RMS ENERGY

# EXPERTISE IN THE NORTHEAST

**EXTENSIVE EXPERIENCE IN POWER SYSTEM ENGINEERING & CONSULTING** – DEEP EXPERTISE ACROSS ISO-NE AND NYISO

**PROVEN TRACK RECORD** – DECADES OF SUPPORT FOR DEVELOPERS AND ISOs/RTOs

**INTERCONNECTION & REGULATORY EXPERTISE** – SPECIALIZED IN STUDIES, MODEL TESTING, AND COMPLIANCE

## MAJOR NORTHEASTERN SUPPORT EXPERIENCE OF RMS EXPERTS

| ISO-NE | NYISO |
|---|---|
| **INTERCONNECTION APPLICATIONS** | |
| Interconnection Applications, including all technical data, One Line Diagram (OLD), Site Plans, PSS/E, PSCAD and ASPEN models | Interconnection Applications, including all technical data, One Line Diagram (OLD), Site Plans, PSS/E and ASPEN models |
| PSS/E vs PSCAD Model Acceptance Tests (MAT) formerly known as the Benchmarking Study | Optional Model Usability Tests (MUT) (for PSS/E and ASPEN models recently introduced in NYISO) |
| **STUDIES** | |
| Feasibility Studies | Optional Feasibility Studies |
| System Impact Studies | System Reliability Impact Studies |
| Forward Capacity Market Overlapping Impact Studies | Class year System Upgrade Facility (SUF) and System Deliverability Upgrade (SDU) Studies |
| Material Modification Studies | Material Modification Studies |
| **COMPETITIVE DEVELOPMENT SOLICITATIONS** | |
| Massachusetts Clean Energy's 83-C Offshore Wind Procurement Round IV | New York City PPTN 2023 |

## TECHNOLOGICAL VARIETY IN RMS ENERGY'S EXPERIENCE IN THE NORTHEAST

| TECHNOLOGY EXPERIENCE | TECHNOLOGY TYPES |
|---|---|
| Generation | Offshore Wind, Onshore Wind, Battery Energy Storage Systems (BESS), Solar/PV, Hydroelectric, Thermal |
| Large Loads | AI and Mining Data Centers<br>Industrial Manufacturing Plants |
| Transmission and FACTS | AC Overhead, Underground, HDD and Submarine HVDC Overhead and Submarine STATCOMs and SVCs |
| OEMs | Inverters: SMA, Sungrow, Power Electronics, Tesla<br>Wind Turbines: GE, Vestas, Siemens Gamesa<br>HVDC and FACTS: ABB, Siemens |

## IMPACT OF FERC ORDER 2023/2023-A IN THE NORTHEAST

| PRE FERC ORDER 2023/2023-A | POST FERC ORDER 2023/2023-A |
|---|---|
| Serial Interconnection Process | Cluster Based Interconnection Process |
| Open Application Window | Fixed Application Window |
| First-In First Served | First-Ready First Served |
| Every Interconnection Studies Performed Individually for every queue project with no defined timeline | Energy Interconnection Studies Performed for Clustered Queue Projects with defined timelines |
| Capacity Studies for Clustered Queue Projects | Capacity Studies for Clustered Queue Projects with:<br>• Procedural changes in both ISOs<br>• Change in Methodology only for ISO-NE |
| ISO-NE: PSS/E, PSCAD, Models required with defined modeling and testing requirements, including a mandatory Benchmarking Report<br><br>NYISO: PSS/E Models required with defined modeling requirements | ISO-NE: PSS/E, PSCAD, Models required with significantly increased modeling and testing requirements, including a mandatory Model Acceptance Tests (MAT) Report<br><br>NYISO: PSS/E Models required with defined modeling and testing requirements, with an optional Model Usability Tests (MUT) Report |
| Study Fees and deposits not fixed and minimal withdrawal penalties | Significantly higher, defined study fees and deposits and withdrawal penalties |

# ISO-NE EXPERTISE

**Decades of experience in ISO-NE region for generation and transmission projects.**

**Extensive familiarity with interconnection processes, modeling, and testing.**

**Supported ISO-NE directly with feasibility and system impact studies for numerous projects.**

**Expertise in shadow studies and benchmarking processes.**

## Prospecting and Viability

- Supported developers with screening studies for greenfield projects
- Identified Points of Interconnection (POIs) with available injection and deliverability capacities
- Physical interconnection viability assessments

