NEW YORK STATE OF OPPORTUNITY. | NYSERDA

ANDREW M. CUOMO
Governor

RICHARD L. KAUFFMAN
Chair

DOREEN M. HARRIS
Acting President and CEO

REVISED NOTICE OF MEETING AND AGENDA

January 25, 2021

TO THE GUESTS OF THE PROGRAM PLANNING COMMITTEE:

PLEASE TAKE NOTICE that a meeting of the Program Planning Committee (the 111th meeting) of the New York State Energy Research and Development Authority ("Authority") will be held by video conference, on Tuesday, February 2, 2021, commencing at 2:00 p.m., for the following purposes:

1. To consider and act upon the Minutes of the one hundred tenth (110th) meeting of the Program Planning Committee held on June 23, 2020.

2. To receive a report and consider and act upon a resolution recommending approval of the strategic plan entitled *Toward A Clean Energy Future - A Strategic Outlook 2021-2024.*

3. To consider and act upon a resolution recommending approval of revisions to the plan entitled *Operating Plan for Investments in New York Under the CO_2 Budget Trading Program and the CO_2 Allowance Auction Program*.

4. To receive a report on the Authority's CEF Filing.

5. To receive a report from the Treasurer and to consider and act upon a resolution recommending the approval of the Authority's fiscal year 2021-2022 Budget.

6. To transact such other business as may properly come before the Committee.

As the Authority continues to follow the guidance for addressing the impacts of COVID-19, Members of the public may attend the meeting via the video conference which can be accessed at https://www.nyserda.ny.gov/About/Board-Governance/Board-and-Committee-Meetings.

The Authority will be posting a video and a transcript of the meeting to the web as soon as practicable after the meeting. The video and transcript will be posted at http://www.nyserda.ny.gov/About/Board-Governance/Board-and-Committee-Meetings.

Sara L. LeCain
Secretary to the Committee

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Toward a Clean Energy Future:

A Strategic Outlook 2021–2024

NYSERDA

Message from Acting President and CEO

Looking back on 2020, it was a year that scarce few of us could have imagined, never mind predicted. In many ways, the world shifted beneath our feet, with a global pandemic disrupting nearly every aspect of our daily lives and forcing us to reconsider many of the things that we had collectively taken for granted. During this time when Americans were focused on sheltering safely from COVID-19, historic demonstrations over racial injustice also roiled the country and our collective conscience. What's more, crises that had heretofore been viewed as long-term issues came into sharp, immediate relief, including the climate crisis—which reared its head with powerful hurricanes, forest fires, floods, and other extreme weather. In climate and beyond, many observers remarked that 2020 should not be viewed as the most extreme year of our lifetimes, but rather the least extreme year for the rest of the 21st Century—a sobering notion.

The convergence of crises in 2020 means the call to act on climate change and accelerate the energy transition has reached new levels of urgency and appreciation.

If nothing else, however, the convergence of crises in 2020 means the call to act on climate change and accelerate the energy transition has reached new levels of urgency and appreciation, demanding a renewed attention on planning and action. We have all now lived through, and continue to experience first-hand, what it means for society to adapt to major disruptive events, and certainly those of us in New York can attest to the difference that capable leadership and informed planning from government can have on our response and its efficacy.

In addition, 2020's converging crises should leave us all with deeper appreciation for the interconnected nature of our systems, institutions, and policy legacies that continue to perpetuate inequitable outcomes for disadvantaged communities and marginalized populations in New York State and beyond.

As Governor Andrew M. Cuomo noted in the early heights of the COVID crisis, health disparities in minority demographic groups mirror the locations of our most polluting infrastructure, which have contributed to chronically higher rates of respiratory illnesses such as asthma—and in many of the same locations that will disproportionately face risks from a changing climate in the years ahead. **We have to learn this lesson and embed its implications into all of our efforts in the future.**

Against this backdrop, I'm proud to introduce a Strategic Outlook for 2021–2024 that places people at the heart of all our efforts across NYSERDA.

In implementing Governor Cuomo's nation leading climate agenda and the Climate Leadership and Community Protection Act (Climate Act), we must do everything we can to drive climate progress that works for the people—all New Yorkers. That means putting a new lens over NYSERDA's existing mission and vision statements and core outcomes to ensure that our objectives across renewable energy, energy efficiency, a clean energy economy, a resilient and distributed energy system, and greenhouse gas reductions are properly in focus with respect to a people-centric orientation.

And, it means undertaking deep-dive examinations of new priorities where tremendous opportunities exist to deliver benefits to all New Yorkers, especially those in historically underserved communities. Specifically, our deep-dive focus areas for the coming three years will span several notable areas of inquiry and action, all of which revolve around improving lives for New York residents:

- fostering healthy communities;
- supporting clean energy jobs and New York's economic recovery;
- building an inclusive clean energy economy; and
- accelerating the transition from natural gas to a low-carbon future.

All these areas build on work already underway at NYSERDA, representing the priorities for the entire organization.

Thankfully, New York will remain at the vanguard of climate progress, even with the transition to a new presidential administration in Washington, D.C. After New York embraced sweeping change in 2019 with the signing of the Climate Act, additional legislative action in 2020 has positioned New York to accelerate the development of responsibly sited renewable resources, with accompanying measures for robust grid planning and investment and new state roles for boosting renewable energy development, especially on underutilized sites. Regulatory action in 2020 followed similar suit, including the adoption and approval of the expanded and nation-leading goal to achieve **70% renewable energy by 2030 through the Clean Energy Standard**, along with historic new targets for energy efficiency and building and vehicle electrification.

New York will remain at the vanguard of climate progress.

NYSERDA remains at the heart of these and other efforts to double-down on progress toward the State's unprecedented clean energy and carbon reduction mandates, and we are laser focused on near-term action given the imperative of building back better from the coronavirus pandemic.

Just recently in early 2021, Governor Cuomo announced the largest combined renewable energy awards ever by a state in the U.S. These unprecedented procurements resulted in two offshore wind projects, Empire Wind 2 and Beacon Wind, and 24 large-scale land-based clean energy projects awarded by NYSERDA, totaling more than 4,700 megawatts—enough new renewable capacity to power almost 2 million New York homes for at least 20 years. In addition to delivering clean, renewable energy, these projects combined are expected to spur nearly $14 billion in direct investments and create over 8,600 good-paying short- and long-term jobs which will help stimulate the State's economic recovery. The offshore wind projects will furthermore leverage almost $3 of private funding for every $1 of public funding for a combined $644 million investment in resilient port facilities in the Capital Region and Brooklyn. Once completed, the offshore wind projects and land based projects will, when combined with the dozens of large-scale renewable energy projects under development, more than double the State's existing renewable generation and bring New York to over 50% electricity from renewable sources to support Governor Cuomo's 70% by 2030 renewable energy goal.

The next three years will be looked back on as momentous for New York's clean energy transition and climate leadership. Major planning and scoping efforts will play out before the Climate Action Council, billions of dollars of project investments will be committed, and we will begin in earnest an unprecedented scale-up and construction of clean energy infrastructure to meet the call of the climate crisis and develop a cleaner, more affordable, and more resilient energy system. New technological innovations will bring us closer to the realization of energy breakthroughs needed to address the most difficult to decarbonize sectors and use-cases, promising bright new climate-tech solutions that New York can export to the world.

I'm immensely proud to work at NYSERDA, serving the people of New York State. Thanks to the dedicated work and excellence of our teams across the Authority, the opportunities for us to increase our impact will continue to grow. I hope all our stakeholders find this Strategic Outlook valuable in highlighting how we will continue to lead and build on our knowledge and success to date and drive toward a better, cleaner, more resilient future, where New York's people can flourish.

Doreen M. Harris,
Acting President
and CEO, NYSERDA

This forward-looking document reflects State policy and NYSERDA's plans as of January 2021. Because New York'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—updates to particular targets will be noted on the Strategic Outlook webpage: **nyserda.ny.gov/Strategic-Outlook.**

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NYSERDA and Its Context

NYSERDA'S EVOLVING CHARGE

In 2020, NYSERDA undertook an exercise to revisit and refresh its mission and vision statements to better reflect many of the new imperatives that are increasingly driving and shaping the Authority's work. Upon closer look, it was clear that the important themes of climate change, equity and inclusivity, jobs and economic opportunity, public health, and resilient communities must be central to its mission and vision going forward.

NYSERDA IS PROUD TO PRESENT A NEW MISSION AND VISION STATEMENT TO GUIDE THE ORGANIZATION'S CURRENT AND FUTURE INITIATIVES.

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.

STATE POLICIES AND COMMITMENTS THAT STEER NYSERDA'S WORK

Under the Climate Leadership and Community Protection Act (Climate Act), Governor Andrew M. Cuomo is driving the most aggressive climate and clean energy agenda in the nation, setting New York on a path for a just transition to carbon neutrality, spurring the growth of the green economy while prioritizing the needs of disadvantaged communities across the State. New York State—a founding member of organizations like the Regional Greenhouse Gas Initiative (RGGI) and the U.S. Climate Alliance—aims to meet the energy-related challenges posed by climate change head on, while creating economic opportunities.

As co-chair of the State's Climate Action Council, NYSERDA plays a critical role in charting the direction of New York's energy policies.

now

CLEAN ENERGY ECONOMY
nearly 159,000 clean energy jobs

by 2025

RENEWABLE ENERGY
6,000 MW of distributed solar

RESILIENT and DISTRIBUTED GRID
1,500 MW of energy storage

ENERGY EFFICIENCY
185 TBtu end-use savings
in buildings and industrial facilities

by 2030

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

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

3,000 MW of energy storage
30,000 employed in storage sector

NYSERDA'S ROLE

As New York State's clean energy and climate innovation agency, NYSERDA plays a key role in implementing the State's nation-leading clean energy and climate policies, programs and actions, delivering a cleaner, healthier, and more prosperous future for all New Yorkers.

NYSERDA is on the front lines of a global energy transition, bringing energy expertise and public service to the challenges of fighting climate change and accelerating the pace to a green energy future.

NYSERDA works to foster the transformation and expansion of markets, pushing them to accurately value clean energy, energy efficiency, and resilience—while encouraging competition and innovation that delivers value to consumers. In so doing, NYSERDA uses a data-driven approach both to guide program design and to provide for high levels of accountability and transparency. NYSERDA focuses on:

- De-risking energy transitions and deployment from technological and business model innovation, to demonstration projects, to broad commercialization.
- Reducing hard and soft costs of clean energy development by driving demand and focusing the efforts of key stakeholders, as well as by supporting and focusing technological and process innovation.
- Leveraging program investments to support job creation in the clean energy economy and expanded access to economic opportunities for disadvantaged communities.
- Designing and administering novel programs and pilots to meet the needs of emerging policy priorities and deep decarbonization pathways.
- Providing targeted financial support where up-front costs present a persistent barrier, such as for low- to moderate-income (LMI) consumers and disadvantaged communities.
- Enabling communities to take local action on clean energy, climate, and resilience.
- Instilling confidence in markets and consumers through information, credible analysis, and education.
- Increasing market participants' access to capital by creating attractive precedents and standardizing approaches that capital providers can readily replicate and scale up.
- Investigating and designing ambitious energy and climate strategies for the long-term.

RENEWABLE ENERGY
9,000 MW of offshore wind
by 2035

CLEAN ELECTRICITY
100% zero-emission electricity
by 2040

GHG REDUCTION
85% reduction in greenhouse gas emissions from 1990 levels
by 2050

Amidst a turbulent world and constantly changing external conditions, NYSERDA aims to be a beacon of certainty and reliability for stakeholders and partners in New York State, exhibiting the steadfast and focused attention that will be needed to combat the climate crisis in the decades ahead. **Despite the challenges posed by a global pandemic and economic uncertainty, NYSERDA is leveraging its programs within the flourishing clean energy market to assist in building back better and greener toward the State's ambitious long-term climate mandates.**

POLICY FRAMEWORK

The landscape and policy framework surrounding NYSERDA's work has changed rapidly over the past year. Key drivers of change include:

- Passage of New York's Climate Leadership and Community Protection Act (Climate Act). Governor Cuomo signed the nation-leading Climate Act into law on July 18, 2019, dramatically raising the bar for the level of ambition that New York State needs to achieve and for other jurisdictions to follow.
- Increased focus on key priority areas stemming from the Climate Act:
  - Increasing access to (and benefits from) clean energy for disadvantaged communities and low-income consumers
  - Creating quality jobs in the green economy, ensuring a just transition, and protecting New York workers as we transition to a carbon-neutral economy
  - Identifying sectors of the economy that require deeper decarbonization (e.g., transportation, buildings)
- Bold action driven at the local level, which will require unprecedented coordination between the State and local government, particularly the Climate Mobilization Act in New York City.
- Passage of the Accelerated Renewable Energy Growth and Community Benefit Act and approval of the 70% renewable by 2030 Clean Energy Standard (CES). Identifying clean electricity as a key achievement in economy-wide decarbonization, these actions cement regulatory and market certainty along with the necessary mechanisms for grid decarbonization.
- Increased attention and need to map the transition from natural gas to clean energy in light of both long-term Climate Act requirements and near-term, on-the-ground supply/demand realities.
- A renewed imperative to align NYSERDA and utility roles for market enablement and program delivery under New Efficiency: New York given that utility investment in energy efficiency and building electrification measures will increase substantially over the next few years—coupled with short timelines for achieving targets.

