

# Toward a Clean Energy Future: A Strategic Outlook



# 2024-27



NEW  
YORK  
STATE

NYSERDA



# FROM THE PRESIDENT AND CEO

**To our colleagues, partners, and fellow New Yorkers:**

NEW YORK STATE'S JOURNEY TO BECOMING  
A FULLY DECARBONIZED ECONOMY IS  
WELL UNDERWAY.

In the next three years, our State will make even greater progress through the examination of new technologies to achieve a zero-emission grid and flexible loads; the influx of new federal dollars into the energy efficiency and electrification market; the integration of resiliency considerations into infrastructure planning; the continued growth and diversification of our clean energy workforce; and the advancement of policies that will transform the landscape for energy pricing and facilitate an even greater expansion of clean energy markets.

The State's leadership demonstrates to the country that a commitment to clean energy ensures a path toward future energy systems that are affordable, reliable, and equitable, all while improving quality of life, expanding our economy, and most importantly, protecting our environment. The New York State Energy Research and Development Authority (NYSERDA) is well positioned to continue helping New York State chart that path over the years to come.

While there is much to look forward to in the years ahead, 2023 also marked a turning point as clean energy markets entered a critical stage of maturation across the State and, largely due to the cross-cutting impacts of a global energy crisis, faced more challenges than in prior decades. Despite these challenges, with Governor Hochul's steadfast leadership and support, in the coming three years, NYSERDA will maintain our core responsibilities of advancing clean energy innovation and investments, working to combat climate change; improving the health, resiliency, and prosperity of New Yorkers; and delivering benefits equitably to all New Yorkers.

In each facet of our work, NYSERDA seeks to maximize our impact in the marketplace by developing policies or delivering programs, transforming markets to allow private actors to create new value and opportunity, and coordinating the contributions of others that will be necessary for NYSERDA's and New York's success. We recognize we are at an intersection that is full of new opportunities to advance our efforts in partnership with local, State, and federal government and private partners from across a variety of sectors.

Some of the opportunity areas we seek to build on over the next three years include:

- **Expansion of the Clean Energy Economy:** NYSERDA is actively supporting career pathway programs aimed at educating, training, and providing services to place individuals—especially those from vulnerable populations—into clean energy occupations, addressing the growing demand for workers in this sector. Such programs have helped drive the creation of approximately 171,000 family-sustaining clean energy jobs statewide, with growth in this sector outpacing overall job growth in New York State. NYSERDA is also focused on analyzing local clean technology manufacturing and supply chains to determine where the State can be the most competitive in attracting investments and jobs. We are coordinating with State partners on a recruitment campaign to bring clean energy firms to New York State, leveraging Federal Inflation Reduction Act tax credits and funding. Through these efforts, we are fostering a robust and equitable expansion of our State's economy overall.

- **Infusion of Federal Dollars:** New York State seeks to demonstrate clean energy leadership both within our State and for others across the country. We expect to see this transition accelerate thanks to the unprecedented amount of federal dollars directed to support clean energy programs. Over the next few years, we will work to leverage these dollars to accelerate our efforts in New York. For example, New York was the first state in the country to be approved by the Department of Energy (DOE) for funding through the Home Electrification and Appliance Rebates program to amplify the impact of our EmPower+ program, which serves low- and moderate-income homeowners. In total, NYSERDA alone is working to deliver nearly \$1.2 billion in federal funding.
- **Advancing State Energy Policy:** NYSERDA will continue its role as the State’s chief energy policy analyst, driving the development of policies that contribute to a stable, resilient, zero-emissions grid. For instance, under Governor Hochul’s direction, NYSERDA and the Department of Environmental Conservation (DEC) took significant steps this past year to advance an economywide cap-and-invest program. NYSERDA will also continue to inform policy development with robust technical analysis, as evidenced by the technical feasibility study we have launched to support the Public Service Commission proceeding on the technology resources needed to achieve a zero-emissions grid by 2040.
- **Facilitating an Equitable Clean Energy Transition:** NYSERDA continues to advance equity both externally and internally through its programs and internal operations. Through programs such as Clean Energy Communities, which has served more than half the local governments in the State, we are better equipping communities of all sizes to make informed and affordable decisions on their own clean energy futures. We have doubled down on this work through the Regional Clean Energy Hubs program, a network of community-based organizations that serve as a one-stop shop for individuals and businesses to access resources that can help them reduce their energy usage and cut costs, or even seek training or employment in the clean energy sector. Furthermore, the Governor’s 2024 State of the State announced statewide Solar for All, the expansion of NYSERDA and National Grid’s successful Solar for All program. This would increase the State’s use of solar energy resources and result in energy bill savings for low-income New Yorkers.

With this context, I’m proud to present NYSERDA’s Strategic Outlook for 2024-2027, which builds on the progress we’ve made and harnesses the opportunities of this moment to rapidly increase our impact across the State and enhance our leadership across the country and, indeed, the world. The Strategic Outlook focuses our vision on the following key mission outcomes that we seek to achieve as an organization, with a new standalone mission outcome added this year to reflect the critical work we are doing to decarbonize the transportation sector:

- Greenhouse Gas Emissions Reduction
- Clean Electricity
- Clean and Efficient Buildings
- Clean Transportation
- Clean Energy Jobs and Economy
- Sustainable and Climate-Resilient Communities

I want to express my sincere gratitude to the NYSERDA team, our board, and State partners, for your support and dedication to the success of our clean energy initiatives. Together, we have made remarkable progress in advancing clean energy and creating opportunities for all New Yorkers. And on behalf of NYSERDA, I would also like to thank our community and industry partners. As we continue our journey toward a more sustainable future, I invite all of you to join us in taking action. Your commitment is instrumental in driving positive change and ensuring a brighter tomorrow for generations to come. Thank you for standing with us as we work tirelessly to build a cleaner, more resilient New York. Together, we can achieve our shared goals and leave a lasting legacy of environmental and energy stewardship.

Sincerely,



**Doreen M. Harris, President and CEO, NYSERDA**

This forward-looking document reflects State policy and NYSERDA’s plans as of April 2024. New York State’s energy policy objectives continue to develop in response to the evidence that aggressive action is needed to combat climate change—and greater ambition is possible. Visit NYSERDA’s website for the latest information.

[nyserderda.ny.gov/Strategic-Outlook](https://nyserderda.ny.gov/Strategic-Outlook)

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# NYSERDA AND ITS CONTEXT

## NEW YORK STATE'S COMMITMENTS

Governor Kathy Hochul is driving an energy agenda for New York that can take on climate change, provide affordable and reliable energy, build a robust economy with new job opportunities, and situate our State to take the lead on the advanced technologies that will shape a decarbonized economy. This agenda places New York State in a national leadership role, providing a vision for others to chart a path toward a just and equitable transition to decarbonization while investing in Disadvantaged Communities.

### New York State Energy Plan

**As Chair of the State Energy Planning Board, NYSERDA will lead the examination of energy transitions to support a decarbonizing economy in the next State Energy Plan.**

The State Energy Plan employs a multi-disciplinary approach to inform State energy policy, examining the energy, environmental, economic, societal, and public health impacts of the changes in electricity, fuels, transportation, and related sectors.

By examining existing and recommending new policies, analyzing trends in energy markets, and assessing the development and acceptance of new energy technologies, the State Energy Plan aims to provide decision-makers and the general public with a better understanding and guidance for decisions to advance the State's energy transition.

## Climate Leadership and Community Protection Act

**The Climate Act lays the groundwork for achieving New York State's nation-leading climate targets while calling for an orderly and just transition to clean energy that creates jobs and continues to grow our clean, green economy.**

At the end of 2022, the Climate Action Council adopted New York's Scoping Plan,\* which lays out the State's energy and climate trajectory under the Climate Act. The Scoping Plan set the stage for regulatory and legislative action to unfold and for agencies to begin the work of implementing the Council's numerous recommendations.

Furthermore, the Climate Act stipulates that a minimum of 35%—with a goal of 40%—of benefits of clean energy investments will be directed to Disadvantaged Communities. In March 2023, the Climate Justice Working Group finalized the criteria for identifying Disadvantaged Communities. In early 2024, draft Disadvantaged Communities Reporting Guidance was issued for public review and comment. This guidance will help State entities determine progress toward the Disadvantaged Communities investment target. This goal accounts for overall State agency, authority, and entity benefits and investments in clean energy and energy efficiency programs, projects, or investments in the areas of housing, workforce development, pollution reduction, and low-income energy assistance and economic development that benefits Disadvantaged Communities.

\* [climate.ny.gov/scoping-plan](https://climate.ny.gov/scoping-plan)



NYSERDA plays a critical role in charting the direction of our State's energy and climate policies and implementing this ambitious agenda.

**RESILIENT and DISTRIBUTED GRID**  
1,500 MW of energy storage

**ENERGY EFFICIENCY and BUILDING DECARBONIZATION**  
185 TDU end-use savings in buildings and industrial facilities

**GHG REDUCTION**  
40% reduction in greenhouse gas emissions from 1990 levels

**RESILIENT and DISTRIBUTED GRID**  
3,000 MW of energy storage\*  
\*Governor Hochul has called for an increase from 3,000 MW to 6,000 MW

**ENERGY EFFICIENCY and BUILDING DECARBONIZATION**  
1 million electric homes and 1 million electrification-ready homes

**CLEAN TRANSPORTATION**  
100% light duty zero-emission vehicle sales

**CLEAN ELECTRICITY**  
100% zero-emission electricity

**GHG REDUCTION**  
85% reduction in greenhouse gas emissions from 1990 levels

**now**

**CLEAN ENERGY ECONOMY**  
171,000 clean energy jobs

**by 2025**

**RENEWABLE ENERGY**  
6,000 MW of distributed solar

**by 2030**

**RENEWABLE ENERGY CLEAN ENERGY STANDARD**  
70% electricity from renewable energy

**CLEAN ENERGY ECONOMY**  
More than 200,000 new jobs added

**RENEWABLE ENERGY**  
10,000 MW of distributed solar

**by 2035**

**RENEWABLE ENERGY**  
9,000 MW of offshore wind

**by 2040**

**by 2050**

## NYSERDA'S ROLE

As New York State's clean energy and climate innovation and development agency, NYSERDA plays a central role in planning, designing, and implementing the State's nation-leading policies, programs, and actions—all to deliver a cleaner, healthier, and more prosperous future for all New Yorkers.

### **Our Vision:**

**New York is a global climate leader building a healthier future with thriving communities; homes and businesses powered by clean energy; and economic opportunities accessible to all New Yorkers.**

### **Our Mission:**

**Advance clean energy innovation and investments to combat climate change, improving the health, resiliency, and prosperity of New Yorkers and delivering benefits equitably to all.**

### **Our Promise:**

**NYSERDA provides resources, expertise, and objective information so New Yorkers can make confident, informed energy decisions.**

## **NYSERDA is on the frontlines of a global energy transition.**

**We bring energy expertise and public service to the challenges of fighting climate change and accelerating the arrival of a clean energy future across all corners of our State and our economy.**

NYSERDA works to foster the adoption of the clean energy technologies and innovations needed to address climate change and improve our quality of life. This work helps families and businesses access affordable and clean energy, energy efficiency and resiliency measures, and all-electric homes and vehicles.

At the same time, NYSERDA encourages the innovation and market competition that deliver value to consumers. NYSERDA uses a data-driven, engagement-focused approach to guide program design and provide high levels of accountability and transparency, stewarding public funds toward prudent investments in a wide variety of clean technologies and green infrastructure.



**NYSERDA's role in pursuing these outcomes focuses on:**

**Market acceleration and resource development**

- Supporting customers and projects to accelerate uptake of clean technologies by helping to address a range of barriers, including finance, supply chain and workforce development, siting, technical assistance, building consumer awareness and confidence, and more
- De-risking energy transitions and deployment, from technological and business model innovation to demonstration projects and broad commercialization
- Administering key resource deployment programs, including for large-scale renewables and energy storage projects
- Providing targeted financial support where costs present a persistent barrier, such as for low- to moderate-income (LMI) consumers and residents of Disadvantaged Communities

**Minimizing cost and maximizing benefits**

- Leveraging federal funds
- Reducing hard and soft costs of clean energy development by driving demand and focusing the efforts of key stakeholders, as well as by focusing on technological and process innovation
- Proactively driving efforts to attract clean energy economic development, manufacturing, and supply chain growth, and helping other high-tech industries achieve robust sustainability outcomes

**Policy and analysis**

- Instilling confidence in markets and consumers through information, credible analysis, education, and regulatory certainty
- Designing and administering novel programs and pilots to meet the needs of emerging policy priorities and deep decarbonization pathways
- Investigating and designing ambitious energy and climate strategies and policies for the long term

**Equity and partnerships**

- Leveraging program investments to support job creation in the clean energy economy and expanded access to economic opportunities for underserved populations and Disadvantaged Communities
- Enabling communities, residents, and businesses to take local action on clean energy, climate, and resiliency

**In a dynamic world with global challenges including inflation, high interest rates, supply chain disruptions and international conflict, NYSERDA aims to be a beacon of certainty and reliability for stakeholders and partners in New York State, exhibiting the steadfast, long-term approach and focused attention that is needed to successfully achieve the clean energy transition in the years ahead.**



# Building Blocks of New York’s Clean Energy Agenda



## Climate Act Scoping Plan

Creating policies and recommendations to achieve 40% GHG reduction by 2030 and 85% GHG reduction by 2050



## Clean Energy Fund

Designating more than \$7.7 billion to fund four key program portfolios:

- > NY Green Bank
- > Market Development
- > Innovation & Research
- > NY-Sun



## Clean Energy Standard

Transforming the generation of electricity serving New York State to help reach 70% renewable by 2030 and 100% zero-emission by 2040



## Zero-Emission Vehicles

Reducing transportation emissions through build-out of electric vehicle market and infrastructure and support for electrification of fleets and trucks



## New Efficiency: New York

Delivering energy efficiency savings and emissions reductions with comprehensive building strategies



## NYS Clean Heat

A suite of utility-run incentives—supported by NYSERDA’s market development activities—to replace onsite fuel combustion for heating and cooling with efficient, electric heat pumps (air, ground)



## Regional Greenhouse Gas Initiative (RGGI)

Growing cooperative effort among northeast/mid-Atlantic states to cap and reduce CO<sub>2</sub> emissions from power plants



## New York Cap-and-Invest

New economy-wide program driving emissions reductions, investing proceeds in an equitable manner, sharing benefits with consumers, and maintaining competitiveness of New York’s industries

## FEDERAL INFRASTRUCTURE AND CLIMATE INVESTMENTS

In 2021 and 2022, the federal government passed a trio of laws—the Infrastructure Investment and Jobs Act (IIJA), the Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act, and the Inflation Reduction Act (IRA)—that collectively approved the largest amount of federal funding, and many of the most consequential policies, to directly address climate and energy issues in our nation’s history. Combined, these transformational acts will:

- Increase domestic manufacturing capabilities for critical clean energy products
- Create family-sustaining jobs
- Lower energy costs for families
- Increase renewable energy supply
- Reduce emissions and pollution
- Modernize our electric grid and improve its resiliency
- Improve the health, comfort, and resiliency of our country’s aging homes and building stock
- Expand networks of fast chargers and access to clean and reliable public transportation
- Focus investments in Disadvantaged Communities and to populations that have been underserved historically
- Invest in innovation to drive further economic growth and job creation

This federal funding will be an important complement to New York State’s robust policy agenda and program portfolios. In particular, the passage of new tax credits has the potential to unlock significant private investment in new and emerging technologies. More than half of the climate and energy funding approved in the IRA was authorized in the form of tax credits. The Scoping Plan estimates that the IRA can reduce New York State’s cost to meet the Climate Act’s requirements by up to \$70 billion through 2050.

