Attachment #8.1
Return to Agenda

De-Carbonization / DER Report for NYSRC Executive Committee Meeting 6/13/2025

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The June 2025 edition of the De-Carbonization / Distributed Energy Resources (DER) Report includes the following items:

- NERC: Aggregated Report on Level 2 Recommendation to Industry: Findings from Inverter-Based Resource Model Quality Deficiencies Alert April 1, 2025
- Canary Media: PG&E defers restart of huge grid battery next to Moss Landing fire site
- Utility Dive: A Fraction of proposed data centers will get built. Utilities are wising up
- S&P Global: New York regulators approve $5 billion for electrification, efficiency programs
- Snapshots of the NYISO Interconnection Queue and Cluster Queue: Storage / Solar / Wind / Co-located

NERC: Aggregated Report on Level 2 Recommendation to Industry:

This Report summarizes the findings from Inverter-Based Resource Model Quality Deficiencies Alert April 1, 2025 In June 2024, NERC specifically requested responses from Generator Owners (GO), Transmission Planners (TP), and Planning Coordinators (PC). The alert was posted publicly on the NERC website and required GOs who own bulk power system (BPS)-connected inverter-based resources (IBR) to provide a Data Submission Worksheet. The alert had an initial submission deadline of September 2, 2024, and due to a low response rate, NERC extended the deadline to November 1, 2024. This resulted in NERC receiving sufficient responses to perform an analysis. Based on the findings from this alert and the previous alert on IBR performance, a Level 3 alert with Essential Actions is needed to address the deficiencies identified in this Level 2 Alert.

NERC analyzed 10 large-scale disturbances on the BPS that involved widespread and unexpected reduction in output of IBRs since 2016. These 10 disturbances totaled nearly 15,000 MW of unexpected IBR-output reduction, with approximately 10,000 MW of reduction occurring from disturbances between 2020 and 2024. The increase of IBR-related events coincides with an increase in IBR penetration across the BPS. The contributing causes to these events are poor modeling and poor study practices to assess the performance of these resources.

Performing dynamic simulations of the BPS enables TPs, in cooperation with GOs, to mitigate reliability risks before they occur. Accurate dynamic models of resources are critical to this analysis and to BPS reliability. Several of NERC's published disturbance reports included analyses of the models for the affected facilities, which revealed systemic dynamic model inaccuracies. These analyses also revealed that the models provided for conducting generator interconnection studies, or other system studies, failed to accurately reflect the dynamic performance of the plants. Accurate modeling of IBR facilities is critical in performing system studies to assess the reliable operation of the BPS.

The Inverter-Based Resource Model Quality Deficiencies Alert was distributed to all registered GOs of IBRs as modeling deficiencies, best practices, and recommendations are applicable across all IBR technologies. NERC encourages owners and operators of non-BES and BPS-connected IBR to also review the alert.

The significantly higher complexity and software-based nature of IBR modeling, when compared to synchronous machine modeling, necessitates an improvement in the fundamental principles of dynamic modeling to accurately capture the performance of IBR plants. This alert was also distributed to TPs and PCs to provide recommendations that can be implemented to strengthen current modeling practices. TPs and PCs were required to answer a set of questions in the alert system; however, only GOs of IBR were required to complete the Worksheet.

The Report contained eight recommendations, summarized below:

1. All models should be detailed and accurate representations of expected or as-built facilities across all expected operational conditions. Changes to any model parameters, including plant controller parameters that change the performance of the IBR plant, should be studied to ensure BPS reliability before implementation.
2. Industry-approved standard library positive sequence phasor domain (PSPD) models are sufficient for use in Interconnection-wide base-case creation.
3. Equipment-specific models should be used for detailed reliability studies (e.g., during generation interconnection studies and local reliability studies). These equipment-specific models should be considered acceptable by a TP or PC if specific usability requirements are met.
4. Establish clear, consistent, sufficiently detailed, and comprehensive modeling requirements that include standard library, PSPD, and Electromagnetic Transient (EMT) models and are aligned with the recommendations in this alert and with the FERC Large Generator Interconnection Procedures (LGIP) and Small Generator Interconnection Procedures (SGIP). The requirements must include model quality checks and be updated as necessary (e.g., after an event where model quality is noted as an issue.)
5. TPs and PCs should require the following for each generator currently connected to the BPS to ensure that sufficient models and supporting documentation are provided. TPs or PCs should provide models and model updates to the Reliability Coordinator (RC), Transmission Operator (TOP), Balancing Authority (BA), and any affected stakeholders. For generating resources seeking interconnection to the BPS, model submission requirements should align with the FERC LGIP and SGIP.
6. Coordinate with inverter manufacturers, plant controller manufacturers, TPs, and PCs to meet all modeling requirements established by the TP and PC and provide adequate proof of conformance.
7. Maintain an accurate and representative model throughout the lifecycle of the project.
8. All applicable recommendations in the alert should be implemented so an updated set (e.g., standard library, equipment specific PSPD, and EMT) of dynamic models is included in the next applicable TP and PC annual model updates.

