

De-Carbonization / DER Report for NYSRC Executive Committee Meeting 11/9/2023

Contact: Matt Koenig (koenigm@coned.com)

The November 2023 edition of the De-Carbonization / Distributed Energy Resources (DER) Report includes the following items:

- NERC BESS Disturbance Report Emphasizes Continued Need for Industry Action, Recommendations
- NERC launches interregional Transfer Capability Study Webpage
- NYSERDA announces Ten-Point Renewable Energy Action Plan
- NY Governor’s Office: New York makes largest state investment in clean energy in U.S. history
- New York Times: International Energy Agency sees peaks in global oil, coal, and gas demand by 2030
- Snapshot of the NYISO Interconnection Queue: Storage / Solar / Wind / Co-located

NERC BESS Disturbance Report Emphasizes Continued Need for Industry Action, Provides Recommendations

NERC has [Announced](#) the joint NERC–WECC [2022 California Battery Energy Storage System Disturbances report](#), which assesses two events involving unexpected, abnormal performance of bulk power system (BPS)-connected battery energy storage systems initiated by normally cleared faults in the Western Interconnection that took place on March 9 and April 6 in 2022. The report represents ongoing efforts for NERC’s Inverter-Based Resource (IBR) Strategy ([Landing Page](#) / [Document](#)), which is dedicated to identifying and addressing challenges arising from the use of IBR’s, sharing risk mitigation techniques, and providing best practices and education. These are the first significant events involving battery energy storage facilities, highlighting the need to consider these systems in the same light as any other inverter-based resource.

Causes for the BESS abnormal responses are shown in the table below:

Table 2.1: Causes of BESS Abnormal Power Reduction									
Cause of Reduction	Plant A		Plant B		Plant C		Plant D		
	March	April	March	April	March	April	March	April	
Original Equipment Manufacturer	Power Electronics		Power Electronics		Power Electronics		Power Electronics		
Total MW Reduction	20	N/A*	Not Involved	26	73	Inconclusive due to poor metering data to support GOs claims	30	N/A*	
AC Overcurrent	X	X			X				
AC Overvoltage		X							
DC Bus Voltage Unbalance		X							
Unbalanced AC Current	X	X		X	X				
DC Overvoltage		X						X	
Half Bus DC Vmax		X							
Unknown/Misc.				X	X			X	X

Several of the newer causes of tripping are highlighted below:

- Inverter unbalanced AC current tripping was the most common cause of tripping observed in both disturbances. The inverter module can trip when an unbalance has been detected in the module output currents that are above a programmed threshold and remains for longer than a programmed time delay. As a mitigation, all GOs should check with their inverter manufacturer to ensure that inverters are not prone to unexpected, unbalanced ac current tripping during normally cleared unbalanced grid faults.
- Inverter dc bus overvoltage tripping was observed in two facilities: one while discharging and another while charging. As a mitigation, all GOs should check with their inverter manufacturer to ensure that their inverters are not prone to unexpected dc bus overvoltage tripping during normally cleared unbalanced grid faults.
- Inverter Half DC Bus Overvoltage protection is triggered when an inverter module continues to experience unstable dc bus voltage despite being stopped on dc bus overvoltage fault. As a mitigation, all GOs should check with their inverter manufacturer to ensure that their inverters are not prone to tripping on unstable dc bus voltage during normally cleared unbalanced grid faults.

Based on the findings from the two BESS events, CAISO identified that the affected facilities did not meet the performance-related requirements of their [Generator Interconnection Agreement \(GIA\)](#). Subsequently, CAISO issued notice of breach letters to affected GOs advising that the terms and conditions of Appendix H of the LGIA are not being met by their facilities. The notice highlighted the provisions related to the voltage ride-through and minimum transient data recording requirements. The letter required GOs of affected BESS facilities to develop and implement mitigation plans to eliminate the unexpected causes of tripping and make changes to recording capabilities to meet the interconnection agreement requirements.

