

New York's 6 GW Energy Storage Roadmap

Stakeholder Overview Webinar: Retail and Residential Storage

March 1, 2023



NYSERDA

Department
of Public Service

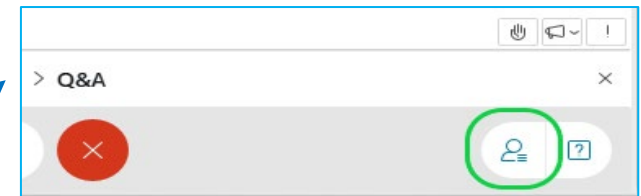
Webinar Procedures

Before beginning, a few reminders to ensure a smooth discussion:

- > Today's webinar is being recorded
 - A copy of the recording and presentation slides will be posted to NYSERDA's [Retail Storage Incentives page](#) in the "Webinar Presentations" section
- > Attendees will be muted upon entry

To ask questions:

- > Questions and comments may be submitted in writing through the Q&A feature at any time during the event. Questions will be answered at the end of the presentation.



If technical problems arise, please contact
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Agenda

- 6 GW Storage Target: Role and Need
- Current Progress Towards Storage Goals
- 6 GW Modeling Results: Locations and Durations
- Proposed Procurements by Sector
- Retail Storage: Value, Target Allocation and Program Design
- Residential Storage: Value, Target Allocation and Program Design
- Disadvantaged Communities and Environmental Justice Considerations
- Program Costs
- Funding Mechanism
- Roadmap Process and Next Steps
- Q&A

Need for New York's 6 GW Energy Storage Roadmap

- The Climate Leadership and Community Protection Act (CLCPA) electric sector goals, in addition to the electrification of transportation and buildings in achieving New York State's future carbon neutral economy, necessitate rapid growth in renewable energy over the next decade.
- Climate Action Council Scoping Plan analysis indicates the need for approximately 12 GW of energy storage by 2040 and 17+ GW by 2050.
- The current interim goal of 1.5 GW by 2025, established through the 2018 Storage Roadmap, combined with the legislated 3 GW by 2030 per the CLCPA, was recognized by Governor Hochul as needing to be updated in early 2022.
- A new 2030 target of 6 GW, enabled by the recommendations in the Roadmap, will play a critical role in achieving the order-of-magnitude growth increases needed post 2030 to put New York on a path towards these longer-term storage needs and achievement of the CLCPA.

Current Progress toward Storage Goals

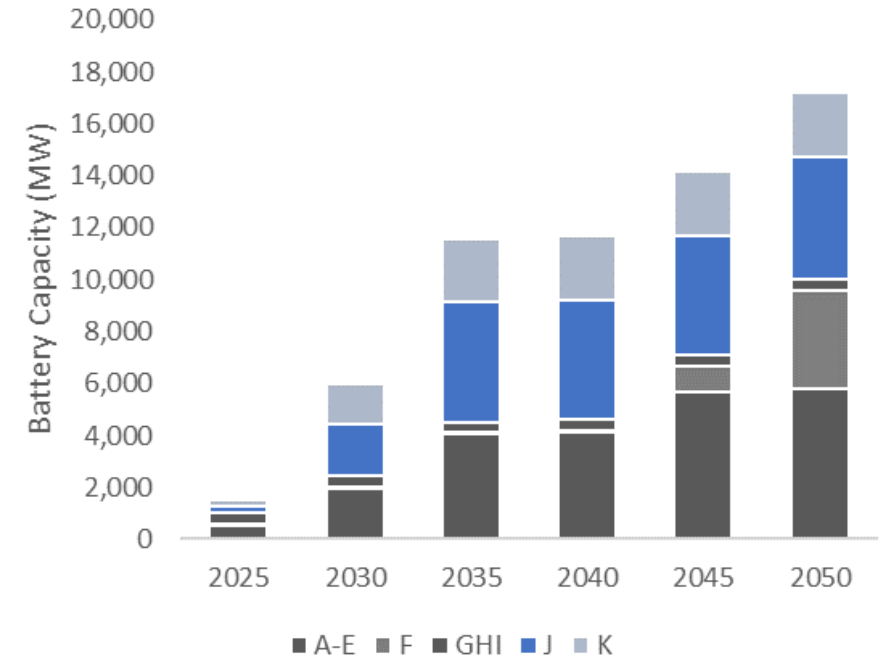
- The portfolio of programs and actions approved by the Commission in the 2018 Energy Storage Order began nurturing and expanding New York's then-nascent energy storage market.
- The 2018 Roadmap led to the codification of the 1.5 GW by 2025 and 3 GW by 2030 targets, which were supported by a set of up-front, standard offer Market Acceleration Bridge Incentive programs administered by NYSERDA.
- The Bridge Incentive offered financial incentives to install energy storage systems for three categories of projects:
 - **Bulk** energy storage projects larger than 5 MW providing wholesale services;
 - **Commercial retail** energy storage systems up to 5 MW;
 - Single-family **residential** energy storage systems installed with solar PV on Long Island.
- To date, **1,301 MW** of energy storage projects have been awarded/contracted, representing 87% of the 2025 target of 1,500 MW. Of this, **811 MW** was approved for funding under the MABI program.