Accelerated Renewable Energy Growth and Community Benefit Act

Passed in April 2020, the Act ushered in a new era for renewable energy development, permitting, and approval—one that aligns the State's regulatory regime with the urgency of expediting responsibly sited solar and wind. It established a new Office of Renewable Energy Siting (ORES), provided NYSERDA with new Build-Ready authority, and initiated new modeling and procedures for grid investments to integrate renewables.

Advancing Internal Objectives for Diversity, Equity, and Inclusion

In 2020, NYSERDA began a comprehensive effort to examine and improve diversity, equity, and inclusion (DE&I) across the Authority. While NYSERDA has long held as a guiding principle the importance of valuing diversity and inclusion, the recent efforts reflect an elevated focus on making meaningful, concrete improvements across representation, equitable outcomes, work environment/engagement, and other dimensions—all of which will be captured in a DE&I Strategic Plan to be released soon in 2021. As highlighted throughout this year's strategic outlook, this internal work and focus is integrated with our external work in building a more inclusive clean energy economy.

- The need to build on recent policy developments (EV Make Ready Order, Medium- and Heavy-Duty Vehicles MOU) in order to make deep in-roads in reducing emissions from transportation, which is the largest contributor of emissions in the State.
- Extreme weather events, which are increasing in frequency and severity and placing rapidly increasing strain on our infrastructure and communities, necessitating the need to place resiliency at the heart at clean energy and climate solutions.

These new drivers of change build upon ongoing challenges and priorities that must continue as core areas of focus.

- The need to ensure energy affordability for all New Yorkers as the energy system undergoes transformation
- The importance of leveraging market activity and private capital to achieve aggressive policy goals
- The imperative to continue building public support for difficult systematic changes such as expanding support for large-scale projects and changing of consumer behaviors

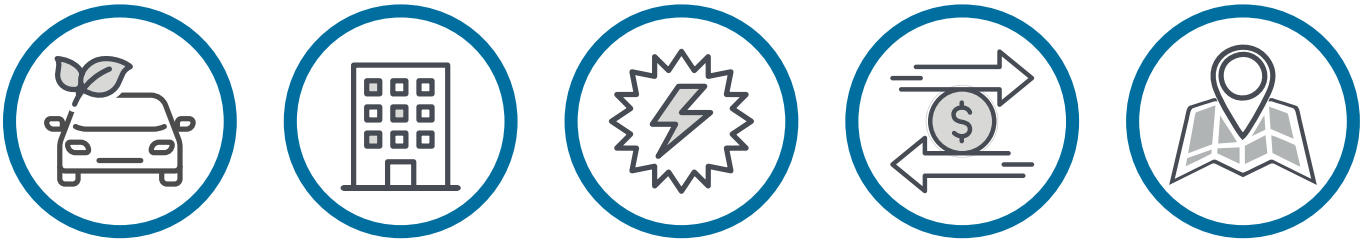
At this critical inflection point for our climate and energy systems, NYSERDA has been and will align policy and program offerings to reflect these new and significant drivers of change, including prioritization of the key strategies and policies outlined on the next two pages.

Climate Leadership and Community Protection Act | (Climate Act)

Lays the groundwork for achievement of New York's nation leading climate targets under Governor Cuomo's leadership, while calling for an orderly and just transition to clean energy that creates jobs and continues growing a green economy. A minimum of 35%—with a goal of 40%—of benefits of clean energy investments will benefit disadvantaged communities.

Under the Climate Act, the Climate Justice Working Group is charged with developing a definition/criteria for defining Disadvantaged Communities, which will guide the delivery of benefits of investments to these communities.

BUILDING BLOCKS OF NEW YORK'S CLEAN ENERGY AGENDA



Transportation | Buildings | Electricity | Economy Wide | Regional

Climate Act Scoping Plan

Recommendations and policies to achieve 85% GHG reduction by 2050, target carbon neutrality

Clean Energy Fund

$5B fund for four key program portfolios:

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

Clean Energy Standard

Designed to transform the generation of electricity to renewable and zero-emission

Make Ready

Transportation emissions reductions through build-out of electric vehicles market and infrastructure

New Efficiency: New York

Comprehensive set of strategies for delivering energy efficiency savings and emissions

NYS Clean Heat

Replacing onsite fuel combustion for heating and cooling with efficient, electric heat pumps (air, ground)

Regional Greenhouse Gas Initiative (RGGI)

Cooperative effort among several states to cap and reduce CO_2 emissions from power plants

U.S. Climate Alliance

Bipartisan coalition of 24 states and Puerto Rico committed to achieving the goals of the Paris Agreement

Mission Outcomes and Strategic Focus Areas for 2021–2024

NYSERDA's primary mission outcomes are presented in the following pages. For each outcome, NYSERDA strategies over the planning horizon are presented along with a summary of NYSERDA's unique role in delivering on the critical outcome. Indicators of progress are also presented to ensure that movement in the market and progress toward these goals can be tracked.

The mission outcomes that NYSERDA seeks to advance to support the energy transformation in New York State include:

GREENHOUSE GAS EMISSIONS REDUCTION

RENEWABLE ENERGY

ENERGY EFFICIENCY

CLEAN ENERGY ECONOMY

RESILIENT AND DISTRIBUTED ENERGY SYSTEM

Over the planning horizon, NYSERDA will concentrate on the following strategic focus areas to drive progress under each mission outcomes. These strategies are critical to achieving our long-term energy and greenhouse gas emission reduction goals:

BUILDING AN INCLUSIVE CLEAN ENERGY ECONOMY

SUPPORTING CLEAN ENERGY JOBS AND NEW YORK STATE'S ECONOMIC RECOVERY

ACCELERATING THE TRANSITION FROM NATURAL GAS TO A LOW-CARBON FUTURE

FOSTERING HEALTHY COMMUNITIES

For each of these strategic focus areas, statewide priorities are presented along with key NYSERDA actions for 2021–2024. These strategic focus areas embody a common theme of centering around people—the residents and communities across New York State who utilize the energy system every day and have the potential to benefit from NYSERDA's programs and policies.

These strategies will be crucial for achieving our ambitious and necessary climate objectives. Critical focus will be on helping historically marginalized New Yorkers access the growing green energy economy and clean energy job opportunities; supporting families to learn about and choose cleaner home appliances; and empowering neighbors, communities, and businesses to drive climate action and public health wins.

Many efforts will begin producing tangible outcomes in the near term, while others represent an acceleration in focus for a transition that will take many decades to unfold.

MISSION OUTCOME

Greenhouse Gas Emissions Reduction

STATE POLICY GOAL
FOR GREENHOUSE GAS (GHG) EMISSIONS REDUCTION

The Climate Act sets a greenhouse gas reduction target of 40% by 2030 and 85% by 2050, each below 1990 levels.

Hitting these targets will enable the State to advance economy-wide carbon neutrality. In other words, it would mean that New York State is doing its part to reduce carbon pollution and the causes of climate change, while establishing a model for other jurisdictions to follow. The Climate Act also set in motion a process to develop an updated GHG accounting methodology, which the Department of Environmental Conservation (DEC) has commenced.

2020–2021 Climate Action Council and Advisory Panel work

2021–2022 Draft and Final Scoping Plans (Economy-Wide)

2023–2024 DEC Sector-Based Emissions Regulations

2030 40% reduction in greenhouse gas emissions, below 1990 levels

2050 85% reduction in greenhouse gas emissions, below 1990 levels

Mission Outcome:

Greenhouse Gas Emissions Reduction

NYSERDA'S ROLE

Co-Chair the Climate Action Council to craft a roadmap of policies needed to achieve the Climate Act's goals, including co-leadership of Energy Efficiency and Housing and Power Generation Advisory Panels and Just Transition Working Groups, through analytical/modeling support for pathways analysis.

Guide and facilitate the State Energy Plan development and shape energy policies throughout New York State.

Identify and implement strategies for energy, buildings, and transportation sector emissions reductions and other GHG mitigation strategies.

Develop and track statewide greenhouse gas inventory, supporting DEC in new emissions methodology rulemaking.

Facilitate State agencies' efforts to Lead-by-Example and drive toward carbon-neutral operations.

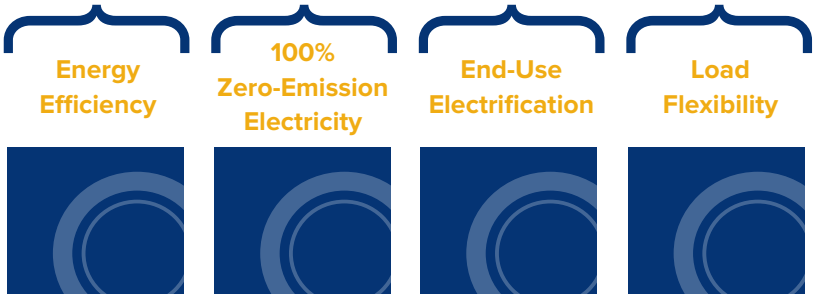
INDICATORS OF PROGRESS

- Levels and trends in GHG emissions from sources statewide

STRATEGIES FOR 2021–2024

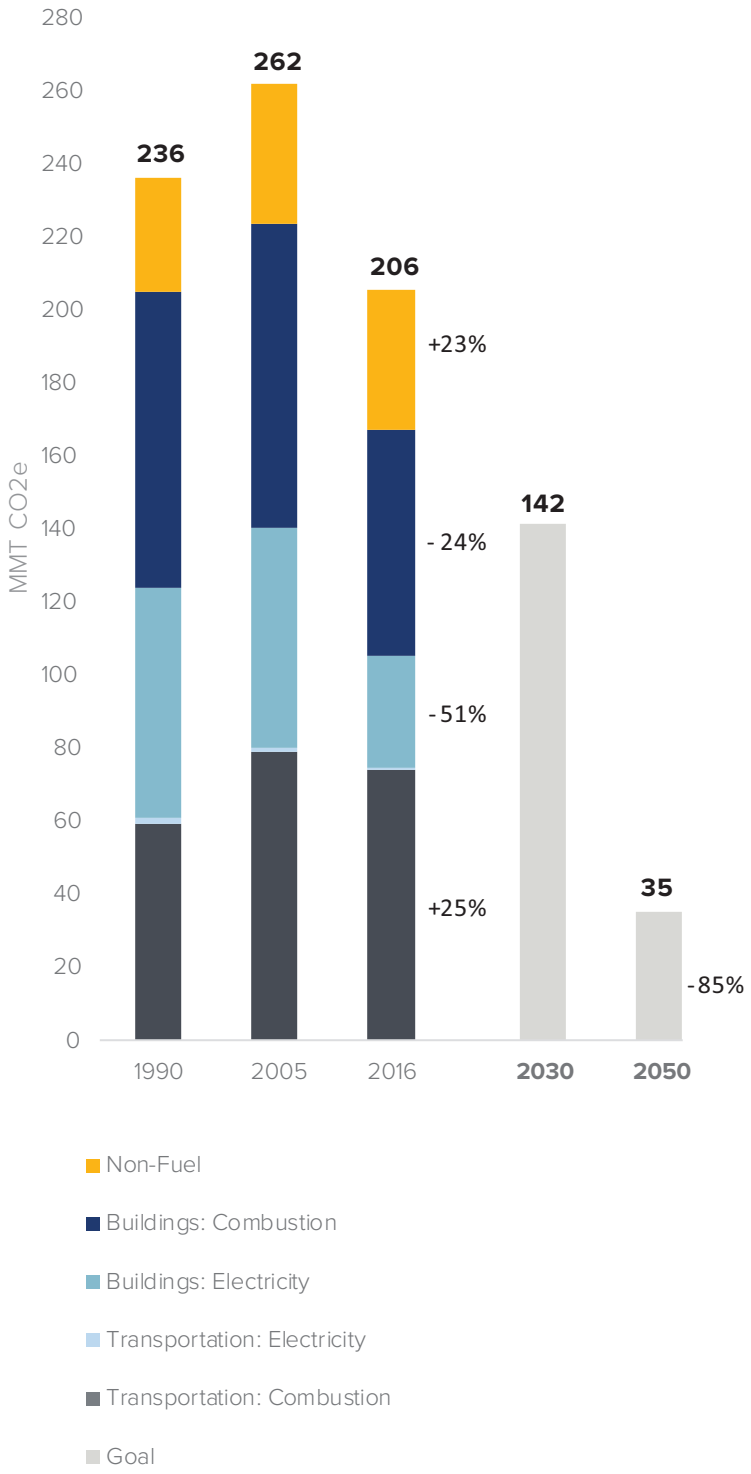
- Support policy development and planning, including Climate Act Scoping Plan, Carbon Neutral Buildings Roadmap, Building Electrification Roadmap, and Clean Transportation Roadmap.
- Advance solutions to drive emissions reductions in all areas of New York's economy—through a foundation of energy efficiency, decarbonizing electricity supply, and beneficial electrification of buildings, transportation, and industrial applications.
- Spur development of innovative, next-generation solutions driving emissions reductions, from hardware, software, and materials to natural carbon solutions.
- Support communities across the State in implementing their own sustainability and clean energy goals, including localized clean heating and cooling campaigns, and widespread adoption of new stretch energy/building codes.
- Conduct analysis and program development to better spotlight and target the co-benefits of GHG reductions, especially the public health benefits that can be delivered to disadvantaged communities via reduction of co-pollutants.

Foundational pillars of deep decarbonization across all pathways:



2050 target:
85% reduction
from 1990 emissions baseline

NOTE: all emissions inventory numbers expected to be updated in 2021 following ongoing DEC rulemaking on emissions accounting methodology to align with the Climate Act.



