

2021 NYPA/Canals Accomplishments

Transmission Projects Supporting Clean Energy

Growing Transmission Capacity. Advancing Renewable Energy.

One of NYPA's priorities under VISION2030 is to become the state's leading transmission developer, owner and operator. It is critically important for New York State to relieve transmission congestion and integrate more renewables into the grid.

Our transmission activities directly support Governor Hochul's nation-leading clean energy goals in its efforts to reach a carbon-free electricity system by 2040. NYPA is investing between \$200 million to \$400 million annually to grow our transmission asset base by three to five times by 2030.

- Clean Path NY will provide nearly 7.5 million megawatt-hours (MWh) per year from upstate emissions-free renewable energy sources to downstate destinations—enough to power more than 1 million homes. NYPA is partnering with Forward Power (a joint venture of energyRe, LLC and Invenergy, LLC) on the project, which will create 8,300 clean energy and construction jobs in New York State.
- Smart Path will upgrade 78 miles of transmission lines from Massena to Croghan. The upgraded lines will be more resilient against weather events, and enable secure transmission of clean and renewable energy from Northern New York into the electric grid including low-cost hydropower from NYPA's St. Lawrence-Franklin D. Roosevelt Power Project.
- Smart Path Connect is a partnership with National Grid to rebuild nearly 110 miles of transmission lines in the North Country and the Mohawk Valley. The project runs east-west from Clinton to Massena and north-south from Croghan to Marcy. When completed, the two segments of Smart Path Connect will combine with Smart Path to create one continuous upgraded transmission line from Clinton to Marcy.
- *Central East Energy Connect will upgrade energy transmission along a 93-mile, 345 kV transmission line in the Mohawk Valley and Capital Region. The \$854 million project, in partnership with LS Power is designed to increase transmission capacity and deliver more renewable energy to high-demand areas across the state while supporting clean energy jobs and improving resiliency.*

Generation Modernization Projects

Strengthening existing hydropower assets.

- *Next Generation Niagara Modernization and Digitization Project.* In September, NYPA completed the digitization of the first of 13 hydropower turbines at the Robert Moses Niagara Power Plant. This represents the first major milestone of Next Generation Niagara, a \$1.1 billion, 15-year program to significantly extend the operating life of the Niagara Power Project.
- *Lewiston Pump-Generating Plant Life Extension and Modernization.* NYPA completed a \$460 million effort at the Lewiston Pump-Generating Plant (LPGP). The improvements at LPGP and

also at the Robert Moses Power Plant include replacing aging equipment with the latest machinery and incorporating advanced digital technologies for optimizing the hydroelectric project's performance.

Solar and Energy Storage Projects

Advancing solar projects across New York State was a critical element in our clean energy activities in 2021. The state's Climate Leadership and Community Protection Act (CLCPA) set goals of 6 gigawatts (GW) of distributed solar by 2025 and 3 GW of storage by 2030. In July, New York State reached 3 GW of solar generation—half of the CLCPA goal for 2030—thanks largely to the efforts of NYPA and its partners.

Announced in early 2021, NYPA's Community Solar and Storage Program will spur nearly \$135 million in direct, private investments toward the development, construction and operation of up to 40 solar projects across the state, creating more than 1,250 short- and long-term jobs.

- NYPA, EPRI and the U.S. Department of Energy launched a pilot project to explore the use of a high-temperature crushed-rock thermal energy storage system developed by Brenmiller Energy. The system stores excess thermal energy so it can be used later during periods of peak demand.
- NYPA worked with the New York City Department of Citywide Administrative Services to assist with the power purchase agreements for installation of solar arrays on 47 public schools and several water treatment facilities, which includes up to 6.6 MW of energy storage.
- NYPA and the New York State Office of General Services began development on remote solar arrays that will provide Empire State Plaza in Albany with more than 30 MW of solar generation.
- NYPA selected a developer to install and operate a 5 MW solar array at the Monroe County Water Authority (MCWA) to help offset more than 15 percent of the energy required for water pumping and treatment each year.
- NYPA partnered with the University at Albany to begin construction of a 1.8 MW solar project that covers nearly all the campus's available roof space and supplies 60 percent of the electricity to the new Emerging Technology and Entrepreneurship Complex building.
- NYPA began negotiating agreements for municipalities and school districts in Westchester County that want to build solar power systems to meet their renewable energy goals.
- The City of White Plains, with NYPA as its expert energy advisor, and Distributed Solar Development broke ground on a nine-project, 6.8 MW community solar portfolio of city-owned sites that will triple the amount of solar energy produced in Westchester County.