Like the previous Level 2 Alert, feedback from industry (GOs, consultants, Original Equipment Manufacturers (OEMs), etc.) indicated that GOs do not keep the requested data and information readily available and up-to-date and are reliant on OEM and consultant support. Further, multiple major GOs expressed significant time commitments and difficulties in obtaining fundamental site information, such as basic plant controller settings.

Key findings include:

- Many GOs indicated that they did not have the requested data readily available. This hampers future NERC event analyses and raises questions on the quality of the data submitted by GOs for study in the planning processes. This supports the findings from the previous Level 2 Alert: Inverter-Based Resource Performance Issues2 and is indicative of a lack of knowledge of how IBR plants operate on the BPS and a failure to improve data acquisition and management processes.
- The systemic deficiencies observed in this alert analysis indicate that the interconnection process requirements are insufficient. Enhancing requirements and study procedures, to be recommended in an upcoming level 3 alert, could significantly mitigate these deficiencies.
- Approximately two-thirds (66%) of the protection settings used by the respondent GOs are not set to provide the maximum capability of the inverters. This creates a significant artificial limitation of overall ride-through capability of BPS-connected solar photovoltaic (PV) facilities.
- Approximately 20% of the facilities use a “triangle” (0.95 power factor (PF) limit) facility capability; therefore, a significant amount of underused reactive capability exists on the BPS.
- Inconsistency in dynamic model data has been observed across different sources – GOs reported as left settings, reported modeling data, and submitted dynamic model data files (e.g., .dyd and .dyr files), and dynamic model data from interconnection-wide cases. TPs and PCs can address the inconsistency by enhancing model requirements and quality-check processes for existing and new models.

Canary Media: PG&E defers restart of huge grid battery next to Moss Landing fire site

This Article describes how one of the largest grid batteries in California almost resumed operations on June 2nd, following the cataclysmic Moss Landing fire in January. The San Francisco Bay Area's power grid used to draw on two battery storage plants in the quiet seaside town of Moss Landing. Texas-based power company Vistra built the nation's largest standalone grid battery on the grounds of an old gas power plant there, and utility Pacific Gas and Electric Co. built and owns the Elkhorn project next door.

A roaring fire engulfed Vistra's historic turbine hall in January, wrecking rows of lithium-ion batteries that delivered 300 megawatts of instantaneous grid power. That site is still in shambles. PG&E's battery plant suffered far less disruption: Hot ash blew over the fence line from Vistra's property, posing an environmental hazard and potentially clogging batteries' thermal management systems. After several months of remediation, cleaning, and testing, PG&E attempted to flip the switch Sunday to reconnect Elkhorn to the grid. But the utility ran into a problem.

"On June 1st, we began methodically returning the batteries to service as a part of the planned return to service, and in the process a clamp failure and coolant leak was identified in one of the 256 megapacks onsite," the company said in a statement. "We are working to remediate the issue and out of an abundance of caution we are deferring the facility's return to service until a later date."

PG&E has not released any more details on how long it will take to restore the facility. It noted that the testing and discovery of the malfunctioning unit led to no injuries, smoke, or fire. If it had been successful, it would have restored 182.5 megawatts/730 megawatt-hours of storage capacity into the power-hungry Silicon Valley grid corridor right before the region's first major heat wave of the summer.

Indeed, California has been building grid batteries at a record pace, to store the state's nation-leading solar generation and deliver it during crucial hours, like after sunset. Solar energy is displacing some gas-fired power generation in the state. California's battery fleet passed 15.7 gigawatts installed per a May tally, which Gov. Gavin Newsom's office touted as "an unprecedented milestone." The governor, a Democrat, did not specify why the 15.7-GW threshold merits particular attention, but it does mean California has added more than 5 GW since it crossed the 10-GW mark a year prior.

The state's battery buildout is plowing ahead. But Vistra's fiery failure sparked deep community concerns about battery safety in California and beyond, as Moss Landing residents were forced to evacuate for several days and plumes of smoke loomed over surrounding estuaries and farmlands. In April, Vistra rescinded an application to build a 600-MW battery in Morro Bay, two hours down the coast from Moss Landing, following significant local resistance that intensified after the January fire.

The reset at Elkhorn has rekindled concerns among community leaders who are still grappling with the fallout from the largest-ever battery fire in the U.S., and quite possibly the world. The Monterey County Board of Supervisors had asked to keep both battery plants offline until the Vistra investigation was completed and acted upon.