HIGHLIGHTED PROGRAMS AND INITIATIVES

Clean Energy Fund accelerates the deployment of clean energy solutions while driving economic development.

Clean Energy Standard provides the framework for achieving 70% renewable electricity by 2030 via the build-out of large-scale renewable resources for New York State. Achievement supported by complementary actions initiated in 2020 legislation (Build Ready, Office of Renewable Energy Siting [ORES], Power Grid Study).

Energy Storage deployment and other **renewable energy integration measures** to get more renewables on the grid, minimize and avoid delivery impacts, bolster system flexibility, and support resiliency.

Regional Greenhouse Gas Initiative (RGGI) assigns a price to power plant emissions and directs revenue to clean energy initiatives.

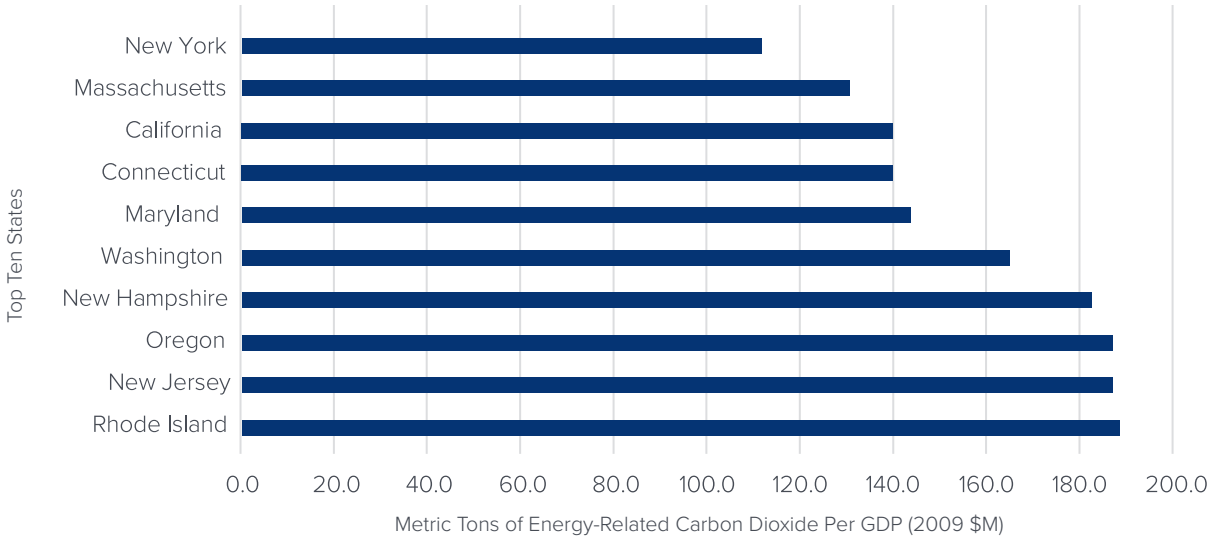
EV Make Ready Order and Clean Transport prizes represent an important change in the State's commitment and investment to zero-emission vehicle adoption, with funding for utility infrastructure to support electric vehicles and NYSERDA-run prizes around environmental justice, advanced mobility, and medium- and heavy-duty vehicle innovation.

Clean Energy Communities recognizes and rewards communities for implementing clean energy actions that save taxpayer dollars, create jobs, and improve the environment.

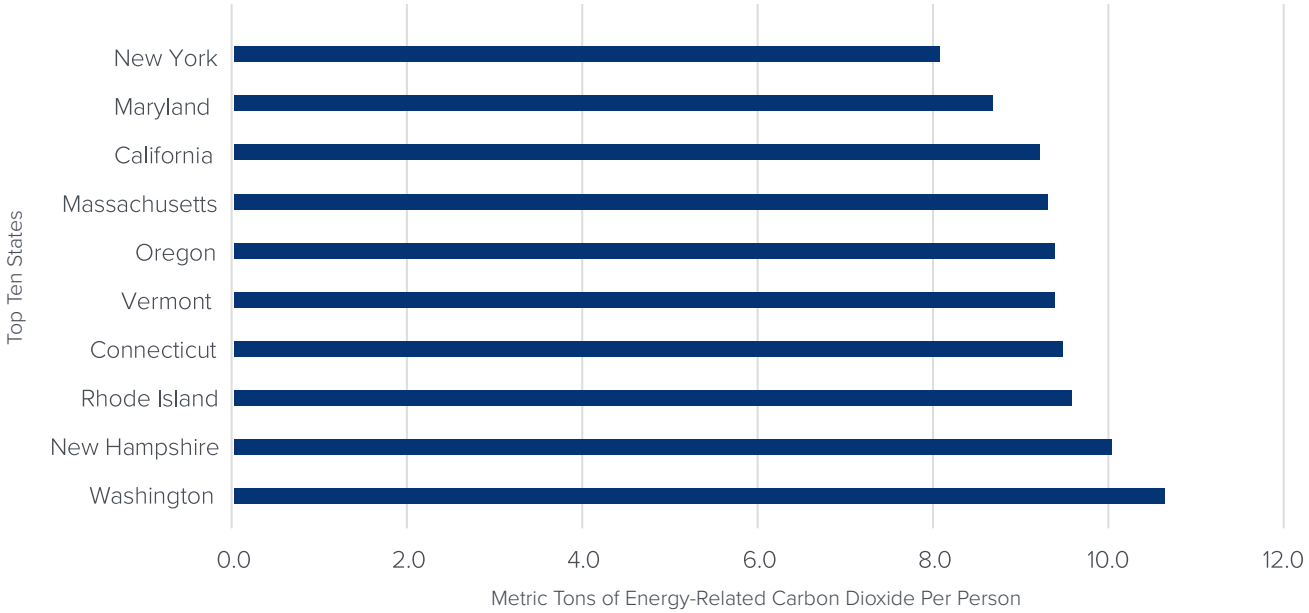
As of 2017 (most recent U.S. E.I.A. data), New York is the most carbon-efficient state in the United States on both a per capita basis (8 metric tons of energy-related carbon dioxide per person) and a per GDP basis (112 metric tons of energy-related carbon dioxide per 2009 million dollars of GDP).

Sources: U.S. Energy Information Administration, State Energy Data System, and EIA calculations made for this analysis.

CARBON INTENSITY OF THE ECONOMY BY STATE



PER CAPITA ENERGY-RELATED CARBON DIOXIDE EMISSIONS



Renewable Energy

STATE POLICY GOAL
FOR RENEWABLE ENERGY

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

As a companion to the Climate Act, the Accelerated Renewable Energy Growth and Community Benefit Act followed in the Spring of 2020 to address the urgency of our climate transition. The intent is to integrate the acceleration of permitting timelines, seeking regulatory efficiencies, mandating careful study of our electricity grid and the identification of priority upgrades, and deepening community engagement. Armed with the nation's most aggressive climate goals and expedited processes to match, achievement of the 70 x 30 mandate will move the State closer to delivering just, equitable climate action to New Yorkers, including improving air quality, buttressing a more resilient grid, and spurring a clean economy through investments, workforce development, and job creation.

In the 21st Century, the future is electric and NYSERDA is working tirelessly to remove barriers and deliver our State's goals and benefits to New Yorkers—including more than $17 billion in net benefits estimated over the lifetime of Tier 1 and offshore wind procurements under the CES.

Mission Outcome:

Renewable Energy

NYSERDA'S ROLE

Facilitate the next decade of steady, predictable procurements for renewable and zero-emission generation, offering market confidence and stability to supply chains.

Support smart siting policies to maximize co-benefits between industries, cultivate infrastructure ecologies, and build community and stakeholder engagement.

Support climate equity through the prioritization of benefits and workforce development and training delivered to Disadvantaged Communities across the State through renewable energy development.

Drive supply chain localization, local investments, job creation, and workforce capabilities.

Reduce costs by delivering economies of scale, removing barriers to deployment, and supporting innovation.

Plan for the renewable grid of the future by identifying and supporting priority grid investments that facilitate movement of new renewable energy across the State, and the policies and planning necessary to maximize the benefits of renewable energy for ratepayers and communities.

STRATEGIES FOR 2021–2024

- Accelerate implementation programs to achieve the Climate Act's 70x30 renewable goal as part of the next generation of the Clean Energy Standard, including launch of a new Tier 4 focused on delivering clean energy directly into Zone J/New York City.
- Continue the sprint toward the 6,000 MW solar goal by 2025 and beyond, 3,000 MW of storage, 9,000 MW of offshore wind targets, and the delivery of benefits to Disadvantaged Communities.
- Collaborate with market participants to complete technical studies and promote infrastructure investments like transmission and energy storage that will unlock system efficiencies and unbottle resources to drive progress on our goals and ensure cost savings to ratepayers.
- Collaborate with utilities and other market participants to build transparency in interconnection processes, overcome grid constraints on project capacity, and pricing/curtailment issues.
- Develop and launch new planning and execution framework for at least 9,000 MW of offshore wind by 2035, as a successor to NYSERDA's Offshore Wind Master Plan.
- Engage in detailed sector studies of evolving resiliency design approaches and best practices to mitigate future climate risks and to deepen the carbon performance of projects through reducing embodied carbon.

New York State continues to grow a strong pipeline of projects to meet the 70x30 goal. As of September 30, 2020, there were approximately

47 GW of active renewable energy projects in the NYISO interconnection queue.

Additionally, there are currently 56 projects in the Active Article 10 Queue, with five applications being approved in the last year, indicating more of the pipeline is coming to fruition. There have been 868 MW of storage awarded statewide, along with 2.5 GW of installed distributed solar and a pipeline of 2 GW (high project maturity—lower than 10% attrition).

INDICATORS OF PROGRESS

- MWh: progress toward the 70x30 and 100x40 targets
- MW and facilities (large-scale, offshore, and behind-the-meter) completed and in the pipeline: progress toward goals
- Benefits of renewable energy investments accruing for disadvantaged communities (%) and M/WBE engagement
- Private market investment, clean energy jobs, and costs per Renewable Energy Credit (REC)

HIGHLIGHTED PROGRAMS AND INITIATIVES

Large-Scale Renewables supports the development of large-scale renewable energy projects.

Offshore Wind establishes a significant, cost effective, renewable generation source with promise of new industry in New York State.

Build-Ready is a new program that complements private sector development and expedites the pre-development of large-scale renewable assets with **a focus on underutilized, previously developed sites.**

Community Solar makes solar affordable and accessible for all New Yorkers.

Solar for All makes subscriptions to community solar projects available at no cost for low-income consumers.

NY-Sun and Energy Storage drive distributed solar adoption through residential/commercial rooftop and larger community solar projects, reducing costs, making solar accessible to all New Yorkers, while deploying 1,500 MW of energy storage by 2025 with a goal of realizing a self-sustaining market.

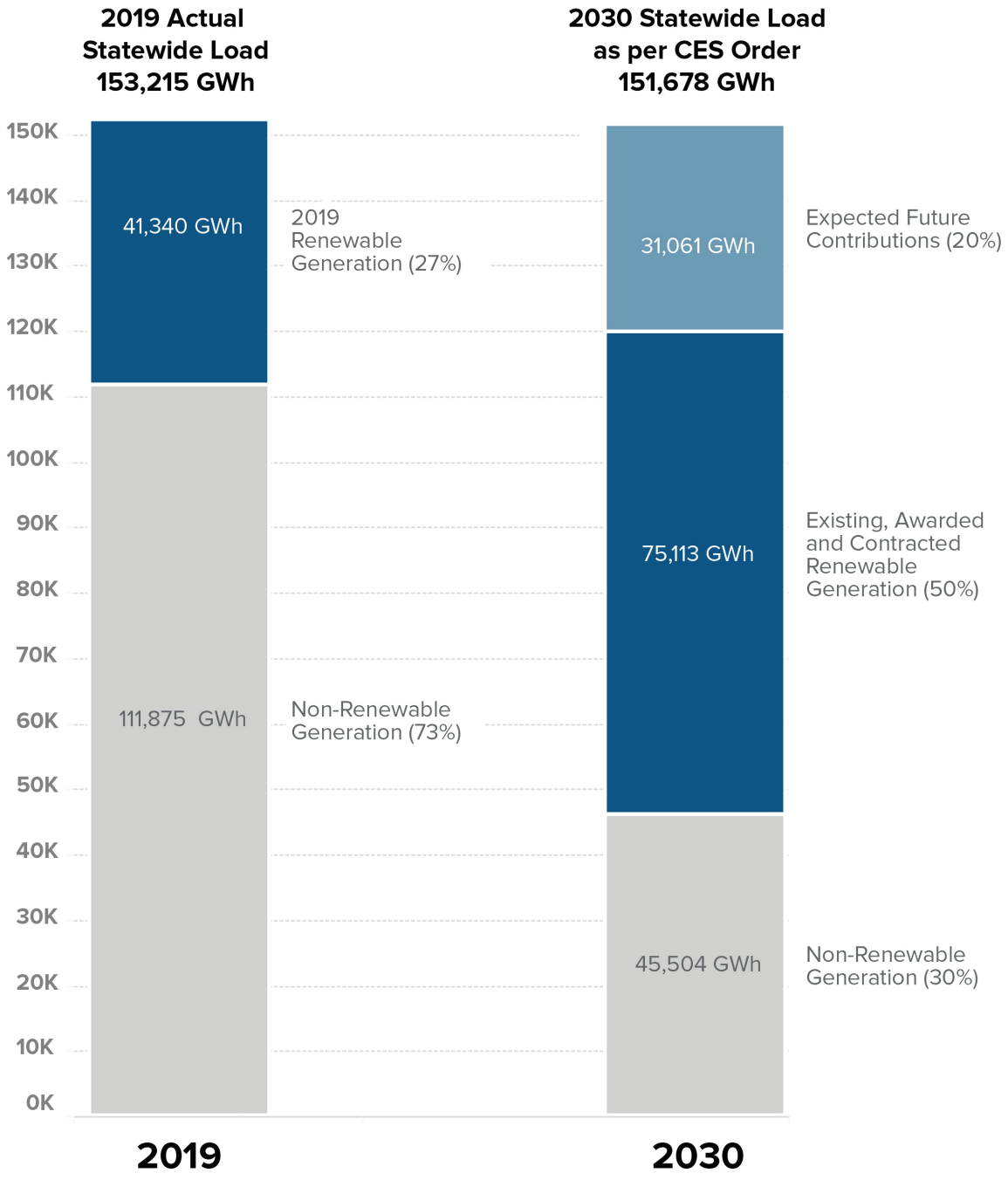
Raise the Green Roof is a new collaboration between NYSERDA, the NY Green Bank, and Homes and Community Renewal (NYSHCR) to deploy solar and energy efficiency retrofits throughout NYSHCR's affordable housing portfolio, aiming to bring solar to approximately 5,000 affordable housing units statewide.