### The IRA reforms energy tax incentives through a mix of extensions, modifications, and new programs in the coming years

#### Selected tax credit modifications in the IRA\*



**\$2,000**

per year consumer tax credit for the purchase of heat pumps, heat pump hot water heaters, biomass stoves, and boilers

*(25C, nonbusiness energy property credit)*



**\$30**

per MWh for zero GHG electricity generation placed into service after 2024; reduces to \$23 in 2034 and \$15 in 2035

*(45D, production tax credit; 45Y, clean electricity)*



**Adders/  
Bonuses**

for prevailing wage, domestic content, energy communities, low income, and more



**\$7,500**

per vehicle consumer tax credit for qualifying electric vehicles (EVs)

*(30D, clean vehicle credit)*



**30%**

tax credit for standalone energy storage systems

*(48A, investment tax credit)*



**\$3**

per kilogram for the production of qualified clean hydrogen

*(45V, clean hydrogen tax credit)*

\* Source: [www.mckinsey.com/industries/public-and-social-sector/our-insights/the-inflation-reduction-act-heres-whats-in-it](https://www.mckinsey.com/industries/public-and-social-sector/our-insights/the-inflation-reduction-act-heres-whats-in-it)

Federal funding coming to New York State will be provided by several federal agencies and administered by many State agencies. Interagency partnership and collaboration will be critical to the effective use of these funds.

NYSERDA's approach to leveraging federal funding is multipurposed: reducing costs to New Yorkers, advancing progress toward the Climate Act's goals, ensuring benefits are delivered to underserved and historically marginalized communities, creating new jobs, reducing emissions, and developing infrastructure while driving health and economic benefits.

**NYSERDA alone is working to deliver nearly \$1.2 billion in federal funding through programs administered by federal agencies. NYSERDA tracks and responds to federal funding opportunities to ensure that New York State, local governments, individuals, businesses, Disadvantaged Communities, and other stakeholders can realize the maximum benefits from these investments, helping to achieve our climate and energy goals.**

Several programs to highlight the federal investments in clean energy and this collaboration include:

- **Home Electrification Appliance Rebate program and the Home Efficiency Rebate program:** New York State will receive \$317 million in formula grants to support energy efficiency and home electrification, with a focus on lower income housing and housing located in Disadvantaged Communities. The Department of Energy (DOE) issued guidance for both of these two transformative programs in 2023, and New York State (via NYSERDA) was one of only four states to submit an application by the end of 2023 to fast-track parts of this funding.
- **Weatherization Assistance Program:** \$290 million in federal funding has been allocated to the New York State Homes and Community Renewal program as part of the IIJA, supporting critical energy efficiency improvements in affordable housing.
- **National Electric Vehicle Infrastructure program:** A \$175 million investment over a five-year grant period to develop and implement a robust network of fast chargers across New York State.
- **Greenhouse Gas Reduction Fund:** The Environmental Protection Agency (EPA) announced awardees for all \$27 billion in funding through the Inflation Reduction Act's Greenhouse Gas Reduction Fund in April 2024. As part of this announcement, the Coalition for Green Capital (CGC) was one of three awardees through the National Clean Investment Fund. NY Green Bank is a sub-awardee in the CGC application and is now well positioned to receive significant new funding to accelerate its lending activity in New York, with a focus on driving equitable climate solutions. CGC received \$5 billion and NY Green Bank is working with CGC to finalize negotiations regarding NY Green Bank's total sub grant funding amount. NYSERDA has also been awarded nearly \$250 million to expand New York State's national leadership and commitment to increase access to clean, affordable solar energy to low-income residents via EPA's Solar For All program.

# MISSION OUTCOMES FOR 2024–2027

The following chapters present NYSERDA’s primary mission outcomes. Each outcome chapter summarizes the relevant recommendations from the Scoping Plan, and discusses both NYSERDA’s unique role in delivering on the outcome and corresponding strategies over the planning horizon. Indicators of progress are included to track movement in the market and show progress toward goals. Selected key programs in each mission outcome are highlighted in more detail.

Further information about programs and other resources referenced throughout this document can be found on NYSERDA’s website ([nyserderda.ny.gov](https://nyserderda.ny.gov)).

**NYSERDA works to advance the following mission outcomes in support of New York State’s energy transition:**



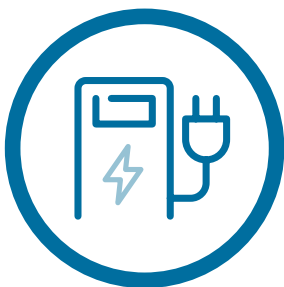
**GREENHOUSE GAS EMISSIONS REDUCTION**



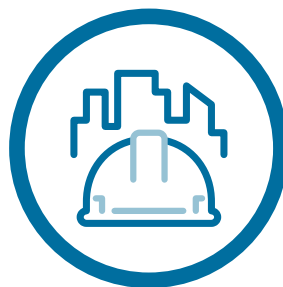
**CLEAN ELECTRICITY**



**CLEAN AND EFFICIENT BUILDINGS**



**CLEAN TRANSPORTATION**



**CLEAN ENERGY JOBS AND ECONOMY**



**SUSTAINABLE AND CLIMATE-RESILIENT COMMUNITIES**

**Progress in these mission outcomes will be an integral contribution toward the State’s ambitious climate objectives.**

Critically, NYSERDA will focus on helping historically marginalized New Yorkers access job opportunities and the growing clean energy economy, providing New York families with cleaner places to live, work, and play, and empowering communities and businesses to drive climate action and public health wins. Accordingly, a number of themes (such as equity, resiliency, and innovation) are addressed in this Strategic Outlook across multiple mission outcomes.



# GREENHOUSE GAS EMISSIONS REDUCTION

## STATE POLICY GOAL

**The Climate Act sets economy-wide greenhouse gas (GHG) emissions limits at 40% lower than 1990 levels by 2030 and 85% by 2050, and sets a GHG emissions neutrality goal by 2050.**

**At NYSERDA, a wide range of initiatives are underway to contribute to these goals.**

This includes programs that set emissions caps and price signals for markets to move toward lower and zero-emission alternatives (in particular the Regional Greenhouse Gas Initiative or “RGGI,” and New York Cap-and-Invest or “NYCI”); foundational, advanced technology-supporting action such as NYSERDA’s innovation portfolio; and the spectrum of market-transforming efforts that reveal and channel value of clean energy action to the full range of market actors (including building owners and operators, homeowners, equipment manufacturers, design engineers, architects, contractors, and funders) discussed throughout this Strategic Outlook.

By doing its part to cut New York’s GHG emissions that cause climate change, New York State will help to inspire similar market-moving activities in many other jurisdictions.

## SCOPING PLAN

The Scoping Plan recommends that New York State implement a cap-and-invest program, underpinning NYSERDA and DEC’s work underway since 2023 to develop and implement the NYCI program. The Scoping Plan recognizes the crucial role of such a program to unlock economywide GHG emissions reductions, support the State’s burgeoning clean technology economy, send a consistent price signal to individuals and businesses, and utilize the proceeds from emission allowance auctions to mitigate any costs from the program to New Yorkers and invest in decarbonization and workforce development activities.

## NYSERDA'S ROLE AND STRATEGIES FOR 2024–2027

- **Policy and analysis.** Help implement and communicate the roadmap of policies and recommendations to achieve the Climate Act's goals under the Scoping Plan. Guide and facilitate State Energy Plan development. Help shape energy policies throughout New York State and implement mandates and Executive Orders. Conduct analyses to better spotlight and maximize the co-benefits of GHG reductions—such as air quality improvements from reduced co-pollutant emissions—with a focus on benefits in Disadvantaged Communities. Support development of the statewide GHG inventory, assisting DEC as it updates emissions methodology rulemaking and implementation.
- **GHG programs.** Help spearhead regional GHG program reviews alongside other states—in particular, as part of RGGI. Support policy development, analysis, and administration of NYCI.
- **Partnerships.** Work in close partnership with other agencies and authorities, including Department of Environmental Conservation (DEC), Department of Public Service (DPS), Department of Transportation (DOT), Homes and Community Renewal (HCR), NY Power Authority (NYPA), and Long Island Power Authority (LIPA). Facilitate State agencies' efforts to lead by example and drive toward operations with reduced or eliminated emissions.
- **Federal funds.** Coordinate and maximize equitable investment of federal climate and clean energy funds under the Infrastructure Investment and Jobs Act, the CHIPS and Science Act, Inflation Reduction Act, and other federal funding in partnership with other New York State agencies and authorities.
- **Gas system transition.** Support the Public Service Commission (PSC) in advancing a comprehensive planning process toward a managed, phased, and just transition from fossil natural gas, with a focus on safety, equity, reliability, and affordability. Promote the development of robust coordinated electric and gas system planning practices, analytical tools, and regulatory policies to enable strategic downsizing of the gas network. Incorporate lessons from thermal energy network pilots to support neighborhood-scale decarbonization.
- **Leading by example.** Guide New York State agencies toward the climate, energy, and sustainability goals set forth in Executive Order 22, while continuing to lead by example through NYSERDA's own operations.



### INDICATORS OF PROGRESS

- Levels and trends in GHG emissions from sources statewide and within priority sectors
- Indicators across all other mission outcomes

## Energy Innovation

### NYSERDA's Innovation and Research portfolio supports decarbonization and the clean energy transition by:

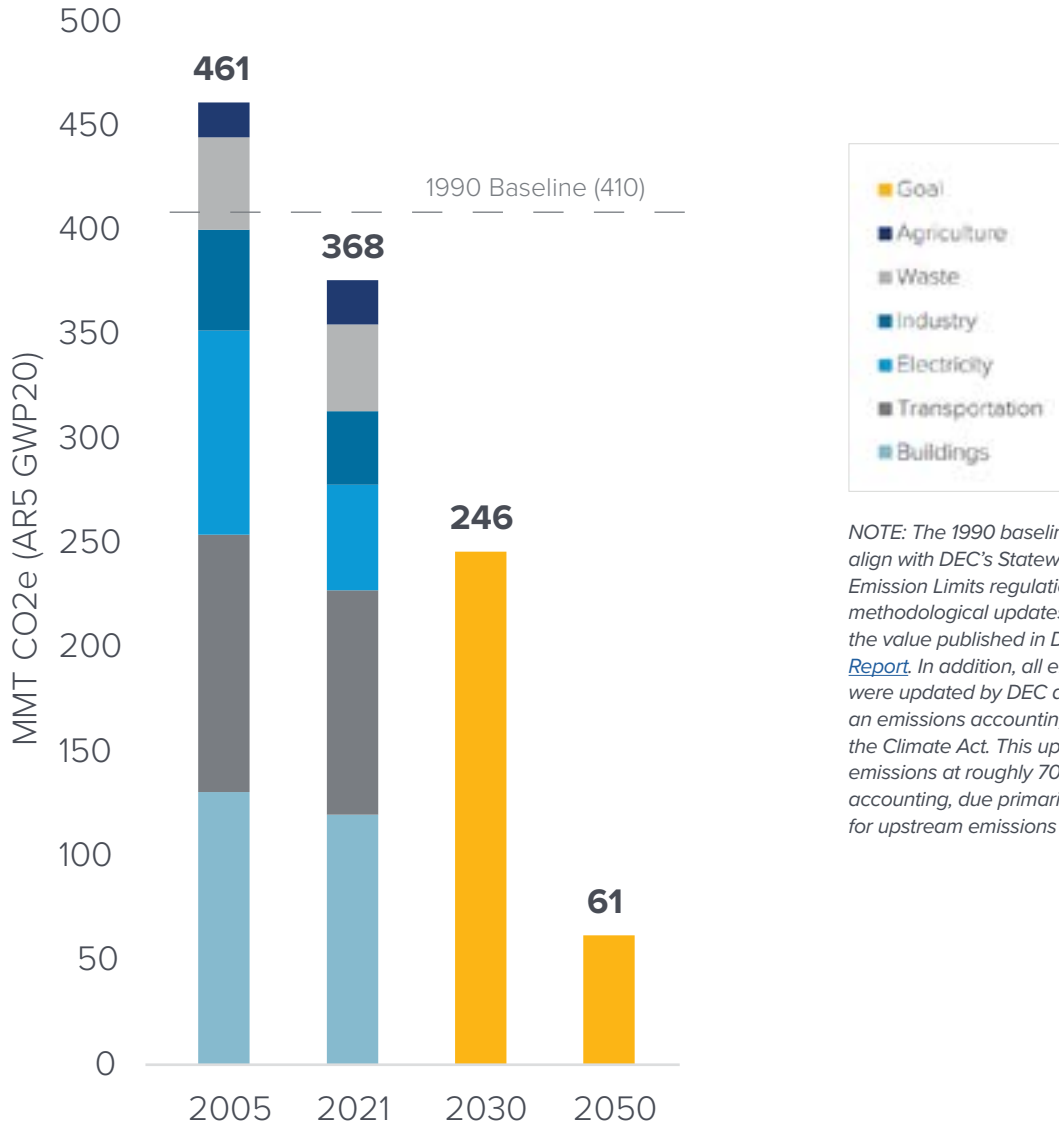
- Building understanding of, and momentum for, technologies necessary to meet the State's Climate Act goals.
- Demonstrating the role of innovation in deep decarbonization, helping the State develop pathways to achieve the most challenging aspects of the long-term emission reduction goals.
- Contributing to resiliency, technology cost reductions, job growth, and economic development.

NYSERDA's innovation activities include awarding funds through competitive solicitations, supporting technologies through public-private partnerships, addressing barriers to commercialization, and providing research and analysis. Innovation initiatives specific to each energy sector are described in the various mission outcomes covered in this Strategic Outlook.

NYSERDA's ongoing program review for the Innovation and Research portfolio will provide a quantitative and qualitative summary of performance, including data trends, lessons-learned, findings from relevant evaluations, and identification of any necessary modifications to further support and align with the Climate Act or otherwise improve the portfolio's effectiveness.

