

De-Carbonization / DER Report for NYSRC Executive Committee Meeting 8/15/2025

Contact: Matt Koenig (koenigm@coned.com)

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

- FERC Issues Final Rule on Reliability Standards for Inverter-Based Resources
- Utility Dive / Solar Power World: NYPA's updated renewables plan would double capacity to 7 GW
- NYSERDA: Draft State Energy Plan Released for Public Comment and Public Hearing Schedule Announced
- Canary Media: New York becomes first state to commit to all-electric new buildings
- Utility Dive: What's next for advanced nuclear technology?
- Snapshots of the NYISO Interconnection Queue and Cluster Queue: Storage / Solar / Wind / Co-located

FERC Issues Final Rule on Reliability Standards for Inverter-Based Resources

On July 24, [FERC issued Order No. 909](#), a Final Rule accepting [NERC's proposed Reliability Standard PRC-029-1](#) for Frequency and Voltage Protection Settings and Ride-Through for Inverter-Based Resources. The Order and Final Rule largely adopts the proposals from FERC's December 2024 Notice of Proposed Rulemaking. The standards address performance requirements for inverter-based resources (IBR), to include the requirement that inverter-based resources remain connected during voltage and frequency disturbances to avoid loss of power. The standards in Order No. 909 are a response to the broader directive issued in 2023 by FERC in Order No. 901, which instructed NERC to develop comprehensive reliability standards for IBRs over a three-year period. This standard, alongside the newly adopted NERC Standard [PRC-024-4](#) for synchronous generators, signals a shift in expected performance of IBRs to support the Bulk Power System (BPS) during grid disturbances

The Final Rule in Order No. 909 accepts NERC's proposal to define the term "Ride-through" as "the plant/facility remains connected and continues to operate through voltage or frequency system disturbances." NERC proposed, and FERC accepted, three separate requirements that require that each owner of a NERC-registered IBR must: ensure that the design and operation of each IBR meets or exceeds ride-through requirements; adhere to voltage ride-through performance criteria during system disturbances, unless a documented hardware limitation exists; and ensure that its IBR adheres to ride-through requirements during frequency excursion events and continues to exchange current and remain electrically connected. The Reliability Standard also allows each owner of an existing legacy IBR to obtain an exemption to the above requirements, subject to documentation, petition and review, and acceptance by NERC.

PRC-029-1 applies to both BES (Bulk Electric System) IBRs and registered Category 2 IBRs:

- BES IBRs: Gross nameplate capacity >75 MVA, connected at ≥100 kV
- Non-BES IBRs: Gross nameplate capacity ≥20 MVA, connected at ≥60 kV

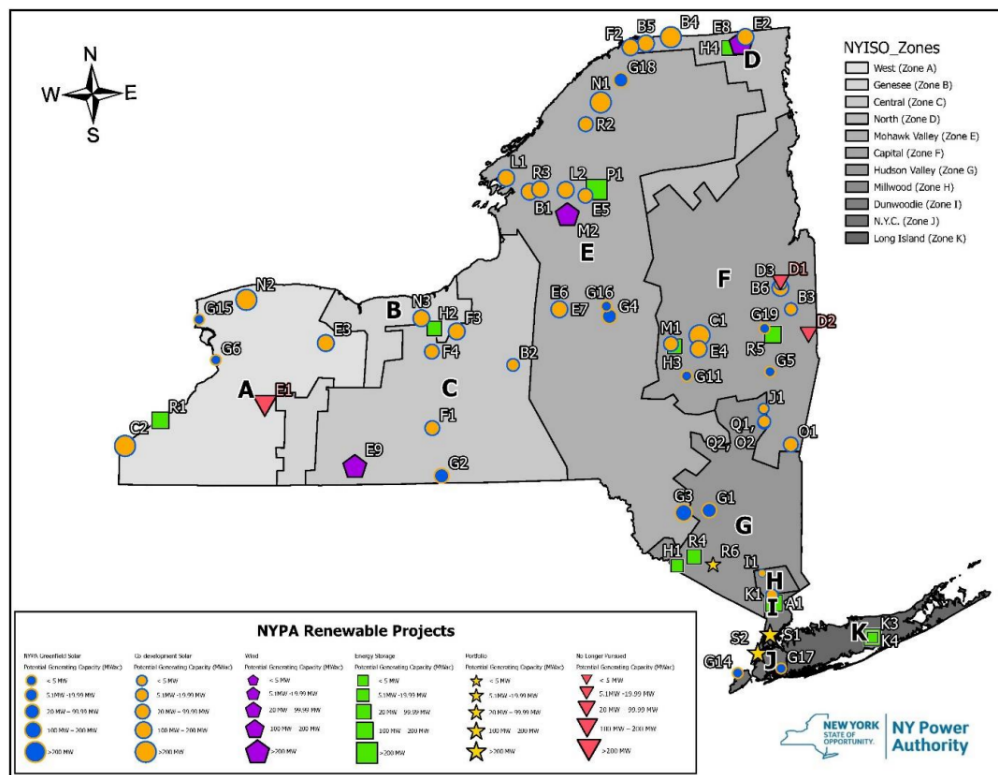
The Final Rule is effective August 28, 2025. FERC also directed NERC, within 12 months of the effective date, to submit a modification expanding the list of acceptable types of evidence of a hardware limitation that prevents the IBR from meeting the ride-through criteria. NERC also must submit an informational filing 18 months after the conclusion of the exemption request period that assesses the reliability impact of the exemptions to Requirement R4.