## Interconnection Application Requirements

- Detailed one-line diagrams and site maps
- PSSE and PSCAD steady-state and dynamic models
- Generator/Inverter datasheets and user manuals
- Equivalent collector calculations
- Short-circuit Aspen Model and OLTC Design
- Completed Appendix 1, Attachment A, and A-1 Forms
- Application fees and deposits:
  - $50,000 Initial Deposit
  - Study Deposits: $250,000 ($100,000 for CNRIS only)
  - Commercial Readiness Deposits: $5M ($1M for CNRIS only)

## Studies

- Supported the ISO and developers with:
  - Network Capability Interconnection Standard (NCIS) studies including:
    - Power flow thermal and voltage studies
    - Dynamic stability studies
    - Short circuit and PSCAD Electromagnetic Transient (EMT) studies
  - Capacity Capability Interconnection Standard (CCIS) Studies including:
    - Overlapping impact studies
  - Guided developers through FERC Order 2023 compliance and ISO-NE's updated interconnection process and requirements

# NYISO EXPERTISE

**Extensive experience supporting generation and transmission developers, including giga-scale offshore wind projects.**

**Expertise in NYISO interconnection applications, modeling, and studies.**

**Supported NYC Public Policy Transmission Need (PPTN) projects during the Viability and Sufficiency Assessment (VSA) stage and Transmission Interconnection Application (TIA) submittal.**

## Prospecting and Viability

- Prospecting studies across NYISO zones
- Wide-area thermal screening for injection and deliverability capacities
- Physical interconnection viability assessments to identify red flags early

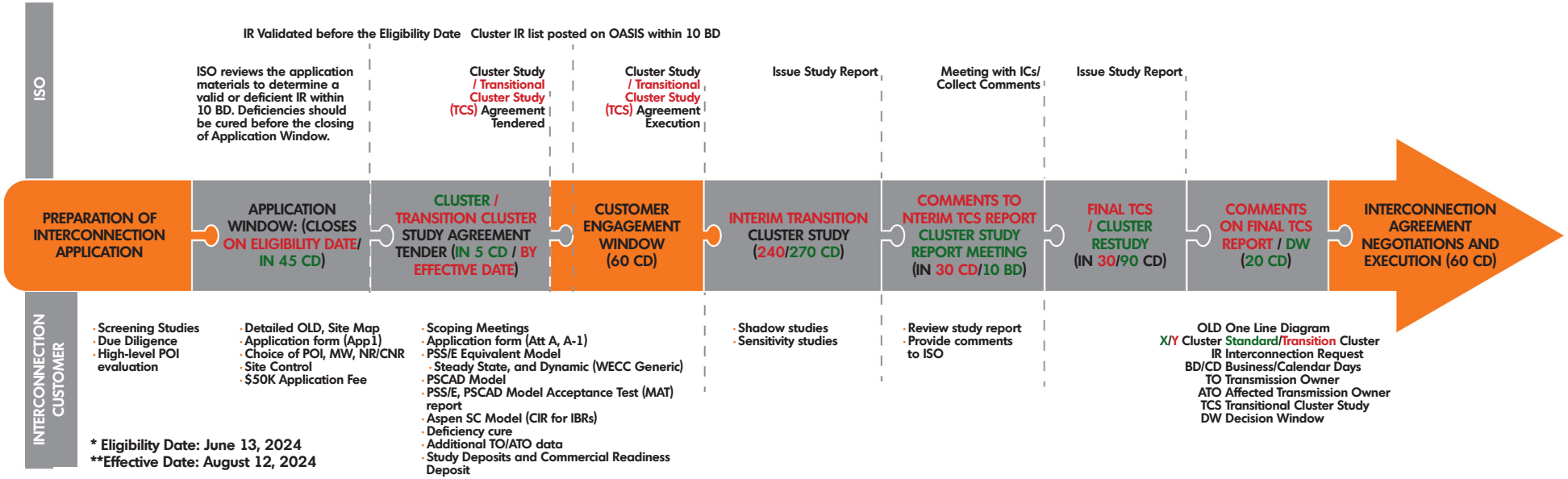
## Interconnection Application Requirements

- Completed application forms and modeling data spreadsheets
- PSSE and ASPEN OneLiner models
- Detailed one-line diagrams and site plans
- NYSRC Reliability Rule B.5 Attestation
- Evidence of site control and attestation
- Application fees and deposits based on project size:
  - $10,000 fee ($5,000 for CRIS-only)
  - Deposits: $100,000 (<80 MW), $150,000 (80–200 MW), $250,000 (>200 MW)
- Submission via NYISO Interconnection Portal