# 2050 target: 85% reduction

Relative to 1990 emissions baseline



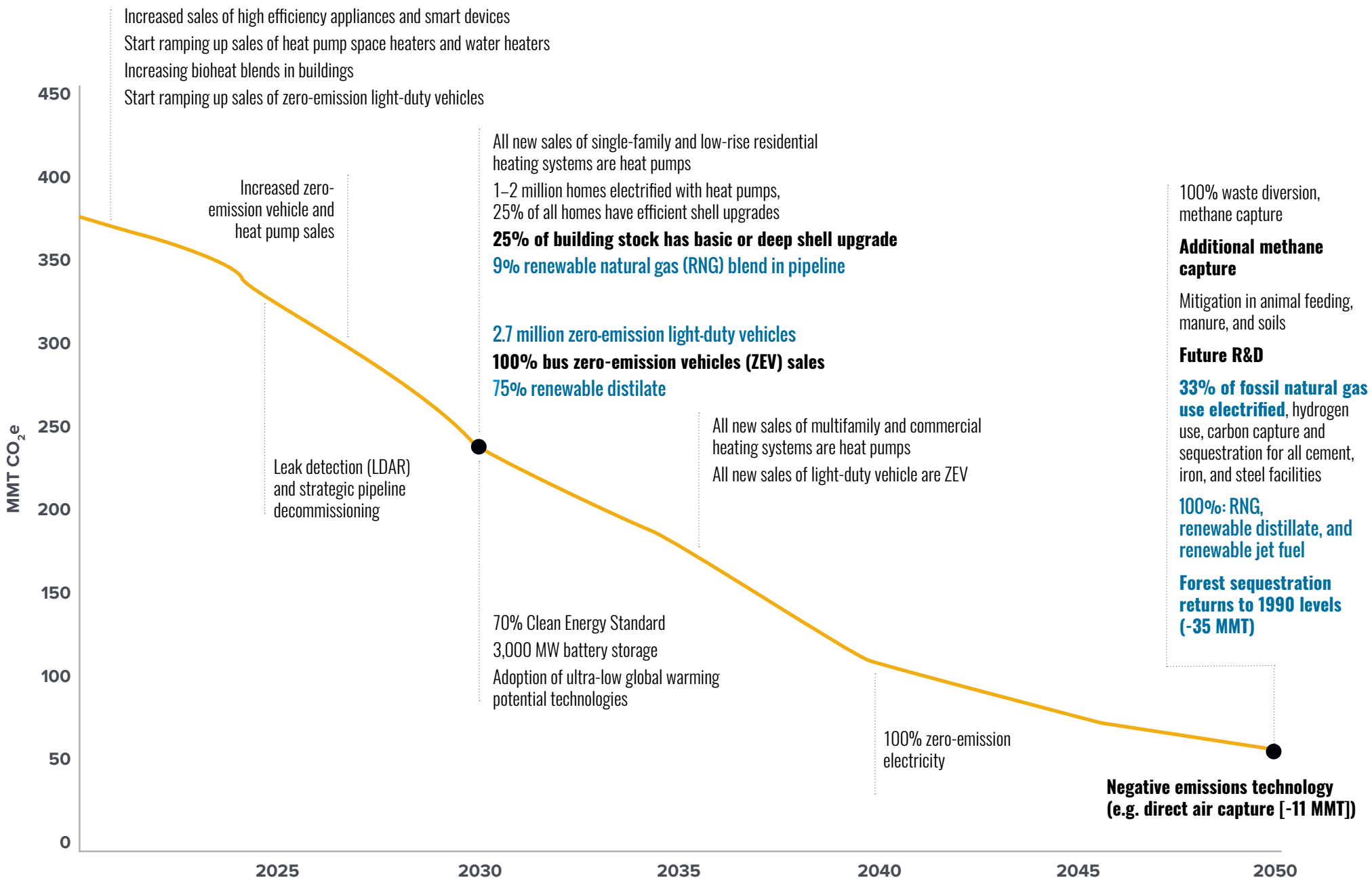
NOTE: The 1990 baseline and the 2030 and 2050 values align with DEC's Statewide Greenhouse Gas (GHG) Emission Limits regulation ([Part 496](#)). Due to ongoing methodological updates, this 1990 value differs from the value published in DEC's annual GHG Emissions [Report](#). In addition, all emissions inventory numbers were updated by DEC at the end of 2021 to incorporate an emissions accounting methodology that aligns with the Climate Act. This update put New York's baseline of emissions at roughly 70% higher than pre-Climate Act accounting, due primarily to the changes in accounting for upstream emissions and global warming potential.



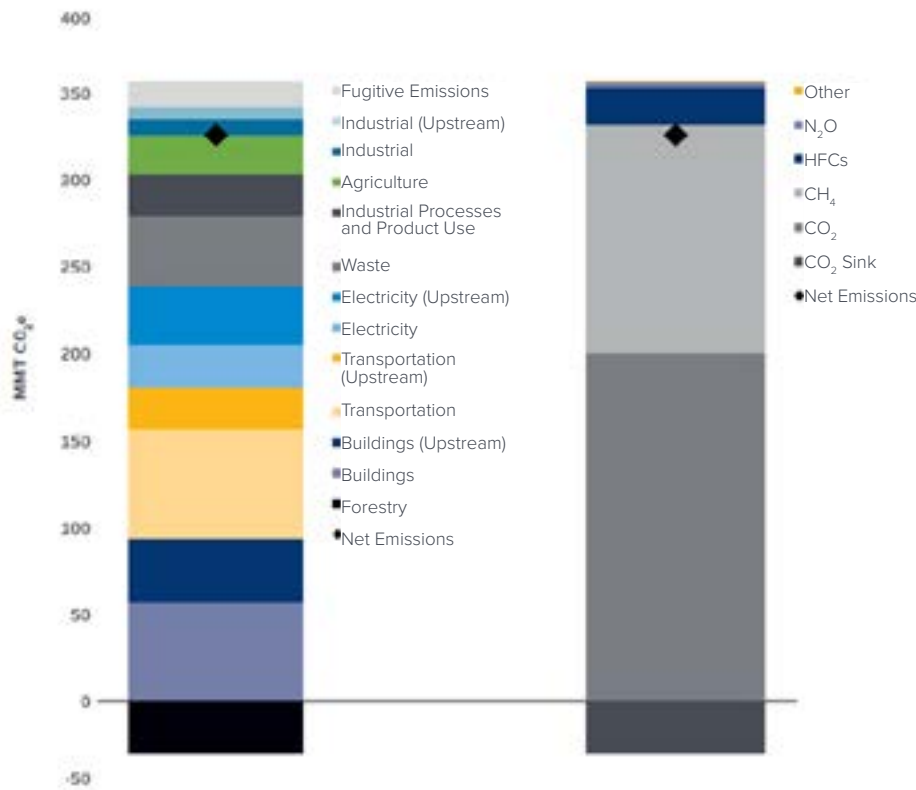
CLIMATE ACTION SNAPSHOT: NEW YORK'S SCOPING PLAN

Highlights from the 2022 Final Scoping Plan issued by the Climate Action Council in December 2022

- Climate Act Scoping Plan - Mitigation Scenario
- Climate Act gross emissions limits



## CURRENT ESTIMATED 2021 GREENHOUSE GAS EMISSIONS BY SECTOR AND TYPE



## HIGHLIGHTED PROGRAMS AND INITIATIVES

### REGIONAL GREENHOUSE GAS INITIATIVE\*

Under the RGGI program, multiple states in the Northeast (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont) have come together to establish a regional cap on carbon dioxide emissions from power plants. Participating states sell emission allowances at quarterly auctions, in proportion to their respective share of the regional cap. NYSERDA invests New York’s share of the resulting revenue into programs and initiatives that support GHG emissions reductions and clean energy. The participating states are currently undertaking a periodic review that includes technical analysis and consideration of public comments. As the program review moves forward, the RGGI states will release a draft updated Model Rule, conduct public engagement to solicit comments and feedback on the draft model rule, and review results of the technical analysis (e.g., customer bill impacts and the stringency of the regional emissions cap).

### NEW YORK CAP-AND-INVEST (NYCI)\*\*

NYCI is a new program scheduled to launch in 2025 that will enact an economy-wide emissions limit for the State that will gradually decrease over time. In early 2023, Governor Hochul—reflecting Scoping Plan recommendations—directed DEC and NYSERDA to begin NYCI program design and implementation, according to principles of affordability, climate leadership, job-creation, preserving competitiveness, investing in Disadvantaged Communities, and funding a sustainable future. DEC and NYSERDA published a package of preliminary analysis and program design pre-proposals at the end of 2023 and start of 2024, quantifying the expected benefits from the program in terms of improved health outcomes (including reduced mortality and fewer heart attacks and asthma attacks) and an estimated 30,000 new jobs by 2030. NYSERDA’s role in delivering the program will include auctioning allowances and investing proceeds to accelerate New York’s clean energy transition.

\* <https://www.rggi.org/>

\*\* <https://capandinvest.ny.gov>

## HIGHLIGHTED PROGRAMS AND INITIATIVES

### EXECUTIVE ORDER 22

Recognizing the importance of a lead-by-example role for State agencies in the clean energy transition, this Executive Order, adopted in 2023, sets a range of targets across electricity use and energy use in transport and building operations, green procurement, waste diversion, and other sustainability goals to be achieved by State agencies in their operations. NYSERDA fulfills a role as co-chair of the Green NY Council set up to help facilitate the process with agencies to start implementing these targets and directives.

### AIR QUALITY ANALYSIS

NYSERDA has significantly strengthened its capability to estimate potential changes in air quality and ensuing public health outcomes (such as by evaluating health benefits when initiatives to reduce GHG emissions also reduce co-pollutant emissions) and by evaluating health effects in different communities (including Disadvantaged Communities). These enhanced modeling approaches have been demonstrated in analysis supporting development of the New York Cap-and-Invest program and in the Climate Act Disadvantaged Communities Investment and Benefits Reporting Guidance.

### TRANSITION AWAY FROM THE FOSSIL NATURAL GAS SYSTEM

Consistent with the Scoping Plan's electrification focus, the gas system will need to be strategically downsized as progress toward statewide decarbonization proceeds. Proactive planning is necessary to avoid the costs associated with operating and maintaining an underutilized gas system, the corresponding risks of stranded assets, and sharply increasing energy bills for remaining gas customers.

Managing this transition will require such improvements as integrated gas and electric system planning; the implementation of non-pipeline alternatives and thermal energy networks (which would allow whole streets or neighborhoods to transition away from gas in a coordinated manner); workforce development to support current gas workers and accelerate the deployment of energy efficiency, demand response, and electrification; planning for the targeted use of alternative fuels, such as hydrogen and renewable natural gas, for the most essential and high-value end-uses; and the use of novel utility cost recovery practices that allocate system costs to those customers best equipped to bear them. It is also essential that the impacts of this transition on Disadvantaged Communities are well understood and that benefits accrue to these communities. In the meantime, given the health risks and high global warming potential of methane, utilities must continue to mitigate leaks from their transmission and distribution systems for both safety and environmental reasons.

NYSERDA is committed to being a critical thought partner to DPS, the PSC, utilities, and stakeholders across the State as we facilitate the necessary, managed transition of the fossil natural gas system in furtherance of an ambitious and equitable clean energy transition.

### HYDROGEN AND CLEAN FUELS PROGRAM

NYSERDA's Hydrogen and Clean Fuels program will advance innovative clean hydrogen research, development and demonstration projects that drive emissions reductions in hard-to-electrify sectors. The program will also provide resiliency solutions in medium- and heavy-duty transportation and non-road applications, high-temperature industrial processes, district heating, and power generation. Some of these potential applications will see greater rollout in the near term and others in the longer term. NYSERDA will collaborate with a broad set of stakeholders to develop the building blocks for clean hydrogen infrastructure, from production, to storage, to distribution, while ensuring benefits to Disadvantaged Communities. These investments will stimulate the growth of New York State's hydrogen industry by advancing firms' technical and commercial readiness levels, assuring safety and reliability, and reducing costs, all of which will support the realization of a statewide zero-emissions grid by 2040 and a zero-emissions economy by 2050.



# CLEAN ELECTRICITY

## STATE POLICY GOAL

**The Climate Act establishes that at least 70% of New York State’s electricity should come from renewable energy sources such as wind and solar by 2030 (70x30).**

**Pursuing the 70x30 goal will move the State closer to delivering just, equitable climate action to all New Yorkers. Such action includes improving air quality, buttressing a more resilient grid, and spurring a clean economy through supply chain investments, workforce development, and job creation.**

New York State has also set technology-specific targets in the electricity sector, including 10,000 megawatts (MW) of distributed solar deployment by 2030, 3,000 MW of energy storage by 2030 (with consideration of an increase to 6,000 MW underway), and 9,000 MW of offshore wind by 2035. Progress toward these goals in the coming years will support achievement of the Climate Act’s 70x30 goal and extend beyond it to work toward achievement of the State’s target that the electric grid reach zero emissions by 2040 (0x40).

The State’s climate and energy policies and initiatives continue to drive the clean energy transition, with new large-scale and distributed renewable energy projects coming online every year. Although the decades-high inflation rate experienced globally in recent years initially slowed renewable energy development, New York State quickly responded with a 10-point Action Plan and expedited solicitations for both onshore and offshore renewable generation to maintain stability and progress of in-state renewable energy development.

Continued development of renewable generation at all levels of the State’s electric grid is further enhanced by new investments in the transmission grid recently authorized by the PSC, modernized collaborative statewide grid planning processes, and more efficient and effective permitting processes. In the 21st century, the future is electric. NYSERDA is working to remove barriers, help achieve our State’s goals, and deliver benefits to New Yorkers.

## SCOPING PLAN

The Scoping Plan emphasizes that pursuant to the 70x30 mandate, New York State must aggressively procure and deploy wind, solar, and energy storage projects by continuing to fund such technologies, eliminating barriers and reducing costs to renewable energy development and operation, and improving statewide grid planning and coordination. Looking further ahead, the Scoping Plan notes that achieving a statewide zero-emissions grid by 2040 will require that the State not only meet its present electric demand with clean energy, but that our grid accommodate additional capacity to power a more electrified State economy—driven by widescale building and vehicle electrification. To pursue this, New York will need to increase the share of renewables that power its grid, retire or repurpose its existing fossil fuel facilities, and integrate both distributed energy resources and energy storage technology in a manner that preserves reliability and minimizes costs to New Yorkers. The clean and resilient grid of the future should be built in a way that ensures our communities—especially Disadvantaged Communities—have a seat at the table and share in the benefits.

## NYSERDA'S ROLE AND STRATEGIES FOR 2024–2027

- **Policy and analysis.** Support the continuous development of the policy framework and resource assessment supporting analysis that drives New York State's efforts to deliver the 70x30 and 0x40 goals, including the development of roadmaps for the next generation of market acceleration for energy storage and distributed resources, as well as the assessment of advanced nuclear technologies and their potential applications to the grid or directly serving large loads.
- **Procurements.** Facilitate continued steady, predictable procurements for large-scale and distributed renewable generation and energy storage to continue growing the in-state renewable energy industry and increase the supply of clean, renewable energy to the New York State electric grid.
- **Market acceleration: siting.** Partner with local governments by providing best practices and expert guidance to inform and spur adoption of smart local siting rules/laws. Assist communities in making fact-based decisions when examining renewable energy projects and build community engagement to cultivate a welcoming environment for suitable renewable energy projects. Advance project development on underutilized lands, and co-location of solar and agriculture.
- **Market acceleration: interconnection.** Partner with utilities and other market participants to build transparency in interconnection processes, overcome grid constraints on project capacity, and alleviate pricing/curtailment issues through innovative and cost-effective solutions to grid constraints.
- **Market acceleration: supply chain.** Drive in-state supply chain growth through workforce training and investments in local ports and manufacturing (in particular, those related to offshore wind procurements).
- **Market acceleration: finance.** Use public capital to fill financing gaps and mobilize private investment into key clean energy market segments and projects, enabling increased clean energy generation capacity in New York State.
- **Transmission.** Inform transmission planning processes to drive investment critical to enabling the integration of 20+ gigawatts of Tier 1 and offshore wind renewable projects anticipated for State goals. Continue to administer the Tier 4 program aimed at constructing new transmission line projects into NYISO Zone J (New York City).
- **Cost reductions.** Reduce costs by delivering economies of scale, removing barriers to deployment, reducing risk, and supporting innovation targeted at levelized cost of electricity and levelized cost of storage. Promote infrastructure investments such as transmission and energy storage that will unlock system efficiencies and unbundle resources to drive progress on our goals and ensure cost savings to ratepayers.
- **Partnerships.** Engage in interregional coordination with the federal government and neighboring states to address mutual opportunities related to transmission, supply chain, benefits to Disadvantaged Communities, workforce, and environmental concerns. Continue to engage with New York State Department of Tax and Finance in its implementation of the renewable energy property tax assessment model.