Additional information can be found here: [Elevate Energy: Navigating NERC PRC-029-1: A Field Guide for Inverter-Based Resource Owners](#)

Utility Dive / Solar Power World: NYPA's updated renewables plan would more than double capacity to 7 GW

These two Articles ([Utility Dive](#) / [Solar Power World](#)) describes how on July 29th by the New York Power Authority published a draft of its [Renewables Updated Strategic Plan](#) calling for 7 GW of solar, wind and energy storage — more than doubling the total energy capacity outlined in its [initial plan released in January](#). The new plan highlights 17 solar arrays, three wind projects and 156 energy storage projects, representing a combined capacity of more than 3.8 GW. That is on top of the 37 projects totaling 3 GW of renewables in the initial plan.

The [Map on page 53 of the Plan](#) shows the locations of the planned renewable energy projects



NYSERDA: Draft State Energy Plan Released for Public Comment and Public Hearing Schedule Announced

On July 23rd, [NYSERDA announced](#) that the [New York State Energy Planning Board](#) voted unanimously to release a [Draft 2025 Energy Plan](#) for public comment. The Plan provides a 15-year outlook through 2040 to guide energy development with recommendations for meeting future energy demands that prioritize an energy system that is reliable, clean, and affordable while supporting economic development, equity, and a healthy environment. New Yorkers have the opportunity to review the Plan and submit comments through October 6, and can attend one of the virtual or in-person public hearings scheduled across the state in August and September.

The highlights significant progress New York has made toward a clean energy economy, such as investment in energy efficient technologies that are saving New Yorkers money, installation of over six gigawatts of distributed solar, completion of the South Fork Offshore Wind Farm, and the ongoing construction of the Champlain Hudson Power Express and Empire Wind projects. Governor Kathy Hochul also took additional actions in support of zero-emission energy by directing the New York Power Authority to develop and construct at least one GW of advanced nuclear energy generation and by establishing the \$1 billion Sustainable Future Program - the largest single State Budget commitment to climate and clean energy in New York's history.

Key findings of the Draft State Energy Plan include:

- New York State is prepared to meet forecasted growth in electricity demand while maintaining system reliability and making progress toward a zero-emission grid, as demonstrated in analysis conducted for the Draft State Energy Plan.
- In order to meet peak demand needs and ensure system resilience, New York State will continue making strategic investments throughout the planning period, and all major fuels used today will continue to contribute to the state's energy mix.
- To ensure that energy systems can reliably meet demand at reasonable cost, New York State agencies, system operators, and stakeholders will pursue planning and strategies that remain adaptable across a range of potential futures.
- Shifting priorities at the federal level are anticipated to impact long-term planning, investment decisions, and possibly the pace of transition to clean energy. This, however, does not change New York's commitment to continued clean energy growth.