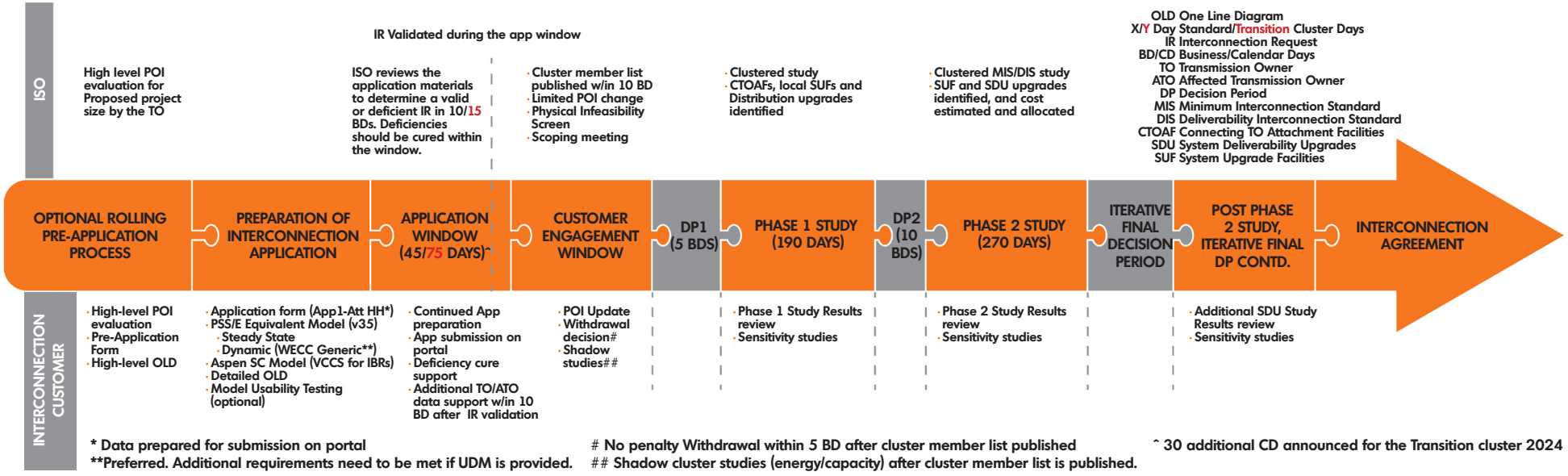
## Studies

- Supported developers with:
  - NYISO's Minimum Interconnection Standard Studies including:
    - Power flow thermal and voltage studies
    - Dynamic stability studies
    - Short circuit studies
  - NYISO's Deliverability Interconnection Standard Studies including:
    - Deliverability Tests for Highways and Byways
    - No-harm Tests for Highways and Other Interfaces

# ISO-NE INTERCONNECTION PROCESS




# NYISO INTERCONNECTION PROCESS



# PSSE/PSCAD MODEL ACCEPTANCE TESTS EXPERTISE

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### ISO-NE Model Acceptance Tests for Inverter-Based Resources (IBR)

- PSCAD EMT studies required for growing Inverter-Based Resources (IBRs).
- Compliance with ISO-NE Planning Procedure 5-6 (PP5-6), Appendix C1 and C2.
- The MAT includes a total of 42 tests for a generator projects and 84 tests for BESS projects, and even higher number of tests for Hybrid facilities, with a requirement of separate testing of individual and concurrent operations of each IBR technology.

## ISO-NE MODEL ACCEPTANCE TESTS (MAT)

| TEST # | TEST NAME | TEST # | TEST NAME |
|---|---|---|---|
| 1 | Flat Run | 9 | Unbalanced Fault Ride-Through |
| 2 | Steady-state Reactive Power Limit | 10 | Voltage Protection Verification |
| 3 | Dynamic Reactive Power Limit | 11 | NERC PRC-024 Voltage Ride-Through |
| 4 | Voltage Reference Step Change | 12 | Frequency Ride-Through |
| 5 | Active Power Reference Step Change | 13 | Rate of Change of Frequency (ROCOF) Ride Through |
| 6 | Grid Frequency Magnitude Change | 14 | Grid Voltage Phase Angle Change Ride-Through |
| 7 | Balanced Fault Ride-Through | 15 | Point of Interconnection SCR Change Ride-Through |
| 8 | Balanced Remote Fault Ride-Through | | |