Electric Vehicles

The two hurdles to electric vehicle (EV) adoption historically have been economics and convenience. For the past few years, battery prices have fallen dramatically, making EVs more cost competitive. With programs like our EVolve NY, great strides are being undertaken to make EV ownership much more convenient with installation of charging stations statewide.

EVolve NY dedicates up to \$250 million through 2025 to make electric vehicles easier to own in New York State.

EVolve NY aims to install fast-charging stations allowing drivers to travel all of New York State with the confidence a charging station is nearby at locations along major state highway corridors plus charging hubs in several major cities.

2021 EV Highlights

- EVOlve NY installed about 100 fast chargers, 60 operational—putting New York on track to have the third-largest open-access 150 kW+ fast-charging network in the U.S.
- EVOlve NY added fast chargers in Amsterdam, Saratoga Springs, the Village of Fairport and New York City; at five Stewart’s Shops in the Capital and North Country; and at three fast-charging hubs at Mirabito gas stations in Syracuse and Oneonta.
- NYPA finalized a \$39 million agreement to install more than 50 overhead chargers to power 45 new electric buses to be deployed by the Metropolitan Transportation Authority in New York City in 2022.
- In July, NYPA’s Board of Trustees approved \$1.1 million in additional funding to help New York’s municipal and rural electric cooperative systems bring more hybrid and electric vehicles into their fleets.

Energy Efficiency

NYPA is playing a major role in New York State’s efforts to reduce energy use and advance its ambitious climate goals by working closely with state and local government customers to achieve impressive results.

A centerpiece of the effort is BuildSmart 2025, NYPA’s statewide energy efficiency program aimed at drastically reducing energy usage in New York State facilities. NYPA’s BuildSmart 2025 is contributing to helping New York State reach its goal of 11 trillion British thermal units (Btu) of energy savings by the end of 2025—the equivalent of removing more than 500,000 cars off the road—and a 34 percent reduction in energy use from 2015.

NYPA has enrolled more than 53 state agencies and authorities in the NY Energy Manager platform. NY Energy Manager directly supports BuildSmart 2025 by providing one place where these agencies and authorities can manage and track their performance to their Btu of energy savings targets.

- *Empire State Plaza Plan.* In September, NYPA and the New York State Office of General Services began an 18-month comprehensive energy audit that will assist the state in determining the benefit and feasibility of implementing additional energy-saving technologies at the plaza in Albany.
- *Clean Heat for All Challenge.* In late 2021, NYPA, the New York City Housing Authority and New York State Energy Research and Development Authority launched the Clean Heat for All Challenge. This competition is directed at heating and cooling equipment manufacturers to develop a new electrification product to better serve existing family buildings and hasten the transition to fossil-free heating.

Smart Street Lighting NY LED Upgrades

A major component of our energy efficiency efforts is our LED efficiency program. By converting existing lighting systems to energy-efficient LEDs, NYPA helps municipalities save taxpayer dollars, provide better

lighting to their communities, reduce energy use and decrease their community's impact on the environment.

NYPA's Smart Street Lighting NY, along with other local street lighting programs, have a goal of replacing at least 500,000 streetlights throughout New York State with LED technology by 2025. I am happy to say excellent progress has been made, as nearly 300,000 streetlights were installed by 2021.

Investing in Community and Improving New York State

Economic development is an important component of NYPA's mission.

NYPA's signature economic development initiative, ReCharge NY, enables qualifying businesses and nonprofits statewide to "Find the Power to Succeed." With ReCharge NY, they can control their energy costs and create jobs by using a combination of specially allocated clean, low-cost NYPA power and market-rate power.