Recommendations within the Draft State Energy Plan include actions to:

- Deliver abundant, reliable, resilient, and clean energy through a diverse mix of resources and supply infrastructure, while supporting energy efficiency and load flexibility
- Plan for and pursue strategic investments to upgrade the State's aging energy system infrastructure
- Provide affordable energy across combined household energy and transportation fuel expenses, and lessen the energy burden for lower-income households
- Provide equitable clean energy benefits by reducing the upfront costs of energy efficiency and clean energy choices for households, businesses, and in the transportation sector
- Promote economic development by meeting the needs of large energy users and attracting new industry, including clean energy leaders
- Advance energy innovation that fosters economic development and brings new technologies to market that will help enable New York's energy transition.

NYSERDA also recently published its 3-year Strategic Outlook ([Download Link](#)). Highlighting its organization's focus on catalyzing the state's clean energy transition, the informational document summarizes NYSERDA's educational and programmatic activities, as well as the positive economic impact associated with the clean energy transition. Program overviews provided include workforce development; community-based energy planning; GHG reduction efforts such as the Regional Greenhouse Gas Initiative; clean electricity supply; building decarbonization; and clean transportation.

Canary Media: New York becomes first state to commit to all-electric new buildings

This [Article](#) describes how NY State finalized rules ensuring most new edifices will install electric heat pumps and stoves instead of gas appliances, lowering costs and improving air quality. On July 25, the State Fire Prevention and Building Code Council approved [an all-electric building standard](#), making New York the first state in the nation to prohibit gas and other fossil fuels in most new buildings. Legislators and climate advocates celebrated the move, which had been mandated under the pathbreaking 2023 All-Electric Buildings Act. Buildings account for [31% of the Empire State's planet-warming pollution](#).

New York is forging ahead on building decarbonization at the same time the federal government is backtracking, [yanking support](#) for renewable power and home energy efficiency and providing the fossil-fuel industry with new subsidies. The state's rules will apply to new structures up to seven stories tall and, for commercial and industrial buildings, up to 100,000 square feet beginning Dec. 31, 2025. Buildings bigger than that will need to be built all-electric starting in 2029. The new code will spur installations of [heat pumps](#) and [heat-pump water heaters](#) — ultra-efficient electric appliances that are good for the planet and, [typically, pocketbooks](#).

The council left room for exceptions, though, including new laboratories, crematoriums, restaurants, and large buildings whose owners can prove the grid isn't ready to accommodate their sizable all-electric heating needs. Michael Hernandez, a policy director at electrification advocacy nonprofit Rewiring America, said he doesn't think the exemptions will eat away at the code's efficacy, however. With the rules finalized, "I'm relieved,"

The new regulations come on the heels of a recent legal victory: On July 23, a federal district court in New York upheld the state's ability to [implement the All-Electric Buildings Act](#). The groups challenging the law in court — including the New York State Builders Association, National Association of Home Builders, National Propane Gas Association, and a few local union chapters for plumbers and electricians — alleged that it's preempted by the federal Energy Policy and Conservation Act, the same justification used to [overturn Berkeley, California's pioneering ban](#) on gas hookups in new construction. The New York judge was unconvinced by this argument, [noting](#) that the Berkeley decision relied on "deficient interpretations" of terms like "energy use," and is "simply not persuasive."

The state's new energy code is expected to raise the cost of residential construction and substantially lower energy bills for homeowners and renters, making it cost-effective with a payback of 10 years or less, according to a [report](#) commissioned by the New York State Energy Research and Development Authority. Over 30 years, households are expected to save an average of about \$5,000 due to a 17% reduction in energy use.

Other research indicates all-electric construction is typically less expensive than that for buildings equipped to burn gas or fuel oil. Electric-only projects allow developers to forgo installing costly fossil-fuel infrastructure alongside the electrical systems requisite in modern buildings. A 2022 analysis by the decarbonization nonprofit New Buildings Institute, for example, found that building an all-electric single-family home in New York costs about [\\$8,000 less](#). The all-electric code will improve air quality by reducing reliance on fossil-fuel-fired boilers, furnaces, water heaters, and stoves. These conventional appliances spew harmful byproducts such as carbon monoxide, particulate matter, benzene, nitrogen oxides, and more, which can [cause respiratory and cardiovascular issues](#) — to lethal effect. In 2017, fossil-fuel use from New York buildings caused \$21.7 billion in health impacts and [nearly 2,000 premature deaths](#), more than in any other state.

