



New England Electricity Restructuring Roundtable

The Connective Tissue: Transmission in Support of Decarbonization

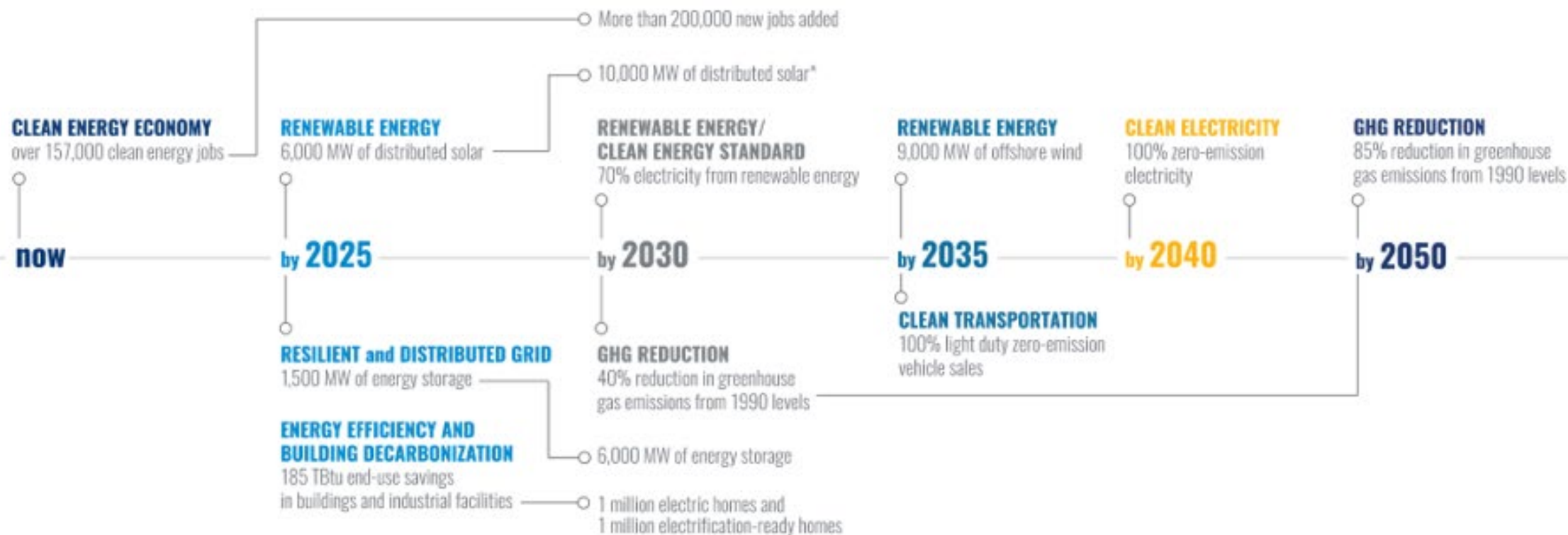


NEW
YORK
STATE

NYSERDA

Doreen M. Harris, President and CEO, NYSERDA
September 30, 2022

New York State Clean Energy Goals

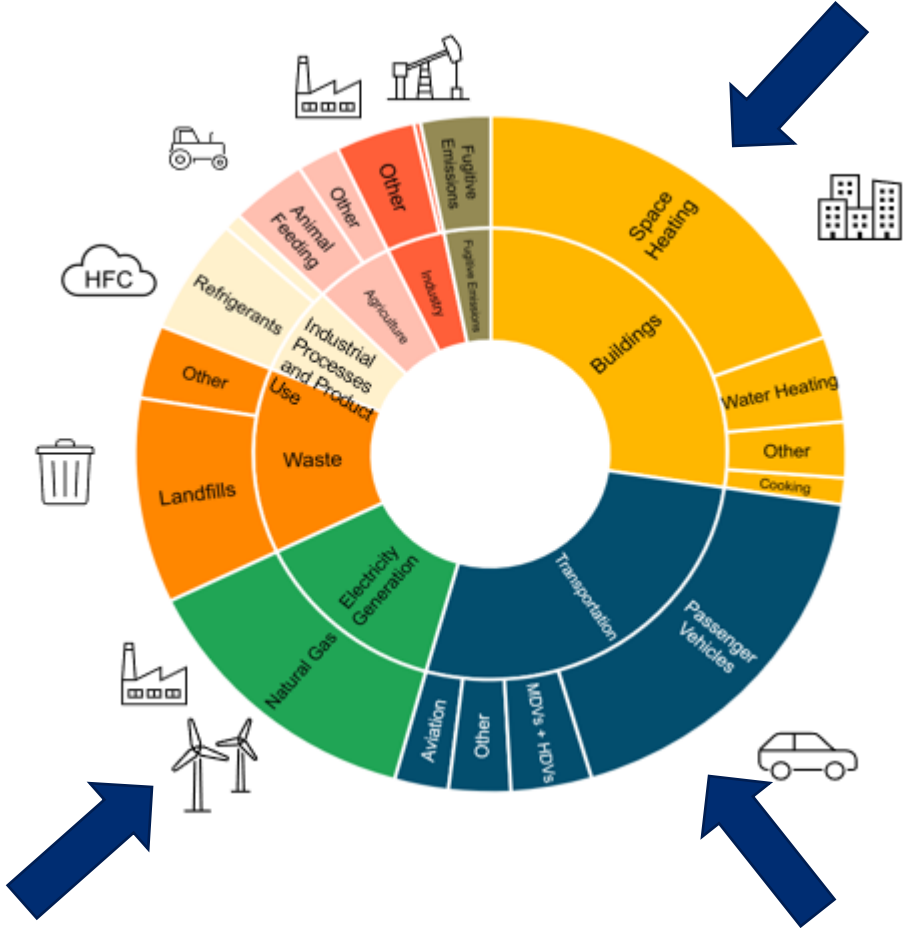