2030 Clean Energy Standard target:
70% electricity
from renewable sources

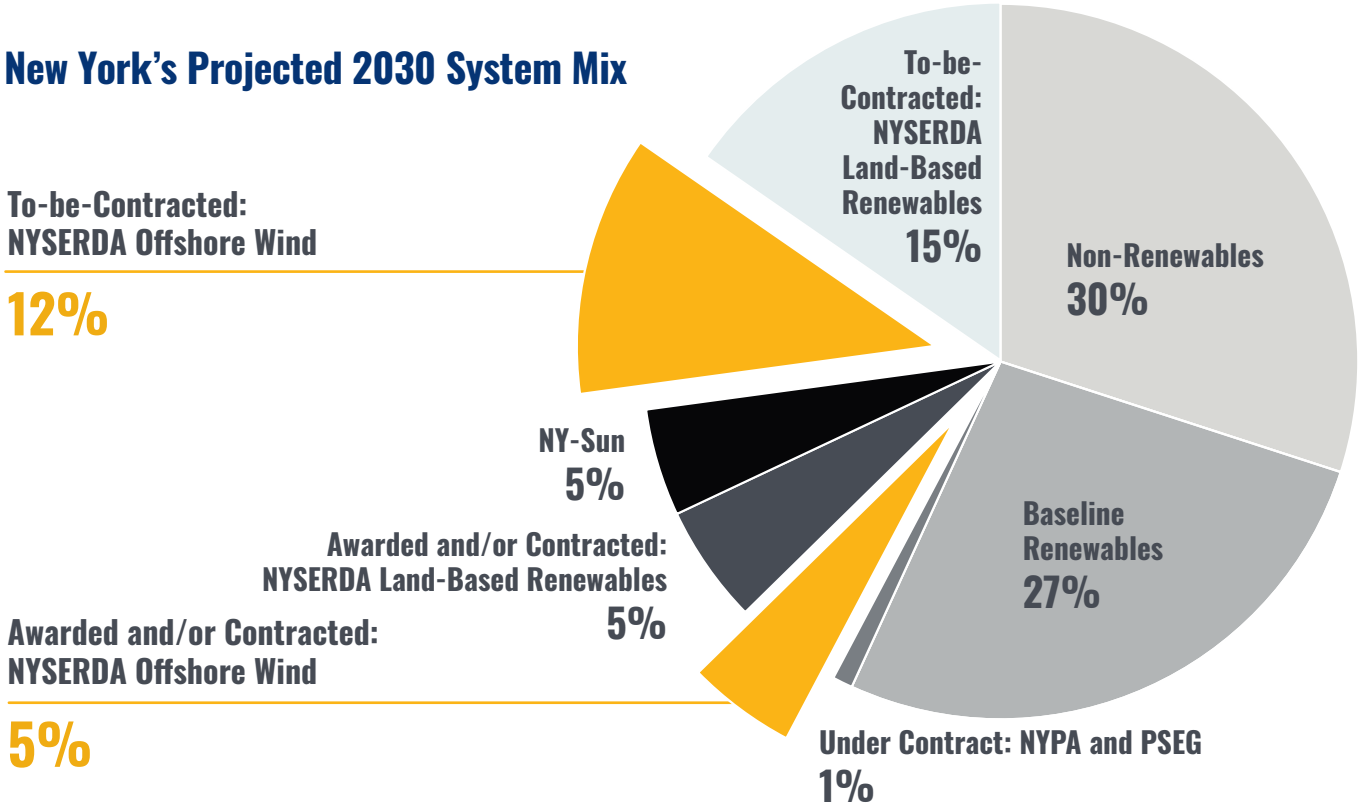
PROGRESS TOWARDS 70X30 GOAL

106,174 GWh to reach goal*

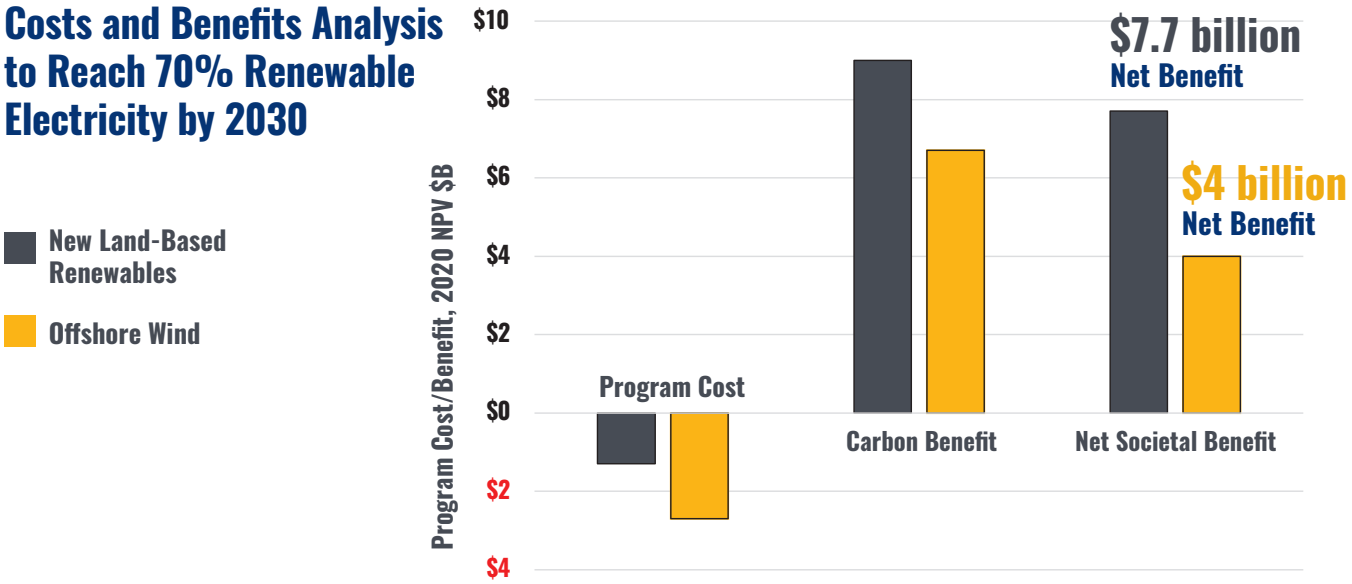
** GWh required to meet goal is based on 2020 Clean Energy Standard Order load projection for 2030 and is subject to future adjustment.*



New York's Projected 2030 System Mix



Costs and Benefits Analysis to Reach 70% Renewable Electricity by 2030



The Climate Act ramps up renewable energy goals, including:

QUADRUPLING NEW YORK'S OFFSHORE WIND TARGET TO

9,000 MW BY 2035

up from 2,400 MW by 2030

DOUBLING DISTRIBUTED SOLAR DEPLOYMENT TO

6,000 MW BY 2025

up from 3,000 MW by 2023

PSC PROCESS TO AMEND CLEAN ENERGY STANDARD

In October 2020, the PSC approved the expanded Clean Energy Standard requiring that:

- a minimum of 70% of statewide electricity be renewable by 2030.

Future proceedings will similarly require:

- statewide electricity be zero-emission by 2040.

Energy Efficiency
and Building Decarbonization

STATE POLICY GOAL
FOR ENERGY EFFICIENCY AND
BUILDING DECARBONIZATION

New York set a 2025 statewide energy efficiency target of 185 TBtu of cumulative site energy savings which was codified by the Climate Act.

While this target will deliver one-third of New York's interim 40x30 climate goals, the 185 TBtu energy efficiency goal is the beginning of a much more ambitious change needed to decarbonize buildings consistent with Climate Act. Building energy efficiency and electrification will play a dominant role in putting the State's building sector on a course to carbon neutrality, while creating better living and working spaces for New Yorkers and economic opportunity in the form of clean energy jobs. Advances in load flexibility will minimize the grid impacts of statewide beneficial electrification of buildings. Efforts will also focus on delivering benefits to disadvantaged communities and low- and moderate-income New Yorkers.

Mission Outcome:

Energy Efficiency

and Building Decarbonization

NYSERDA'S ROLE

Develop and manage programs to eliminate barriers and increase adoption of energy efficiency and electrification, providing financial and technical assistance to solution providers and consumers, particularly low- and moderate-income consumers.

Develop and demonstrate strategies to achieve deep energy and carbon savings.

Deliver policy leadership on energy efficiency and building electrification through Climate Action Council, Energy Efficiency and Housing Advisory Panel, Carbon Neutral Buildings Roadmap, and Building Electrification Roadmap.

Provide technical assistance to advance energy codes, appliance standards, and building mandates, supporting structural improvements in energy efficiency and emissions reductions across the State.

Provide financing for energy efficiency and building electrification market participants.

STRATEGIES FOR 2021–2024

- Complete the carbon neutral buildings and building electrification roadmaps to identify strategies and paths to accelerate transition of New York's building stock to incorporate deep efficiency, more efficient electric heating and cooling technologies, and grid-connected capability.
- Drive deeper levels of efficiency and carbon savings in buildings using a variety of strategies, including peer-based challenges, support of long-term energy planning within the capital improvement cycle, incorporation of sensors/advanced analytics to improve operations, demand aggregation, supply-side engagement and other cost compression strategies, as well as development and demonstration of new solutions to deliver higher performing, healthier buildings.
- Develop a robust portfolio of programs for low-income consumers and disadvantaged communities, in coordination with utilities and housing agencies.
- In partnership with utilities, launch a comprehensive building electrification initiative with consumer incentives and market support to move New York toward all-electric homes and buildings and accelerate transition away from natural gas and fossil fuel.
- Build market demand by increasing consumer awareness and providing decision-quality information on energy efficiency and building electrification opportunities for building owners and tenants—capitalizing on key points in a building life cycle (e.g., tenant turnover, major renovations, property transfer, equipment replacement).
- Support statewide building decarbonization through improved appliance standards, building mandates, and advanced building codes, with 2030 goals of establishing a low energy use intensity energy code combined with a mandatory zero on-site GHG emissions building code and using appliance standards and building mandates to promote decarbonization in existing buildings.
- Provide support for consumers in gas constrained areas of New York by providing information and assistance to adopt energy efficiency and clean heating solutions.

2025 energy efficiency targets will reduce energy consumption by the equivalent of 1.8 million homes annually and create as many as 50,000 new jobs

INDICATORS OF PROGRESS

- Avoided energy use: total TBtus across all fuels (natural gas, electricity, etc.)
- GHG emission reduction from the building sector (annual CO_2e)
- Benefits of energy efficiency investments accruing to disadvantaged communities (%) and reduced on-site fossil fuel combustion in environmental justice (EJ) Areas
- New York State's Clean Energy Dashboard can be used to track indicators of progress, found at nyserda.ny.gov/view-clean-energy-dashboard

Public Service Commission Orders on New Efficiency: New York doubled utility investment in energy efficiency, created a nation-leading building electrification initiative (NYS Clean Heat), and advanced an $800 million investment in LMI Energy Efficiency.

HIGHLIGHTED PROGRAMS AND INITIATIVES

Healthy Homes Pilot with Department of Health integrates health services with home energy efficiency improvements and safety measures.

Indoor Air Quality and Energy Efficiency Pilot identifies ways to mitigate spread of COVID in buildings, while optimizing energy efficiency.

EmPower New York and Assisted Home Performance provides no- and low-cost energy efficiency solutions to income-eligible New Yorkers.