Crucially, PG&E's battery layout, completed in 2022, mitigates the hazards that took out the neighboring Vistra plant, which was completed two years earlier. Officials have not yet pinpointed the cause of Vistra's fire, but it became so destructive because it spread through the densely packed rows of batteries in the old turbine hall, igniting more fuel as it grew. By contrast, PG&E's Elkhorn plant spans 256 individual Tesla Megapack containers spaced over the property. That industry-wide preference for separate, containerized systems doesn't eliminate the chance of battery fires, but it does limit the potential severity. One container might burn, but the fire can't reach all the other batteries. A fire could knock a facility offline temporarily, but it would only eliminate a small percentage of its capacity, Murtishaw said. That stands in contrast to Moss Landing's failure, or the all-or-nothing issues that can occur when a gas-burning turbine malfunctions.

That compartmentalization strategy worked out when Elkhorn suffered its own battery fire in 2022 — the result of water seeping into a unit through an improperly installed roof, Gabbard said. The single unit burned in a contained fashion and did not spread to any other batteries. PG&E restarted the facility three months later, after implementing recommendations from an independent investigation into the cause.

When Vistra's plant burned up in January, the Elkhorn cameras spotted it and automatically severed the connection to the grid, halting the flow of high-voltage power out of the site. PG&E also made the air quality data available to emergency response teams. The utility then kept Elkhorn offline for the subsequent months to allow for environmental remediation of the soot to keep it out of local waterways, Gabbard said. Workers also cleaned the Megapacks "outside and inside," he noted. The main concern was that the ash could have intruded into the systems that cool batteries during operations. Staff pressure-washed all those components and have tested their functionality to get the site ready for operations.

Many more batteries on the horizon

Another 10 gigawatts of storage are already under contract for California's regulated utilities and community choice aggregators over the next four years, Murtishaw said. That would put the state over 25 gigawatts, well on its way to the current goal of 52 gigawatts by 2045, stemming from the state's clean energy law SB 100.
To achieve that goal, the Moss Landing calamity needs to remain an outlier event. There's good reason to believe that will be the case. For one thing, the industry has all but abandoned Vistra's strategy of packing huge amounts of batteries into a single building. California now has 214 grid-scale batteries, and only about 10 of them reside in a building, Murtishaw noted. Those are subject to inspection by the California Public Utilities Commission under a recently expanded authority, he added; in the meantime, owners have stepped up safety measures in response to the Moss Landing news.

Small-scale batteries in homes and businesses also count for California's top-line storage goal. They depend on the same core battery technologies as the large-scale storage projects, but as mass-produced consumer items, they go through a different gauntlet of tests before they reach customers.

Utility Dive: A Fraction of proposed data centers will get built. Utilities are wising up

This [Article] describes how speculative interconnection requests could be as high as five to 10 times more than the number of actual data centers, while the scale of the problem remains elusive. The U.S. grid is flooded with data center proposals that will never get built. That's making it much more difficult for utilities and grid operators to plan for the future.

An Amazon cloud data center under construction in Aldie, Virginia on Feb. 10, 2024. Experts say developers are hedging their bets by submitting more interconnection requests than there are data centers.

Even relatively short-term data center load growth forecasts are all over the map. Last year, RAND Corporation's "upper confidence" forecast projected 347 GW of AI-sector power consumption by 2030. But Schneider Electric called that prediction "extreme" in a whitepaper on AI's potential grid impacts last month, which cited more down-to-earth forecasts — under 100 GW — from other reputable observers. Schneider's own 2030 AI power demand scenarios range from 16.5 GW to 65.3 GW, with 33.8 GW the optimal outcome under a sustainable AI framework that balances AI growth with grid stability.

The wild divergence in near-term AI power demand forecasts hints at fundamental challenges facing utilities, grid operators and power system regulators today: speculative load interconnection requests, or what Bianca Giacobone of Latitude Media in March called "phantom data centers." Experts like Atkinson advise power system stakeholders to take utility forecasts, like Exelon's expectation for 11 GW of "high-probability" data center load over 10 years, with a grain of salt.

A 2018 Lawrence Berkeley National Laboratory study that compared load forecasts and actual growth for 12 Western U.S. utilities in the mid-2000s and found most overestimated future demand. But experts say it's very difficult for utilities to tell in advance which data center interconnection requests will pan out, or how much potential load to discount in the aggregate. This is a problem because, as Giacobone noted, excess requests sap utilities' limited study resources, cause delays for others in the interconnection queue and distort long-range resource planning, raising the risk of costly system overbuilding.

Utilities are trying a few tactics to mitigate the risk. Some have rolled out standardized large-load interconnection processes. Others are asking data center developers for bigger financial commitments upfront. In some cases, utilities have asked state policymakers for help. The phantom load problem is, in part, a problem of transparency. Loath to tip off competitors or local NIMBYs, data center developers and their agents conceal land acquisitions and early development activities behind vaguely-named LLCs and non-disclosure agreements. Developers relentlessly winnow early-stage projects, but not to the point that every publicly-announced proposal is a done deal, Atkinson said. Microsoft, for example, abandoned up to 2 GW of data center capacity reservations since January, while Tract killed a 30-building Phoenix-area proposal last year amid local opposition.