As announced by Governor Hochul during Climate Week 2021, New York State has now set a successor distributed solar goal of at least 10 GW of solar by 2030. NYSERDA and DPS Staff are now in the process of charting the path to 10 GW and beyond via a Whitepaper before the Public Service Commission (PSC).

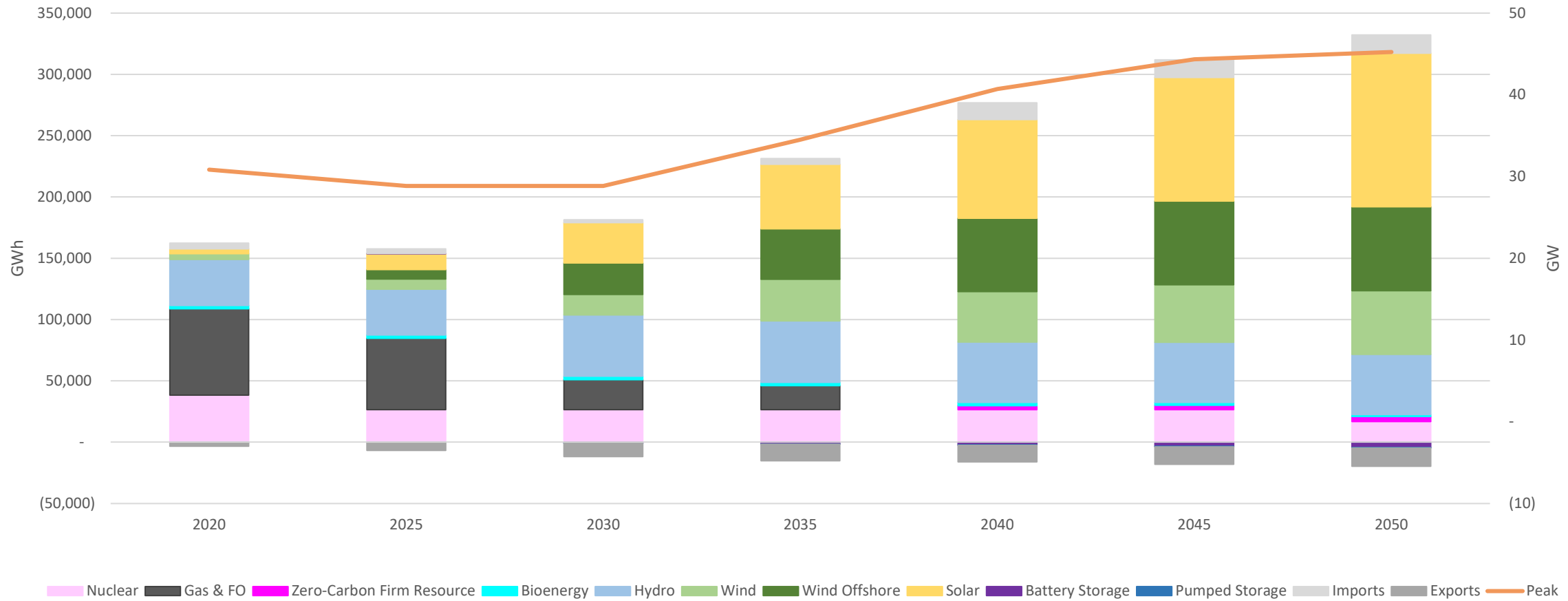
2030 Primary Sectoral Targets Supported by Secondary Targets