### Climate Resiliency

Comprehensive energy resiliency involves preparing—both sector-wide and at the asset level—for a future with climate change. In 2022, the PSC mandated Climate Change Vulnerability Studies for the first time, requiring major electric utilities to perform studies to prepare for the expected increase in severe weather from climate change. As NYSERDA continues to engage in transmission planning processes, it supports the incorporation of climate resiliency considerations that help prepare the sector for increasing climate risks. NYSERDA also works with partners across the State to mitigate risks from climate change while transitioning to clean, reliable energy sources, and will continue to engage in detailed sector studies and incorporate results of evolving resiliency design approaches and best practices to mitigate future climate risks.

At the asset level, recent solicitations for offshore wind projects and other large-scale renewables require proposers to consider and mitigate risks from climate hazards (such as flooding, extreme heat, and extreme storms) and incorporate lessons learned from NYSERDA-led studies (such as the 2021 Offshore Wind Climate Adaptation and Resilience Study and the Climate Impacts Assessment).

## Energy and Climate Equity

NYSERDA incorporates equity considerations as a core aspect of its role to drive the transition to clean energy:

- **Procurement design.** When evaluating projects' economic benefits, NYSERDA prioritizes Disadvantaged Communities, climate resiliency considerations, and energy storage projects that support the phaseout of the most polluting fossil generators downstate.
- **Transmission planning.** NYSERDA participates in transmission planning to align with clean energy project development, seek important partnerships, and cultivate benefits with communities.
- **Technical assistance and predevelopment.** NYSERDA's NY-Sun program offers grants to address key barriers to solar and storage projects—providing benefits to Disadvantaged Communities.
- **Peaker reduction and replacement.** NYSERDA's various programs to promote the deployment of renewables and energy storage help to back down electric-generating peaker units, delivering important health benefits to Disadvantaged Communities. Working with DEC and DPS, NYSERDA supports the development of a guide for retirement and redevelopment of New York State's oldest and most-polluting fossil facilities by 2030.

## Energy Innovation

NYSERDA's **Grid Modernization** program will continue to develop innovative technologies and solutions through public/private partnerships to improve the grid performance, meet future grid needs, and enable both existing and future technologies that increase grid flexibility and resiliency. Such solutions will help New York State achieve its 70x30 target and will be critical in achieving the longer-term 0x40 target. Supported technologies include virtual power plants and other demand-side resources, the use of hybrid transmission and storage solutions, and the expanded integration of grid-enhancing technologies, such as dynamic line ratings and power flow control devices.

As New York continues to invest and build its cleaner grid, energy storage will allow better use of existing resources with a grid that can operate more efficiently and with fewer emissions. NYSERDA's **Long Duration Energy Storage** innovation efforts will utilize public-private partnerships to explore, develop and demonstrate solutions such as hydrogen, electrical, mechanical, chemical, and thermal-electric storage technologies.

## TRANSFORMATION BY 2030

- More than 20 GW of new power generation fueled by wind, hydroelectric and solar energy, expected to be needed as part of achieving the 70x30 goal.
- Commensurate reductions in power and emissions from fossil fuel generators.
- At least 50,000 new jobs created in the electricity sector (renewables, transmission and distribution, energy storage, etc.).
- Build-out of inter- and intra-regional transmission infrastructure, and long-duration energy storage will be underway.



## INDICATORS OF PROGRESS

- Projects completed and in the pipeline (measured in megawatt capacity) across large-scale, offshore and distributed renewables, and energy storage; renewable energy generated toward the 70x30 target (measured in megawatt-hours). A review of progress toward this goal will be published in 2024 (CES Biennial Review).
- Benefits of renewable energy investments accruing for Disadvantaged Communities and Minority and Women-Owned Business Enterprise (MWBE) engagement.
- Private market investment, clean energy jobs, and cost per Renewable Energy Certificate (REC).



## The Climate Act and new, expanded goals ramp up renewable energy, including:

QUADRUPLING NEW YORK'S OFFSHORE WIND TARGET TO AT LEAST

# 9,000 MW by 2035

up from 2,400 MW by 2030

BOLSTERING DISTRIBUTED SOLAR DEPLOYMENT TO AT LEAST

# 10,000 MW BY 2030

up from 6,000 MW by 2025

## New York State continues to grow a strong pipeline of projects to meet the 70x30 goal.

AS OF MARCH 2024,  
THERE WERE APPROXIMATELY:

# 61 GW

**OF ACTIVE ONSHORE  
RENEWABLE ENERGY  
PROJECTS IN THE NYISO  
INTERCONNECTION QUEUE**

Additionally, there are currently more than **12 PROJECTS** in or in the process of applying for the Article 94c (ORES) queues, with **13 CERTIFICATES/PERMITS GRANTED** in 2022 and 2023 representing **MORE THAN 2.1 GW** of renewable generation—indicating more of the pipeline coming to fruition.

New York has **30 OPERATING** Tier 1 large-scale renewable projects as well as **24 PROJECTS IN ACTIVE DEVELOPMENT** comprised of wind, solar, and hydroelectric generation.

**APPROXIMATELY 1 GW OF ENERGY STORAGE** awarded statewide, with 340 MW operational and several hundred MWs expected to be built in 2024.

**NINE LEASE AREAS** of uncontracted offshore wind, enough to support over 14 GW of offshore generation capacity.

Offshore wind resources in the New York Bight include **15 LEASE AREAS** covering **2,778 SQUARE MILES** that are under development by **10 DIFFERENT OFFSHORE WIND TEAMS**.

**MORE THAN 5 GW OF DISTRIBUTED SOLAR** installed statewide, with a **PIPELINE OF 3.5 GW** (high project maturity—lower than 10% attrition).



## HIGHLIGHTED PROGRAMS AND INITIATIVES

**CLEAN ENERGY STANDARD (CES)**

The CES provides the framework for large-scale, clean generation in the State, contributing to the 70x30 goal. It includes programs for the build-out of new large-scale renewable resources (Tier 1 and the Offshore Wind program), maintenance of existing renewable and nuclear generators in the State (Tiers 2 and 3), and new transmission lines to bring renewables generation into Zone J/New York City from Upstate New York and Quebec (Tier 4).

**OFFSHORE WIND**

The Offshore Wind program seeks to advance the cost-effective and responsible development of at least 9,000 MW of capacity by 2035 while building a competitive and sustainable offshore wind industry in the U.S. Current priorities for the program include:

- Finalize contracts with awardees from NYSERDA's fourth offshore wind solicitation (ORECRFP23-1 or "NY4").
- Develop a future NYSERDA Offshore Wind Solicitation, in coordination with progress on the New York City Public Policy Transmission Needs (PPTN) process led by the New York State Independent System Operator (NYISO).
- Work with the NYISO, the New York State Department of Public Service and other State agencies to help ensure the selected New York City PPTN project(s) are advanced efficiently and in a way that minimizes conflicts and costs.
- Continue development of the offshore wind "Masterplan 2.0: Deep Water," which will serve as an organizational framework to continue procuring offshore wind to achieve at least 9,000 MW of offshore wind installed by 2035 and inform approaches to maximize the benefits and minimize costs and risks of further offshore development. This may include next-generation floating turbine technologies and the preparation for a shared regional offshore network to achieve mutual climate goals with neighboring states.
- Make a formal request to the U.S. Bureau of Ocean Energy Management (BOEM) for additional offshore wind lease areas in the New York Bight to reduce costs and address conflicts.
- Launch Offshore Wind Supply Chain RFP(s) to build a portfolio of supply chain projects to support achievement of the offshore wind goals, increase investments in Disadvantaged Communities, and support economic development and workforce training across the State.
- Enhance workforce development opportunities, inclusion, and equity by leveraging the expert input from NYSERDA's Jobs and Supply Chain Technical Working Group and the Environmental Justice Technical Working group.
- Engage with regulators, industry, underserved communities, and a broad set of stakeholders to inform approaches and workstreams such as new research, analysis, and program measures related to resiliency and sustainability to reduce risks and improve outcomes.

## HIGHLIGHTED PROGRAMS AND INITIATIVES

**BUILD-READY**

Build-Ready advances project development on sites that present challenges for commercial developers. It complements private sector development and expedites the pre-development of large-scale renewable assets into revenue-generating clean energy projects, with a focus on underutilized, previously developed sites, such as brownfields, landfills, and former industrial properties. Build-Ready has coordinated, and will continue to coordinate with, the Office of Renewable Energy Siting (ORES) as projects move through the development cycle. ORES consolidates the environmental review and permitting of major renewable energy facilities 20 MW and larger in New York State into a single forum that provides a coordinated and timely review of siting permit applications.

**DISTRIBUTED SOLAR**

**NY-Sun** drives distributed solar adoption through both residential and commercial rooftop installations and larger community solar projects. **Community Solar** makes solar energy affordable and accessible for all New Yorkers. **Expanded Solar for All** is a community solar utility bill assistance program that provides utility bill discounts at no cost for low-income residents and eliminates customer acquisition costs for developers. This benefits homeowners and renters who are otherwise unable to access solar. At the 2024 State of the State, Governor Hochul announced the statewide expansion of this successful program.

Together, these programs stand as an example of successful market transformation through a combination of market acceleration (through NY Green Bank finance and action to reduce siting barriers and promote industry development) and initiatives to overcome cost barriers (including through Value of Distributed Energy Resources compensation, on-bill crediting and NY-Sun incentives), with deployment of distributed solar a year ahead of the schedule and below program budgets set to reach the 10,000 MW target.

**ENERGY STORAGE**

The Energy Storage program engages those involved in developing and deploying energy storage technology, with a focus on supporting mature technologies and projects being deployed in the residential, commercial, and utility-scale (bulk) sectors. The program complements the rollout of renewable energy generation, including a focus on regions where energy storage is critically needed to support the replacement of dirty peaker plants, alleviate grid congestion, mitigate grid investment and operational costs, and aid the integration of large-scale renewables and offshore wind. Additionally, the program works to address barriers and risks associated with rapidly scaling energy storage system deployment. Efforts include the Inter-Agency Fire Safety Working Group, interconnection and tariff reform, and soft cost reduction. Furthermore, NYSERDA's public-private partnerships in long duration energy storage innovation explore the promise of deep decarbonization driven by hydrogen, electrical, mechanical, chemical, and thermal-electric storage technologies. NYSERDA and DPS filed New York's 6 GW Energy Storage Roadmap to support the PSC's consideration of an increase in the established 3,000 MW goal.



# CLEAN AND EFFICIENT BUILDINGS

## STATE POLICY GOAL

The Climate Act codifies a 2025 statewide energy efficiency target of 185 trillion British thermal units (TBtu) of cumulative end-use energy savings in New York State buildings and industrial facilities. Governor Hochul set a target to achieve two million climate-friendly homes by 2030, including homes and apartments that are electrification-ready and electrified.

**Achieving the 2025 Climate Act energy efficiency target will deliver near-term progress toward New York State’s GHG emission reduction goals. It will also help build the foundation for an increasingly ambitious State effort to modernize and decarbonize the State’s buildings across the residential, commercial and institutional sectors—as well as the State’s industrial facilities—so they are healthier, cleaner, and more resilient.**

Energy efficiency and electrification will play a dominant role in putting New York State buildings on a course to decarbonization while creating better, more comfortable places to live, work, and play. It will also drive economic opportunity by growing clean energy jobs and businesses. Investments in building energy efficiency and designing for flexible building energy loads can also reduce the amount of electric grid investments needed for a reliable and resilient grid.

There are more than six million buildings in New York State. More than 200,000 buildings per year would need to be decarbonized for the next 30 years to address the entire existing building stock by 2050. NYSERDA will continue to deliver critical activities that support building owners and residents in making investments to advance efficiency and electrification and reduce the use of fossil fuels. This includes market acceleration initiatives and administering targeted incentive programs.

NYSERDA’s strategies will need to evolve to support effective scaling of building retrofits across the State, including streamlining the experience of residents, contractors, and vendors, increasing coordination across relevant State entities and utilities, and exploring approaches that move beyond single-building solutions to those that can work block-by-block and community-by-community to achieve the scale and pace needed to address the climate crisis. To ensure the benefits of the clean energy transition are accessible to those who need it the most, State policy and programmatic efforts aimed at modernizing and decarbonizing buildings focus on delivering benefits to Disadvantaged Communities and low- and moderate-income New Yorkers while protecting energy affordability.

As New York makes progress toward its mid-century goal of carbon neutrality, combustion of fossil natural gas for industrial processes and to heat homes and businesses will decline. The corresponding transition away from gas consumption, both for customers and gas system infrastructure, may be one of the most challenging pieces of New York’s clean energy transition. NYSERDA will seek to ensure that transition occurs in a way that is safe, reliable, and affordable for customers.

## SCOPING PLAN

To meet the requirements of the Climate Act and reduce emissions from the buildings sector, the Scoping Plan recommends the efficient electrification of heating and cooling systems and appliances, widespread improvements to building envelopes (air sealing, improved insulation, and replacing poorly performing windows), and advanced controls to reduce energy consumption. It also lays out a need for the adoption of lower-carbon construction practices and materials; building and appliance codes and standards that support building electrification and efficiency; expanded financing options for building decarbonization; and continued support for innovations in, and rollout of, low-GHG building technologies. Furthermore, low-carbon fuels could reduce emissions in applications that are difficult to electrify (such as carbon-intense, high-heat industrial processes). The Scoping Plan also advocates for equitable access to clean buildings technologies by the Disadvantaged Communities most burdened by housing and utility costs, plus air-quality issues and other health impacts.

## NYSERDA'S ROLE AND STRATEGIES FOR 2024–2027

- **Policy and analysis.** Deliver policy and strategic leadership on energy efficiency and building electrification including through engagement in State regulatory proceedings, decarbonization partnerships with other State agencies, outreach to stakeholders and analysis of the outcomes, equity impacts, benefits, and costs of policy options. Help advance and implement policy directives in the buildings sector, such as zero-emission new construction codes, benchmarking and performance standards for large buildings' energy consumption, and regulatory direction and planning for a safe, reliable, and affordable gas transition.
- **Market acceleration.** Continue to build market demand for investments in efficiency and clean energy technologies in buildings. These activities include (1) technical assistance to provide accurate and high-quality information to help building owners; (2) capacity building and technical resources targeted at supporting the expansion of the clean and efficient building supply chain; (3) demonstration projects to identify scalable pathways for hard-to-decarbonize segments and emerging technologies including at key points in a building lifecycle (e.g., tenant turnover, renovations); (4) sharing market insights through tools and playbooks; and (5) outreach and education to help New Yorkers understand the holistic benefits of energy efficiency and clean building technologies.
- **Financing solutions.** Provide affordable loans, low-cost energy assessments, and diverse mechanisms to reduce pre-development costs. Enable private financing for energy efficiency and building electrification for residential, commercial, and not-for-profit market participants. Offer diverse forms of credit enhancements to reduce credit risk for conventional and specialized lenders investing in the decarbonization of single-family, multifamily and commercial buildings. Leverage collaboration with the federal government to attract low-cost financing for building decarbonization and related technologies, such as clean transportation and solar energy.
- **Home upgrades for low- and moderate-income (LMI) residents.** Lead delivery of LMI home upgrade programs across New York State, delivering energy savings, improved comfort, and efficient electrification when affordable. Advance equitable electrification for LMI homes through programmatic, regulatory, and other strategies that maintain energy affordability (limiting energy cost burden to LMI homes at or below 6% of income) for LMI residents. Deepen partnerships and programs that create cleaner, healthier, and more resilient homes and buildings for low-income families and in under-resourced and historically marginalized Disadvantaged Communities.
- **Building and energy codes and standards.** Conduct critical technical and capacity-building activities to ensure New York State is advancing and codifying efficient, cleaner, and healthier buildings and appliances where possible—sending a clear signal to the market that the State is phasing out the use of fossil fuels. Continue to support implementation of zero-emission new construction requirements, including technical support for builders, and help advance the next generation of carbon-neutral and resilient new construction.