The new rules will get heat pumps into new construction and help boost adoption in existing homes. Note that [heat pump units are now outselling gas furnaces nationally](#).

Utility Dive: What's next for advanced nuclear technology?

This [Article](#) provides an overview of the five varieties of advanced reactor that stand out. In the past two years, at least six advanced reactor designs have begun operations or made significant progress at the Nuclear Regulatory Commission (NRC). Advanced reactors promise greater safety, quicker deployment, and less cost than traditional nuclear generation. But skeptics warn that the technology remains largely unproven in the Western world and that early deployments may cost significantly more than advertised. More recently, the NRC has [accelerated reactor construction permit reviews](#), allowed approved reactor designs to remain valid longer and [eased restrictions on certain factory-built reactors](#). More NRC reforms are [on the way](#).

Advanced nuclear energy is on the upswing thanks to [supportive state policy](#), expected load growth, technology companies' interest in "clean firm" power and federal tax incentives that survived [GOP budget negotiations](#), according to [Clearview Energy Partners](#). These tailwinds have many utility leaders planning for a future generating mix that includes new nuclear. For those that aren't, now is the time to get up to speed.

All advanced reactors have simpler and less failure-prone safety systems than those securing the vast majority of currently operating reactors, according to the Nuclear Innovation Alliance, a Washington, D.C.-based trade group that put out a comprehensive primer on advanced nuclear technologies last year. Most of these systems are at least partially passive, meaning they don't require human intervention to activate.

The most expansive definition of advanced nuclear encompasses large light-water reactors like the two 1,117-MW AP1000s [now in operation](#) at Georgia Power's Vogtle power plant — whose final price tag of [about \\$32 billion](#) more than doubled the \$14 billion preconstruction estimate — as well as tiny microreactors like the 1-MW molten salt design [under construction at Abilene Christian University](#). In between are modular reactors — known as micro- or [small modular reactors](#), depending on their output — that can be partly or even largely built in a factory and then transported to the generating site.

Experts say smaller reactor designs may prove faster and cheaper to deploy than larger ones, advanced or otherwise. The U.S. Department of Energy in September estimated the total project cost for a first-of-its-kind small modular reactor [at \\$4 billion](#), or one-third the expense of a larger reactor. A British study released in 2018 [found that full modularization](#) could reduce capital costs by more than 40%, excluding interest charges. But large advanced reactors may always be more cost-effective for bulk electricity generation, DOE says. The department pegs costs for a first-of-a-kind large light-water reactor at about \$8,500/kW, compared with about \$13,000/kW for an early SMR, and flags large reactor build costs as low as \$2,300/kW in South Korea after decades of process improvement there.

Cost concerns led to the [cancellation in late 2023](#) of NuScale's 462-MW Carbon Free Power Project, which until this May was the United States' only commercial SMR project for a utility off-taker. The project's cancellation was a big setback for the nearly 20-year-old Oregon company and advanced nuclear more broadly. Though NuScale remains a subcontractor on a power plant project in Romania and [says it's close](#) to signing offtake agreements with non-utility customers in the United States. It was also a teaching moment for the industry, said Judi Greenwald, executive director of the Nuclear Innovation Alliance. "[NuScale] put all their eggs in one basket [and] that one entity wasn't enough of a business case," she said, referring to the [coalition of Western municipal utilities](#) that would have purchased power from the project. Likewise, NuScale's often halting regulatory engagement with the NRC — the company got approval for a 50-MW module in 2020, then returned for the 77-MW module [the NRC greenlighted in May](#) — provided a model for future nuclear technology companies to engage and made the agency itself more efficient, Greenwald said. "NuScale paved the way for a lot of other people," she said. "They spent a lot of time with NRC, some of it not as fruitful as we would have liked, and a lot of others are going to get the benefit."

