scheduling constraints represent the maximum grid exports/imports that the CLR's Point of Interconnection can support
 - The CLR Scheduling Constraint ultimately dictates the deliverability of co-located Energy/Capacity to and how much Energy the Load/ESR can consume from the wider transmission system
- **The CLR Scheduling Constraint will be used to balance the schedules of all Co-Located assets located behind the CLR POI**
 - For example, suppose a CLR comprised of 150MW of Generation, 50MW of Firm Load, with a +/- 100MW POI Limit
 - Assume the Firm Load consumes 50MW throughout Real-Time. NYISO's optimization would recognize that the Generator, which has 150MW of capability, can be scheduled for its full 150MW output
 - 50MW of output would be consumed by the Load behind-the-meter
 - 100MW of output would be exported to the grid across the POI, without violating the Injection Scheduling constraint
 - Note that the Generator and the Load will be settled as separate gross assets, as described on subsequent slides

CLR Capacity Market Participation

- **Each Generator or Load comprising a CLR will participate in or be subject to charges from the NYISO Capacity market as individual entities**
 - Each Generator component of a CLR will behave as an independent ICAP Supplier and offer Capacity into the auctions consistent with the existing CSR rules
 - Demand Side Resources participating in a CLR may offer Capacity consistent with the rules for Demand Side Resources, with the exception that their total ICAP will be capped by the CLR's POI Limit
 - All Loads, including Type C Demand Response providers, will be assigned an ICAP tag on a gross demand basis as relevant and pay Resource Adequacy charges accordingly
 - This is consistent with ICAP tag assignments as they exist today

CLR – Settlement and Cost Allocation

- **As discussed on Slide 73, NYISO needs to apply a gross construct to CLRs**
 - Co-Located Loads will pay charges and fees, consistent with Slide 73, on a gross Demand basis
 - Co-Located Suppliers to be settled for Energy, Ancillary Services, and Capacity on a Gross Supply basis

Buyer Side Mitigation (“BSM”) Self Supply Exclusion

- NYISO proposes to modify the BSM rules so that new Generators interconnecting to allow a Large Load to receive Firm Withdrawal Service would be excluded from BSM.

Next Steps

Next Steps

- **NYISO requests stakeholders to provide written feedback on its Show Cause Order response design by end of day Monday, July 27**
 - NYISO will factor stakeholder feedback into its decision to pursue an abeyance, and proceed to develop a Show Cause Response
 - The deadline for a Show Cause Response absent an abeyance is August 17, 2026
 - If there is an abeyance, the deadline for a Show Cause Response filing with FERC would be November 16, 2026

Please send feedback to Kirk Dixon, kdixon@nyiso.com

Questions?

Our Mission and Vision



Mission

Ensure power system reliability and competitive markets for New York in a clean energy future



Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation



Appendix

Current Load Interconnection Process Overview