- **Thermal energy districts.** Support the development of next-generation thermal energy districts that can deliver affordable, resilient heating and cooling to buildings while providing direct employment to support the transition of the gas workforce—including through the implementation of the Utility Thermal Energy Networks and Jobs Act in coordination with and supported by DPS.
- **Fossil natural gas transition.** Level the playing field for clean energy alternatives and end the legal obligation to serve customers with fossil natural gas, while maintaining affordability for New York’s most vulnerable customers. Within NYSERDA programs, end incentive support for fossil natural gas and reorient investments around building shell improvements, electrification, and development of deep decarbonization alternatives.

### Energy and Climate Equity

A changing climate disproportionately impacts residents of Disadvantaged Communities, who often have fewer resources to respond and have borne the cumulative economic and health impacts of fossil-based generation and transportation.

Energy burdens for low- to moderate-income households can exceed 20% of annual income, and nearly half of New York State’s population (especially communities of color) has annual income below 80% of the Area Median Income. Therefore, it is vital that investments also address historic inequities with targeted approaches for vulnerable communities.

Equity considerations are a core part of a wide range of NYSERDA clean buildings programs and initiatives described in this and other Mission Outcomes, including:

- EmPower+ program
- Regional Clean Energy Hubs
- Financing solutions
- Multifamily housing initiatives, including the Affordable Multifamily Housing Incentive—offered through the NY-Sun program—for solar installations serving affordable housing properties

### Energy Innovation

From single-family homes to skyscrapers, buildings use significant amounts of energy and are a major source of GHG emissions in New York State. Nearly 80% of buildings across the State were constructed before energy codes emerged in the 1970s. They were not designed to be energy efficient.

NYSERDA’s innovation efforts focus on improving the availability and performance of alternative and emerging clean heating and cooling and façade solutions, reducing their cost, and building a local clean energy industry. The Advanced Buildings program supports the State’s energy innovators via public-private partnerships to develop and commercialize new technologies to lower building energy consumption and emissions. Investment areas include:

- Clean heating and cooling product innovation
- Building envelope (shell) improvement solutions for retrofits and new construction
- Solutions to enable low-GHG refrigerants
- Thermal storage solutions for load flexibility and higher energy efficiency
- Low embodied carbon building materials
- Intelligent buildings capable of grid (buildings as a distributed energy resource) and occupant interactions for improved operational efficiency and resiliency

### Climate-Resilient Buildings

Modernizing our buildings is a critical component to both meeting our climate goals and building better, healthier homes and workplaces that are more resilient to climate change. Climate hazards pose unique challenges to the more than six million buildings in New York State. Historical flood maps show that approximately 700,000 New Yorkers live in “flood-prone” zones, with many more working, traveling, or taking recreation in these areas.

In line with Scoping Plan recommendations, work at NYSERDA is underway to identify opportunities to incorporate climate resiliency into its own programs, investments, and assets to support both decarbonization and climate resiliency goals. Drawing from the Carbon Neutral Buildings Roadmap, strategies under consideration include resiliency solutions for all-electric buildings, passive survivability and facilities of refuge to withstand future disruptions to the energy system, with a focus on affordable housing and Disadvantaged Communities.

### HIGHLIGHTED PROGRAMS AND INITIATIVES

#### **CLEAN ENERGY FUND**

The Clean Energy Fund accelerates the deployment of clean energy solutions in the buildings sector (among other sectors) to put buildings on pace to reduce emissions and help achieve the Governor's target of Two Million Climate-Friendly Homes by 2030.

#### **EMPIRE BUILDING CHALLENGE**

The Empire Building Challenge program advances the market for large building decarbonization, through purposeful demonstrations, with a focus on low-carbon solutions for tall buildings, in partnership with real estate industry and solution providers.

#### **EMPIRE TECHNOLOGY PRIZE**

The Empire Technology Prize program spurs new innovations that meet the needs of New York State's building stock.

#### **BUILDINGS OF EXCELLENCE**

Buildings of Excellence supports the design, construction, and operation of carbon neutral multifamily buildings, including affordable housing. This program demonstrates repeatable approaches to electrifying heating loads in both new and existing buildings while also reducing buildings' peak demand through energy recovery, efficiency, and thermal storage, leading to clean and resilient buildings that also reduce strain on the electric system.

#### **EMPOWER+**

EmPower+ provides no-cost and discounted energy efficiency and electrification solutions that will help income-eligible New Yorkers save energy and money, increase comfort, and upgrade their homes. This is boosted by a new infusion of State funding and a new 6% affordability pilot for participating customers who fully electrify.

#### **CLEAN ENERGY PARTNERSHIPS**

Clean Energy Partnerships with both the New York State Division of Housing and Community Renewal and the New York City Department of Housing Preservation and Development deliver energy efficiency and electrification directly into affordable housing financing transactions.

#### **CLEAN GREEN SCHOOLS**

Clean Green Schools helps fund solutions for P-12 schools in under-resourced communities to reduce energy use, transition away from fossil fuels, and create healthier learning environments while educating students, teachers, and the community about clean energy. In early 2024, an additional \$100 million in funding from the Clean Water, Clean Air, and Green Jobs Environmental Bond Act was made available to expand this program.



HIGHLIGHTED PROGRAMS AND INITIATIVES

**FINANCING**

**NY Green Bank and NYSERDA more widely** offer financing for affordable housing and energy efficiency improvements in Disadvantaged Communities. NY Green Bank has set a target of investing at least \$150 million in clean energy, energy efficiency, and building electrification projects that benefit the State’s affordable housing market by 2025. NYSERDA leverages **Green Jobs – Green New York** to continue offering New Yorkers access to low- and no-cost energy assessments, low-interest financing, and work readiness pathways to participate in the energy transition. NYSERDA is also exploring diverse innovative and inclusive financing solutions, with approaches to overcome challenges to access affordable finance, stabilize energy costs, reduce emissions and improve air quality in Disadvantaged Communities.

TRANSFORMATION BY 2030

By 2030, New York State will need to have one to two million homes equipped with modern electric heating and cooling and paired with energy efficiency. A robust supply chain for heat pumps and weatherization will enable widespread electrification and greater consumer choice when retrofitting New York’s existing residential and commercial building stock. Furthermore, building codes will require zero-emission new construction that is electrification ready. This will create better living and working spaces and healthier communities—especially for low- and moderate-income New Yorkers.



INDICATORS OF PROGRESS

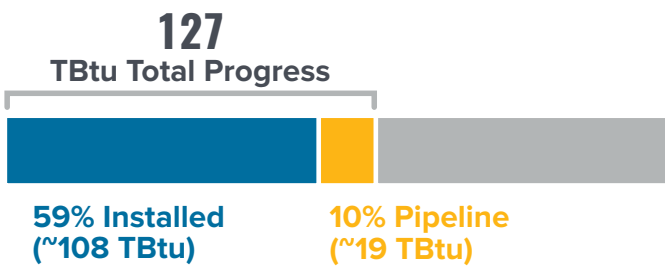
- Reduction in GHG emissions from fuel combustion in buildings and industry, from the 2005 peak (measured in annual carbon dioxide equivalent [CO<sub>2</sub>e]).
- Energy savings: total TBtu across all fuels (fossil natural gas, electricity, oil, etc.).
- Number of single-family and multifamily homes that are electrification-ready and/or electrified, as consistent with the Two Million Climate-Friendly Homes target, including number of such homes that qualify as low- to moderate-income.
- Prioritized investment in homes and other buildings located in Disadvantaged Communities.

**Progress toward these goals**

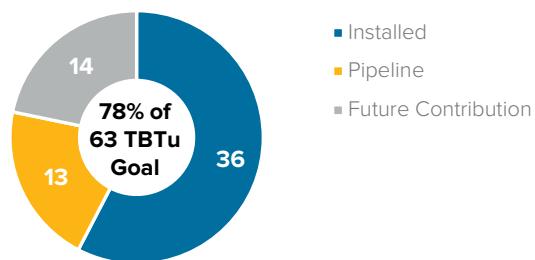
Combined activities of NYSERDA, investor-owned utilities, Long Island Power Authority, and NY Power Authority across historic and ongoing energy efficiency programs have so far achieved more than 108 TBtu of avoided energy use in the building sector—equivalent to fueling and powering more than one million New York homes. Though there have been recent global market challenges, NYSERDA remains on track to deliver against CEF 2030 Targets for Total Energy Savings.

**185 TBtu New Efficiency: New York Energy Savings Goal**

*Progress data is through Q3 2023 for NYSERDA, Investor-Owned Utilities, and LIPA, and through Q4 2022 for NYPA.*



NYSERDA Progress





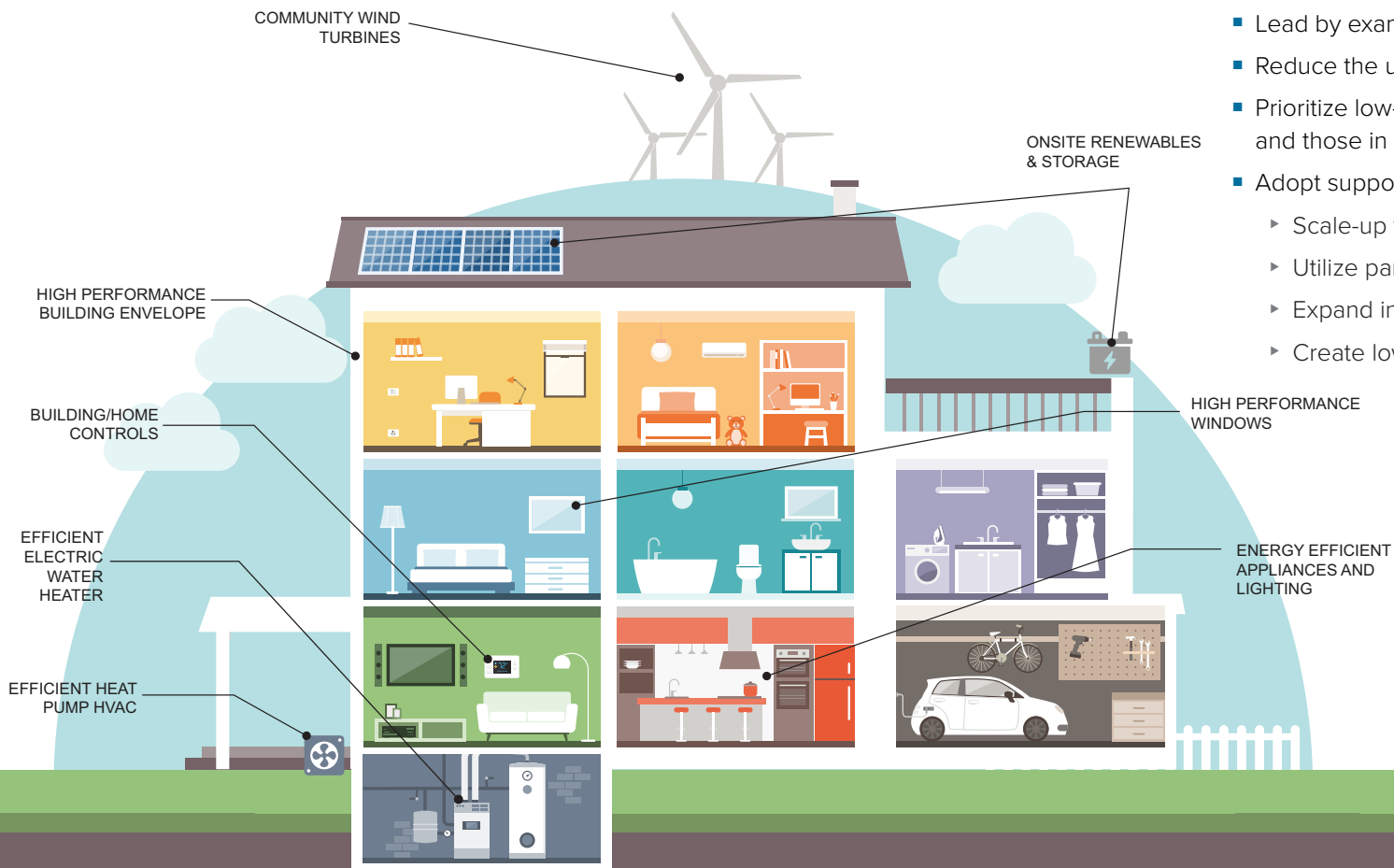
# ATTRIBUTES OF A CARBON NEUTRAL BUILDING

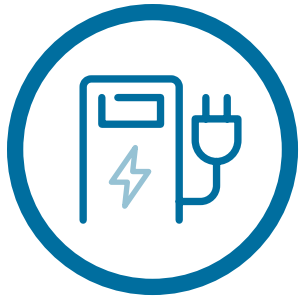
- Maximizes energy efficiency
- No fossil fuel combustion for building energy services (all-electric end uses)
- Produces or procures zero-emission electricity
- Designed with flexible loads and/or storage that can respond to grid conditions
- Features resiliency measures that protect building occupants
- Designed with attention to embodied carbon and refrigerants

# STRATEGIES NEEDED TO DRIVE PROGRESS IN CARBON NEUTRAL BUILDINGS

- Advanced codes for new construction
- Prohibit replacement of fossil-fuel heating and hot water equipment
- Benchmarking and disclosure of energy performance
- Performance requirements for existing buildings to improve energy efficiency
- Plan for the gas transition
- Fund research development and demonstrations
- Lead by example on embodied carbon
- Reduce the use of hydrofluorocarbons (HFCs)
- Prioritize low- and moderate-income residents and those in Disadvantaged Communities
- Adopt supporting policies to drive action:
  - ▶ Scale-up the workforce
  - ▶ Utilize partnerships
  - ▶ Expand incentives
  - ▶ Create low-cost financing

[nyscrda.ny.gov/Carbon-Neutral-Buildings](https://nyscrda.ny.gov/Carbon-Neutral-Buildings)





# CLEAN TRANSPORTATION

## STATE POLICY GOAL

**New York State has adopted ambitious clean energy targets in the transportation sector through legislation and regulation. By 2027, all new school buses purchased in the State will be zero-emission vehicles, with the entire school bus fleet transitioning to zero-emission buses by 2035.**

**By 2035, all new light-duty vehicle sales in the State must be zero-emission vehicles, and all medium- and heavy-duty vehicle sales must be zero-emission vehicles by 2045.**

The coming years will see a dramatic expansion of zero-emission vehicles, coupled with an increased investment in public transportation and other low-carbon transportation modes.

Reducing GHG emissions from the transportation sector—which is responsible for nearly 30% of the State’s total GHG emissions—is essential to meeting the State’s 2030 and 2050 Climate Act emission limits. Also of critical importance, the transportation sector has historically been a major source of local air pollution, especially in New York State’s most overburdened communities. Shifting away from combustion to electric and hydrogen fuel-cell technology in the sector will improve air quality and health outcomes for all New Yorkers, and the most vulnerable New Yorkers are likely to see outsized health benefits.

Under Governor Hochul’s leadership, New York State has set ambitious goals for the adoption of zero-emission vehicles like electric vehicles (EVs). To meet these goals, NYSERDA is accelerating adoption through a mix of incentives, research, engagement, and market development activities designed to remove barriers to EV adoption.

Transitioning to zero-emission vehicles is only part of the solution for decarbonizing the transportation sector. Improving access to clean transportation options can also provide much-needed access to jobs, education, and essential services for people who have been underserved by transportation options for years. New York State’s commitment to a substantial expansion in public transit and the use of low-GHG transportation modes under the Scoping Plan will provide new opportunities to communities that have lacked clean options and been burdened by the high cost of personal transportation. As part of this commitment, NYSERDA is using its programs to increase the affordability and accessibility of new technologies such as electric vehicles and e-bikes.