Those lessons and landmark pro-nuclear laws passed in [2019](#) and [2024](#) have pushed the NRC to speed up its reactor design, construction permit and operating license application reviews; develop a lighter-touch framework for microreactor licensing; and establish a new [“risk-informed, technology-inclusive” licensing pathway](#) for advanced reactors. The upshot could be faster, more efficient approvals for all sorts of advanced nuclear technologies, particularly microreactors, said James Richards, manager of NIA’s economics and project development program. “Microreactor developers are very much anticipating going faster,” he said. “The regulatory environment [has changed and is changing.](#)”

Holtec International plans to develop SMRs on existing nuclear power plant sites with spare interconnection capacity, beginning with the [soon-to-be-restarted, 800-MW Palisades generating station](#) in southwestern Michigan. X-energy’s first commercial project will supply process heat and electricity at a Dow petrochemical complex in Texas, replacing the facility’s aging, fossil-fired cogeneration plant. Along with TerraPower, X-energy has significant support from the DOE Office of Clean Energy’s Advanced Reactor Demonstration Program. And Last Energy is pursuing [front-of-the-meter and behind-the-meter](#) arrangements with data centers and other large power consumers interested in its 20-MWe modules. “If you can cut through the noise, there is real stuff happening in the industry right now — shovels in the ground,” Richards said. “We haven’t seen this since the 1980s, and we’re seeing it with new and different designs”

All commercial reactors operating in the U.S. today use steam or superhot pressurized water to generate electricity and cool cores powered by [low-enriched uranium](#). Some advanced reactor designs envision doing the same, but not all. A fair number use liquid metal, molten salt or high-temperature gas for cooling and heat transfer. Many of these more novel designs — including those from Kairos Power, TerraPower and X-energy — will use more potent high-assay, low-enriched uranium, which allows for more efficient reactions in compact reactors with longer refueling cycles. HALEU-powered non-water reactors can reach higher outlet temperatures than water-cooled reactors, making them suitable not just for electricity generation but [for industrial heat production](#), according to an Information Technology & Innovation Foundation paper published earlier this year.

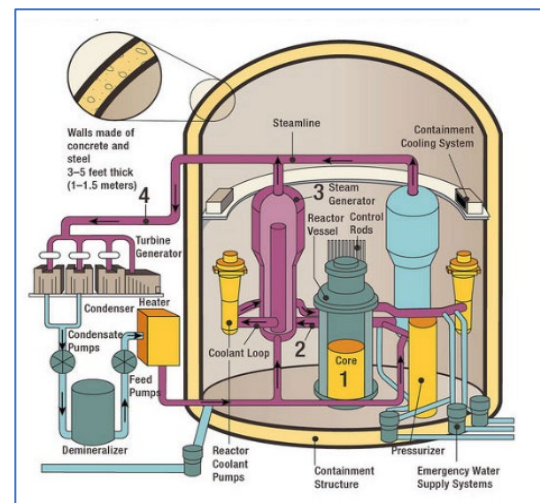
Five varieties of advanced reactor stand out right now. For each, Utility Dive has highlighted a project or developer reasonably far along in the demonstration process as an example.

Pressurized water reactor (PWR):

Potential applications: Power generation, lower-grade industrial heat (desalination, pulp and paper, some petrochemical applications)

Example project: AP-1000s at Plant Vogtle Units 3 and 4, Georgia Power in Waynesboro, Georgia

[Pressurized water reactors](#) have powered conventional nuclear plants for decades. The reactor core heats a pressurized water loop that generates steam in a secondary, lower-pressure loop that powers a turbine generator. PWR technology factors into several advanced nuclear designs, including NuScale’s [US460](#), Holtec International’s [SMR-300](#), Last Energy’s [PWR-20](#) and Westinghouse’s AP1000 and [AP300 SMR](#).