Three Pillars of Action Emerge

| 40% Emissions Reductions by 2030 | | |
|--|--|--|
| Electricity 70% renewable electricity by 2030 | Buildings 2M Homes by 2030; 10% of comm. floor space | Transportation 100% ZEV LDV sales by 2035 |
| Tier 1 and Tier 4 | New Efficiency NY– 185 TBTU by 2025 | ZEV Mandate |
| 9 GW of Offshore Wind by '35 | Building Electrification Roadmap/ Action Plan | Advanced Clean Truck Rule |
| 10 GW of distributed solar by '30 | Clean Energy Fund | Make-Ready charging station goals |
| (3-) 6 GW of storage by '30 | Action/ targets NYC, utilities, other Agencies | 100% ZEV School Bus sales by '27 |



New York's Electricity Needs Will Grow



New York State Power Grid Study

- **Power Grid Study:** The NYS Department of Public Service and NYSERDA completed the New York Power Grid Study to identify distribution upgrades, local transmission upgrades, and bulk transmission investments that are necessary to achieve the state's goals in the Climate Act.
- **Utility Study:** Identified a number of upgrades to the local transmission and distribution systems to accelerate progress towards meeting 70% of the State's electric energy demand with renewable sources by 2030.
- **Offshore Wind Study:** Concluded 9,000 MW of offshore wind generation can be integrated without requiring major onshore bulk transmission upgrades to mitigate adverse system impacts or curtailments.
- **Zero Emissions Study:** New York's 2030 clean energy goals can likely be met at low levels of curtailment and congestion without significant bulk-power transmission upgrades beyond those already planned and under development.