The report provides [key findings and recommendations](#) for industry action to address potential systemic reliability risks, including:

- Battery energy storage systems may have the same systemic performance problems as solar photovoltaic resources.
- Battery energy storage system ride-through performance is not adequately assessed during the interconnection process.
- Poor commissioning practices are a significant contributor to the unreliable performance of inverter-based resources.
- NERC will conduct a model quality assessment of this event and subsequently issue an alert, as needed.
- Lack of adequate monitoring hinders performance and event analysis.

The report also includes two recommendations for Generator Owners:

- All Generator Owners should check with their inverter manufacturer to ensure that their inverters are not prone to tripping on the following causes, in addition to those previously reported, during normally cleared unbalanced grid faults:
 - Unexpected, unbalanced ac current
 - Unexpected dc bus overvoltage tripping
 - Unstable dc bus voltage
- All Generator Owners should ensure both inverter- and plant-level recording functions are configured to meet the requirements in the interconnection agreements. Additionally, Generator Owners should ensure fast logging is enabled and that meter data does not freeze on the last value when subjected to system transients during grid faults.

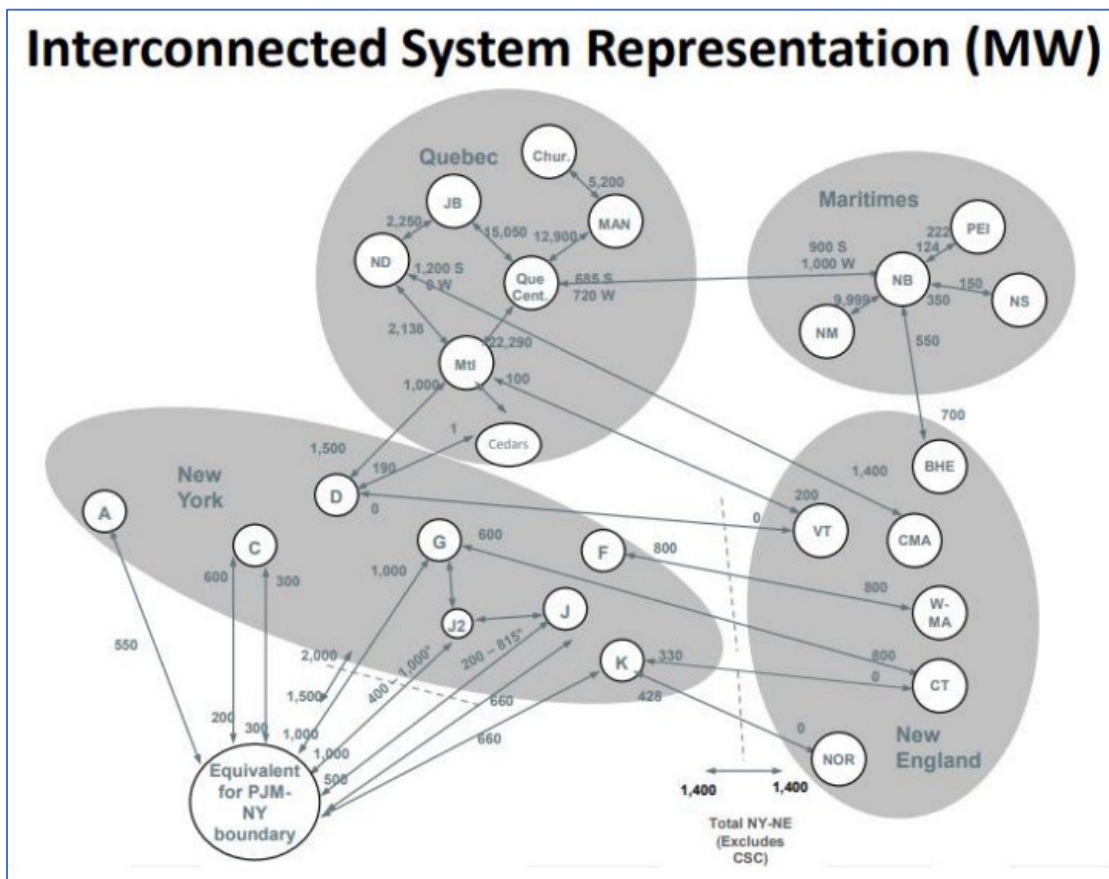
NERC's efforts in this area are a component of its [2023 work plan priorities](#). More information about NERC's inverter-based resource efforts is available in the [Inverter-Based Resource Activities Quick Reference Guide](#).