Pressurized Water Reactor diagram

1. The core inside the reactor vessel creates heat.
2. Pressurized water in the primary coolant loop carries the heat to the steam generator.
3. In the steam generator, heat from the primary coolant loop vaporizes water to steam in secondary loop
4. The steam line directs the steam to the main turbine, turning the turbine generator, producing electricity

Boiling water reactor (BWR)

Potential applications*: Power generation, lower-grade industrial heat

Example project: BWRX-300 at Clinch River Nuclear Site, Tennessee Valley Authority — Clinch River, Tennessee
The [boiling water reactor](#) is the other mainstay of the U.S. conventional nuclear fleet. The reactor core heats and partially boils pure water, which produces pure steam to power the main generator. The technology isn't as popular with SMR developers, but there is one standout: GE Hitachi's [BWRX-300](#), which has made significant progress toward commercialization. One is already under construction at [Ontario Power Generation's Darlington nuclear plant](#) and could come online there by 2029. Stateside, Tennessee Valley Authority in May [became the first U.S. utility](#) to submit an SMR construction permit for a planned BWRX-300 plant that could power up in the early 2030s.

Molten salt reactor (MSR)

Potential applications*: Power generation, high-quality industrial heat (hydrogen production, most petrochemical processes, direct steelmaking)

Example project: Hermes 1 and 2, Kairos Power — Oak Ridge, Tennessee

[Molten salt reactors](#) use molten salt as a coolant only or as a dual fuel and coolant, according to the International Atomic Energy Agency. In either case, the salt can absorb far more heat than water, allowing the reactors to operate at temperatures high enough to power hard to abate industrial processes like production of plastic precursors. Some advanced nuclear plant designs, including the next on our list, also use molten salt as an energy storage medium that operates separately from the reactor and generator. Some nuclear experts see molten salt reactors as an “over the horizon” technology that will mature after BWRs, PWRs and liquid metal reactors, but Kairos Power appears to be making progress toward commercialization. It's [building the first of two test reactors](#) in Tennessee, targeting commissioning in 2027, and has [agreed to supply 500 MW of power](#) to Google by the mid-2030s.

Liquid metal reactor (LMR)

Potential applications*: Power generation, medium-grade industrial heat (tar sands and shale oil production, petroleum refining)

Example project: Natrium at Kemmerer Power Station Unit 1, TerraPower — Kemmerer, Wyoming
Liquid metal reactors use molten metal, often pure sodium, to cool the core and transfer heat to an electric generator, energy storage medium and/or facilities running medium-temperature industrial or resource extraction processes. Neutrons move much faster through metal-cooled cores than through water-cooled cores, enabling [fast reactor designs](#) that can recycle nuclear fuel and potentially reduce nuclear waste. Oklo and TerraPower are both working to commercialize sodium-cooled fast reactors. TerraPower [broke ground last year](#) at the Wyoming site of its 345-MW [Natrium](#) commercial demonstration reactor, which is in line to get its construction permit later this year and could power up by 2030. Thanks to a molten salt energy storage reservoir, that facility will have load-following capabilities to complement the wind-heavy Wyoming grid.

High-temperature gas reactor (HTGR)

Potential applications*: Power generation, high-quality industrial heat

Example project: Xe100s at Long Mott Generating Station, Dow & X-energy — Seadrift, Texas

[High-temperature gas reactors](#) use helium or another stable gas to cool their cores and transfer heat for electricity production or direct industrial use. They achieve very high outlet temperatures with great efficiency, making them ideal for heavy industries like petrochemicals and steelmaking. The best-known U.S. HGTR is X-energy's Xe-100, which is the subject of an active construction permit application and [could come online early next decade](#) at Dow's Seadrift facility. Like some MSRs and LMRs, HGTRs run on TRISO, a heat-resistant, ceramic-coated HALEU fuel that experts say is more durable than conventional fuel rods. U.S. supplies of HALEU-based fuels remain scarce, though DOE recently made some available to early-mover nuclear companies and domestic enricher Centrus plans to ramp up production later this decade.