Grid Planning Underway

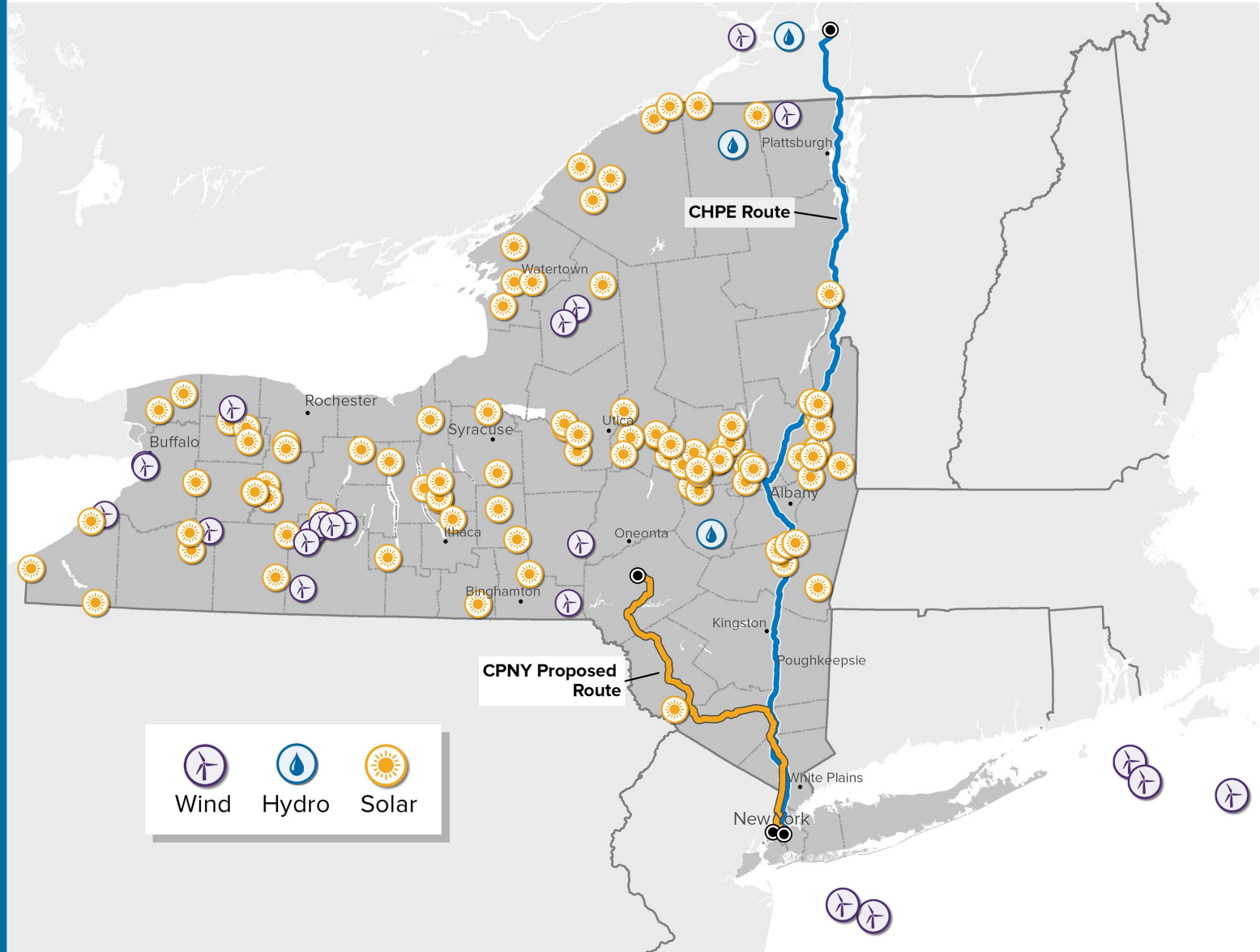
- **Near-Term Grid Improvements:** Resulting from the Power Grid Study, the upstate utilities have proposed multiple suites of local transmission upgrades that will create significant amounts of headroom to accommodate integration of large-scale renewables. The PSC approved the first suite of National Grid projects in July 2022 and is considering additional proposals submitting by National Grid, Avangrid NY, and Central Hudson Gas & Electric. Utilities statewide are also required to submit additional suites of transmission upgrades driven by CLCPA goals by January 1, 2023.
- **Next Steps on Enhanced Grid Planning:** Utilities are working to develop and submit a proposed Coordinated Grid Planning Process by January 1, 2023, to improve coordination of local transmission and distribution upgrades performed by the individual utilities, the bulk-power system planning and generation interconnection processes led by the NYISO, and the renewable generation and storage procurement planned and managed by NYSERDA.
- **Long Island Offshore Wind Export:** In March 2021, the PSC issued an Order which declared a Public Policy Transmission Need on Long Island (LI). The Order called for increasing the export capability from LI such that at least 3,000 MW of OSW is deliverable. NYISO is currently in the "Evaluation and Selection" phase of the process. Projects will be ranked based on several factors such as cost, cost containment, transfer capability, operability, schedule, property rights, production costs, deliverability, and Installed Capacity costs. NYISO envisions providing a project ranking "sometime in the first half of 2023". Stakeholder vetting and NYISO Board approval would follow.