Deployed, Contracted and Awarded Pipeline

Energy Storage Deployed, Contracted and Awarded (MW)	
NYSERDA Bridge Incentive Program	811
<i>Of which:</i> Bulk	480
Commercial Retail	320
Long Island Residential	11
Utility Bulk Storage Dispatch Rights Procurement	120
Renewable Energy Standard	240
NYPA North Country Project	20
Utility Demonstration and NWA Projects	56
Other Projects	54
TOTAL	1,301
% of 1.5 GW 2025 Goal	87%
% of 3 GW 2030 Goal	43%

6 GW Modeling Results: Locations

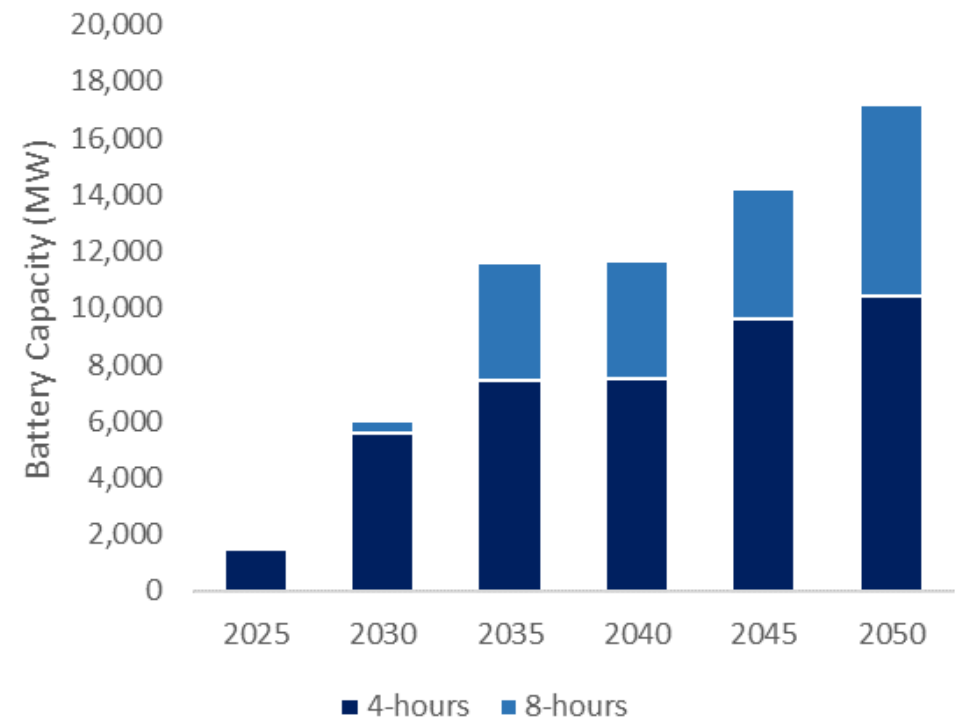
- NYSERDA commissioned Energy and Environmental Economics, Inc. (E3) to conduct system modeling runs to determine optimal timing, locations and durational profile of 6 GW x 2030 buildout.
- In 2030, model shows 66% of the 6 GW requirement is met with storage in downstate NY (Zones J and K).
- By 2050, the model shows storage selection shifts upstate, to help balance land-based renewables and cost-effectively meet the state's reliability needs.



Storage Summary by Zone						
	2025	2030	2035	2040	2045	2050
A-E	519	1,954	4,030	4,103	5,663	5,808
F	60	60	60	60	1,016	3,759
GHI	430	430	430	430	430	430
J	275	2,005	4,600	4,600	4,600	4,739
K	216	1,551	2,473	2,473	2,473	2,473
Total (MW)	1,500	6,000	11,593	11,665	14,181	17,208

6 GW Modeling Results: Durations

- Most modeled storage builds by 2030 are 4-hour; however, modeling shows significant deployment of longer duration storage in the 2030s.
- 60-70% of the statewide 8-hour storage deployment is placed in NYC (Zone J) and Long Island (Zone K) as expensive peakers retire and to replace other expensive thermal capacity.
- Resources needed by 2040 are pulled forward into the early-to-mid 2030's to capture the expanded Investment Tax Credit (ITC) made available through the Inflation Reduction Act (IRA).
 - More economic to build early with ITC than to wait for further technology cost reductions