Even seasoned data center customers like Microsoft, Meta, Amazon, and Google propose several times more projects than they're likely to need due to uncertainty around power availability and permitting at any given site. Less sophisticated developers abandon proposed projects at an even higher rate. Accurately assessing future data center power demand could get harder in the near future as lengthy waits for grid interconnection push developers and operators toward behind-the-meter primary power generation sources.

Elon Musk's Memphis-area xAI hub, where its Grok model trains, runs 35 gas turbines behind the meter, according to a lawsuit filed in April by an environmental group. Energy Secretary Chris Wright's former company, Liberty Energy, could eventually deliver 1 GW of off-grid gas-fired generation to data centers and other large industrial loads at a planned business park near Pittsburgh. Data center customers account for about a third of gas turbine manufacturer GE Vernova's 21-GW reservation pipeline, CEO Scott Strazik said in April.

Great River Energy shares its home state with investor-owned utilities like Xcel Energy. Together, Xcel and Great River Energy member cooperatives near the Minneapolis-St. Paul metro area have drawn proposals for at least 11 data center campuses since 2020, including one each from Amazon, Microsoft, and Meta and three 500-MW schemes from Tract. Some requests could be duplicates, but there's no good way to tell which. Of the 11 proposals in or near its territory, only Meta's had begun construction as of earlier this year.

Some load-serving entities are trying to keep data center power demand expectations in check, according to the Electric Power Research Institute. Of 25 large utilities EPRI surveyed in September 2024, 48% expected data centers to account for at least 10% of peak load by 2030, while 26% expected double that share. But the EPRI respondents were generally skeptical that all proposed data center load — or even close to all — would materialize. Of the 10 utilities that said aggregate data center requests accounted for 50% or more of present peak load, none expected an actual five-year share above 35% of peak load. That included respondents with the highest proportion of data center requests.

Utilities take different approaches to derating proposed data center loads, or assuming that they would use less than their proposed nameplate capacity, EPRI found. About 30% of respondents took proposed loads at face value but assumed they would ramp over time. Another 30% derated loads based on apparent project maturity, using benchmarks such as public announcements, land acquisitions, permitting progress, company maturity and signed load-serving agreements.

Former Federal Energy Regulatory Commissioner Allison Clements and former Meta Director of Energy Strategy Peter Freed, in a February op-ed for Utility Dive, argued for a standardized process across the country that could reduce speculative data center requests and shorten interconnection wait times. The process proposed by Clements and Freed could involve standardized interconnection queues across utilities within the same planning region and anonymized visibility into queued projects' attributes and status. It could also require developers to meet commercial readiness tests, pay phased fees that increase as projects progress and include a mechanism for removing nonviable projects from the queue.

But even that may not be enough. Data center developers are adept at playing utilities off one another to manufacture price elasticity, said Karl Rábago, principal at Rábago Energy and a former commissioner at the Texas Public Utility Commission. "The phantom load problem arises because the cost of getting in a queue is lower than the weighted likelihood that they'll want to use their position," Rábago said. "When it's cheaper to buy a queue position than not to use your queue position, you'll buy queue positions all day long." He was also skeptical of some state legislative efforts to address the issue.

Recent moves by three utilities in Virginia, the country's biggest data center market, hint at a possible path forward. This year, Dominion Energy, Appalachian Power, and Rappahannock Electric Cooperative all proposed new large-load rate classes that would apply to data centers. Dominion's and Appalachian Power would require data centers to pay at least 60% and 80% of contracted demand, insulating existing ratepayers, according to the Virginia Mercury. Member-owned Rappahannock's proposal would require new data centers to put up collateral, cover some infrastructure upgrades, pay up to 100% of contracted load and deal directly with special-purpose subsidiaries to protect existing customers.

New York regulators approve $5 billion for electrification, efficiency programs
This S&P Global Article provides details regarding New York state regulators authorized investor-owned utilities and the New York State Energy Research and Development Authority to invest approximately $5 billion in energy efficiency programs over the next five years.

The funds are designed to accelerate weatherization, energy efficiency and electrification through the adoption of heat pumps, Chris Coll, project director for the New York Department of Public Service, said May 15 during a state Public Service Commission meeting.

"Energy efficiency is a go-to resource, is the first step to decarbonizing the buildings sector and will drive longer-term energy burden reductions for lower-income New Yorkers," PSC Chair Rory Christian said in a statement. "For these reasons, we need to continue to aggressively pursue this solution."

The order allocates $1.57 billion in energy efficiency funds to electrify and weatherize low- to moderate-income customers and $3.29 billion for non-low- to moderate-income customers. The state expects the programs to save enough energy to power up to 400,000 homes.