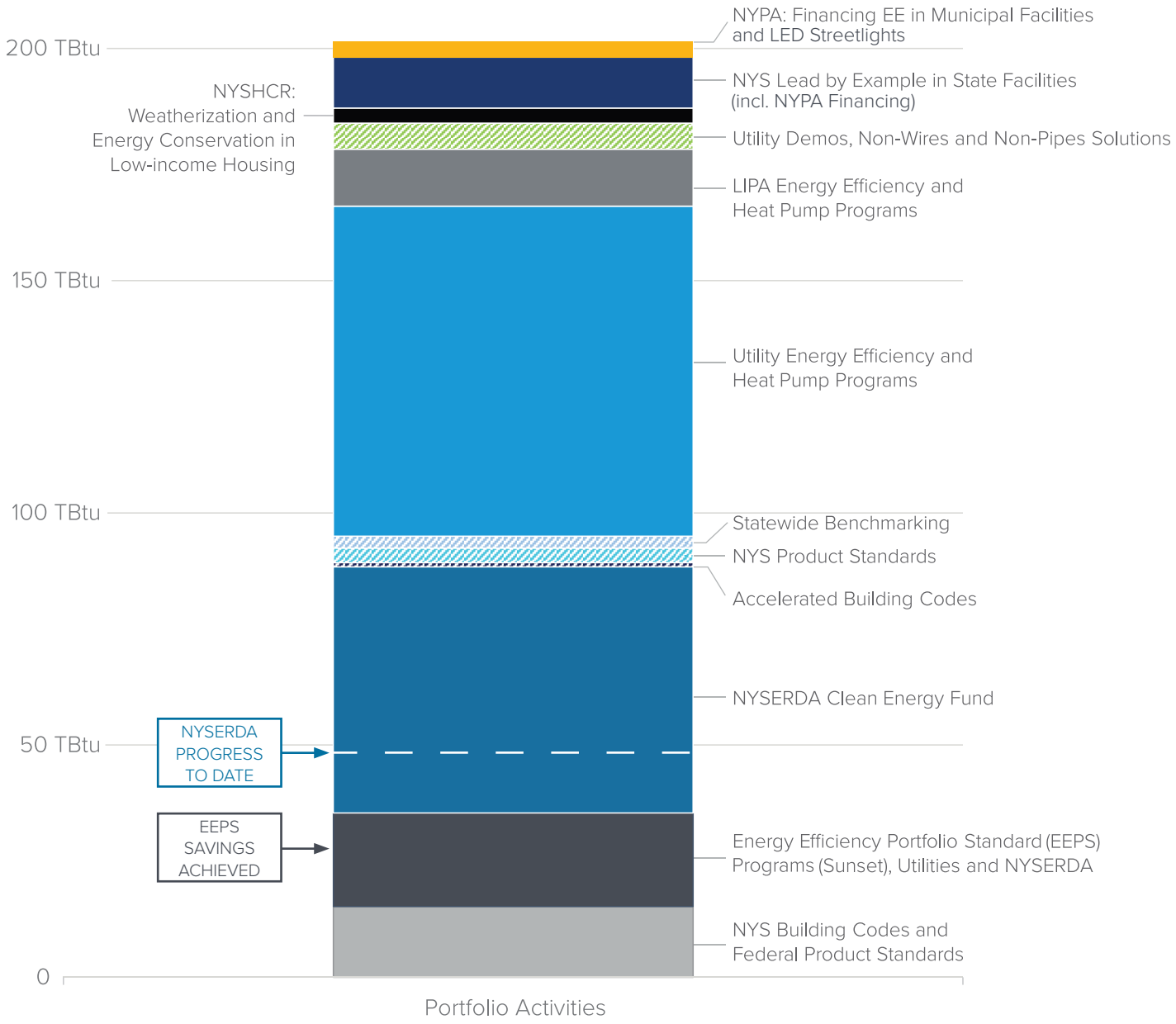
Home Comfort Pilot develops standardized envelope solutions that improve energy performance and make homes heat pump ready.

Buildings of Excellence competition recognizes and rewards the design, construction, and operation of very low or zero carbon emitting multifamily buildings.

Empire Building Challenge demonstrates low-carbon solutions for tall buildings, in partnership with real estate industry and solution providers.

2025 target:
185 TBtu
of onsite energy savings*

ENERGY EFFICIENCY ACTIVITIES TOTAL SITE TBTU SAVINGS BY 2025 (CUMULATIVE ANNUAL, 2015–2025)



** Graphic does not reflect roughly 15 TBtu of overlap between policies*

Clean Energy Economy

STATE POLICY GOAL
FOR THE CLEAN ENERGY ECONOMY

With nearly 165,000 clean energy jobs across the State at the end of 2019 (pre-pandemic)—and with nearly triple the rate of statewide job growth from 2018 to 2019—New York's nation-leading climate policies continue to drive investment and job-creation.

Despite projections for additional growth in the near-term, the State's clean energy sector suffered an enormous setback in 2020 due to upwards of 20,000 unemployment claims filed in the immediate aftermath of the coronavirus pandemic. Subsequent job rebounds have shown tremendous resilience in the sector—only 8.1% of New York's clean energy workers who lost their job remain unemployed as of November 2020, compared to three out of four clean energy workers who lost their job nationally. Nonetheless, the State needs the clean energy industry to continue to grow and thrive in the years ahead, helping drive a sustainable and equitable economic recovery for New York.

Mission Outcome:

Clean Energy Economy

NYSERDA'S ROLE

Unlock new job growth, leveraging marquee program investments such as offshore wind port infrastructure and competitions for deep building retrofits to bring global industries to New York.

Provide workforce development and training programs to grow the training capacity and human resources needed to build the clean energy economy, and support a just transition for historically disadvantaged populations and industries affected by the transition away from fossil fuels.

Cultivate demand for clean energy solutions to attract clean energy companies from all ends of the global supply chain looking to serve the growing local market, supported by proactive cross-agency attraction efforts.

Foster capital attraction and support commercialization of products, services, and business models (deployment models) from clean energy startups and maturing companies.

Deliver more targeted assistance to energy startups/innovation firms, leveraging support from federal stimulus efforts and future federal incentives to advance clean energy innovation.

Establish precedent for encouraging greater private sector investment and business models through new, substantial commitments of institutional capital in the clean energy economy.

Achieving the Climate Act's nation-leading goals and building back a thriving industry sector will mean expanded deployment of existing technologies as well as substantial investment in the State's clean energy innovation economy to develop new solutions for a low-carbon future. New York's ecosystem of start-ups will develop these technology and business-model solutions for demonstration and use in the State, as well as for export to markets across the globe. Furthermore, to build an inclusive clean energy economy and cultivate a just transition, NYSERDA, other State agencies, and clean energy industry partners will be ramping up efforts to develop a pipeline of skilled labor and open-up economic opportunities to to workers, communities, and historically disadvantaged populations who may be transitioning from fossil fuel-based economic activities.

STRATEGIES FOR 2021–2024

NY Green Bank

- Increase the size, volume, and breadth of sustainable infrastructure investment activity throughout the State, expand the base of investors focused on clean energy, and increase market participants' access to capital on commercial terms.
- Address barriers to mobilization of private capital and financing for clean energy projects: identify where barriers exist, demonstrate investment model, entice private capital, and repeat.
- Support priority policy areas through a growing pipeline of investments in energy efficiency, energy storage, electric vehicles, affordable housing, offshore wind port infrastructure, and beyond.
- Consistent with the goals of the CLCPA, launch a new initiative to invest in projects that support and deliver benefits to disadvantaged communities.
- Explore and refine new financing models (e.g., energy efficiency pay-for-performance) and new technology/solution areas (e.g., microgrids).
- Continue issuing targeted RFPs and organizing convenings in strategic areas to grow the clean energy investment pipeline.
- Remain supportive to counterparties through the future stages of the pandemic and economic recovery, including through Paycheck Protection Program (PPP) loan administration, investment term flexibility, and more.

Innovation

- Support the development of climate technologies necessary to meet the State's Climate Act goals through funding, team-building, customer introductions, advisory services, and the development and support of independent innovation organizations.
- Address barriers and support regulations, processes, and rulemaking that enable, a robust climate innovation economy by stimulating demand and supporting private sector innovation efforts
- Invest in the development of the New York's green economy, supporting relocation of climate-tech companies to New York, the growth of existing companies already in the State, and the human capital of the innovation ecosystem across the State.
- Consistent with the goals of the Climate Act, ensure the State's innovation development system, as well as the innovations developed, deliver benefits to disadvantaged communities.
- Coordinate and partner with the national innovation ecosystem to align and leverage State priorities and support New York climate-tech companies' access to finance and expertise
- Continue to support priority climate innovation firms through future stages of the pandemic and economic recovery

Workforce Development

- Prioritize recruitment, training, job preparedness, and placement for priority populations and disadvantaged communities
- Develop training infrastructure to upskill existing workers and prepare the next generation of clean energy workers in high-growth areas like high-efficiency HVAC, building electrification, energy storage, and offshore wind
- Ensure training curricula and programmatic support respond to industry and market needs
- Provide targeted support to reduce the time it takes to bring a new worker to full productivity and offset risks that might prevent clean energy firms from hiring or training new workers, particularly workers with additional barriers to employment

INDICATORS OF PROGRESS

- Statewide Clean Energy Industry Jobs
- Priority populations trained and employed in clean energy
- Commercialized climate solutions and launches of incubated firms, including related revenues
- Total value of capital mobilized using NY Green Bank support

New York's clean energy industry can help drive a sustainable recovery for the State's economy

NYSERDA'S INNOVATION ROLE: SUPPORT BY STAGE

Startup Formation

- Proof of Concept Centers
- Proof of Concept R&D Grants
- Accelerator Programs
- Entrepreneurs-in-Residence

Develop and Market Test

- Incubators
- Ignition Grants
- Entrepreneurs-in-Residence
- Research, Development, and Demonstration Grants and Collaboration

Commercialize

- Incubators
- NY Climate Progress
- Manufacturing Corps
- Entrepreneurs-in-Residence
- NYS Cleantech Venture Exchange
- Research and Technology Consortia
- Commercial-Scale Technology Demonstrations

Launch at Scale

- Manufacturing Corps
- Entrepreneurs-in-Residence
- NYS Cleantech Venture Exchange
- Novel Business Models

Visit **nyserda.ny.gov/innovation** for more information on these programs.

HIGHLIGHTED PROGRAMS AND INITIATIVES

NY Green Bank works with the private sector to increase investments into the State's clean energy markets, including through transactions related to:

- Community solar/Community distributed generation
- Affordable housing and energy efficiency
- Electric vehicles, charging infrastructure, and clean transportation
- Energy storage

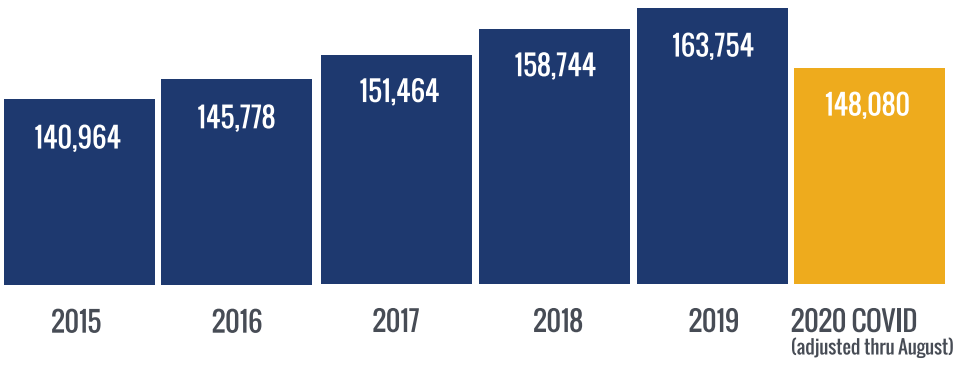
Innovation supports an affordable and just transition and the achievement of New York's climate goals through investments in and advisory services to researchers and companies, including:

- Tech to Market resources including climatetech incubators such as Urban Future Lab; cleantech accelerators like the Clean Fight and Cleantech Open Northeast; the M-Corps manufacturing scaleup program; and the Entrepreneur in Residence (EIR) mentorship program at Columbia University
- New York Climate Progress, a catalytic convertible note program for climatetech companies
- Natural Carbon Solutions, leveraging farms, forests and under-utilized lands to reduce GHG emissions and increase carbon sequestration
- Long-duration energy storage solutions supporting firm capacity requirements for a clean grid
- Next Gen HVAC program, accelerating the mitigation and phase-out of high global warming potential refrigerants

Workforce Development supports training for new clean energy workers, driven by industry needs, and develops the clean energy sector talent pipeline:

- HVAC/Building Electrification Career Pathway Program
- Building Operation and Maintenance Staff Training
- On-the-Job Training
- Clean Energy Internships
- Clean Energy Talent Pipeline Development

ANNUAL CLEAN ENERGY EMPLOYMENT IN NEW YORK (2016-2020 COVID-ADJUSTED)



- Clean energy jobs represented almost 1.7% of all employment within the State.
- Between 2018 and 2019, clean energy employment increased by 3.2%, outpacing the total New York employment growth of 1.1%

COVID

As of August 2020, New York lost 15,674 clean energy jobs, about 9.6% of the total clean energy workforce.

5k clean energy jobs restored since COVID-19 re-opening in May 2020

MISSION OUTCOME

Resilient and Distributed Energy System

STATE POLICY GOAL
FOR THE ENERGY SYSTEM

Build a resilient and distributed energy system that can anticipate, absorb, adapt to, and recover quickly from a wide range of shocks and stresses, including climate, environmental, cyber, financial, aging infrastructure, and other emerging vulnerabilities.

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, even as the system moves away from a more vulnerable centralized power generation towards an increasingly balanced, diversified, and digitalized network.

As New York strives to meet its aggressive climate targets, the State will have to contend with new risks and opportunities.

With electric power enabling nearly all critical infrastructure and services, including communications, emergency systems, banking, and transportation, it is crucial that the transition to clean energy and net zero emissions also advances via a resilient and modernized grid. This includes considerations for infrastructure given changing flood zones, sea level rise, and storm surge zones as well as new solutions and designs to withstand high windspeed, hail, and higher temperatures, and advancements in flexible, responsive resources such as energy storage and building load flexibility. Measuring and valuing risk reduction and resilience can help catalyze opportunities to harness the market system in service of these important goals.