Storage Summary by Duration						
	2025	2030	2035	2040	2045	2050
4-hours	1,500	5,600	7,413	7,486	9,606	10,448
8-hours	0	400	4,179	4,179	4,575	6,761
Total (MW)	1,500	6,000	11,593	11,665	14,181	17,208

Proposed Roadmap Procurements by Sector

- There is currently a total of **1,301 MW** of storage already awarded/contracted through Roadmap 1.0, LSR Tier 1 and other procurements.
- More than 23,000 MW of proposed energy storage projects are presently in either distribution-level or wholesale-level interconnection queues.
- To reach the proposed 6 GW goal, **4,700 MW of new projects** will need to be awarded and deployed by 2030.
- The 6 GW Roadmap recommends new programs be developed for three different sectors: **Bulk, Retail, and Residential.**

Sector	Capacity in MW	Incentive Mechanism	Funding Source
Bulk	3,000	Index Storage Credit	LSE
Retail (< 5MW)	1,500	Upfront incentive	CEF Style
Residential	200	Upfront incentive	CEF Style
Total	4,700		

Retail Storage: Value and 6 GW Target Allocation Considerations

- Retail storage projects have the ability to provide meaningful reliability contributions and peak energy within distribution networks. Through their operation, they offset the need for other resources, often at the wholesale level, to provide peak power needs.
- Retail projects average over three years from interconnection request to commissioning, which means future retail blocks must be designed to allow awarded storage projects enough time before the end of 2030.
- This likely means retail projects must be procured before the end of 2027, with procurement spread between program launch and the end of 2027 relatively evenly, or even weighted toward earlier years, to optimize the state's ability to meet its targets.
- Given retail storage development timelines, the size of these projects and the overall pipeline opportunity (utility interconnection queues), the total contribution retail storage can make to the 2030 goals is estimated to be approximately 1.5 GW.

Retail Storage Program Design

- The 2018 Storage Roadmap implemented region-specific, declining-block fixed-rate upfront incentives for retail systems up to 5 MW.
- The program was successful in procuring over 300 MW of projects and resulted in a significant increase in the size of the interconnection pipeline (now over 1 GW).
- While fixed-rate incentives are less robust to changes in markets and costs than other options, the certainty of funding availability and rates has proven to be valuable to this market segment.
- Since the initial programs launched, the Allocated Cost of Service proceeding has enabled a reduction in demand charge costs to distribution-sited storage projects, and the Inflation Reduction Act has extended the Investment Tax Credit to standalone storage. These improvements drive longer-term certainty to the market as well as lower cost, and allow New York to maintain the existing declining-block funding mechanisms, which have proved efficient in administration.
- Therefore, NYSERDA and DPS Staff have recommended extending the previous Retail Storage program to procure a further 1,500 MW of retail storage by 2030, with the related recommendation that the program continue to operate on the basis of declining blocks designed to provide multiple years of project development certainty to the market and avoid boom-bust cycles within the program.

Retail Storage Program Design (cont'd)

- Due to distinct development pathways for retail storage sited upstate (primarily paired with PV) vs downstate (primarily standalone), NYSERDA and DPS Staff recommend continuing to utilize a regional block structure as previously implemented for the retail segment.
- Project maturity requirements should be maintained at high levels to reduce project attrition and time between contracting and commissioning.
- Program implementation should evaluate funding requirements and system benefits of projects in the different regions and size funding rates and block sizes accordingly.
- NYSERDA and DPS Staff believe it is important to ensure that the sizing of the first block, or series of blocks, reflects the backlog of highly mature projects that has developed since program funding was exhausted in previous years.
- To ensure that projects procured in service of the 6 GW target create well-paying jobs, the Roadmap recommends that projects with a capacity of 1 MW-AC and greater participating in any NYSERDA energy storage program pay New York State Prevailing Wage as a contractual requirement, substantiated via quarterly certifications by a New York State-licensed Certified Public Accountant during the construction period.

Residential Storage: Value and 6 GW Target Allocation Considerations

- Incorporating energy storage into residences can help manage high energy costs, integrate on-site renewable energy, and provide much-needed resilience to consumers.
- Residential storage also has the ability to provide additional services to the grid during times of peak demand through tariffs or demand response programs.
- For residential programs, the short timelines of project development allow the program to allocate funding across the time horizon to 2030, spreading project deployment across several years.
- Given the size of the installations – less than 10 kW per project on average – and the installation rates observed in previous programs, the total contribution that residential storage could make to the state’s overall 2030 needs is estimated to be approximately 200 MW, representing at least 20,000 installations over the next seven years.