NERC Launches Interregional Transfer Capability Study Webpage

NERC has [Announced](#) a new [Interregional Transfer Capability Study \(ITCS\) web page](#) that will allow stakeholders to easily find and track project updates and resource documents, including the latest ITCS [October Quarterly Technical Update](#), [Advisory Group Scoping document](#) and [Meeting Schedule](#), among others. The web page can be found on the front page of [NERC.com](#) under the “Initiatives” tab.

The ITCS [Draft Study Framework](#) provides background information as to the scope of this effort. The purpose of this project is for NERC, in consultation with each of the six regional entities and each transmitting utility in a neighboring transmission planning region to conduct a study to determine the maximum reliable transfer of electric power between neighboring transmission planning regions, and to recommend prudent additions to improve total transfer capability between each pair of neighboring regions. This objective entails evaluating proposing policies and measures to achieve and sustain the identified transfer capability and any recommended enhancements). NERC must file with FERC by December 2, 2024

The image below shows the current modelled interconnections between regions in the Northeast:



- Quarterly Updates: To further facilitate transparency and alignment among industry; stakeholders; and federal, state, and provincial government partners, NERC will produce two progress reports each quarter, which will be shared and posted to the ITCS web page. Both have been published for October.
 - [ITCS Update](#): This document provides a compilation of information on progress made throughout the previous quarter.
 - [ITCS Technical Update](#): This document, produced by the ITCS project team, will provide a more in-depth review of technical information throughout the study’s progress.

NYSERDA Announces Ten-Point Renewable Energy Action Plan

On October 12th, Governor Hochul announced the release of a new [10-Point Action Plan](#) to expand and support the growing large-scale renewable energy industry in New York. The plan can be found on the [NYSERDA website](#), and outlines a comprehensive set of actions to expand the State's growing clean energy economy and renewable energy sector. The points are briefly described below:

1. **Announce Offshore Wind and Onshore Renewables Awards in the Near Future.** NYSERDA will announce a historic award of offshore and onshore renewable energy projects along with major supply chain investments.
2. **Expedite the execution of the Public Service Commission Order and Assessment of Renewables Portfolio.** NYSERDA will address the directives issued in the October 2023 Public Service Commission (PSC) Order. NYSERDA will be assessing the impacts on the large-scale renewables portfolio and the ability of developers to meet their contractual obligations. If a project cannot proceed as initially planned, NYSERDA remains committed to providing these projects future opportunities to contribute to New York's renewable energy goals.
3. **Launch Accelerated Competitive Procurements.** NYSERDA will launch an accelerated renewable energy procurement process for both offshore wind and onshore renewables. This aims to backfill any contracted projects that are terminated.
4. **Leverage Federal Support and Partnerships.** New York State will continue to actively engage with the Federal government to bring forward market solutions. This includes establishing a Memorandum of Understanding (MOU) with the U.S. Department of Energy Loan Programs Office to access low-cost financing for large-scale renewable projects, clean energy tax credits and Federal-State revenue-sharing.
5. **Build Transmission Infrastructure.** New York State is investing and actively planning a historic buildout of transmission infrastructure across the State. This includes \$4.4 billion in 62 local transmission projects to support clean energy integration in upstate areas; \$4.1 billion in transmission upgrades to integrate offshore wind and increase reliability for Long Island and New York City; soliciting additional solutions to meet New York City's offshore wind transmission needs; and collaborating with other states and federal agencies on interregional transmission to reduce costs.
6. **Build the Offshore Wind Supply Chain.** New York State is actively supporting the establishment and growth of a supply chain ecosystem to help the market scale, gain efficiencies, and reduce costs. The State is investing \$700 million in offshore wind supply chain infrastructure and working with other states and federal agencies to reduce costs through a shared vision for a U.S. supply chain.
7. **Build the Clean Energy Workforce.** New York State is committed to building and expanding its clean energy workforce. NYSERDA has already committed more than \$170 million for workforce development and training initiatives, prioritizing the benefits to priority populations, disadvantaged communities, and transitioning fossil fuel workers to clean energy careers.
8. **Plan for Next Phase of Offshore Wind Deployment.** New York State's Offshore Wind Master Plan 2.0 will provide a plan for the future of offshore wind development, including in deeper waters, which will allow for the expansion of the industry and ability to meet regional development targets.
9. **Engage in Active Industry Outreach and Dialogue.** New York State is actively engaging with industry stakeholders. Such outreach will increase following the PSC order through roundtable discussions to receive input in shaping our clean energy strategy.
10. **Advance Public Engagement and Outreach.** New York State is deeply committed to fostering public engagement and outreach, transparency, and collaboration. Areas of engagement include fisheries, Science and Project Developer communities, and facilitating the coexistence of the Agriculture / Solar industries.

This Action Plan serves to reinforce New York State's dedication to clean energy development, sustainability, and economic growth in order to achieve the state's Climate Act goals, including obtaining 70 percent of the State's electricity from renewable sources by 2030.

New York Makes Largest State Investment in Clean Energy in U.S. History

On October 24th, the [New York State Governor’s Office](#) announced the state’s largest investment in renewable energy in U.S. history this week, awarding contracts for three offshore wind and 22 land-based renewable energy projects totaling 6.4 gigawatts. The offshore wind projects, when in operation, will generate up to a total of 4,032 megawatts, representing approximately 12% of New York’s electricity needs, and reduce greenhouse gas emissions by 9.4 million metric tons annually.

The three new offshore wind projects are:

- Attentive Energy One (1,404 MW) developed by Total Energies, Rise Light & Power and Corio Generation. The project includes a novel fossil repurposing plan in Queens, which seeks to retire fossil fuel power generation.
- Community Offshore Wind (1,314 MW) developed by RWE Offshore Renewables and National Grid Ventures. The project includes utilization of the new Brooklyn Clean Energy Hub.
- Excelsior Wind (1,314 MW) developed by Vineyard Offshore (Copenhagen Infrastructure Partners). The project includes proposed cable route options providing energy deliverability to Long Island, leveraging the electric grid expansion provided through the Long Island Public Policy Transmission Need outcome.

The projects are anticipated to enter commercial operation in 2030. The average bill impact for customers over the life of the projects will be approximately 2.73 percent, or about \$2.93 per month.

NYSERDA is also awarding \$300 million to enable the development of two supply chain facilities including nacelle manufacturing and assembly by GE Vernova, along with blade manufacturing developed by LM Wind Power Blades USA. Both of these facilities are planned for New York’s Capital Region.

In addition, New York also announced 22 land-based clean energy awards, including 14 new solar projects, six wind repowering projects, one new wind project, and one return-to-service hydroelectric project, listed below.