Climate impacts land disproportionately on disadvantaged communities—populations that often have fewer resources to respond—so it is vital that investments also address questions of equity with targeted approaches for vulnerable communities. To this end, building a resilient and distributed energy system can also generate new workforce opportunities and create avenues to strengthen social cohesion, a quality of community resilience, through citizen engagement with shared energy and infrastructure.

Mission Outcome:

Resilient and Distributed Energy System

NYSERDA'S ROLE

Lead-by-example by factoring resilience goals in the State's clean energy infrastructure investments.

Partner with other State agencies to identify and implement best practices around climate resilience.

Spearhead next generation of climate adaptation research to provide insights for infrastructure, investment, and energy system planning decisions based on new/updated climate projection data.

Spur development and integration of a wide array of **smart grid technologies** that support a distributed energy system and advance resilience including storage, smart demand response, and vehicle to home/grid (V2H/G) flexible charging.

Continue to administer and refine flagship distributed energy resources (DER) programs like NY-Sun, and energy storage incentive programs to boost resilience, provide grid value, and reduce costs.

STRATEGIES FOR 2021–2024

- Incorporate resilience considerations into NYSERDA programs, including floodplain mapping, onsite generation and storage, and other means to ensure investments factor in shifts like increased electrification, future climate impacts, and other energy system disruptions.
- Explore potential mechanisms for the finance and insurance of resilient energy infrastructure, in partnership with the Department of Financial Services.
- Spur development and integration of smart grid technologies to ensure buildings are flexible and responsive under changing conditions, with a focus on load pockets where environmental and health outcomes are critical (e.g., disadvantaged communities).
- Support resiliency and grid flexibility, i.e., balance the growing intermittent renewable resources. Continue efforts to scale up energy storage to achieve statewide goals, with a focus on the Downstate region where energy storage is critically needed to replace dirty peaker plants, support grid congestion, and offshore wind procurements.
- Drawing from the Carbon Neutral Buildings Roadmap work, develop solutions for resilient communities and resilient housing focusing on passive survivability, resilience solutions for all-electric buildings and facilities of refuge to withstand future disruptions to the energy system.

HIGHLIGHTED PROGRAMS

Innovation's Smart Grid team and the Technology to Market team will launch **initiatives to support a resilient, affordable, flexible clean grid**.

New York Power Grid Study as required in April 2020 Accelerated Renewable Energy Growth and Community Benefit Act legislation

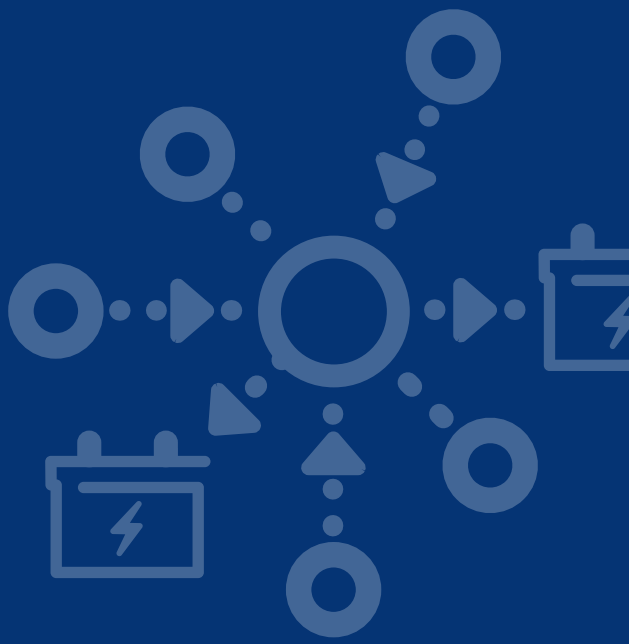
Energy Storage engages those involved in building, installing, integrating, or researching energy storage technology, including efforts to expand opportunities to pair solar and storage statewide (continuing and expanding the strong Residential PV + Storage program on Long island through the DLM tariff).

Fuel NY makes fueling stations resilient to power system outages.

Offshore Wind, including new analysis and program measures related to resilience.

Real Time Energy Management provides the ability to shed or shift loads in response to grid needs as well as the capability to stage critical equipment to maintain building services most needed to support safety and recovery.

Carbon Neutral Buildings Roadmap places strong emphasis on resilience with a full chapter dedicated to resiliency considerations related to building decarbonization.



INDICATORS OF PROGRESS

- Progress toward storage (3,000 MW by 2030) and distributed solar (6,000 MW by 2025) deployment goals
- Statewide grid-interactive building load
- Percentage of NYSERDA solicitations that incorporate resilience provisions

Building an Inclusive Clean Energy Economy

LONG-TERM VISION AND VALUE PROPOSITION

New York State's frontline communities, including environmental justice, LMI, communities of color, and otherwise disadvantaged[1] communities, have disproportionately been impacted by energy costs; pollution from fossil fuel combustion; disinvestment in housing; systemic inequities in education and workforce opportunities; and limited ability to engage in and inform policy making that would affect their community.

Realizing the objectives of the Climate Act will require foundational shifts in the development and implementation of clean energy policy, programs, and processes to ensure opportunities for residents and disadvantaged communities to participate in and benefit from the clean energy economy.

A strong and inclusive clean energy economy will lead to economic opportunities, improved health outcomes, and engagement for all New Yorkers.

1 As part of the implementation of the Climate Act, the Climate Justice Working Group is charged with developing criteria for disadvantaged communities for prioritization and benefit through New York State investments in clean energy.

In advancement of the Climate Act objectives, the NYSERDA clean energy portfolio will focus investments to improve energy affordability; reduce pollution from fossil fuel combustion across all sectors for environmental justice; create new economic development opportunities for communities and advance workforce development and training for underserved residents.

In addition, NYSERDA will focus on community capacity development and engagement to ensure the perspectives of residents are incorporated into the development and implementation of clean energy initiatives. Improving diversity, equity, and inclusion within NYSERDA staffing, procurement, and strategic development will also be prioritized to ensure the operations and practices of the Authority can be more representative of and responsive to the diverse needs of New Yorkers.

KEY CHALLENGES/BARRIERS

- Systemic and institutional inequities have led to limited opportunities for communities of color and other frontline or disadvantaged communities to participate in and benefit from the clean energy economy, including access to green jobs, ownership of distributed energy resources, and informing policy and programs.
- Energy burden for lower-income households can exceed 20% of annual income, and nearly half of the population has annual income below 80% of the Area Median Income, with overrepresentation of communities of color.
- Access to capital, split incentives, and historically fragmented administration of key programs present barriers to scaling adoption of clean energy solutions in the LMI market segment and within disadvantaged communities.
- Size of income-eligible/disadvantaged population requires innovative approaches to achieve scale, with precautions tailoring program/policy designs to avoid regressive outcomes/impacts.
- Engaging with disadvantaged communities and bringing their voice to the table is inherently challenging given chronic lack of resources in LMI and EJ communities.

NYSERDA is positioned to drive equity and the realization of an inclusive clean energy economy through its direct investment, as well as through its work with State agencies, utility companies, and community-based organizations.

PRIORITY ACTIONS FOR NEW YORK

- Work toward a goal of driving 40% of the benefits of clean energy spending to disadvantaged communities.
- Increase engagement of frontline, climate-vulnerable communities in the development of the clean energy economy, including ensuring community representation in decision-making and policymaking.
- Align State resources and strategy to increase impact of public investment in energy affordability and expand access to clean energy solutions for lower-income households, affordable housing, and disadvantaged communities.
- Leverage regulatory, policy, and financing mechanisms to increase adoption of clean energy solutions in affordable housing, including beneficial electrification.
- Facilitate a just transition to a clean energy economy by supporting unemployed or underemployed workers and priority populations by addressing barriers to workforce training and job opportunities for residents of disadvantaged communities and priority populations.
- Advance resilience to climate change and extreme weather events within affordable housing and disadvantaged communities through clean energy solutions such as solar, battery storage, and passive house standards.
- Advance access to clean transportation for residents of disadvantaged communities and accelerate the transition from fossil fuel to electric vehicles in EJ areas to reduce emissions and address air quality issues.
- Develop solutions and models for deploying utility-scale DER, clean transportation solutions, and energy efficiency in the built environment to reduce emissions and harmful co-pollutants for disadvantaged communities.
- Quantify and maximize health and other non-energy benefits associated with clean energy improvements in disadvantaged communities.
- Develop path for decarbonizing the State's affordable housing, including developing models for advancing beneficial electrification across the LMI market segment.

NYSERDA KEY ACTIONS FOR 2021–2024

- **Build community capacity** by supporting community-based organizations through efforts to engage residents and increase awareness of clean energy solutions, advance economic development opportunities, and facilitate input in policy and program decision-making.
- **Ensure robust engagement opportunities** to better democratize program planning and design processes by providing a structured engagement process and financial support for stakeholders to participate in the process.

Prioritize workforce development and advance employment opportunities to support disadvantaged communities, transitioning underemployed and unemployed workers into the clean energy industry, while also training the next generation of entrepreneurial cleantech leaders.

- **Establish an Environmental Justice Fellowship** to bring perspectives on environmental and climate justice into policy and program design and provide training opportunities for a more diverse population.
- **Develop replicable solutions** to advance beneficial electrification across the LMI market.
- **Develop innovative community-level interventions**, such as implementing approaches for geographic eligibility and advancing community-scale distributed energy resources such as district geothermal and community solar to benefit disadvantaged communities.
- **Explore and advance models for community ownership** of distributed energy resources.
- **Develop an approach for quantifying and monetizing the benefits of clean energy adoption**, including affordability, health outcomes, resilience, and beyond.

Develop and implement a statewide portfolio of energy efficiency initiatives with utilities to increase the impact and reach of LMI clean energy initiatives.

- **Integrate clean energy subsidies** from NYSERDA and utilities into **affordable housing finance** to advance the energy performance of these buildings and deliver co-benefits to tenants.

ILLUSTRATIVE INITIATIVES TO ADVANCE AN INCLUSIVE CLEAN ENERGY ECONOMY BY PORTFOLIO

MARKET DEVELOPMENT / ENERGY EFFICIENCY

Clean Green Schools – funding solutions for eligible P-12 schools to reduce school energy use and assist in the conversion to carbon-free fuels

EmPower New York – no-cost and discounted efficiency solutions to income-eligible New Yorkers, helping save energy and money

Technical Assistance and Predevelopment – support for housing agencies, contractors, developers, and builders for clean energy, high-performance building, and retrofits

Beneficial Electrification for LMI and Affordable Housing – replicable solutions for heat pump adoption in the LMI and affordable housing sectors, while ensuring customer protections

Community-Based Workforce Development – community-based training partnerships between clean energy businesses, training organizations, industry associations, and un/underemployed residents in disadvantaged communities

On-the-job training for priority populations – support for clean energy businesses to hire persons from priority populations

Career Pathways Funding and Training – solicitation to train and place new entrants to the HVAC and building electrification industry

Climate Justice Corps – funding for fellows to work to improve engagement of disadvantaged communities, identify community-based, climate justice focused projects and solutions, and build capacity of local organizations to advance climate justice

NY GREEN BANK / FINANCE

Financing for Affordable Housing and Energy Efficiency in Disadvantaged Communities – new initiative using financing to catalyze clean energy within the existing capital stack for affordable housing, aiming to invest at least $150 million in clean energy and energy efficiency solutions that benefit the State's affordable multifamily housing market

Exploring tariff-backed and other innovative, inclusive financing models – approaches to overcome LMI/disadvantaged communities finance challenges, stabilize energy costs, and improve air quality in disadvantaged communities

Partner with other agencies to explore innovative opportunities to put NY Green Bank capital to work, including new areas such as energy resiliency

Green Jobs–Green New York (GJGNY) – provides New Yorkers with access to energy assessments, installation services, low-interest financing, and pathways to training for various green-collar careers

Cultivating diverse ecosystem of investment partners and counterparties – explores funding to cover transaction costs and/or pro bono/in-kind transaction support

NY-SUN / DISTRIBUTED ENERGY RESOURCES

Solar for All – utility bill assistance program funding solar to benefit homeowners/renters unable to access solar

Affordable Multifamily Housing Incentive – PV installations serving affordable housing properties

Raise the Green Roof – pre-development support and financing for solar and efficiency deployed in Homes and Community Renewable's (HCR) affordable housing portfolio

Technical Assistance and Predevelopment – grants to address key barriers to PV and storage projects providing benefits to LMI, Environmental Justice and disadvantaged communities

Community Solar, Solar paired with Storage, and Energy Efficiency – incentive adders for community PV, projects that pair PV and energy storage and provide resiliency and/or financial benefits to LMI customers and affordable housing

Peaker Reduction and Replacement – project deployments that support the potential for solar and energy storage to repower, replace, and back-down electric generating peaker units

INNOVATION AND RESEARCH

Advanced HVAC Challenge – heating and cooling technology innovations targeting common LMI building types and needs

Innovation for Affordable Decarbonization – investments designed to reduce the cost of clean energy through optimization of the power grid, clean building technologies, and clean gas and liquid fuels

Evolving work on resilience – tools to support adaptation to climate change for all New Yorkers, including those most vulnerable

New York Clean Transportation Prizes – solutions to reduce harmful air pollution in frontline communities and create transportation "green zones"

Clean Personal Mobility Prize – innovative and high-impact approaches that enable access to clean transportation services for disadvantaged and underserved communities

Clean Medium- and Heavy-Duty Vehicle Innovation Prize – innovative and high-impact approaches to medium- and heavy-duty electrification that can be replicated at scale, including for "last-mile" solutions

LARGE-SCALE RENEWABLES

RFP Design – prioritize economic benefits to disadvantaged communities in evaluation of project bids

Agriculture, natural resources and smart siting policies – maximize co-benefits between industries and cultivate infrastructure ecologies (e.g., supporting supplemental income diversification, promoting carbon sequestration through soil enrichment, water quality improvements)

Community Benefits Agreements – support development of robust Renewable Energy Facility Host Community Benefit Program, potentially with specific callout for disadvantaged communities

Transmission planning – active participation in transmission planning to align with project development and seek important partnerships and cultivate benefits with communities

OTHER AUTHORITY-WIDE PRIORITY EFFORTS

Capacity-building and community engagement – Clean Energy Hubs to build local capacity and advance opportunities for residents within the clean energy economy; development of multilingual communication materials; providing financial support to encourage stakeholder engagement in processes; streamlining stakeholder engagement Authority-wide through equitable engagement framework

Community Ownership of Clean Energy and Distributed Energy Resources – New models for community ownership of distributed energy resources

NYSERDA Diversity, Equity, and Inclusion (DE&I) - Strategic Planning Effort to promote DE&I progress Authority-wide

Grow MWBE Contracting – NYSERDA to qualify contractors as Disadvantaged Communities, MWBE

Supporting Clean Energy Jobs and New York's Economic Recovery

LONG-TERM VISION AND VALUE PROPOSITION

New York's nation-leading climate action policies and investments have driven steady growth in the State's clean energy economy, outpacing economy-wide growth for the last three years.