## SCOPING PLAN

The Scoping Plan recommends an aggressive transition of New York State’s light-, medium-, and heavy-duty vehicles and non-road equipment to zero-emission technologies, including battery electric, clean hydrogen fuel cells, and other renewable fuels. It indicates New York should rapidly expand public transportation use and continue to promote community development patterns that are conducive to low-GHG modes of transportation and fewer vehicle-miles traveled (VMT). The State should develop new frameworks and policy mechanisms that drive economywide emissions reductions in the transportation sector, such as a clean transportation standard.

## NYSERDA’S ROLE AND STRATEGIES FOR 2024–2027

- **Policy and analysis.** Provide policy guidance and strategic direction to policymakers based on market intelligence, technology expertise, and learned experience in administering programs. Scope future programs and advise on potential legislative and regulatory approaches that could advance transportation decarbonization. Build upon existing programs such as the NY Truck Voucher Incentive program and identify additional approaches to electrifying the medium- and heavy-duty vehicle market and non-road equipment through activities such as technical assistance, incentives, and financing. In collaboration with DEC, launch a study to analyze the benefits of a clean transportation standard (a policy that encourages the use of an increasing amount of low- and zero-carbon transportation fuels), focusing on how such a program could help drive the State toward a zero-emission transportation sector by 2050 while supporting the deployment of electric and zero-emission transportation in overburdened and Disadvantaged Communities.
- **Partnerships.** Lead coordination and collaboration across State agencies and federal and local government entities to encourage consistent approaches to reducing transportation GHG emissions and energy use. Coordinate programs to ensure investments of State funding and State-administered federal funding are complementary and reflect State priorities, including a collaborative effort across State agencies to direct funding for EVs and EV charging to the most impactful uses. Engage utilities and the DPS to ensure the electric grid is ready for an influx of EVs, charging stations are built to keep pace with rapid EV adoption, and regulatory approaches are supportive of transportation electrification.
- **Incentive programs.** Deliver impactful programs to catalyze market activity and accelerate clean transportation investments, including EVs and EV charging incentives. Maintain light-duty EV and EV charging incentive programs and adapt them to evolving market conditions to ensure New York is on track to meet its 2030 EV goals.
- **Market acceleration.** Add new approaches to removing barriers to market adoption, such as addressing EV charging station permitting and increasing consumer awareness and acceptance of EVs. Provide technical assistance to fleets and industries looking for help in reducing their transportation GHG emissions, with a primary focus on school bus fleets, but also working with other industries to identify viable low-GHG technologies and plan for long-term emission reductions. Work with communities to identify needs, support the introduction of new services, and adopt local ordinances supporting low-VMT transportation options, land uses, and development.
- **Financing.** Offer support for innovative clean transportation businesses and projects to reduce risk associated with these projects, and demonstrate to private sector financiers that these projects can be successful and generate returns on their investments.

### Energy and Climate Equity

Historically, diesel vehicles and engines have been a major source of harmful pollution in overburdened communities. NYSERDA works to advance access to clean transportation for residents of Disadvantaged Communities and accelerate the transition to electric vehicles within Environmental Justice areas to reduce emissions and improve air quality. Projects funded through the NY Clean Transportation Prizes are a primary example of this work.

For example, Disadvantaged Communities in the Rockaways in Queens and Brentwood in Suffolk County have limited public transportation options but relatively low rates of vehicle ownership. To expand clean transportation choices in these communities, Circuit (a NY Clean Transportation Prize winner) has launched two affordable, electric micro-shuttle services, available for on-demand trips to bridge first/last mile gaps in both communities. The 21-vehicle electric microtransit fleet, which launched in December 2023, uses locally hired and trained drivers and mobile ride-request app technology to provide service. Service planning has been accomplished through close collaboration with local organizations. New EV charging stations, installed as part of the project, will provide charging options to both fleet vehicles and the public.

## Energy Innovation

NYSERDA has a strong track record of supporting new technology and business model development related to EVs, transit, and mobility. NYSERDA funds new technology research, development, and demonstration projects to bring cutting-edge products to market, test emerging technologies, and identify both barriers to adoption for new technologies and business models and potential resolutions to those barriers.

NYSERDA will continue investing in new solutions that minimize EV impacts on the electric grid through advanced vehicle-grid interactions—critical for deploying EVs at scale and at a reasonable cost. Additional future areas of study include e-bike battery safety and efficiency improvements for EV auxiliary loads. NYSERDA anticipates funding demonstration projects related to micromobility freight solutions, shared mobility business models that serve low- to moderate-income populations, and hard-to-electrify market segments (especially large trucks, construction equipment, and agricultural equipment).

NYSERDA will also focus on advancing fuel cell electric vehicles (FCEVs), which can help New York State meet the ZEV target in medium- and heavy-duty sectors, reduce peak load on the grid from the transportation sector, and provide resiliency solutions. NYSERDA will support the development of innovative solutions to reduce cost and improve performance in FCEVs and hydrogen fueling infrastructure for medium- and heavy-duty applications, while collaborating with other State agencies and communities to ensure safe deployment in New York.

### INDICATORS OF PROGRESS

- Reduced GHG emissions from the transportation sector
- Number of EVs (light-, medium-, and heavy-duty) on the road and EV charging stations installed across New York State
- Market share (measured as a percent of sales) for light-duty EVs
- Number of electric school buses on the road
- Increased use of public and low-GHG transportation options such as biking and walking and a reduction in single-occupant vehicle use and VMT, especially in New York’s Disadvantaged Communities

## NEW YORK STATE'S ZERO-EMISSION VEHICLE (ZEV) MARKET

**197,358**

ZEVs on the road  
(as of 1/1/2024)



**8.9%**

of new cars sold in 2023 were ZEVs

**92**

light-duty models available for purchase



**12,274**

public and workplace Level 2 chargers available

**1,364**

public DC fast chargers available



**\$127 million**

federal funding received for electric school buses under the IIJA to date

**\$500 million**

NYS funding available for electric school buses

**\$203.5 million**

federal funding received for EV charging under the IIJA to date

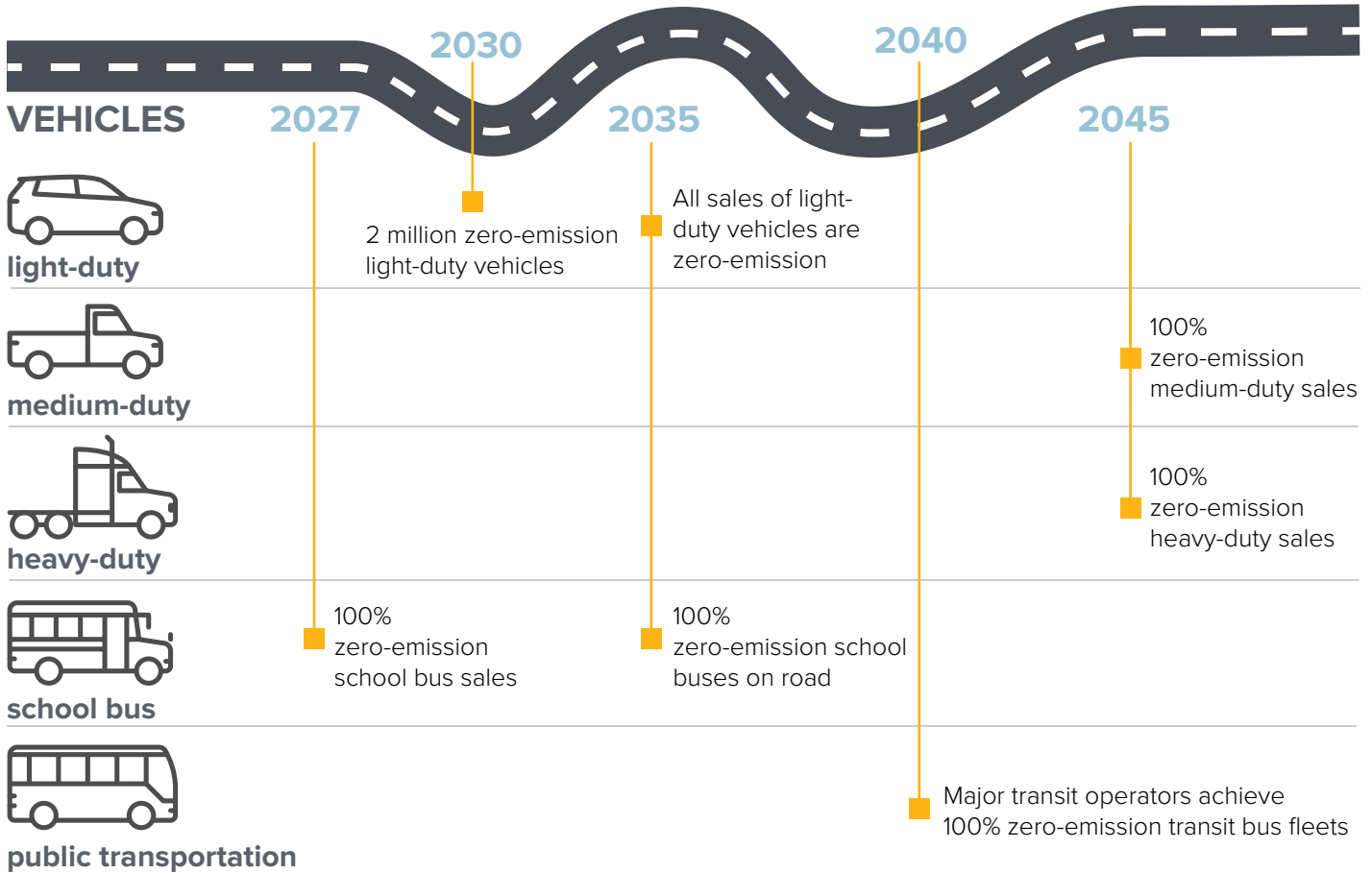
**\$2.75 billion**

total NYS investment in transportation electrification

### TRANSFORMATION BY 2030

Service improvements will make public transit viable for even more New Yorkers and the auto industry will be well on its way to a new era of electrified transportation, with EVs comprising more than 90% of new car sales in 2030.

## CLEAN TRANSPORTATION TIMELINE



### HIGHLIGHTED PROGRAMS AND INITIATIVES

#### ELECTRIC SCHOOL BUSES

NYSERDA is leading State efforts to support schools in implementing legislation that requires, by 2027, all new school buses purchased are zero-emission—and that by 2035, all school buses on the road are zero-emission. This includes administering the NY School Bus Incentive Program, which uses \$500 million in Environmental Bond Act funding, to cover up to 100% of the difference in cost between an electric bus and a diesel bus as well as the cost of charging infrastructure. NYSERDA funds fleet electrification plans to help school bus fleets determine how electric school buses can best fit into their operations; facilitates engagement between school bus fleets and their electric utilities; and coordinates with stakeholders across the school transportation system to answer questions and address market challenges.

Schools and their contractors can also receive funding for school bus fleet electrification planning, which helps fleets understand electric school bus and charging technologies, scope necessary utility upgrades, and develop a long-term plan to transition to a zero-emission fleet in a financially responsible manner.

### HIGHLIGHTED PROGRAMS AND INITIATIVES

#### **NY TRUCK VOUCHER INCENTIVE PROGRAM**

NY Truck Voucher Incentive program uses funding from the Volkswagen diesel emissions settlement to retire older diesel trucks and buses and replace them with new, zero-emissions models.

#### **DRIVE CLEAN REBATE**

Drive Clean Rebate has provided more than 100,000 point-of-sale rebates of up to \$2,000 for New Yorkers buying EVs since 2016.

#### **CHARGE READY NY 2.0**

Charge Ready NY 2.0 offers rebates for workplaces, multifamily buildings, and municipalities that install Level 2 charging stations, with bonuses available for partners who work with NYSERDA to promote EVs to their employees and tenants.

#### **DIRECT CURRENT FAST CHARGER (DCFC) INVESTMENTS**

NYSERDA's DCFC investments target specific geographic areas of New York State that lack fast charging stations to partner with private entities to install rapid chargers for community members and travelers.

#### **NEW YORK CLEAN TRANSPORTATION PRIZES**

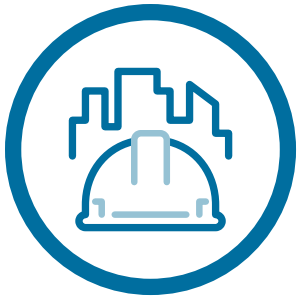
New York Clean Transportation Prizes focus on community-scale transportation solutions, advanced mobility, and electric truck and bus innovation. Many of the projects will launch new services in 2024 and begin collecting data to inform future programs and policy. A new clean mobility program is expected to start in 2024 as well.

#### **EV AND MOBILITY RESEARCH AND DEVELOPMENT**

Programs investing in EV and mobility research and development support a range of projects that have advanced the state of knowledge and technology development in clean transportation. Collaborations with the Grid Modernization program help ensure that projects are investigating new ways to minimize grid impacts and save ratepayers and EV owners money.

#### **NY GREEN BANK**

NY Green Bank continues to work to address financing gaps and accelerate the advancement of the clean transportation market, including through providing capital to support the deployment of electric and zero-emission vehicles and the build-out of EV charging infrastructure in New York State, aiming to invest at least \$100 million in clean transportation projects by 2025.



# CLEAN ENERGY JOBS AND ECONOMY

## STATE POLICY GOAL

**With nearly 171,000 clean energy jobs across the State at the end of 2022—and hundreds of thousands of additional new jobs to be created by Climate Act investments—New York’s nation-leading climate policies continue to drive economic opportunity and job creation.**

**New York’s clean energy businesses have continued to add workers at a faster pace than the State’s overall workforce, with clean energy employment increasing by 3.5% from 2021 to 2022, compared to 3% across all industries statewide. Moreover, quality job growth can be seen across all technology sectors, with existing clean energy workers reporting high rates of career satisfaction.**

Looking forward, the State has an unprecedented opportunity to harness the economic development benefits expected from new federal incentives through the Inflation Reduction Act, the Bipartisan Infrastructure Law, and the CHIPS and Science Act. Combined, these federal programs are expected to invest more than \$500 billion to support clean energy deployment as well as domestic manufacturing of clean energy products and services. These federal programs offer a generational opportunity to create more than nine million jobs across the U.S. and significantly increase the pace of U.S. manufacturing supply projects over the coming years. If New York State is going to be a strong competitor in the national race to domesticate the clean energy supply chain, our economic development initiatives need to be strategic, aggressive, and send strong signals to the market that the State is open for business.

New York State has the opportunity to position itself as an innovation, research, and manufacturing capital of clean technology, by focusing investment on next generation technology development at the State’s global research universities and industrial facilities. Combined, these activities will create thousands of jobs, establish the supply chain for clean energy equipment and technologies, and attract national and global investments across New York for a decarbonized economy of the future.

Availability of finance is an essential component of growing New York State’s clean energy economy. NY Green Bank, a division of the NYSERDA and State-sponsored investment fund, plays a critical role in removing barriers and filling financing gaps to mobilize private investment into the State’s clean energy and sustainable infrastructure markets.

To build an inclusive clean energy economy and cultivate a just transition, NYSERDA, along with other State agencies and clean energy industry partners, will continue building upon efforts to develop a pipeline of skilled labor. In particular, emphasis will be placed on ensuring these economic opportunities are open to communities that have been historically disadvantaged and transitioning fossil-fuel workers. New York State’s communities on the frontlines of the climate crisis—including Environmental Justice areas, low- and moderate-income families, communities of color, and otherwise Disadvantaged Communities—have disproportionately been impacted by structural inequities in education and workforce opportunities.