"By reducing the amount of energy needed to heat and cool a home, and run appliances, weatherization and energy efficiency can lower total system costs for all ratepayers and serve as important resources to the electric grid and natural gas system," the order said.

The utilities administering the electrification funds include subsidiaries of Consolidated Edison and National Grid. Alongside the utilities, the PSC approved a $500 million budget for the New York State Energy Research and Development Authority to provide services such as workforce development and community engagement associated with the energy efficiency efforts.

"Energy efficiency either directly enables or enhances many other efforts underway, particularly those related to electrification," Christian said. Collectively, the electric utilities proposed to spend an average of 67% of their non-low-income budgets on building electrification efforts, according to the order (14-M-0094). Gas utilities proposed to spend a collective average of 61% of their non-low-income budgets on weatherization projects.

The regulators directed the utilities to file a preliminary building electrification and energy efficiency plan for non-low-income customers within 60 days of the order. The program budgets will be effective Jan. 1, 2026.

In the order, the PSC rejected a proposal from Con Edison to launch a $115 million steam energy efficiency program, arguing that the use of ratepayer funds on the steam efficiency program is not warranted.

The regulators repurposed $360 million from the NY-Sun solar incentive program to cover nearly 24% of NYSERDA's energy efficiency and building electrification portfolio during the program's timeframe. In April, the New York PSC announced it would be reinvesting the surplus funds from the solar installation initiative after the program hit its 10-GW goal under budget.

The PSC also reduced the cost of the electrification program for ratepayers by $340 million through the use of existing cash balances for 2025 and 2026.

The order comes after the commission directed the state's major utilities and NYSERDA to begin crafting energy efficiency and electrification proposals in July 2023, as part of the state's climate goals. The state has already advanced its electrification push through a statewide gas ban in new construction that Gov. Kathy Hochul signed into law in May 2023.

New York aims to produce 70% of its electricity from renewable sources by 2030, produce 100% carbon-free electricity by 2040 and achieve net-zero greenhouse gas emissions economywide by 2050.

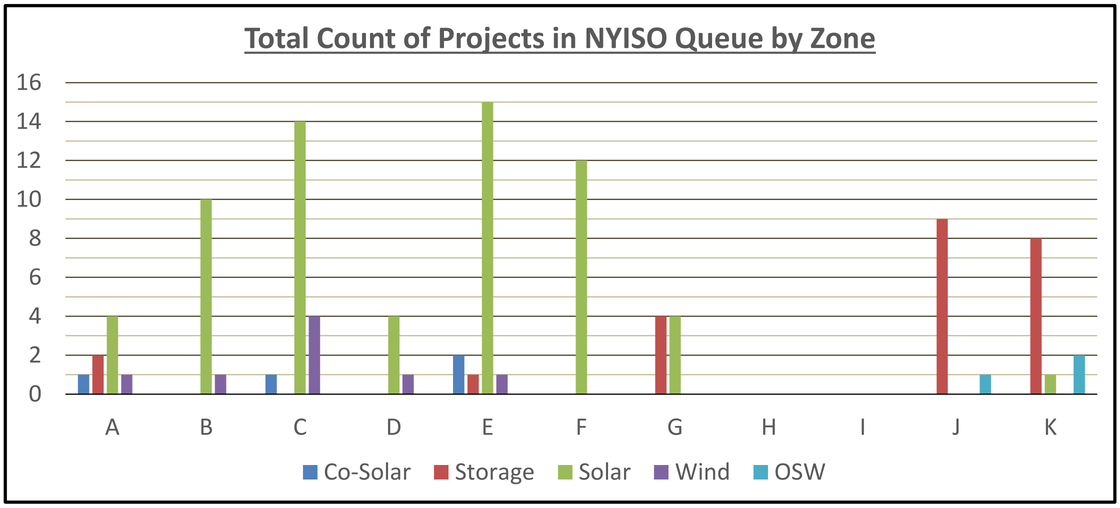
Interconnection Queue: Monthly Snapshot – Storage / Solar / Wind / CSRs (Co-located Storage)