	Region	Company	Activity	Type	MW	Location
Central New York						
1	Oxbow Hill Solar	Cypress Creek Renewables	New	Solar	140	Fenner, Madison County.
Finger Lakes						
2	Gravel Road Solar	Delaware River Solar	New	Solar	128	Tyre and Seneca Falls, Seneca County
3	Hatchery Solar	VC Renewables, LLC	New	Solar	20	Caledonia, Livingston County.
4	SunEast Hampton Corners Solar	Cordelio Power	New	Solar	20	Groveland, Livingston County.
5	SunEast Niagara Solar	Cordelio Power	New	Solar	20	Caledonia, Livingston County.
6	White Creek Solar, LLC	AES	New	Solar	135	York and Leicester, Livingston County
7	Hemlock Ridge Solar	AES	New	Solar	200	Barre and Shelby, Orleans County.
8	Valcour Bliss Windpark	AES	Repower	Wind	100	Eagle and Wethersfield, Wyoming County
9	Valcour Wethersfield Windpark	AES	Repower	Wind	126	Wethersfield, Wyoming County.
Mohawk Valley						
10	Dolgeville Hydro	Energy Ottawa NY Generation Ltd.	Continue	Hydro	5	Dolgeville, Herkimer County.
11	SunEast Millers Grove Solar	Cordelio Power	New	Solar	20	Schuyler, Herkimer County.
North Country						
12	North Country Wind	Terra-Gen Development	New	Wind	298	Burke and Chateaugay, Franklin County
13	Riverside Solar	AES	New	Solar	100	Lyme and Brownville, Jefferson County
14	SunEast Morris Solar	Cordelio Power	New	Solar	20	Gouverneur, St. Lawrence County.
15	Valcour Altona Windpark	AES	Repower	Wind	98	Altona, Clinton County.
16	Valcour Chateaugay Windpark	AES	Repower	Wind	106	Chateaugay, Franklin County.
17	Valcour Clinton Windpark	AES	Repower	Wind	100	Clinton, Clinton County.
18	Valcour Ellenburg Windpark	AES	Repower	Wind	81	Ellenburg, Clinton County.
Southern Tier						
19	Clear View Solar	VC Renewables, LLC	New	Solar	20	Cohocton, Steuben County.
20	Stonewall Solar	Nexamp	New	Solar + 20 ES	145	Meredith, Delaware County.
Western New York						
21	Somerset Solar	AES	New	Solar	125	Somerset, Niagara County.
Outside of New York						
22	Mineral Basin Solar	Swift Current Energy	New	Solar	402	Girard and Goshen, PA
				Total State	2409	

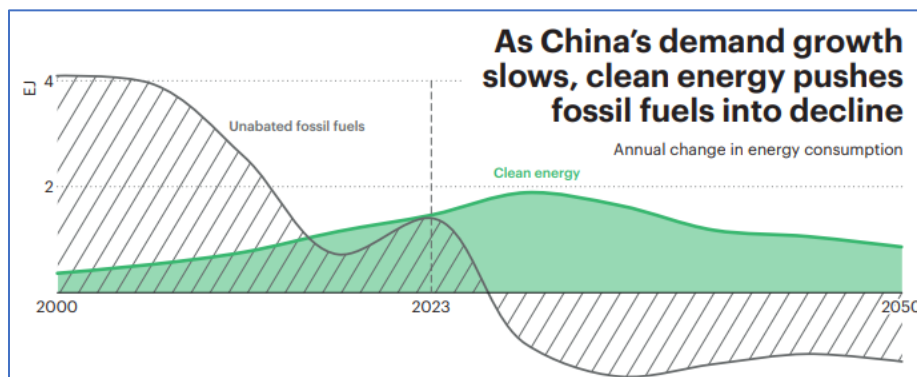
NY Times: International Energy Agency Sees Peaks in Global Oil, Coal, and Gas Demand by 2030

This [Article](#) recounts that the world's leading energy agency now predicts that global demand for oil, natural gas and coal will peak by 2030, partly driven by policies that countries have already adopted to promote cleaner forms of energy and transportation. The [International Energy Agency](#) said in its [World Energy Outlook, a 354-page Report](#) on global energy trends published Tuesday. To do that, emissions from coal, oil and natural gas would need to fall to nearly zero. But a sweeping transformation of the global energy landscape is underway.