Companies receiving allocated power have made commitments such as remaining in the state, keeping or growing employment, expanding operations and making significant local investments in their business.

ReCharge NY supports more than 389,000 jobs in the state and has sparked more than \$19 billion in private capital investments.

In December, NYPA's Board of Trustees approved 34 ReCharge NY power allocations to 29 customers in support of more than 22,600 jobs—including 560 newly created jobs—that will also spur more than \$629 million in private capital investments.

In 2021, approved allocations of nearly 17.9 MW of low-cost ReCharge NY power will benefit companies throughout New York State.

Our trustees also updated NYPA's criteria for evaluating applications for economic development power to include consideration of applicants' impacts on Diversity, Equity and Inclusion commitments.

Preparing for the Future Through Innovation

Driving cutting-edge innovation to improve how we support the statewide grid while paving the way for the rest of the industry.

- *Green Hydrogen and Decarbonizing Natural Gas*

Green hydrogen is a potential energy trend that may go mainstream quicker than expected. Green hydrogen, produced with renewable energy, could play a key role in decarbonizing our economy.

NYPA, the Electric Power Research Institute (EPRI), General Electric, Airgas, Sargent & Lundy and Fresh Meadow Power commenced a first-of-its-kind demonstration project to assess the potential of substituting renewable hydrogen for a portion of the natural gas used to generate power at NYPA's Brentwood Power Station on Long Island.

With access to low-cost power at NYPA's Niagara Power Project, Plug Power began construction of a \$290 million green hydrogen fuel production facility in Genesee County. The facility will

offer transportation fuel to customers at pricing competitive to diesel, leading the way to decarbonize freight-transportation and logistics in New York State.

- *Impacts of Climate Change*

In 2021, NYPA undertook several initiatives to assess and reduce the impact of climate change and extreme weather on the electric grid. In August, NYPA and AT&T announced a collaboration to share climate data to identify risks to utility and telecommunications infrastructure and better position New York State to be more resilient to extreme weather.

An ongoing climate study, on the impact to NYPA's infrastructure and systems, was announced in 2021. It is being conducted with Argonne National Laboratory in collaboration with EPRI and Columbia University's Center on Global Energy Policy.

- *Real-Time Data and System Operations*

NYPA finished its \$1 million Forecast Dynamic Line Rating project, which installed state-of-the-art weather sensors on Northern New York transmission lines to gather weather data. The sensors monitor live weather conditions at individual transmission towers rather than relying on national forecast data taken miles away.

NYPA also worked with several partners on a U.S. Department of Energy-funded project to enable real-time assessment of stress on the state's electric grid and provide intelligence about developing problems to system operators.

- *Artificial Intelligence*

In December, Prisma Photonics was announced as the winner of the New York-Israel Smart Energy Innovation Challenge for its real-time transmission line issue detection system that will help improve grid safety, security and reliability. NYPA will collaborate with Prisma to advance the functionality of its platform, which was installed on NYPA's transmission lines during a previous pilot project.

- *Customer Asset Management Solutions*

NYPA also announced the availability of an asset health monitoring service that enables centralized management of power plants, substations and power lines for use by NYPA's power supply customers like manufacturers, municipal electric systems, rural cooperatives and manufacturers.

Empowering our Employees, Partners and Communities

NYPA has a 10-Point Diversity Equity & Inclusion (DEI) Plan of internal and external commitments underway to build a more inclusive, diverse workforce. It is poised to expand customer energy products and services in underserved and environmental justice communities, help customers lower utility costs, and expand participation of diverse firms.

NYPA has committed to investing in programs to support minority and/or women-owned businesses (MWBEs) in the supply chain; and expand efforts to help them develop, retain and recruit a dynamic,

diverse workforce. Under the plan, NYPA has reached contract agreements with 25 new, diverse suppliers—22 of which are MWBEs.

NYPA is allocating \$12 million over the next five years to assist in further strengthening MWBEs in the energy industry.