However, like other sectors, the clean energy industry suffered significant job losses as a result of the pandemic, with nearly 20,000 unemployment claims from the clean energy sector in April 2020. Jobs have begun to rebound, but continued investment is needed to address current worker dislocation in the near term and build the labor capacity over the longer term to deliver clean energy solutions at the scale needed to meet Climate Act goals. The State's continued leadership and investment in its clean energy workers and businesses can and will contribute to the pandemic recovery, helping New York build back better and creating the foundation for a just transition in the decades to come, starting with prioritizing training and job placement support for individuals from disadvantaged communities.

KEY CHALLENGES/BARRIERS

- Historically marginalized populations face greater barriers to employment.
- Strains on businesses as a result of the pandemic threaten the recruitment, retention, and training of workers.
- Training partners and platforms struggle to successfully/effectively operate in a COVID-safe world, especially hands-on learning requirements.
- Public, private, and philanthropic resources are increasingly scarce, and in some cases, have constraints on how they can be used (e.g., geography, direct technical training versus wrap-around services).
- Ongoing demographic transitions and retirements require the State to entice new entrants to this energy field and ensure that training is in sync with job placement opportunities.

PRIORITY ACTIONS FOR NEW YORK

- Harness the State's clean energy investments to provide economic opportunity and quality jobs for New Yorkers, including LMI and historically disadvantaged populations.
- Support the work of the Climate Action Council and Just Transition Working Group to ensure workforce development considerations are prioritized.
- Integrate the definition of disadvantaged communities and guidance from the Climate Justice Working Group into workforce-related programs and offerings
- Advocate for climate/clean energy investments as part of State and federal stimulus efforts.

NYSERDA KEY ACTIONS FOR 2021–2024

- **Accelerate pandemic recovery** by promoting localization of clean energy workforce development and economic benefit opportunities to strengthen socio-economic resiliency in the transition to a clean energy economy, particularly in LMI and disadvantaged communities.
- **Create a Climate Justice Corps program** to place fellows working in and for disadvantaged communities to advance local climate action priorities.
- **Scale-up Career Pathways** and other successful models for direct entry in apprenticeships, pre-apprenticeships, and other job-readiness programs—focusing on efficiency and electrification, and building a talent pipeline from disadvantaged communities.
  - *See career pathways in action on the following pages.*
- **Support build-out of OSW workforce training** supporting SUNY in advancing the Offshore Wind Training Institute (OSWTI), and coordinating industry efforts already underway.
- **Focus NYSERDA's relationship with other agencies and channel partners** on workforce development and training to develop complementary offers that increase collective impact and serve a wider base of workers.
- **Pursue funding opportunities** to complement/supplement our traditional funding sources to deliver wrap-around services (such as funding for transportation, tools, daycare, etc.) to help priority populations pursue clean energy workforce opportunities.
- **Explore novel community-based investments**, including Build-Ready project development to provide workforce support alongside renewable development and leveraging DOL resources where feasible.

43
trained to date

- **80% are expected to complete the program**
- **90% of those, placed into clean energy employment or advanced education opportunities, including post-secondary degree programs and/or national certifications**

Green City Force was founded to model a national Clean Energy Corps for equity and opportunity, using service as a means to connect young adults from low-income housing communities who are massively excluded from the job market to emerging jobs and career paths in energy efficiency. They are part of a national network of service and conservation corps working to connect young adults aged 18-24 to opportunity through hands-on experience and wrap-around services.

Energy Service-Learning Pre-pre-apprenticeship

Green City Force has created this essential first step for un- or underemployed young adults to enter a clean energy career pathway.

With NYSERDA's assistance, the Program will train 50 graduates of Green City Force's AmeriCorps program, recruited in partnership with the New York City Housing Authority, on electric lighting and post-construction appliances, solar panel maintenance and energy monitoring, preparing them for work on residential energy efficiency retrofits serving low- to moderate-income families.

Graduates will leave the training with a firm foundation in environmental literacy, professional certifications, and meaningful hands-on experience.

Energy Bootcamp

Green City Force is developing an Energy Bootcamp for graduates (ages 18-24) of its AmeriCorps workforce preparedness program. The training is based on a "pre-apprenticeship" framework, offering exposure, basic foundation training, and hands-on experience as well as a direct connection to industry for full-time employment.

The Energy Bootcamp recruits participants through the New York City Housing Authority and prepares them for residential energy efficiency retrofits serving low- to moderate-income families. The training includes a ROOTS for Success environmental literacy program and leads to Green Building Professional certification. Bootcamp graduates have the opportunity to move on to more advanced technical trainings and/or gain employment with Green City Force's energy service partner companies, including Franklin Energy, Ameresco, and Constellation.

** Training has been put on hold due to COVID-19 and is expected to resume in early 2021.*

Green City Force's overall goal is to develop a comprehensive model from service (pre-pre-apprenticeship phase) to Energy Boot Camp (pre-apprenticeship phase) to employment or actual union apprenticeship in the sustainable buildings sector.

pre-pre-apprenticeship → pre-apprenticeship → employment or union apprenticeship

Building Automation Systems Training

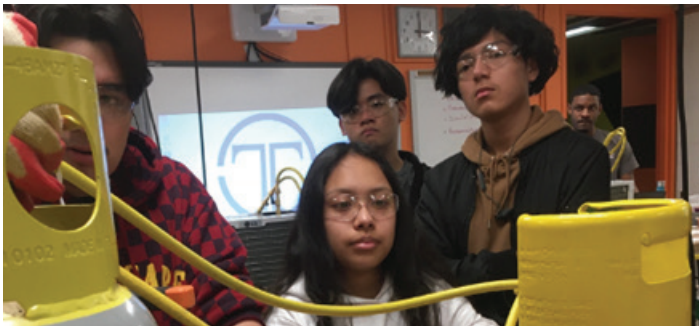
Stacks + Joules has partnered with UA Maker Academy, South Bronx Community Charter High School, and the Lower East Side Girls Club, to prepare high school seniors from low-income communities and designated environmental justice areas for jobs in the Building Automation System (BAS) industry.

Under the project called “New Collar Careers in Green Building Automation,” Stacks + Joules will teach a cohort of students in computer programming, wireless networking, HVAC and lighting controls, and automated building control systems.

The combination of rigorous technical training, hands-on experience, and mentoring by industry professionals has a profound impact on students’ skills and enthusiasm for joining the energy efficiency workforce. This program leads to professional credentials, preparing students for careers in the energy efficiency and clean technology industry.

- **91 industry-recognized certificates earned**
- **46 students secured paid internships**
- **4 graduates working full time in BAS industry**

61
trained to date



In the instantaneous shift to remote learning, most opportunities for hands-on learning became inaccessible. This initially had a negative impact on the students’ ability to really master their understanding of basic HVAC systems. However, in an exciting twist, the experimental approach to training had the unintended consequence of supporting an in-depth understanding of HVAC systems.

Stacks + Joules is using these lessons learned to redesign a strategically blended approach to teaching HVAC and Niagara 4 at the same time.

“Close alignment of industry partners and schools helps create opportunities for students to experience professional working atmosphere and learn the technical skills that many employers are not able to find from current college graduates.”

— Luke Bauer, Principal UA Maker Academy

Accelerating the Transition from Natural Gas to a Low-Carbon Future

LONG-TERM VISION AND VALUE PROPOSITION

In order to realize its goals of a carbon neutral economy by mid-century, New York State needs to move away from its dependence on the combustion of natural gas (fossil fuel-derived methane) to heat homes and businesses and power industrial processes.

This pressure will be exacerbated by the on-the-ground imbalances in the near-term of demand and supply for natural gas, especially in the Downstate metropolitan area. Collectively, this transition away from natural gas to lower-carbon energy sources may be one of the most challenging pieces of our decarbonization agenda.

In the near term, we need to drive more uptake of demand-reducing solutions such as energy efficiency and electrification.

Over the longer term, we will need to scale up these solutions and advance new ones. In hard-to-electrify use-cases, the State will need to pursue R&D to prove and deploy deep decarbonization innovations to replace natural gas with alternatives with lower climate impact—such as green hydrogen, renewable natural gas, novel leak-prone pipe detection and prevention methods, and carbon capture, among others.

At the same time, the State must pay close attention to ensure the gas transition is equitable and avoids any regressive outcomes for the shrinking gas customer-base, with a focus on affordability.

KEY CHALLENGES/BARRIERS

- Significant disparity between the societal costs of natural gas (from methane and carbon dioxide) and the costs realized by consumers, resulting in a market signal that is inconsistent with New York's public policy objectives—natural gas is plentiful, widely available, and affordable for consumers, albeit somewhat artificially so due to historical regulatory rules.
- Affordability of gas makes it favorable not just among residents for home heating and hot water, but also among the businesses and particularly industrial users, where the fuel's ability to produce high quality, high heat for process applications is prized and where there are few or no commercially available electric solutions.
- While efficient, all-electric alternatives can fulfill most/all residential applications and many commercial ones, alternatives face several limitations, including high upfront cost, lack of awareness among consumers, lack of market infrastructure (familiar installers, marketing), and technical barriers for certain larger buildings.
- Given the affordability barriers of cleaner alternatives, the natural gas transition creates risks for regressive outcomes for those unable to move swiftly off natural gas for heating.
- The existing gas distribution system is a multibillion-dollar asset that will remain in place even as consumption/throughput is reduced, and it needs investments to be maintained to keep people safe.

PRIORITY ACTIONS FOR NEW YORK

- Update GHG accounting to match the Climate Act framework and latest state of science for global warming potential, including 20-year lifetime and upstream impacts of methane.
- Coordinate investments among utilities/agencies addressing Downstate gas supply constraints and promote adoption of clean heating and cooling alternatives.
- Build market capacity, expand product availability, and drive cost reductions in electrification solutions such as air source and ground source heat pumps, as part of NYS Clean Heat.
- Direct better gas system planning, calling for utilities to conduct improved long-term planning of their gas assets taking into account long-term State goals.
- Review natural gas policy structures to ensure that alternative heating solutions can compete on a level playing field (e.g., 100-ft. rule, long-term depreciation).
- Advance emissions recommendations for building and industrial sectors via Climate Action Council, including codes and standards aimed at driving adoption of efficient, low-carbon solutions and alternatives to fossil-fuel derived methane as a fuel for heat/industrial process.
- Take action to preserve and enhance affordability in this transition, particularly to guard against disadvantaged and LMI customers being stuck on the gas system with increasing costs.

NYSERDA KEY ACTIONS FOR 2021–2024

- **Publish long-term roadmaps** for advancing all-electric clean homes and buildings in the State consistent with the goals of a carbon-neutral economy.
- **Expand markets for clean, efficient alternatives** to reduce natural gas consumption via programmatic efforts—clean heating and cooling, energy efficiency, LMI incentives, and other efforts to make electrification a more attractive solution set for a wider range of buildings and owner/occupant combinations.
- **Illuminate and prove-out solution set for LMI/disadvantaged communities electrification**—tailored both to customer segment (keeping housing and energy costs affordable) and building stock differences (remediation, deferred maintenance, electric service upgrades, etc.)—and follow-up with investments at a larger scale via LMI implementation plan.
- **Focus on reducing cost of alternative clean heating/cooling** through innovation—demonstrate heat pump technologies (and other carbon-reducing solutions) in large commercial/multifamily buildings, working with portfolio property owners to define technical needs and performance specs, and engaging manufacturers to deliver/tailor products to meet New York's building needs.
- **Support innovations** that reduce peak gas demand, and build understanding of, and momentum for, cutting-edge deep decarbonization technology including green hydrogen and carbon capture. Initiatives include the Carbon Foundry to support carbon-to-value R&D and technology transfer, an R&D gaps analysis for green hydrogen, and co-funding of Department of Energy hydrogen projects and initiatives.