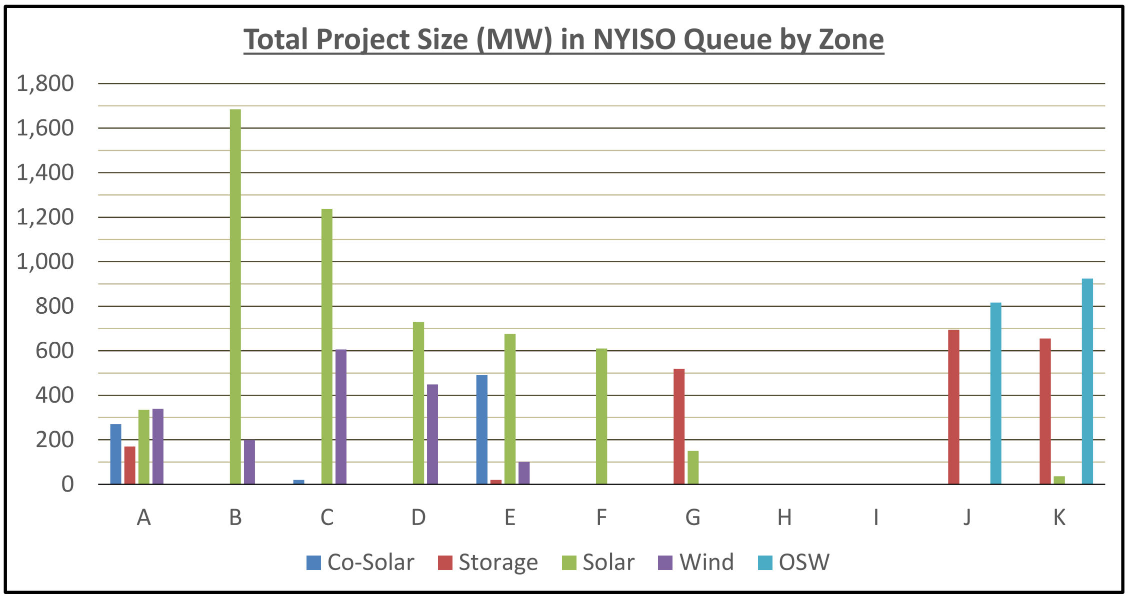
The intent is to track the growth of Co-Located Solar / Storage, Energy Storage, Solar, Wind, and Offshore Wind (OSW) projects in the NYISO Interconnection Queue, looking to identify trends and patterns by zone and in total for the state. The information was obtained from the NYISO Interconnection Website, based on information published on May 20th, and representing the Interconnection Queue as of April 30th. Note that one project was added, and 3 were withdrawn during the month of April.

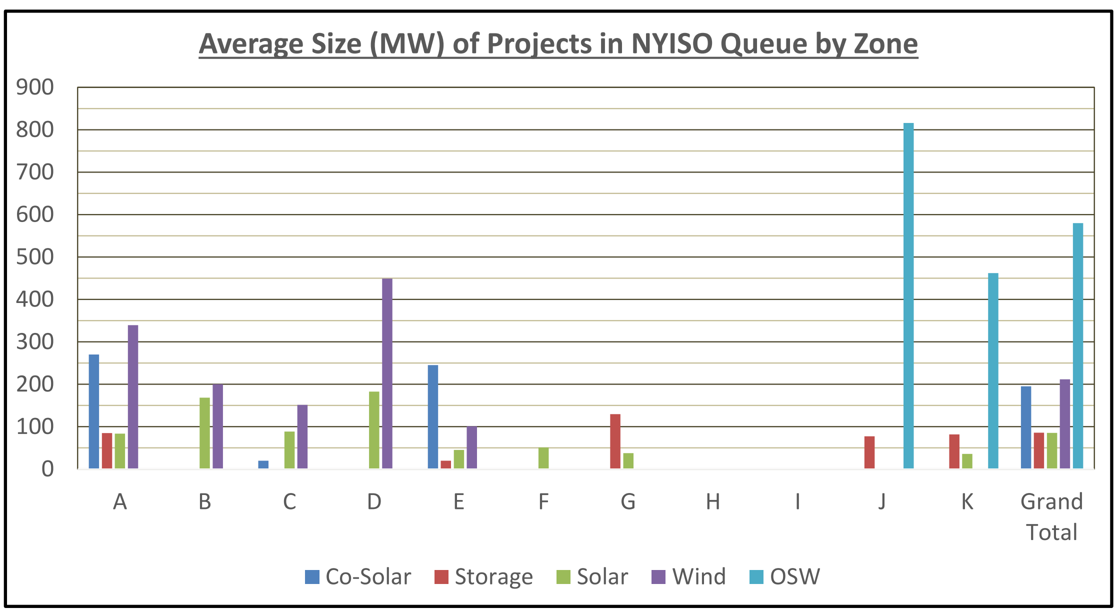
Total Count of Projects in NYISO Queue by Zone					
Zone	**Co-Solar**	**Storage**	**Solar**	**Wind**	**OSW**
A	1	2	4	1	
B			10	1	
C	1		14	4	
D			4	1	
E	2	1	15	1	
F			12		
G		4	4		
H					
I					
J		9			1
K		8	1		2
Grand Total	4	24	64	8	3

Total Project Size (MW) in NYISO Queue by Zone					
Zone	**Co-Solar**	**Storage**	**Solar**	**Wind**	**OSW**
A	270	170	335	339	
B			1,685	200	
C	20		1,238	606	
D			730	449	
E	490	20	676	101	
F			611		
G		519	150		
H					
I					
J		695			816
K		655	36		924
Grand Total	780	2,059	5,461	1,695	1,740