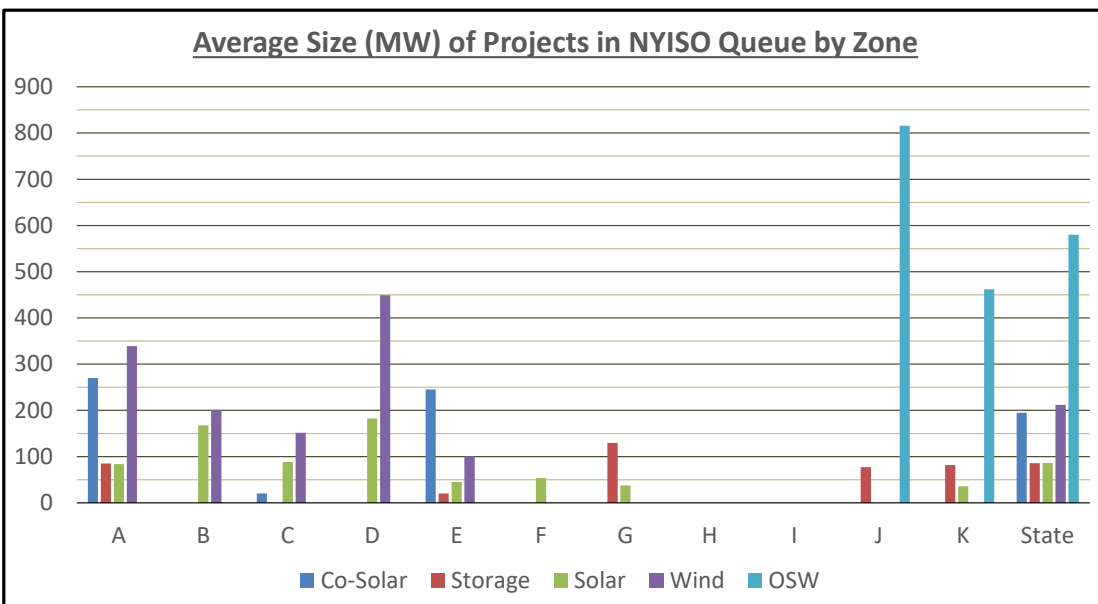
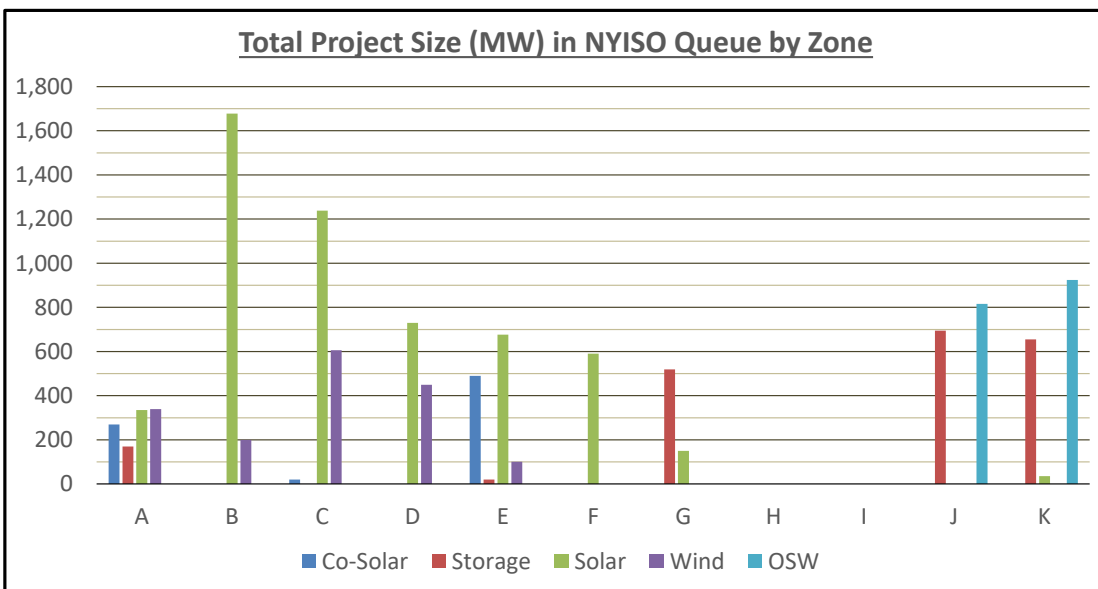
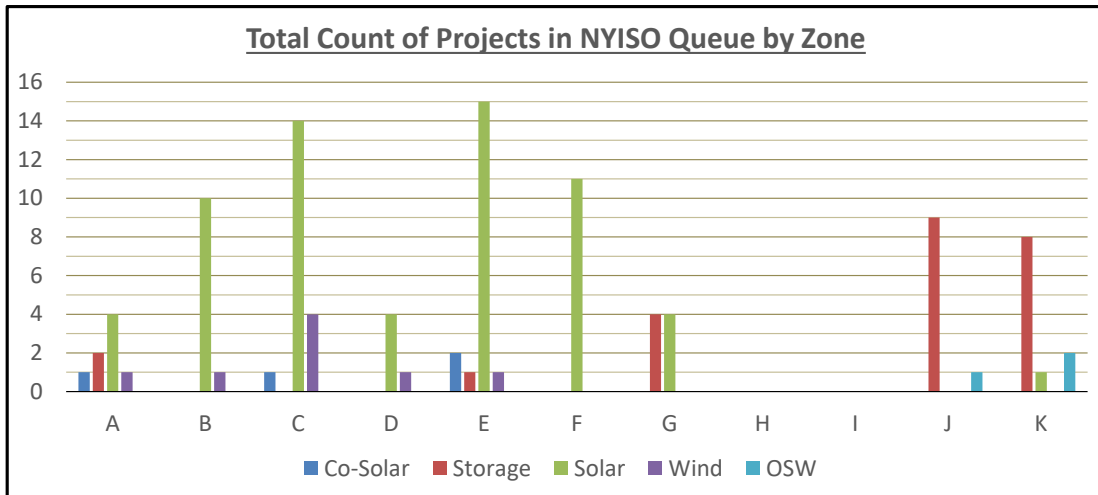
Interconnection Queue: Monthly Snapshot – Storage / Solar / Wind / CSRs (Co-located Storage)