The agency's prediction of a peak in fossil fuel demand by 2030 has created controversy. After Mr. Birol first suggested the possibility in September, the oil cartel OPEC warned that such forecasts were highly uncertain and could lead countries and companies to underinvest in oil and gas drilling. If demand for fossil fuels did not fall as expected, the cartel said, the lack of supply could lead to "energy chaos."

OPEC issued its own outlook last year projecting that global demand for oil and natural gas would keep rising until 2045. Predictions about global energy trends are notoriously difficult, and the International Energy Agency has been wrong before. In 2016, the agency suggested that China's demand for coal had peaked, but coal use later soared to new levels. On the other hand, the agency [has previously underestimated](#) the rapid growth of cleaner technologies like solar power.

This year's report says China will play an outsize role in determining the world's energy future. The country accounts for half the world's coal use and has driven two-thirds of the growth in global oil demand over the past decade. But China's appetite for steel and cement could be leveling off, the report said, which would put a dent in fossil fuel demand (See below).



The agency's forecasts could change if countries altered their energy policies. For example, electric cars are currently projected to make up 50 percent of new sales in the United States by 2030, thanks to tax breaks in the Inflation Reduction Act. But several Republican presidential candidates, including former President Donald J. Trump, want to end those incentives.

High oil and natural gas prices of late, driven by Russia's invasion of Ukraine and renewed conflict in the Middle East, could also lead countries to use fewer fossil fuels. During past oil crises, such as in the 1970s, people had few alternatives and had to suffer through price spikes, said Amy Myers Jaffe, an energy expert at the New York University School of Professional Studies. But today is different.

Even if fossil fuel demand peaks this decade, the world will still need much more stringent climate policies to prevent global warming from surpassing 1.5 degrees Celsius, or 2.7 degrees Fahrenheit, a goal many world leaders have endorsed in order to lessen the risk of catastrophic climate disruptions. In a report last month, the International Energy Agency outlined some possibilities, including bans on gasoline-powered cars and further investments in electric grids and technologies such as nuclear power or clean hydrogen.

Interconnection Queue: Monthly Snapshot – Storage / Solar / Wind / CSRs (Co-located Storage)

The intent is to track the growth of Energy Storage, Wind, Solar and Co-Located Storage (Solar and Wind) 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 October 20th, and representing the Interconnection Queue as of September 30th. Note that 16 projects were added, and 8 were withdrawn during the month of September.

Total Count of Projects in NYISO Queue by Zone					
Zone	Co-Solar	Co-Wind	Storage	Solar	Wind
A	5		12	14	4
B	3		3	14	1
C	12		17	42	9
D	1		1	8	2
E	13		15	35	7
F	5		14	38	
G			32	9	
H			6		
I			2		
J		1	34		31
K		1	64	1	24
Grand Total	39	2	200	161	78

Total Project Size (MW) in NYISO Queue by Zone					
Zone	Co-Solar	Co-Wind	Storage	Solar	Wind
A	1,092		1,298	1,908	618
B	187		520	2,125	200
C	1,591		1,946	4,672	1,001
D	20		200	1,202	747
E	1,492		1,684	3,306	541
F	380		4,522	1,801	
G			4,608	243	
H			2,416		
I			900		
J		1,400	6,960		34,731
K		1,400	7,981	36	24,614
Grand Total	4,762	2,800	33,034	15,291	62,452

Average Size (MW) of Projects in NYISO Queue by Zone					
Zone	Co-Solar	Co-Wind	Storage	Solar	Wind
A	218		108	136	154
B	62		173	152	200
C	133		114	111	111
D	20		200	150	374
E	115		112	94	77
F	76		323	47	
G			144	27	
H			403		
I			450		
J		1,400	205		1,120
K		1,400	125	36	1,026
Grand Total	122	1,400	165	95	801