Average Size (MW) of Projects in NYISO Queue by Zone					
Zone	**Co-Solar**	**Storage**	**Solar**	**Wind**	**OSW**
A	270	85	84	339	
B			169	200	
C	20		88	151	
D			183	449	
E	245	20	45	101	
F			51		
G		130	38		
H					
I					
J		77			816
K		82	36		462
Grand Total	195	86	85	212	580


Total Count of Projects in NYISO Queue by Zone
16
14
12
10
8
6
4
2
0
A
B
C
D
E
F
G
H
I
J
K
Co-Solar
Storage
Solar
Wind
OSW


Total Project Size (MW) in NYISO Queue by Zone
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
A
B
C
D
E
F
G
H
I
J
K
Co-Solar
Storage
Solar
Wind
OSW


Average Size (MW) of Projects in NYISO Queue by Zone
900
800
700
600
500
400
300
200
100
0
A
B
C
D
E
F
G
H
I
J
K
Grand Total
Co-Solar
Storage
Solar
Wind
OSW

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

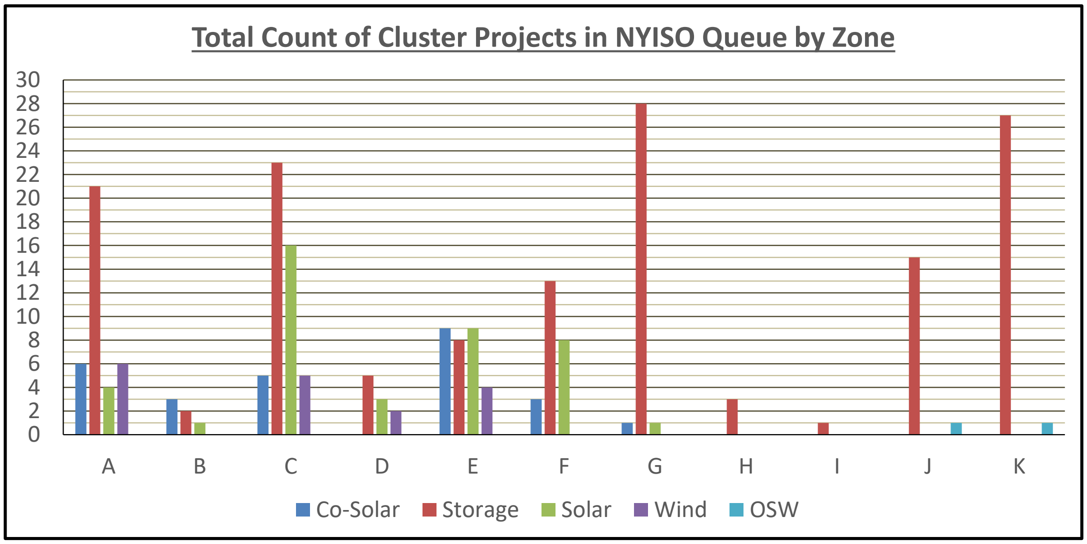
The intent is to track the growth of the Cluster-based projects, including Co-Located Solar and Wind / Storage, Energy Storage, Solar, Wind, and Offshore Wind (OSW) projects in the NYISO Interconnection Queue, looking to identify trends and patterns by zone and in total for the state. The information was obtained from the NYISO Interconnection Website, based on information published on May 20th.

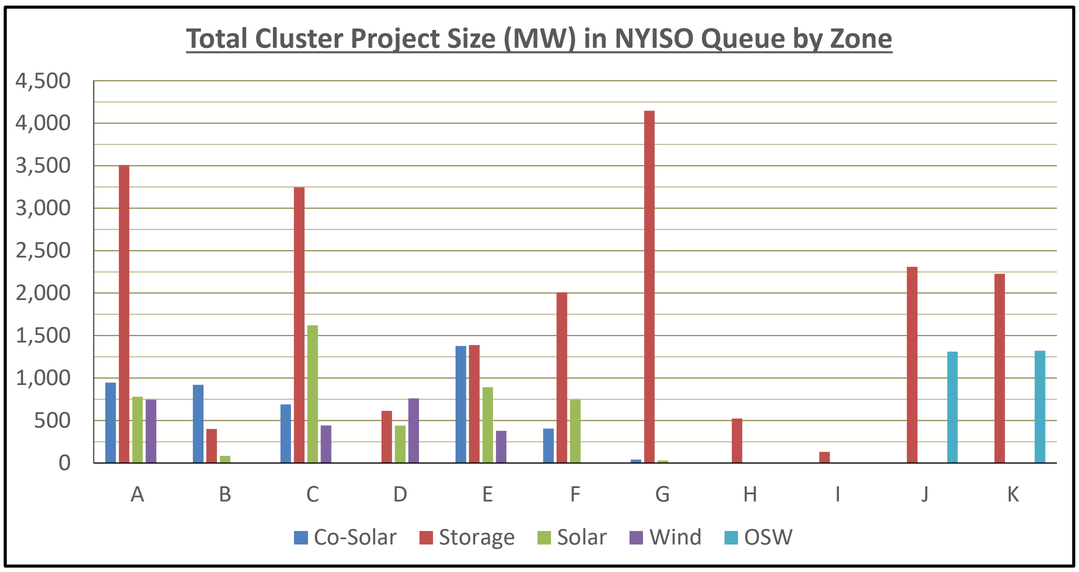
Note that within the Cluster Queue, there are currently 237 projects totaling 34,433 MW. This represents a drop of 1 project, totaling 80 MW from the previous month. A total of 139 projects representing 41,157 MW are listed as having been withdrawn to date.