Striving to Promote STEM Education in our Communities

- *First Harvest from Community-Based Hydroponics Lab*

NYPA, UPROSE, New York Sun Works and Sunset Park community leaders celebrated the launch and initial harvest of New York City’s first community-based organization hydroponics lab. Funded by NYPA, the new lab was conceptualized and developed by New York Sun Works and UPROSE.

- *Pathways in Technology*

As part of its DEI community investment strategy, NYPA has partnered with Pathways in Technology (P-TECH) Early College High School to bring educational resources to high school students looking to build careers in STEM. The inaugural year had 15 participating high school students across the state.

- *Future Energy Leaders Scholarship*

NYPA launched its Future Energy Leaders Scholarship, a program to support students from economically disadvantaged communities across New York State. In June, NYPA announced 10 academically accomplished high school seniors would receive a \$10,000 scholarship. The scholarship winners reflect diversity in background and interests.

- *Astoria Students Graduate from STEM Summer Program*

In August, 39 teens from the Variety Boys & Girls Club of Queens graduated from a summer STEM program where they learned about electricity and renewable energy as part of a NYPA collaboration with Con Edison and 174 Power Global to support an under-resourced community near an upcoming clean energy project—a 100 MW battery storage facility at the Eugene W. Zeltmann Power Project.

- *John S. Dyson New York Energy Zone*

In Utica, NYPA opened its newest Visitor Center to introduce audiences of all ages to the dynamic world of electricity—past, present and future. With interactive exhibits, activities, movies and videos about New York State’s exciting electric history and its many great electric companies, the NY Energy Zone also highlights the important work at NYPA’s Frederick R. Clark Energy Control Center in nearby Marcy.

An Ever-Improving Work Culture

NYPA strives to foster a workplace where people want to be and where every employee is encouraged to reach their full potential. We seek to attract, engage and inspire a skilled, diverse and resilient workforce that is empowered to think big, do-good and transform the energy industry. I am very pleased to say that we are succeeding in these efforts. That’s why it makes perfect sense that NYPA

marked its third year on Forbes magazine's list of Best Mid-Sized Employers by placing in the top 500 companies "liked best" by employees in the 2021 annual ranking.

NYPA's programs, such as the Blue Standard suite of development initiatives, Technical Training and LinkedIn Learning, are helping employees reach their professional goals. Additionally, through our Resource Alignment effort, we are taking full advantage of our Workforce Planning, Knowledge Management and Process Excellence programs.

Strong Financial Performance

Throughout 2021, NYPA continued its strong financial record. S&P Global Ratings and Fitch Ratings affirmed their strong ratings on NYPA's long-term bonds and short-term debt. We outperformed all key credit metrics needed to maintain our stellar credit rating from both credit agencies.

S&P noted its positive rating reflects, "favorable leverage metrics even after the utility added \$1.1 billion of debt in 2020," referring to NYPA's historic green bond sale, which won NYPA the Bond Buyer's Deal of the Year 2020.

These ratings lauded the Power Authority's leadership in navigating the pressures of a pandemic with great success. This was illustrated by surpassing our targeted net income of \$43 million to earn \$72 million, which ensures NYPA's balance sheet remains strong with robust liquidity.

Canal Corporation Operations

From the start to finish, this Canal season wasn't an easy one.

As the Canal System watered up on May 10 preparing for the 2021 Navigation Season, there was a washout at Palmyra along the Ganargua Creek south of Lock E-29. On just the second day of the navigation season, May 22, we had a significant equipment failure at Lock E-17 in Little Falls. Rounding out the trifecta of early season challenges, there was a worsening seepage in Brockport. All during the navigation season, the weather was uncooperative, forcing closure of portions of the Canal System sometimes for weeks.

Even with the arrival of autumn, as we lifted the last movable dam out of the Mohawk River for the season, impending weather conditions with high waters made routine work more difficult. We contended with the remnants of several tropical storms with unprecedented rainfall. Yet, Canal staff rose to the occasion and worked to quickly lift the movable dams throughout the Mohawk River to ensure extra capacity for the rainfall and prevent potential flooding. Residents came to locks to share refreshments and gratitude with our valued workforce.