## SCOPING PLAN

Workforce development and access to economic opportunities are central themes throughout the Scoping Plan. It indicates that in addition to managing a just transition for current fossil fuel workers, New York State must facilitate the education and training of a skilled workforce across the clean energy economy. The State will partner with industry, labor, and educational institutions to drive job growth and expand access to new job opportunities, ensuring that members of Disadvantaged Communities actively participate in, and benefit from, the transition to a clean, green economy. The Scoping Plan also highlights the importance of cross-sectoral clean technology innovation and business ecosystem development in building a competitive and comprehensive clean technology supply chain in New York.

## NYSERDA'S ROLE AND STRATEGIES FOR 2024–2027

### Economic development

- Attract new clean energy businesses and expand existing New York State firms by coordinating clean energy business recruitment, site and infrastructure development, and competitive advantage positioning (e.g., leveraging research and development assets), in partnership with key economic development stakeholders, including Empire State Development and regional and local economic development organizations.
- Help New York-based companies pivot to the clean energy supply chain and help New York State itself compete more aggressively with other states for clean energy manufacturing projects. Partner with economic development stakeholders to continuously examine—and make recommendations to enhance—the State’s clean energy economic development “toolkit” of programs and policies.
- Stimulate economic development in key clean energy sectors through direct investments and other supportive action such as development of offshore wind, energy storage, and other technologies.
- Support regional economic development projects (including Micron, Global Foundries, and others that will have significant economic impacts) as they strive to achieve sustainability goals.
- Develop policy and analysis to support additional investment in clean energy supply chain growth.

### Workforce development

- Fund training organizations (such as technical high schools, colleges and universities, community-based organizations, and unions) to scale-up recruiting, training, and placement of New Yorkers in clean energy careers. Develop training infrastructure to upskill existing workers (such as building operations and maintenance and HVAC workers) to facilitate career advancement and prepare the next generation of clean energy workers in high-growth sectors (such as high-efficiency HVAC, building decarbonization, electric vehicle repair and charging stations, energy storage, and large-scale renewables). Develop career awareness initiatives for young adults and transitioning workers to introduce them to clean energy careers.
- Leverage and augment wrap-around support and services such as housing support, childcare, financial literacy, and transportation assistance for residents of Disadvantaged Communities and Priority Populations (this includes veterans, individuals with disabilities, previously incarcerated individuals, incumbent fossil fuel workers, and homeless individuals).
- Provide targeted support to unions and businesses to train and hire new workers in “earn-as-you learn” models, such as apprenticeships and on-the-job training. Expand clean energy pre-apprenticeship programs that provide pathways to registered apprenticeship programs (direct-entry programs), with a focus on providing careers to individuals who face barriers to employment.
- Coordinate with, and leverage the work of, other State agencies and organizations such as the New York State Department of Labor (DOL), the State University of New York (SUNY), the City University of New York (CUNY), NY Power Authority (NYPA), and Empire State Development (ESD). For example, many of these agencies are working together to support the development of DOL’s Office of Just Energy Transition in support of the Climate Act.
- Build community capacity by leveraging the 12 Regional Clean Energy Hubs (established in 2022) to connect local residents with workforce development opportunities (see the mission outcome Sustainable and Climate-Resilient Communities).

## Finance: NY Green Bank

NY Green Bank helps to accelerate clean energy development by working with the private sector to overcome finance barriers, including through transactions related to:

- Building decarbonization and electrification, including affordable housing
- Clean transportation, including electric vehicles and charging infrastructure
- Energy storage
- Large-scale renewable energy projects
- Community distributed generation

### NY Green Bank's focus areas include:

- Alleviate financing gaps in sustainable infrastructure markets by developing replicable, scalable financing products that encourage private sector lenders and investors to expand their activity in New York State's clean energy markets.
- By 2025, achieve investment targets in clean transportation (\$100 million), building electrification (\$100 million), affordable housing (\$150 million), and energy storage (\$200 million).
- Continue to explore and refine innovative financing models to help other financiers gain comfort with funding new asset classes, (including newer business models featuring less well understood cash flow and risk profiles, structures and approaches).
- Build capacity of New York's climate finance ecosystem through knowledge sharing and highlighting NY Green Bank's underwriting practices in priority market segments.
- Collaborate with New York State clean energy ecosystem partners to deploy awards from the EPA's Greenhouse Gas Reduction Fund as efficiently, effectively, and impactfully as possible.

As a component of New York's Clean Energy Fund, NY Green Bank is currently undergoing its regularly scheduled 10-year Program Review in 2024. This process will include summarizing NY Green Bank's performance to date and its impact on the markets it has engaged in. The review will include an assessment of the overall performance of the portfolio (by sector as well as technology type) of investments compared to projections, the self-sufficiency of NY Green Bank, data trends, lessons-learned and findings from relevant evaluations. In addition, this review will include the identification of any potential modifications or expansions of NY Green Bank's original mission and mandate, which would further support and align with the Climate Act or otherwise improve the effectiveness of NY Green Bank's activities.

## Energy and Climate Equity

Equity considerations are built into the core of NYSERDA's workforce development and training initiatives to support a just transition for historically disadvantaged populations and industries affected by the transition from fossil fuels, as described in the strategies summarized in this mission outcome.

In addition, NYSERDA incorporates new progressive labor and economic development provisions, including prevailing wage/project labor agreements; prioritization of minority- and women-owned business enterprises (MWBs) and service-disabled veteran-owned businesses (SDVOBs); and Buy America provisions into its renewable procurements.

NYSERDA also leads by example through its focus on diversity, equity and inclusion across NYSERDA's internal policies and processes, following publication of its Diversity, Equity, & Inclusion Strategic Plan in 2021.

NY Green Bank aims to demonstrate the attractiveness and viability of investments in projects that benefit the State's Disadvantaged Communities by investing at least 35% of total capital commitments between January 1, 2020, and December 31, 2025 in these types of projects. NY Green Bank launched a concessionary wholesale funding pathway—the \$250 million Community Decarbonization Fund—to help Community Development Financial Institutions and other specialty lenders expand their green lending activity (including sustainable infrastructure and decarbonization investments). These financing products will benefit residents of Disadvantaged Communities and ensure greater opportunities to support local green projects across New York State.

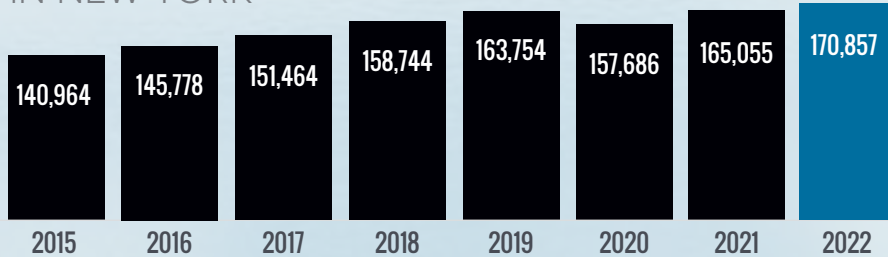


INDICATORS  
OF PROGRESS

- Statewide clean energy industry jobs and job creation supported by Climate Act investments
- Number of New Yorkers, including residents from Disadvantaged Communities and Priority Populations, trained and employed in clean energy
- Commercialized climate solutions and launches of incubated firms, including related revenues
- Total capital invested in New York State’s sustainable infrastructure market, particularly in Disadvantaged Communities

# 171,000 clean energy jobs in 2022 across New York State

## ANNUAL CLEAN ENERGY EMPLOYMENT IN NEW YORK




New York’s clean energy industry gained 5,800 jobs between 2021 and 2022, demonstrating a return to robust clean energy growth.

Clean energy businesses in New York added workers at a faster rate than the State’s overall workforce, and in greater numbers than neighboring states.

All clean energy sectors experienced growth in 2022, with the rapidly expanding clean and alternative transportation and grid modernization and storage sectors seeing double-digit employment increases in the past 12 months.

New York’s clean energy workforce is well-positioned for success as interest and investments into the clean energy industry continue to increase.

### CLEAN ENERGY EMPLOYMENT BY TECHNOLOGY (number of jobs, December 2022)



**Building Decarbonization  
and Energy Efficiency**  
**126k**




**Renewable Electric  
Power Generation**  
**26k**



**Clean and Alternative  
Transportation**  
**14k**



**Renewable Fuels**  
**2.7k**



**Grid Modernization  
and Energy Storage**  
**2.7k**

[nyserdera.ny.gov/  
Clean-Energy-Jobs](https://nyserdera.ny.gov/Clean-Energy-Jobs)

## New York State Climate Jobs Study

Based on independent research conducted for New York’s Just Transition Working Group, Climate Act Scoping Plan Investments are expected to spur hundreds of thousands of new jobs in coming decades.

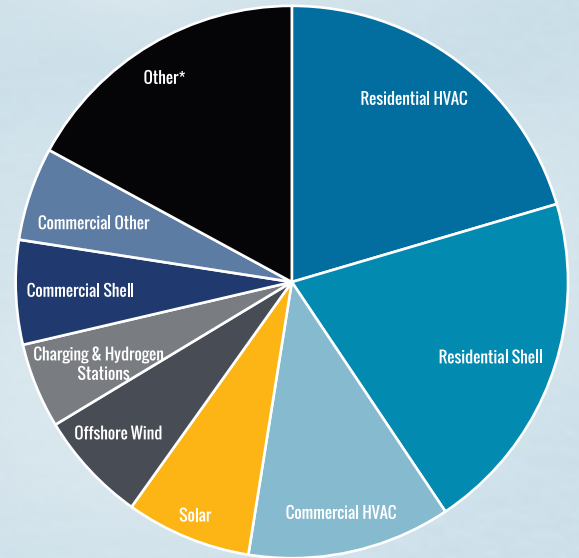
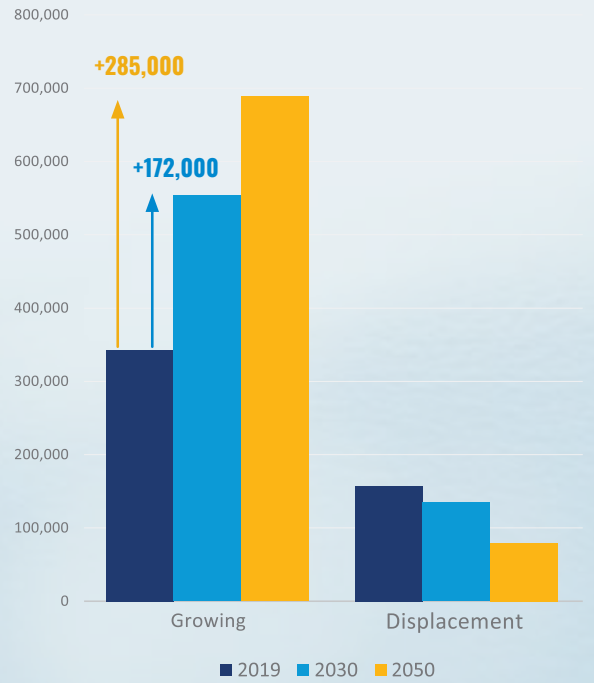


- Employment in growth sub-sectors increases by at least 172,000 jobs by 2030, a 55% increase in the workforce from 2019 to 2030.
- Employment grows in these sub-sectors by at least 285,000 jobs through 2050.
- In New York State, clean energy jobs, in their comparable sub-sectors, are expected to grow annually at more than twice the rate from 2021 through 2030 as the growth experienced between 2016 through 2020.
- By 2050, growth sub-sectors in New York State will reach nearly 600,000 jobs.

### Key Employment Findings\*\*

Sub-Sectoral Breakdown of 172,000 Jobs Added by 2030

- Over half of the new jobs, in the growth sub-sectors, from 2019 to 2030, will be found in the buildings sub-sectors (shaded blue).
- The next largest growth sub-sectors are solar and offshore wind electricity generation, and electric vehicle charging and hydrogen fueling stations.



\* Includes Transmission, Storage, Other Generation, Bioenergy, Residential Other, Hydrogen, Onshore Wind, and Vehicle Manufacturing

\*\* Key employment findings derived from S2: LCF Scenario. Learn more by reading the [New York State Just Transition Working Group Jobs Study](#).

## TRANSFORMATION BY 2030

- Nearly half-a-million family-sustaining clean energy jobs in New York State by 2030.
- Fine-tuned workforce development initiatives with job creation opportunities resulting from Climate Act investments.
- Additional \$12–\$15 billion in capital leveraged by NY Green Bank, Innovation and Research portfolio activities, and private capital mobilized through the federal BIL, CHIPS and Science Act, and IRA.
- Comprehensive economic development strategy has made New York State the leading market for clean energy business growth and supply chain localization.

## HIGHLIGHTED PROGRAMS AND INITIATIVES

### Economic development

#### OFFSHORE WIND PORTS

NYSERDA is investing \$500 million in offshore wind manufacturing and port infrastructure. The goal is to attract and drive the private investment in the State to ensure cost-competitive products are available to support the growing volume of New York's and regional offshore wind projects, and to establish operations in New York State to maximize economic benefits and job opportunities to the State.

#### MICRON AND GLOBAL FOUNDRIES

The \$100 billion Micron investment in Onondaga County and \$11.6 billion Global Foundries investment in Saratoga County are transformational projects to the State in terms of jobs, wages, community growth, and sustainability. Investments made at manufacturing facilities as well as the surrounding communities will necessitate innovative approaches to reducing carbon emissions while growing the State's economy. Micron and Global Foundries participate in New York State's Green CHIPS program, a first-in-the-nation major economic development program that incentivizes sustainability outcomes (such as the use of 100% clean, renewable electricity in participant manufacturing operations)\*. As sustainability becomes a business imperative, more companies like Micron and Global Foundries can be attracted to New York State thanks to its rich renewable asset base, sustained clean energy investment horizon, and policies driving the clean energy economy

#### SOUTHERN TIER, FINGER LAKES, AND WESTERN NEW YORK ENERGY STORAGE SUPPLY CHAIN

NYSERDA is actively participating in the New Energy New York Coalition (NENY), which has been awarded more than \$280 million in federal and State funds. Originally established in 2022 by the U.S. Economic Development Administration's (EDA) Build Back Better Regional Commission, NENY has since won other designations and funding such as the EDA's Tech Hub and the U.S. National Science Foundation's (NSF) Regional Innovation Engines award. NENY will help the U.S. meet the demand for domestic battery products by accelerating the battery development and manufacturing ecosystem in the Southern Tier, Finger Lakes, and Western New York regions. Specifically, NYSERDA will support and connect existing New York State manufacturers to supply chain opportunities, attract energy storage manufacturers to these regions and the State, and enhance the region's profile via marketing and site development.

**The passage of the Inflation Reduction Act will significantly increase opportunities to attract these kinds of projects to New York State.**

\* <https://esd.ny.gov/green-chips>

## HIGHLIGHTED PROGRAMS AND INITIATIVES

### Workforce development

#### **BUILDING OPERATIONS AND MAINTENANCE TRAINING**

This program is designed to develop training projects that create the educational strategy, on-site training framework, and tools needed to advance the skills of building operations and maintenance workers and to prepare new workers beyond conventional classroom training.

To date, 69 projects totaling over \$16 million have been awarded to train and upskill more than 8,000 building operations and maintenance workers. Approximately 40% of program expenditures to date have gone to train operators at buildings located in Disadvantaged Communities.

