Wind and Solar Intermittent Power Resource (IPR)

Resource Modeling, End-to-End Communications Testing, and Pre-Commercial Testing

Modeling of a new Wind or Solar Resource within NYISO Operational Systems

To enable accurate system representation, the new Wind or Solar IPR must be modeled in the NYISO Operational systems and the NYISO's Market Information Systems (MIS). The inputs used for modeling the resources include metering configuration setup, and resource-specific parameters submitted in Section BB and Section EE as part of Registration.

Section BB includes:

- Generator size
- Maximum plant availability
- Operating restrictions
- NY State Transmission System injection point and voltage level
- Indication of ICAP Market Participation

Section EE includes:

- Static Plant Data
  - Physical Layout of plant
  - Details on Wind turbines
  - Details on solar arrays
  - Manufacturer's power curves
  - Details on Meteorological towers and location

Resource specific Object IDs are assigned for Wind turbines, Solar arrays, meteorological towers etc., and appropriate MIS flags (Energy participation) are attributed to the resource within the NYISO's operational systems and the MIS. For timely modeling to be completed and for start-up testing and participation in the NYISO markets, the recommended timeframe for modeling a new resource is 4-6 months prior to the intended start date.

Also see the Wind and Solar Plant Operator Data User's Guide for more information.

End-to-end communications testing

Once the resource has been modeled in NYISO's operational systems, the Wind or Solar IPR must coordinate with NYISO (Customer Registration team and Power Systems Applications Engineering team) and its applicable Transmission Owner to set up end-to-end communications testing.

Communications testing includes:

- NYISO transmitted 5-minute & 6-second MW basepoints to Generator and TO
- NYISO transmitted curtailment status flag
- NYISO received Generator MW/MVAR (and alternate sourced MW/MVAR if available)
- NYISO received Generator breaker status

Real-time communication protocols and the communications path must be established with the respective Transmission Owners (TOs) prior to the onset of end-to-end communication testing. The typical path is a three-way communication path from the NYISO Control Computer System to the Transmission Owner Control Computer system, and from there to the Generator. Requirements and procedures are detailed in the Control Center Requirements Manual. Generators requesting additional (and optional) direct communication with the NYISO for transmitting data and basepoint information must follow the procedures outlined in the Direct Communications Manual, as well as reach out to NYISO Stakeholder Services.

End-to-end communications testing must be successfully completed prior to scheduling pre-commercial or start-up testing and must be coordinated with the NYISO using the customer_registration@nyiso.com email address.

Pre-Commercial or Start-Up Testing

Start-up testing covers various aspects of operating, scheduling, and bidding of new Wind or Solar IPR prior to commercial operation and participation in NYISO Energy and Installed Capacity Markets. Start-up testing must be coordinated with NYISO Customer Registration, Outage Scheduling department and NYISO's Operations Generation desk, as well as the applicable Transmission Owner. New resources must notify NYISO and the applicable TO at least 30 days prior to connecting to the grid. End-to-end communications testing must be successfully completed before Start-up testing commences. Various plant systems are tested prior to the commercial operation of a new generating facility, such as:

- Operating details of the new Generator
- Synchronization to the grid
- Meter data coordination for various phases of metering, based on MW output of Generator
- Testing for providing any selected Ancillary Services products (VSS), and
- ICAP specific resource capability testing (DMNC)

Resources also do Curtailment testing, to ensure that Wind or Solar resources can respond to activation of the curtailment flag and reduce their output in response to NYISO basepoints. This is conducted once the plant reaches the lesser of its nameplate capacity or 20 MWh output. NYISO will communicate the activation of the Curtailment flag and the resources is tested on its ability to reduce its power output, and ramp down all the way to 0 MW.

Details about pre-commercial start-up testing can be found in Technical Bulletin 116: New Generation Units Operating During the Start-Up Testing Phase.

During or just after Start-up testing, the Wind or Solar resource must complete Real time meteorological data transfer testing. Real-time data elements are transferred to the NYISO at least once every 30 seconds and is in turn transferred to the external forecast vendor in order to generate power output forecasts for scheduling Wind and Solar generators in NYISO's Energy markets.
To learn more, please refer to the Establishment of Wind and Solar forecasts factsheet that is part of this Onboarding Educational suite.

Once start-up testing is completed without any issues, the operational onboarding process of the new Wind or Solar IPR is complete. The resource can now start participating in the various NYISO markets and services that it qualifies for.

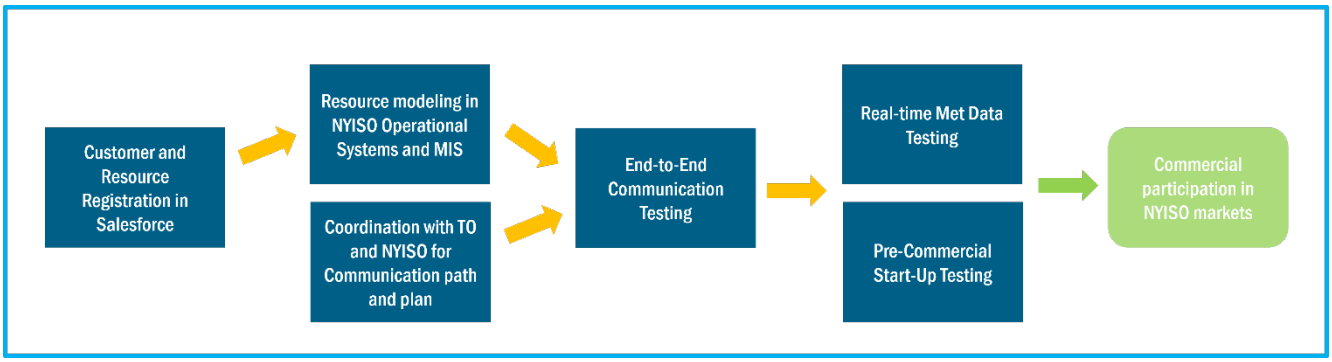

Figure: Process for resource modeling and Start-Up testing for a new Wind or Solar IPR