Residential Storage Program Design

- NYSERDA and DPS Staff recommend launching a statewide residential energy storage program, with funding for 200 MW, available until 2030, that emphasizes maximizing local benefits and benefits to Disadvantaged and Environmental Justice communities.
- To simplify purchase decisions for energy storage projects in the program, NYSERDA and DPS Staff also recommend that the incentive be provided to the project installer upfront so as to directly drive down the cost of the project to the consumer.
- To create a stable market for installers to educate consumers and develop projects, there must be long-term visibility regarding the availability of incentive funding. NYSERDA and DPS Staff therefore recommend designing a program with large blocks of funding at stable incentive rates, likely sized to last a year or multiple years at a time.
- While residential storage drives important resiliency and renewable integration benefits to homeowners, the Roadmap also recommends evaluating means by which residential storage projects can provide system-wide benefits, given that this program is proposed to be funded from statewide ratepayers. While current options in most utility territories are limited, there is significant potential for aggregating residential assets to participate in demand response programs.

Disadvantaged Communities and Environmental Justice Considerations

- **Off-site (front-of-the-meter)** storage projects deliver services to the distribution system, providing wide-ranging benefits across the system. These benefits are tied to the electrical topology in the area where the project is built, not necessarily to the specific physical location of the project. In many cases, projects will be providing services on a territory-wide basis, often stretching into areas beyond a single county or zip code.
- The Roadmap therefore recommends, in order to comply with the DAC requirements in the CLCPA, that **at least 35% of program funding be utilized to support projects in areas of the state with the highest benefits to DACs and peaker reductions.**
- **On-site** retail and residential projects provide direct local benefits to the site at which they are installed, with the value of these projects to be primarily for the benefit of the site owners. The Roadmap therefore recommends that Retail and Residential programs should be designed so **at least 35% of the funding and associated benefits of these projects are directed to projects sited in DACs.**
- Additional details on DAC/EJ-related program design will be addressed as part of a subsequent **Implementation Plan** to be published following approval of this Roadmap, if deemed so by the Commission.

Procurement Costs and Bill Impacts

- The residential program is estimated to cost \$72 million to procure 200 MW of residential energy storage across the state.
- The retail program is estimated to require \$438 million to procure 1,500 MW of retail energy storage.
- Taken in combination, the retail and residential programs are estimated to cost \$510 million (net present value) for incentive payments for 1,700 MW of energy storage, paid out between 2023 and 2030.
- The total cost for the three incentive programs procuring 4,700 MW of energy storage, inclusive of administrative costs, is expected to be between \$1.0 billion to \$1.7 billion (NPV 2022\$).
- This equates to an estimated increase in customer electric bills of 0.32% – 0.54% (or \$0.34 – \$0.58 per month for the average residential customer) on average across New York for the 22-year period of payments under these programs. For the retail and residential programs alone, the equivalent bill impact is estimated to be 0.17%.

Retail and Residential Programs Funding Mechanism

- The retail and residential programs are expected to be designed in a way that pays projects the full contract amount at, or very near, the time of commissioning.
- The retail and residential programs expect to utilize a fixed-rate incentive approach, allowing higher certainty in budget needs and timing.
- For these reasons, NYSERDA and DPS Staff recommend a CEF-style collection, with a transparent pay-as-you-go methodology utilized in other recently approved programs such as NY-Sun, also collected on a statewide MWh load ratio share basis.
- NYSERDA and DPS Staff also recommend that NYPA and LIPA participate in collections on a MWh load share basis as well, consistent with previous programs.
- Collections could begin immediately if ordered by the Commission, though collections and payments under the pay-as-you-go methodology are likely to be more heavily focused in the later years of this timeframe due to the delay between contracting and commissioning/incentive payment.

Roadmap Process and Next Steps

- 6 GW Roadmap was filed on December 28, 2022.
- Roadmap is open for public comments through March 20, 2023. Comments can be filed on the [Department of Public Service's website](#) under Case Number 18-E-0130.
- NY Public Service Commission may then issue an Order approving or denying the items requested in the Roadmap. The PSC has the ability to approve a modified version of the Roadmap.
- If approved, NYSERDA would then file an Implementation Plan specifying additional program design details, which may also be subject to a public comment period and Commission approval.
- NYSERDA would then implement the approved program design elements towards launching new Retail and Residential incentive blocks.

Questions & Answers

Please use the Q&A feature in WebEx to submit a question.



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Thank You

- > If you have questions about this presentation, please contact energystorage@nyserda.ny.gov.
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