#### **ENERGY EFFICIENCY AND CLEAN TECHNOLOGY TRAINING FOR NEW AND EXISTING WORKERS**

This initiative is designed to strengthen the pipeline of skilled talent for the clean energy labor market, focusing on energy efficiency, building electrification, renewables, energy storage, and electric vehicle charging station infrastructure.

Projects funded through this program are intended to develop and/or deliver clean energy technical training and relevant education, hands-on experience, and apprenticeships, full-time jobs, or advanced formal training. The goal is to ensure that both new and existing workers, apprentices, journeypersons, and students, as applicable, have the skills, experience, and qualifications required to meet industry demand.

To date, 57 projects have been provided more than \$17 million to train and upskill nearly 16,000 individuals.

#### **APPRENTICESHIP AND PRE-APPRENTICESHIP CLEAN ENERGY TRAINING**

This new initiative is designed to create and/or expand the capacity of existing direct entry pre-apprenticeship and registered apprenticeship programs as a pathway to family-supporting, high-quality jobs. NYSERDA expects to train approximately 3,500–4,000 new and existing workers, with at least 50% of those trainees coming from a Disadvantaged Community or Priority Population through Registered Apprenticeships and Direct-Entry Pre-apprenticeships by 2025/2026.

#### **MANUFACTURING CORPS (M-CORPS)**

The M-Corps program connects startups who are scaling products that lower greenhouse gases or reduce energy consumption with local supply chain partners, manufacturers, and suppliers—attracting new technologies to the State and prioritizing connections in underserved communities. To date, the program has engaged 68 cohort members and signed 268 manufacturing agreements. Cohort members have manufactured over 27,000 climatetech product units, raised over \$40M in revenue, and seen an estimated 17-month decrease in average time to achieve manufacturing readiness.





# SUSTAINABLE AND CLIMATE- RESILIENT COMMUNITIES

## STATE POLICY GOAL

**Build a resilient and distributed energy system—and supportive social infrastructure—that can anticipate, absorb, adapt to, and recover quickly from a wide range of shocks and stresses.**

**In this period of dynamic and fast-paced change—marked by a global pandemic, wildfires, extreme storms, record-breaking heat, and cyber threats—the energy system faces a range of new risks and disruptions. It is crucial that the transition to clean energy and net zero emissions maintain and enhance reliability and resiliency.**

New York State's power system is evolving from more vulnerable, centralized power generation toward an increasingly balanced, diversified, and digitalized network. Furthermore, advancements in flexible, responsive resources—such as energy storage and building load flexibility—are underway. But the State must ensure its infrastructure is designed for our new climate reality, including changing flood zones, sea level rise, storm surges, high windspeeds, severe hail, and extreme temperatures.

Measuring and valuing risk reduction and resiliency can catalyze opportunities to harness the market system in service of the State's goals. In line with Scoping Plan recommendations, NYSERDA will use the latest climate science to identify opportunities to incorporate climate resiliency into its own programs, investments, and assets to support both decarbonization and climate resiliency goals. This will enable NYSERDA to better support New York State's communities—major partners in the transition to a clean and resilient energy system. Not only do communities host the distributed energy resources that enable grid reliability and flexibility, but by promoting decarbonized transportation and buildings, our communities are showing how holistic, community-scale climate solutions with neighborhood-level impact can improve health outcomes, generate new economic opportunities, and strengthen local decision making and ownership.

NYSERDA is particularly focused on approaches that center on the lived experiences and priorities of frontline communities. NYSERDA recognizes the role State policy has played in perpetuating inequities faced by historically marginalized communities. This includes low-income communities, Black people and other People of Color, Indigenous Nations and people, hard-to-reach underserved rural communities, and other areas of the State with high levels of poverty and limited access to resources. In response, NYSERDA is addressing the climate crisis, energy injustice, and the legacy of environmental racism by engaging with frontline communities, bringing their voices to the table, and ensuring equity in processes and outcomes for those disproportionately burdened by the current energy system.



## New York State Communities

New York's communities are as diverse as New Yorkers themselves, spanning 932 towns, 62 cities, and 10 Indigenous Nations. More broadly, though, communities throughout the State have shared interests in preserving and expanding quality of life, including affordable housing, education, job opportunities, clean air and water, and health and safety.

New York State's communities are essential partners in this clean energy transition and must be engaged in planning, coordination, and decisions that will impact generations to come.

## Disadvantaged Communities Barriers and Opportunities Report

Released at the end of 2021, this report identifies the barriers faced by Disadvantaged Communities in accessing and owning certain services and commodities related to distributed renewable energy, energy efficiency and weatherization, low- and no-emissions transportation, adaptation and resiliency, and other services and infrastructure that can reduce the risks of climate hazards.

The report also identifies 35 opportunities to overcome these barriers, organized under eight principles and three themes that are:

- ensure processes are inclusive
- streamline program access
- address emerging issues.

The Scoping Plan expects all State entities to incorporate these themes into their programs, with NYSERDA leading the way by modeling best practices. This is reflected in NYSERDA's strategies as set out throughout this mission outcome.

## SCOPING PLAN

The Scoping Plan acknowledges that climate change is the new reality, and New York State must improve the resiliency of our communities and the infrastructure that supports them. It urges the State to continue assessing the scope of the risks before us so we can better understand threats to our energy system, ecosystems, and communities, and incorporate these considerations into our programming. The State should also offer its expertise to community partners so they may improve support for resiliency and emergency preparedness for extreme heat and other dangerous weather events.

The Scoping Plan identifies local governments as key partners in the clean energy transition. As such, the State can promote smart growth principles and proactive local government planning. This would facilitate more sustainable transportation patterns; the beneficial siting of renewables and distributed energy resources; the protection of our natural resources, ecosystems, and agricultural land; the sustainable use and reuse of the State's land and buildings; the sequestration of carbon; the furtherance of equitable development practices and local ownership; and the improvement of our communities' resiliency to a changing climate.

## NYSERDA'S ROLE AND STRATEGIES FOR 2024–2027

### Climate Adaptation and Resiliency

- Lead statewide climate resiliency and adaptation planning efforts in partnership with DEC, DOS, and other State agencies. Identify best practices for resiliency to climate hazards, particularly in Disadvantaged Communities, using lessons learned statewide through the Extreme Heat Action Plan (EHAP).
- Lead by example by incorporating resiliency considerations into NYSERDA programming.
- Spearhead the next generation of climate change impacts and adaptation research to provide insights for infrastructure, investment, and energy system planning decisions based on the latest climate projection data.
- Continue to administer and refine flagship distributed energy resources programs, such as NY-Sun, and energy storage incentive programs that boost resiliency, provide grid value, and reduce costs.
- Leverage the findings from the New York State Energy Security Plan to increase awareness of the risks and mitigation opportunities across different segments of the energy sector, and coordinate with industry stakeholders and other government entities to collectively strengthen the energy resiliency and energy security abilities of the State.
- Consider climate risk on NY Green Bank investments and incorporate relevant climate resiliency considerations when evaluating future investments.
- Pursue energy innovation activities in Grid Modernization to help the grid to withstand, adapt to, and recover from climate impacts, thereby becoming more resilient.
- Accelerate the development and deployment of transformative technologies, products, and services to address climate adaptation and resiliency challenges, including through the energy innovation Tech to Market program.

### Community Partnerships and Support

- Provide support through network organizations such as the Clean Energy Hubs to help communities in implementing their own sustainability and clean energy goals.
- Promote neighbor-to-neighbor clean energy campaigns and testimonials, sharing best practices by local champions for clean energy.
- Offer guidance, training, technical resources, and planning services, including through the Clean Energy Communities initiative, to inform local decision making on land use, siting, project economics, taxes, community benefits, building codes, and the mitigation of negative impacts from pending or future fossil fuel power plant closures.
- Increase engagement of frontline, climate-vulnerable communities to ensure their representation in decision-making and policymaking.
- Provide building science expertise to help schools address the dual challenges of sustainability and indoor air quality—creating healthier, more sustainable schools.

### Energy and Climate Equity

NYSERDA pursues an inclusive approach with a focus on Disadvantaged Communities as part of the strategies described above to strengthen climate resiliency and adaptation as well as support and partner with communities.

- NYSERDA partners with stakeholders and community-based organizations within Disadvantaged Communities to co-develop local clean energy agendas and deploy climate resiliency hubs. These Hubs enable residents to safely shelter in place through community-scale distributed energy resources including solar, energy storage, green hydrogen, and district geothermal systems.
- NYSERDA ensures robust engagement opportunities for historically marginalized communities in terms of involvement in program planning and design. NYSERDA provides financial support via a Disadvantaged Community stakeholder service provider pool and a Disadvantaged Community stakeholder reimbursement.

## TRANSFORMATION BY 2030

- Resiliency considerations and investments imbedded in all relevant energy/clean energy infrastructure and programming.
- Community-, neighborhood-, and household-level infrastructure investments to boost social cohesion and people-centric resiliency, with physical refuges from extreme heat and weather events and a particular emphasis on Disadvantaged Communities.
- Ubiquitous and actionable energy data access, allowing thousands of distributed energy assets (i.e., solar, electric vehicles, grid-interactive buildings) to communicate and participate responsively, delivering value to both customers and the grid.

## INDICATORS OF PROGRESS

- Percentage of NYSERDA solicitations that incorporate resiliency provisions
- Proliferation of homes and buildings equipped with clean and resilient onsite technologies (i.e., heat pumps, solar, energy storage and/or electric vehicles) and the proportion benefitting residents of Disadvantaged Community
- Statewide grid-interactive building load

## HIGHLIGHTED PROGRAMS AND INITIATIVES

### CLIMATE CHANGE ADAPTATION AND RESILIENCY PLAN

Governor Hochul's 2024 State of the State committed NYSERDA, DEC, and DOS in partnership with other relevant agencies to develop a comprehensive statewide Climate Change Adaptation and Resiliency Plan. This effort will ensure State entities and localities can equitably adapt to climate change, including by assessing impacts on Disadvantaged Communities, ecosystems, infrastructure, and vulnerable economic sectors. This initiative will draw from foundational climate data provided through the New York State Climate Impacts Assessment (led and funded by NYSERDA and updated in 2024) as well as draw from lessons learned from the State's first broad-scale adaptation planning effort through the Extreme Heat Action Plan (published in 2024).

### CLEAN ENERGY COMMUNITIES

The Clean Energy Communities initiative, in conjunction with DEC's Climate Smart Communities, recognizes and rewards communities for implementing clean energy and climate actions that save taxpayer dollars, create jobs, and improve the environment.

### REGIONAL CLEAN ENERGY HUBS

The Regional Clean Energy Hubs were established in 2022 and are a network of trusted, knowledgeable, community-based organizations in and from the regions they serve. Twelve organizations currently serve as Hubs—one in each of the Economic Development Regions of the State and three in New York City. Each Hub serves as a trusted local advisor to help residents understand and deploy energy efficiency, building electrification, renewable energy, and clean transportation solutions that can benefit them and their community. The Hubs:

- Provide residents and small businesses with information about utility, NYSERDA, and other building electrification, energy efficiency, and clean energy opportunities.
- Assist with applications.
- Provide energy literacy, such as explaining how to understand an electric bill and linking residents to workforce development opportunities.
- Work with residents on local projects and clean energy community campaigns.

# APPENDIX: NYSERDA STRUCTURE

## NYSERDA BOARD MEMBERS

**Richard L. Kauffman**

NYSERDA Chair

**Charles Bell**

NYSERDA Vice Chair

**Sherburne B. Abbott**

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Chair and CEO, New York State Public Service Commission

**Marie Therese Dominguez**

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Senior Program Officer for the Local, National, and International Environment, The New York Community Trust

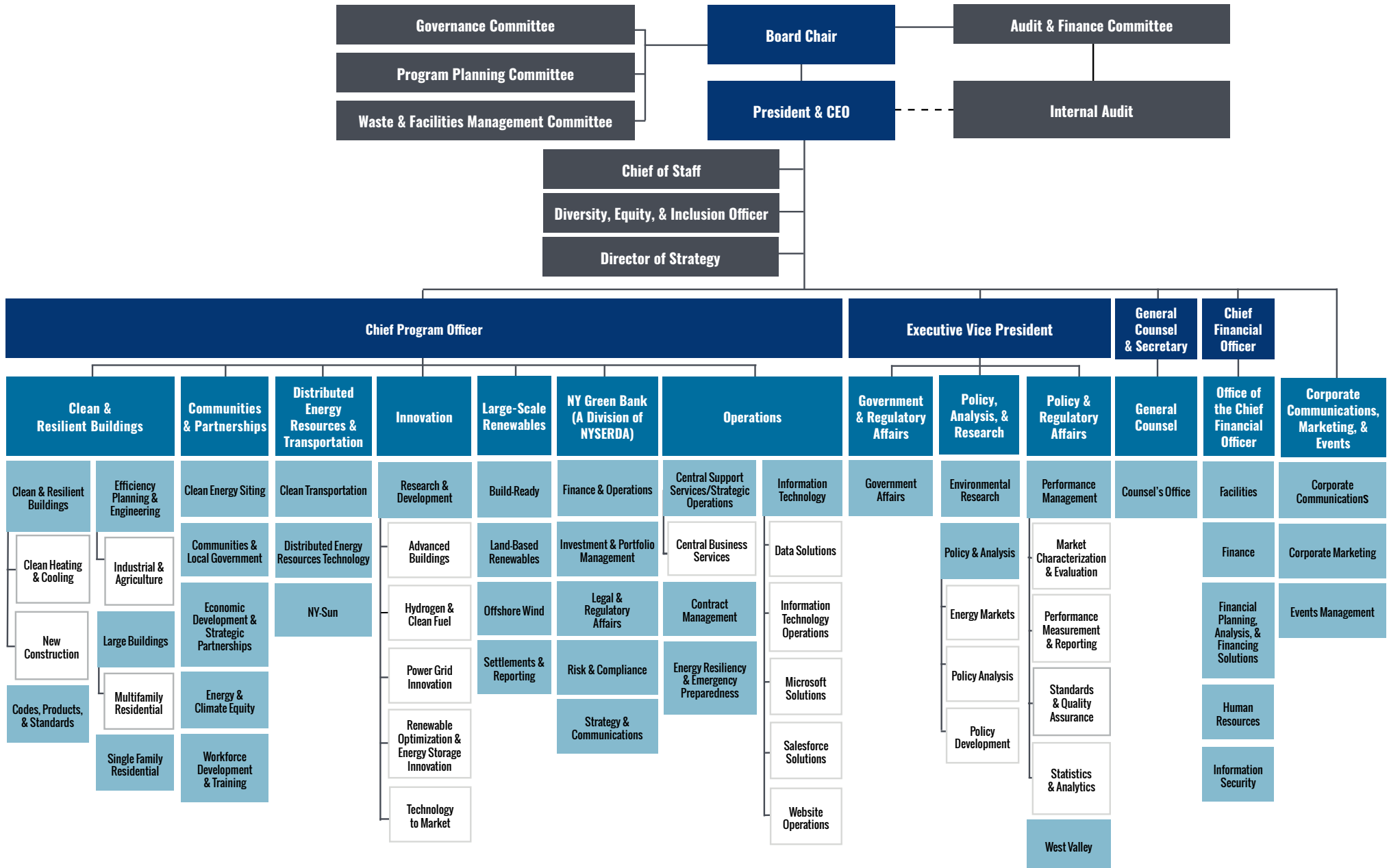
**Jay L. Koh**

Managing Director and Founder, Lightsmith Group

**Sarah "Sadie" McKeown**

President, The Community Preservation Corporation

NYSERDA ORGANIZATION CHART





**State of New York**

Kathy Hochul, Governor

**New York State Energy Research and Development Authority**

Richard L. Kauffman, Chair | Doreen M. Harris, President and CEO