Renewable Energy Projects Under Development Since 2018

Over 120 large scale renewable energy projects under development advanced since 2018

Over 14,500 megawatts of new renewable energy - enough to power nearly 5.2 million households annually

Over \$35 billion of private investment in clean energy



New York State's Progress to Date

Largest Transmission Projects in New York State in Last 50 Years

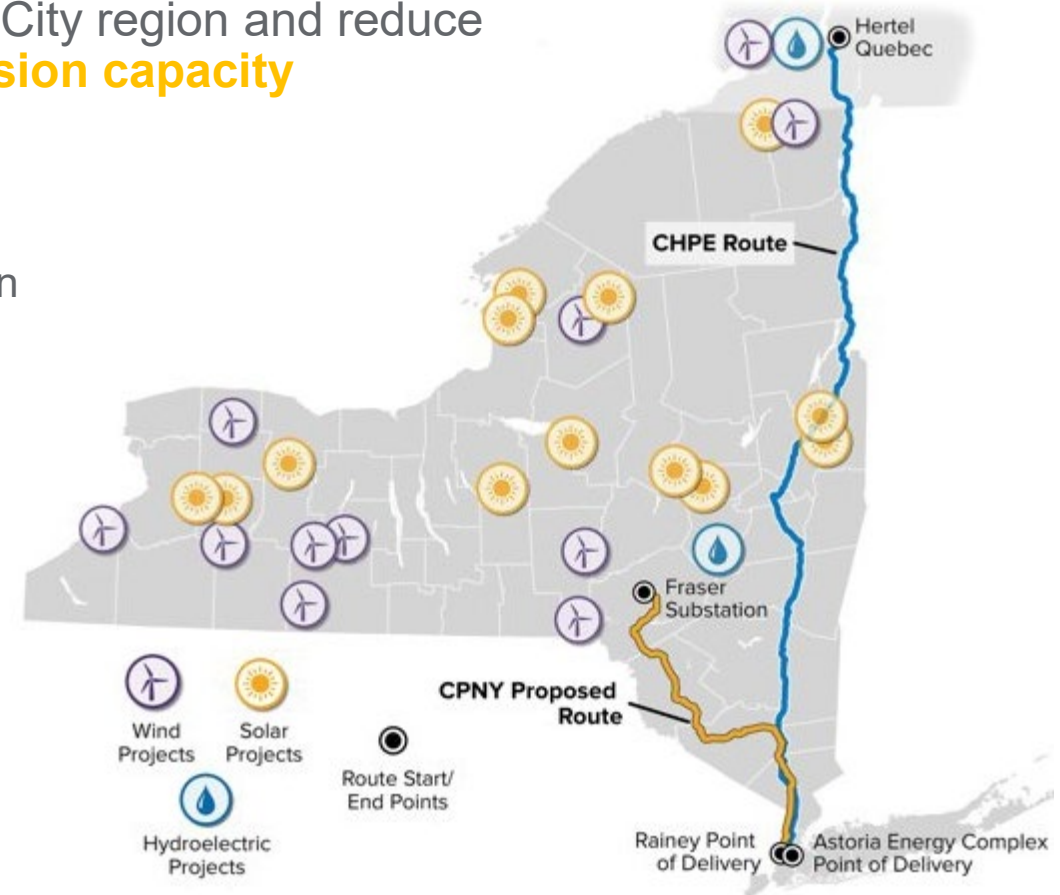
Tier 4 established to increase renewable energy in the New York City region and reduce dependence on fossil fuels = **2,550 MW of new HVDC transmission capacity**

➤ Champlain Hudson Power Express

- 339 miles buried submarine (~60) and terrestrial (~40%)
- Remediation & site prep underway at Astoria Complex
- Fully permitted
- US Line construction starts Q4 2022
- Early 2026 energy delivery

➤ Clean Path NY

- 175 miles buried, 105 miles in existing NYPA ROWs
- 1,160 MW pumped storage
- 2,000 MW wind + 1,800 MW solar across NYS
- Art. VII permitting starts Q4 2022
- Construction starts 2024
- Mid-2027 energy delivery