Despite these challenges, the navigation season was successful and due to the experience, dedication and perseverance of our hard-working staff across the state and our colleagues at NYPA.

In 2021, there were more than 77,000 lock-throughs. We hired 144 seasonal employees, with 98 of them rejoining for at least a second season, and 25 employees were promoted.

Reimagine the Canals

Following the successful launch of the Reimagine the Canals initiative in 2020, the program saw continued growth in 2021, helping to introduce thousands of New Yorkers to everything the New York State Canal System has to offer. Last year saw the addition of several new programs and the advancement of previously announced economic development and ecotourism projects throughout the state.

- *Brockport Loop Pedestrian Bridge*

As the first large-scale infrastructure project to begin under the Reimagine the Canals initiative, NYPA's Board of Trustees selected SHoP Architects as the lead designer and chose Ove Arup & Partners as engineer of record on the project.

- *Canastota Pocket Neighborhood*

Madison County officials selected Savarino Companies of Buffalo to develop the transformative "Pocket Neighborhood" project along the Old Erie Canal in Canastota, 25 miles east of Syracuse. This unique pocket neighborhood incorporates housing, mixed-use commercial space and recreational opportunities.

- *Montezuma Wetlands Enhancement*

The environmental initiative to enhance more than 750 acres within the Northern Montezuma Wetlands Complex in Central New York was announced.

- *On the Canals*

On the Canals was launched in 2021, following the success of last year's NY Canal Staycations program of free outdoor activities. This provides New Yorkers and nearby travelers with Canal vacation experiences. The advances in 2021 helped meet the three On the Canals goals: support local businesses and encourage new ones, introduce the Canals to a wider audience through free outdoor recreation and pilot a hospitality strategy. Visit canals.ny.gov/onthecanals/

- *Unique Camping*

Camp Rockaway, a New York State-based outdoor high-end camping provider, managed the glamping site at Lock C-5 on the Champlain Canal in Schuylerville, offering vacationers an opportunity to experience the vast history and bucolic landscapes of one of New York's oldest canalside communities by enjoying luxury camping on the banks of the canal.

- *Iconic Lighting*

The new LED lighting features were turned on just before the holiday season, illuminating and beautifying the Fairport Lift Bridge over the Erie Canal in Monroe County, plus two Oneida Lake lighthouses—at Brewerton in Oswego County and another at Verona Beach in Oneida County.

- *Fall Fishing and Governor's Conservation Efforts in Western New York*

Governor Hochul announced a new pilot program, Access and Conservation Easement (ACE), to improve public access for fishing in Lake Ontario tributaries that receive regulated water releases in the autumn from the Erie Canal. ACE, through one-time payments to waterfront property owners, will provide more public access locations for fishing. Need for greater access helps support the success of the Fall Fishing Program, introduced by Canals and NYPA in 2020, to extend and enhance world-class fishing opportunities, while also improving spawning conditions in the tributaries.

- *Green Boats Program to Spur Electrification of Tour and Charter Vessels on State's Canal System*

In September, Governor Kathy Hochul announced the launch of the Green Boats program to advance the electrification of tour and charter boats operating on the New York State Canal System.

Improved Public Engagement Through Communications

In 2021, the Canal Corporation launched a new public engagement team to help us centrally manage Canals marketing, communications, and public and government relations. The group focused their initial efforts on reinforcing key stakeholder relationships and creating open lines of communication with important constituent groups such as the boaters, historic preservationists, elected officials, community leaders, the Canal Recreationway Commission and the Reimagine the Canals Advisory Councils.

The team supported key strategic communications including engagement related to Reimagine the Canals projects and Canal operations. These included emergency response communications as the Canal staff dealt with the impacts of equipment failures and extreme weather events. The team provided clear and timely communications to elected officials and the public so they were aware of upcoming situations and could properly prepare.

Internally, we've engaged employees through various new digital platforms. Employees, and those who have an interest in Canal operations, receive a biweekly newsletter featuring bite-size construction, maintenance and Reimagine the Canals project updates; staff and team profiles; and development opportunities for staff. More than 21,500 people follow Canals on Facebook, Instagram, Twitter and LinkedIn.