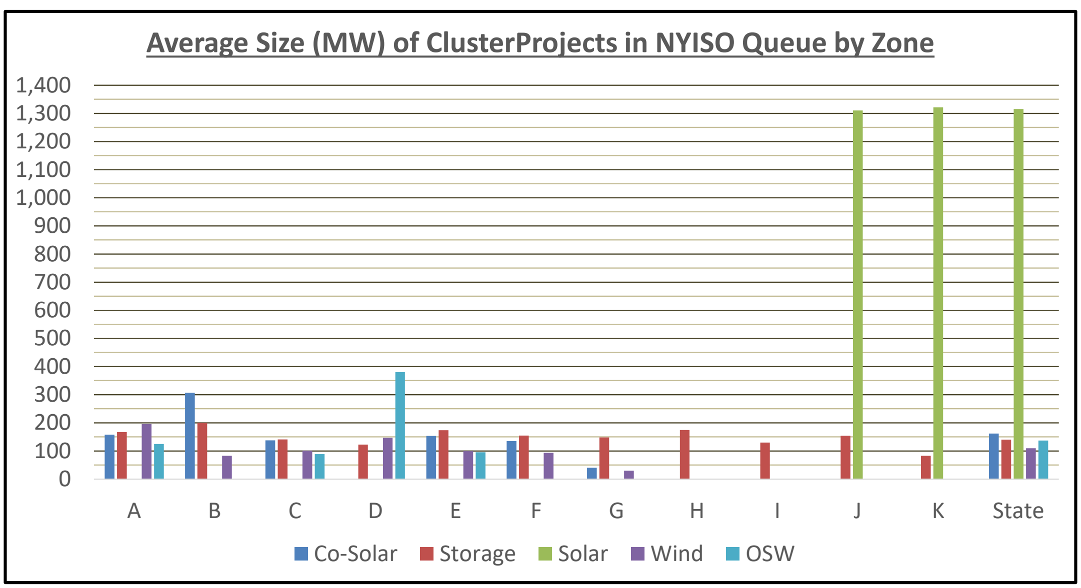
Total Count of Cluster Projects in NYISO Queue by Zone					
Zone	Co-Solar	Storage	Solar	Wind	OSW
A	6	21	4	6	
B	3	2	1		
C	5	23	16	5	
D		5	3	2	
E	9	8	9	4	
F	3	13	8		
G	1	28	1		
H		3			
I		1			
J		15			1
K		27			1
State	27	146	42	17	2

Total Cluster Project Size (MW) in NYISO Queue by Zone					
Zone	Co-Solar	Storage	Solar	Wind	OSW
A	947	3,508	780	746	
B	920	400	83		
C	690	3,245	1,621	442	
D		615	440	760	
E	1,378	1,389	893	380	
F	405	2,009	747		
G	40	4,146	30		
H		524			
I		130			
J		2,309			1,310
K		2,228			1,321
State	4,379	20,502	4,593	2,328	2,631

Average Size (MW) Cluster Projects in NYISO Queue by Zone					
Zone	Co-Solar	Storage	Solar	Wind	OSW
A	158	167		195	124
B	307	200		83	
C	138	141		101	88
D		123		147	380
E	153	174		99	95
F	135	155		93	
G	40	148		30	
H		175			
I		130			
J		154	1,310		
K		83	1,321		
State	162	140	1,316	109	137


Total Count of Cluster Projects in NYISO Queue by Zone
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
A
B
C
D
E
F
G
H
I
J
K
Co-Solar
Storage
Solar
Wind
OSW


Total Cluster Project Size (MW) in NYISO Queue by Zone
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
A
B
C
D
E
F
G
H
I
J
K
Co-Solar
Storage
Solar
Wind
OSW


Average Size (MW) of ClusterProjects in NYISO Queue by Zone
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
A
B
C
D
E
F
G
H
I
J
K
State
Co-Solar
Storage
Solar
Wind
OSW