New York Third Offshore Wind Solicitation: ORECRFP22-1

Solicitation Overview

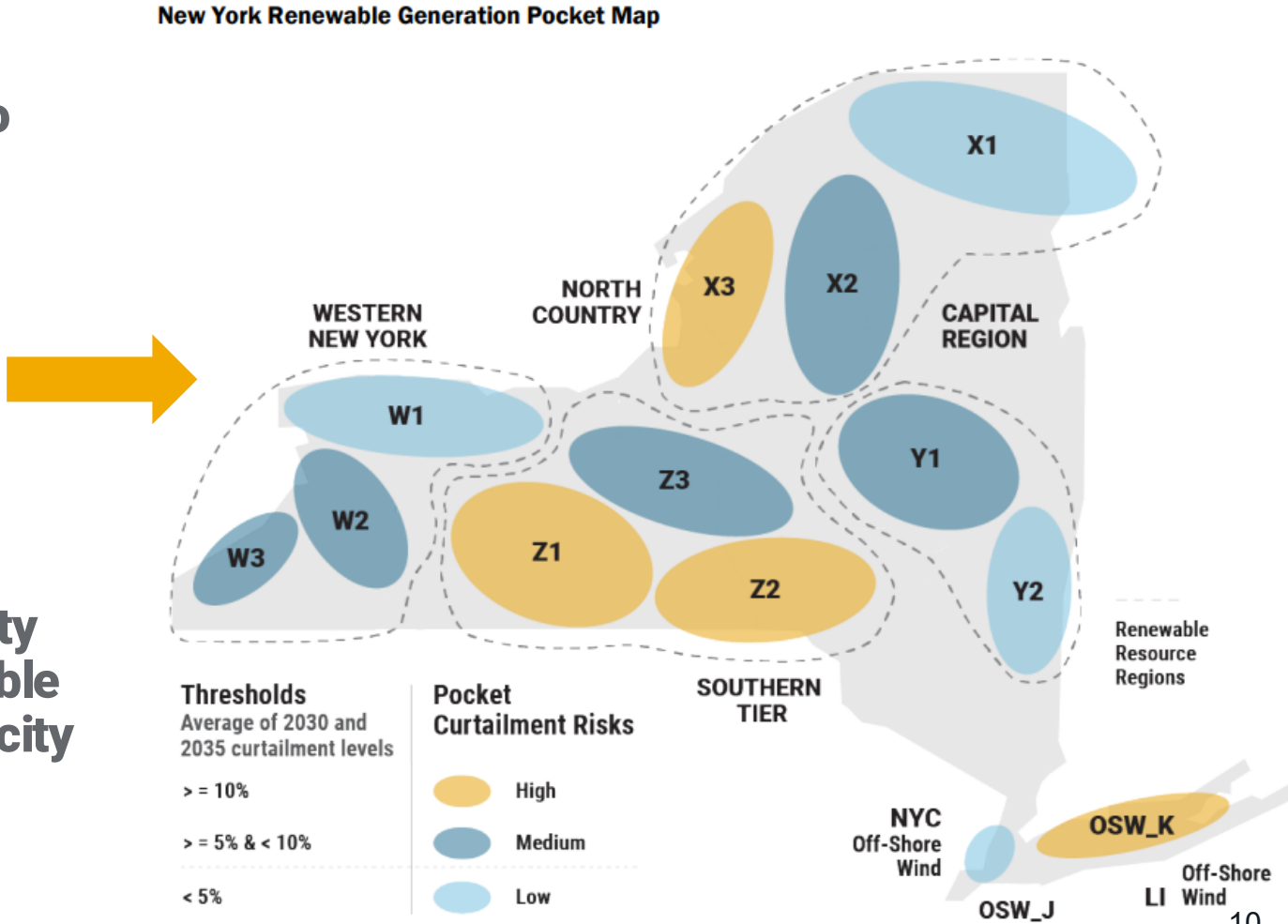
- Target minimum of 2 GW new project(s)
- \$500 million funding to support offshore wind supply chain infrastructure
- Transmission improvements (HVDC, Offshore Grid “Mesh-Readiness”, Storage)
- Repurposing Fossil-Fuel infrastructure
- Stakeholder engagement, promoting equity and delivering benefits to NYS Disadvantaged Communities
- Support for environmental and fishing engagement, research and stewardship.
- 2021 NYS PSL Obligations: Buy American (U.S. Structural Iron and Steel), Prevailing Wage, PLAs, and Project Peace Agreements (O&M)

| Solicitation Schedule | |
|-----------------------------|-------------------|
| RFP Release | July 27, 2022 |
| Notice of Intent to Propose | December 1, 2022 |
| Bid Submission | December 22, 2022 |
| Award Notification | Q1 2023 |
| Contract Execution | Q2 2023 |