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 July 20th, and representing the Interconnection Queue as of June 30st. Note that one project was added, and 6 projects were withdrawn during the month of June.

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			11		
G		4	4		
H					
I					
J		9			1
K		8	1		2
State	4	24	63	8	3

Total Count of Projects in NYISO Queue by Zone					
Zone	Co-Solar	Storage	Solar	Wind	OSW
A	270	170	335	339	
B			1,678	200	
C	20		1,238	606	
D			730	449	
E	490	20	676	101	
F			591		
G		519	150		
H					
I					
J		695			816
K		655	36		924
State	780	2,059	5,433	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			168	200	
C	20		88	151	
D			183	449	
E	245	20	45	101	
F			54		
G		130	38		
H					
I					
J		77			816
K		82	36		462
State	195	86	86	212	580



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 , based on information published on May 20th.

Note that within the Cluster Queue, there are currently 229 projects totaling 33,548 MW. This represents a drop of 5 projects, totaling 584 MW from the previous month. A total of 147 projects representing 42,035 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	18	4	6	
B	3	2	1		
C	5	21	15	5	
D		5	3	2	
E	9	8	9	4	
F	3	13	7		
G	1	28	1		
H		3			
I		1			
J		14			1
K		27			1
State	27	140	40	17	2

Total Cluster Project Size (MW) in NYISO Queue by Zone					
Zone	Co-Solar	Storage	Solar	Wind	OSW
A	947	3,109	780	746	
B	920	400	83		
C	690	3,045	1,561	442	
D		615	440	760	
E	1,378	1,389	893	380	
F	405	2,009	647		
G	40	4,146	30		
H		524			
I		130			
J		2,184			1,310
K		2,228			1,321
State	4,379	19,778	4,433	2,328	2,631

Average Size (MW) Cluster Projects in NYISO Queue by Zone					
Zone	Co-Solar	Storage	Solar	Wind	OSW
A	158	173	195	124	
B	307	200	83		
C	138	145	104	88	
D		123	147	380	
E	153	174	99	95	
F	135	155	92		
G	40	148	30		
H		175			
I		130			
J		156			1,310
K		83			1,321
State	162	141	111	137	1,316

