

**De-Carbonization / DER Report for NYSRC Executive Committee Meeting 4/12/2021**

Contact: Matt Koenig (koenigm@coned.com)

The April 2021 edition of the De-Carbonization / Distributed Energy Resources (DER) Report covers recent publications from NERC, NY State DPS, the Joint Utilities and the NYISO. The snapshot summary of the Interconnection Queue has been updated to reflect the End-of-February values for energy storage, solar and wind. The topics in this newsletter are covered in the following order:

- NERC Activities:
  - NERC Newsletter with extensive references to Texas cold-weather concerns
  - NERC IRPWG Meeting on March 24<sup>th</sup> (Maui IBR – EMT Study Presentation)
- NYS DPS – Interconnection Technical Working Group (ITWG) Meeting
- Joint Utilities Newsletter
- NYISO Public Information Website – Latest Podcasts and blogs covering renewables and DERs
- Snapshot of the NYISO Interconnection Queue: Storage / Solar / Wind

**The February issue of the NERC monthly Newsletter** can be found [here](#). This issue provided extensive coverage of previous cold-weather issues in the Texas region, and referenced many prior reports that have relevance, including:

1. [2020/2021 Winter Reliability Assessment](#), NERC warned of the potential for extreme generation resource outages in ERCOT due to severe weather and the potential need for grid operators to employ operating mitigations or energy emergency alerts to meet peak demand.
2. [2020 State of Reliability](#) found that Texas continued to have insufficient resources to meet its reference margin level.
3. [2020 Long-Term Reliability Assessment](#) pointed to low operating reserves during the summer and during the months of March and October of the study years (2022 and 2024).
4. Following the 2011 Texas cold-weather event, FERC and NERC produced a joint inquiry report, [Outages and Curtailments during the Southwest Cold Weather Event of February 1–5, 2011: Causes and Recommendations](#). Key recommendations included:
  - Generation owners and operators should ensure adequate construction, maintenance and inspection of freeze protection elements, such as insulation, heat tracing and windbreaks.
  - Reliability Coordinators and Balancing Authorities should require generators to provide accurate data about the temperature limits of units so they know whether they can rely on those units during extreme weather.
  - Balancing Authorities should review the distribution of reserves to ensure that they are useable and deliverable during contingencies.
  - State lawmakers and regulators in Texas and New Mexico, working with industry, should determine if weather-related production shortages of natural gas could be mitigated through the adoption of minimum winterization standards for natural gas production and processing facilities.
5. In 2012, NERC and industry developed and published a [Reliability Guideline](#) to help industry develop their own readiness programs for generating units throughout North America. The Guideline provided a general framework for developing winter weather readiness programs for generating units with a focus on maintaining individual unit reliability and preventing future cold-weather related events.

**The NERC Inverter-Based Resource Performance Working Group (IRPWG)** met on March 24<sup>th</sup> ([agenda](#)). The meeting included a presentation on [Inverter-Based Operation in Maui: Electromagnetic Transient Simulations](#). Hawaiian Electric expects Maui to be the first large island (200 MW Peak) to be capable of operating with 100% inverter -based power resources, which is expected to occur as early as 2023. NREL and Electranix are performing EMT and impact studies. The report is careful to distinguish between Grid Forming Inverters (GFMs) vs. Grid Following Inverters (GFLs). GFMs can provide damping for frequency swings, while GFLs can aggravate them. Observations to date include:

1. The model experiences system stability issues in some low-inertia scenarios
2. The modeling of inverter control loops (power and current) for GFL devices is required to detect faster modes in the system response under very weak grid conditions
3. The presence of synchronous generators is not necessary; the system is stable with GFMs and synchronous condensers
  - a. The presence of a single GFM (30 MVA) greatly increases damping, Rate of change of frequency (ROCOF), and the nadir of primary frequency mode. The device was able to stabilize the system for faster modes and mitigate instability of remaining GFLs.
  - b. Presence of two GFMs (60 MVA total) stabilizes this zero-inertia system. There would be a need for two GFMs for N-1 reliability