- Builds on the New York State **Power Grid Study** with emphasis on **grid benefits**
- Requirements for **HVDC** technology and **Meshed-Ready** **prioritize** optionality for **cable corridors**, preparing for a future **offshore transmission system**
- Bids may include **electrical grid storage**, **repurposing fossil fuel based electrical infrastructure**, and other complimentary **energy transition technologies**

2022 Tier 1 Solicitation for Large-Scale Renewables

- > **Sixth annual solicitation for LSR, seeking 4.5 million MWh annually (approx. 2,000 MW), to serve ~600K NYS homes.**
 - **Step One Applications: Due Nov. 16, 2022**
 - **Step Two Bid Proposals: Due Feb. 9, 2023**
- > **New requirement for projects to conduct deliverability studies if sited in areas with insufficient headroom to connect new renewables/with high curtailment risk.**
- > **Bid evaluation will assess energy deliverability and incremental load served by new renewable generation to support 70% renewable electricity by 2030, accounting for renewables already operating/contracted by NYSERDA.**



Distributed Energy Resources and Electric Vehicles Helping Drive Flexible Load Statewide

- **Distributed Solar/NY-Sun:** New framework to achieve at least 10 gigawatts of distributed solar by 2030 approved by New York Public Service Commission (PSC) - at least 1,600 megawatts of solar to benefit underserved New Yorkers
- **Energy Storage:** In this year's State of the State, Governor Hochul directed the Department of Public Service and NYSERDA to update the State's Energy Storage Roadmap to double deployment, reaching at least 6 gigawatts of energy storage by 2030 – the largest target in the nation.
- **Electric Vehicles:** New York State's \$1 billion investment in electrifying its transportation sector is vital to meet our sweeping climate and clean energy plan.
 - New passenger cars and trucks sold must be zero-emissions by 2035 with medium-duty and heavy-duty vehicles must be zero-emissions by 2045 (enacted into law in 2021)
 - New York State requires all new school buses purchased be zero-emissions by 2027 and all school buses on the road follow in 2035 (included in FY22-23 State Budget)

Efficient Building Electrification is Key

> **Near-term Initiatives** to advance include:

- **New goal of 2 million climate friendly homes by 2030, targeting 1 million electrified homes and 1 million electrification-ready homes**
- **Upgrading New York's appliance efficiency standards, reducing energy use while saving New Yorkers billions of dollars in utility costs**
- **Key next steps:**
 - **Zero on-site greenhouse gas emissions for all new construction**
 - **Mandating energy benchmarking for large buildings, making it easier to track and implement energy-efficiency improvements for building owners over time.**

> **Heat Pumps** must be scaled aggressively:

- **2030: heat pumps become majority of new purchases for space and water heating; need to ensure systems are right-sized for performance and optimal emissions reduction. ~200K heat pumps installed currently in NYS.**
- **2050: 85% of homes and commercial building space statewide have electrified heat pumps**



Innovation in New York State

We are investing in solutions and approaches that will yield better performance, reduce costs, increase renewables hosting capacity and improve integration in support of 100 percent zero-emission electricity grid.

➤ **Long-duration Energy Storage (LDES):**

- **\$16.6 million in awards for five long duration energy storage projects that will help harness renewable energy and provide stored energy to New York's electric grid. Multiple projects selected, with two specific examples included below:**
 - **Demonstration of nuclear-hydrogen fueled peak power generation paired with a long duration hydrogen energy storage unit to help reduce emissions from the New York Independent System Operator (NYISO) electric grid.**
 - **Early stage product development of a 3D printed concrete marine pumped hydroelectric storage system that integrates directly with offshore wind development in support of grid resiliency and reduced reliance on fossil fuel plants to meet periods of peak electric demand.**

➤ **Regional Clean Hydrogen Hub:**

- **New York-led coalition of six states and 70+ clean hydrogen ecosystem partners are laying the groundwork for a proposal for the U.S. Department of Energy funding opportunity that was announced last week, with up to \$8 billion in total funding available and designation to become one of at least four regional clean hydrogen hubs**

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