**NY State DPS - Interconnection Technical Working Group Meeting:** The ITWG's [Landing Page](#) contains references to various technical documents, meeting information and materials. Their March 17<sup>th</sup> meeting [Agenda](#) includes the following presentations:

- SI - Solar + Storage Hybrid Discussion [Link](#)
- SI - CESIR Analysis Evaluation Initiative [Link](#)
- SI - IEEE 1547 Industry Feedback [Link](#)
- Overvoltage and 1547-2018 Presentation [Link](#)

**The latest issue of the Joint Utilities Newsletter** can be found [here](#). The newsletter refers to the extensive [Utility Transmission and Distribution Investment Working Group Report](#), which highlights JU efforts to align Transmission and Distribution investments with the CLCPA. Other articles in the newsletter include updates on the implementation of the [PSC's EV Make Ready Program](#), along with the recent [Hosting Capacity Stakeholder Webinar](#) in which the latest enhancements of the Hosting Capacity and Load Capacity mapping applications were presented.

**A new set of Articles, Videos and Podcasts have been published on the [Blog Page of the NYISO Website](#),** including the series of articles covering "The Road to 2040".

[Article:](#) Road to 2040: Our Role in Expanding Transmission to Meet the Needs of a Clean Energy Grid

[Article:](#) Road to 2040: How Green Hydrogen Can Complement a Green Energy Grid

[Article:](#) Road to 2040: Reserve Margins and Why They Matter

[Video:](#) Resolving New York Transmission Constraints

[Podcast:](#) Key Capture Energy's Jeff Bishop on the Critical Role of Storage in Greening the Grid

**Interconnection Queue: Monthly Snapshot - Energy Storage / Wind / Solar Project Tracking**

The intent is to track the growth of Energy Storage, Wind and Solar projects in the NYISO Interconnection Queue, looking to identify trends and patterns by zone and in total for the state. The information was obtained from the [NYISO Interconnection website](#), based on information published on March 16<sup>th</sup>, and representing the Queue as of February 28<sup>th</sup>. Note that 15 projects were added and 18 were withdrawn during the month of February. Results are tabulated below and shown graphically on the following page.

| Total Project MW in NYISO Queue by Zone |         |        |        |
|---|---------|--------|--------|
| Zone                                    | Storage | Solar  | Wind   |
| A                                       | 1,060   | 2,475  | 765    |
| B                                       | 51      | 1,085  | 200    |
| C                                       | 761     | 3,422  | 843    |
| D                                       | 20      | 727    | 847    |
| E                                       | 25      | 2,939  | 1,151  |
| F                                       | 20      | 1,485  |        |
| G                                       | 721     | 250    |        |
| H                                       | 1,380   |        |        |
| I                                       | 400     |        |        |
| J                                       | 2,936   |        | 8,848  |
| K                                       | 4,153   | 59     | 17,089 |
| State                                   | 11,528  | 12,441 | 29,743 |

| Total Count of Projects in NYISO Queue by Zone |         |       |      |
|--|---------|-------|------|
| Zone   | Storage | Solar | Wind |
| A  | 10      | 13    | 4    |
| B  | 4       | 13    | 1    |
| C  | 8       | 35    | 5    |
| D  | 1       | 6     | 4    |
| E  | 2       | 34    | 9    |
| F  | 1       | 40    |      |
| G  | 8       | 9     |      |
| H  | 3       |       |      |
| I  | 2       |       |      |
| J  | 21      |       | 8    |
| K  | 37      | 2     | 17   |
| State  | 97      | 152   | 48   |

| Average Size of Projects in NYISO Queue by Zone |         |       |      |
|---|---------|-------|------|
| Zone  | Storage | Solar | Wind |
| A   | 106     | 190   | 191  |
| B   | 13      | 83    | 200  |
| C   | 95      | 98    | 169  |
| D   | 20      | 121   | 212  |
| E   | 13      | 86    | 128  |
| F   | 20      | 37    |      |
| G   | 90      | 28    |      |
| H   | 460     |       |      |
| I   | 200     |       |      |
| J   | 140     |       | 1106 |
| K   | 112     | 29    | 1005 |
| State   | 119     | 82    | 620  |