Carbon Neutral Buildings Roadmap
A comprehensive roadmap charting New York State's path to a carbon neutral building stock statewide by midcentury.

Building Electrification Roadmap
A complementary roadmap offering deep-dive on electrification solutions and needs, charting course for progress by 2030.

Fostering Healthy Communities

LONG-TERM VISION AND VALUE PROPOSITION

New York's diverse communities have a critical role to play in the State's clean energy transition.

They serve as essential partners both in the rapid expansion of clean energy generation as well as the decarbonization of society—including the built environment and the transportation and industrial sectors—thereby creating healthy, livable environments and supporting larger projects with far-reaching statewide benefits

But to succeed, we need to provide communities with the necessary tools and other resources to carry out this work. On the renewable generation side, new efforts such as the Office of Renewable Energy Siting (ORES), NYSERDA's Build-Ready program, and the new host community benefits framework, are designed to reduce barriers for localities and overcome obstacles to mutually beneficial project development.

In order to decarbonize the State's building stock by mid-century, New York will have to quickly move beyond a building-by-building approach to a neighborhood-by-neighborhood approach, developing carbon neutral communities.

There are more than 4.5 million buildings in the New York. On a building-by-building basis, more than 400 buildings per day would need to be decarbonized for the next 30 years to cover the entire existing building stock by 2050. The State needs to build scale to succeed, and action at the community-level will be critical.

NYSERDA provides planning resources for community-scale decarbonization projects, and NYSERDA is already supporting several communities as they embark on the decarbonization transition. Integrating decarbonized transportation solutions will also be paramount in proving holistic community-scale climate solutions with neighborhood-level impact.

The disparate health and air quality impacts borne by disadvantaged communities as a result of historical and continuing environmental injustice remain front of mind, a reality that has been underscored and exacerbated by the COVID-19 pandemic. We can begin to reverse and repair these inequitable community outcomes by providing resources to disadvantaged communities to join the vanguard of the clean energy transition. Decarbonized communities will have improved outdoor air quality (e.g., through the elimination of peaker plants and on-site combustion of fossil fuels), safer and healthier buildings (through electrification, energy efficiency and measures to guard against airborne pathogens), and substantial job opportunities and increased economic activity, collectively fostering healthy communities.

KEY CHALLENGES/BARRIERS

- Communities lack resources to adequately address the many on-the-ground challenges associated with the energy transformation—from competing interest for land use and challenging siting issues, to a diverse building stock coupled with complex and evolving building codes and aging infrastructure.
- Local resource constraints have been exacerbated by COVID-19 and the resulting sharp economic downturn.
- Certain communities have a negative perception of large-scale renewable projects, and consequently are negatively disposed to the development of such projects within those communities.
- Disadvantaged communities face disparate exposure to air pollution via multiple sources (vehicle, power plant, industrial facilities) and often are burdened with a building stock that provides unhealthy indoor environmental quality.
- Health and safety benefits that result from electrification and energy efficiency projects, and other non-energy benefits resulting from community decarbonization that improve the quality of the community's indoor and outdoor spaces, are not well understood and very difficult to quantify and monetize.

PRIORITY ACTIONS FOR NEW YORK

- Continue to provide and expand upon training and technical resources to help communities prepare for responsible renewable energy development, embrace decarbonization and energy efficiency, and support progressive building codes.
- Facilitate paths for community engagement on decarbonization wherever possible, including via grants/financial support, local coordinator support, clear technical guidance and templates, recognition, and interagency coordination.
- Incorporate decarbonization into various existing State funding programs, like the Downtown and Upstate Revitalization Initiatives and other opportunities under the Consolidated Funding Application.
- Develop and establish robust framework for host community benefit agreements via DPS, clarifying local benefits and making benefits packages more compelling.
- Via the Office of Renewable Energy Siting, issue new uniform, standardized guidelines for responsible large-scale renewable siting to improve consistency, expedite approval for non-greenfield project sites, reduce burden for local intervention, and provide foresight into future project characteristics.
- Focus on turning underutilized lands, such as brownfields, landfills, and former industrial properties, into revenue-generating clean energy projects, and advance project development on other sites that present development challenges for commercial developers.
- Facilitate passage and/or implementation of proactive community-level clean energy policies such as Community Choice Aggregation (CCA), statewide benchmarking, a carbon neutral stretch code, and other codes, standards, and mandates recommended by the Climate Action Council.

NYSERDA KEY ACTIONS FOR 2021–2024

- Site and build renewable power and distributed clean energy projects that provide community benefits.
  - **Develop new resources** to help communities and clean energy developers collaborate to design and build successful projects, such as guidance on project economics and PILOT rates for large scale renewable energy projects, and ensuring such projects deliver tangible benefits to host communities.
  - **Encourage adoption** of distributed and large-scale clean energy resources via CCAs, increasing Consolidated Funding Application the number of CCA programs where localities use 100% renewable energy as default supply.
  - **Grow local partnerships** and leverage State and federal resources to drive investment in clean energy on brownfields or otherwise underutilized land, offering support like Just Transition site reuse planning grants.
- Build local capacity and develop programs to support community-scale decarbonization.
  - **Launch new Clean Energy Communities Leadership Round**, driving and recognizing deep climate action at the local level.
  - **Establish a local Clean Energy Hub** in each economic development region of the State to build local capacity in service of developing an inclusive clean energy economy and ensuring that disadvantaged communities benefit from this economy. Clean Energy Hubs will foster multi-disciplinary partnerships between organizations to help residents meet their energy needs, advance initiatives and solutions to address local priorities, promote clean energy programs to residents and small businesses, facilitate engagement of residents and elevate input from the community into program and policy decisions, and connect residents to workforce development opportunities.
  - **Expand clean energy training** opportunities for local officials by providing accredited, on-demand, online educational courses.
  - Building on NZEED (Community Scale) and the Clean Energy Communities Leadership Round, **develop programs that provide technical and financial assistance** for communities to adopt comprehensive plans and local legislation aimed at full decarbonization, utilizing CCAs, Downtown and Upstate Revitalization Initiatives, and other Consolidated Funding Application supported programs where applicable.
  - **Directly partner with municipalities, communities, and individual landowners** to promote neighbor-to-neighbor clean energy campaigns and testimonials, fostering the sharing of best practices by local government champions for clean energy.
  - **Partner with stakeholders and Community-Based Organizations** (CBOs) in disadvantaged communities to co-develop a local clean energy agenda to identify DER deployment strategies tailored to each community, focused on reducing operation of peaker plants (where applicable) while also creating local economic opportunities, addressing environmental injustices, advancing the State's GHG reduction goals, and boosting disadvantaged communities capacity to lead in community-scale decarbonization.
  - **Incentivize and execute demonstration projects** consistent with the DER deployment strategies identified through such geo-targeted research studies.
  - Catalyze novel clean transportation and zero-emission vehicle/mobility deployments with prize funding **supporting clean vehicles, personal mobility, and medium- and heavy-duty transformation to benefit environmental justice communities.**
- Help communities address the dual challenges of sustainability and COVID mitigation, providing building science expertise to State counterparts and local jurisdictions in ongoing response to the COVID crisis, including energy systems support to promote clean, green schools.
- Leverage funding to drive health and energy benefits, including the Healthy Homes pilot, aimed at realizing the ability to harness health dollars and avoided health/insurance costs (private and public) to facilitate/finance electrification, energy efficiency, and clean energy upgrades.

Funding Commitments

FUNDING SOURCES

Several funding sources help NYSERDA advance the State's clean energy goals and achieve the its mission. NYSERDA invests these funds in a fiscally responsible manner that maximizes benefits to New Yorkers, fills critical gaps, and addresses the needs of the market.

Clean Energy Fund
Authorized by the Public Service Commission (PSC) and derived from an assessment on retail sales of electricity by State utilities — it is comprised of four portfolios: Market Development, Innovation and Research, NY-Sun, and NY Green Bank.

Clean Energy Standard
As authorized by the PSC, these funds are realized by NYSERDA through the sale of Tier 1 Renewable Energy Credits (RECs), Offshore Wind Renewable Energy Credits (ORECs), and Zero Emission Credits (ZECs) as well as receipt of Alternative Compliance Payments from New York's Load Serving Entities (LSEs). Through PSC orders, LSEs are obligated to meet annual compliance obligations for RECs, ORECs and ZECs. As needed, utility financial backstop collections may be called on to meet funding shortfalls. These commitments are typically paid out over a 20–25 year contract term upon delivery of RECs (for Tier 1, OSW, and future Tier 4; contract terms are shorter for Tier 2 RECs and ZECs).

Regional Greenhouse Gas Initiative (RGGI)
Derived from sale of carbon emission allowances as set forth in 6 NYCRR Part 242 and 21 NYCRR Part 507. The amount of revenues available is dependent on the variable auction prices for the allowances. Per requirements in 21 NYCRR 507, RGGI funds are used to advance energy efficiency, renewable energy, and carbon abatement projects in New York State.

Other Funds
Includes sources provided by various sponsors used for specific purposes. Public funds are leveraged considerably with private sector funding through NYSERDA programs.

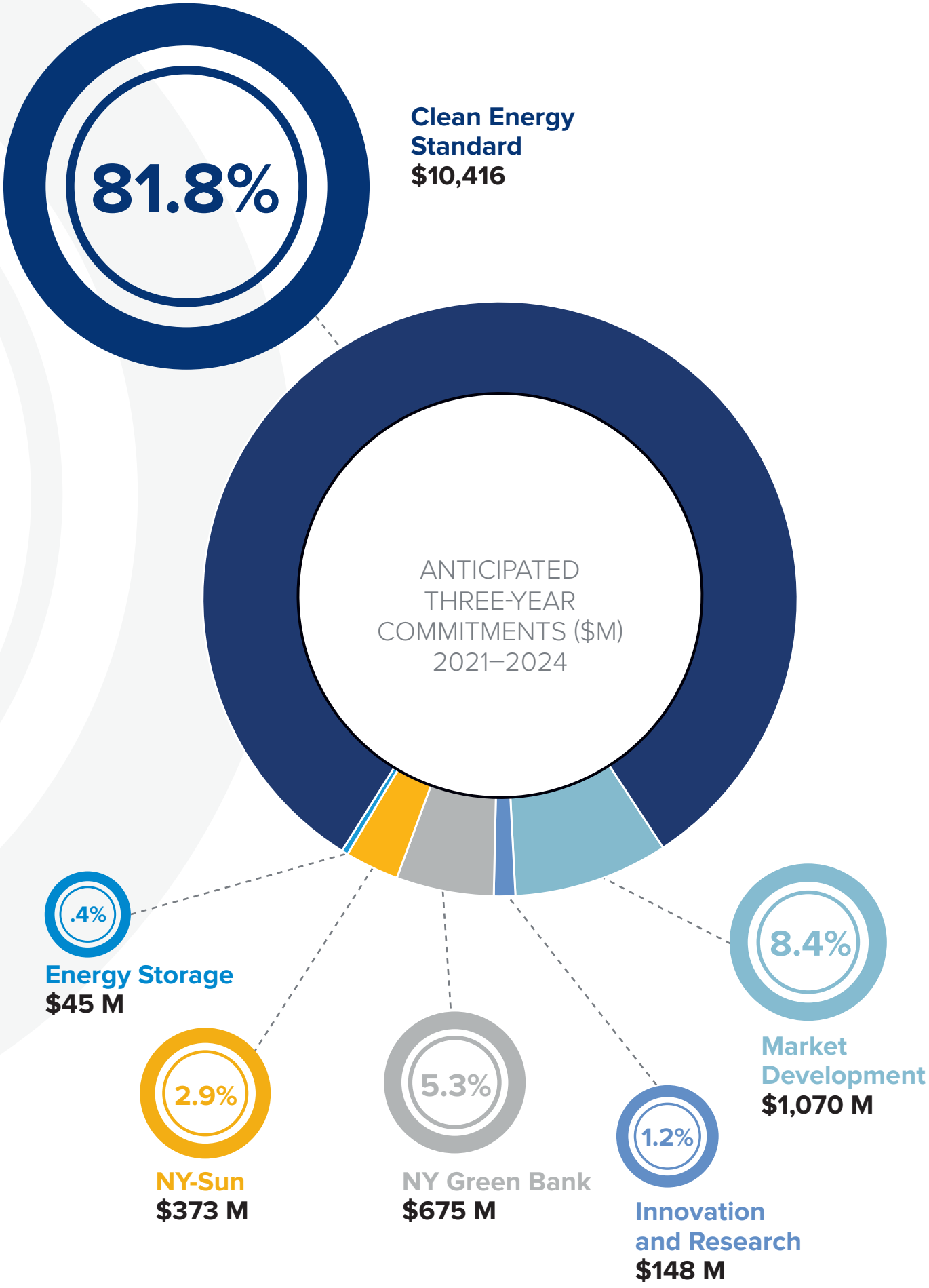
ANTICIPATED COMMITMENTS (APRIL 1, 2021-MARCH 31, 2024)

INVESTMENT AREAS AND PRIORITY INITIATIVES	ESTIMATED 3-YEAR INVESTMENT LEVEL	% OF TOTAL	NYSERDA MISSION OUTCOME(S) ICONS INDICATE RELEVANCE FOR PLANNED FUNDING RENEWABLES	ENERGY EFFICIENCY	EMISSIONS REDUCTIONS	CLEAN ENERGY ECONOMY	DISTRIBUTED ENERGY SYSTEM
Clean Energy Standard [1, 2, 3]	$10,416,000,000	81.8%	✓		✓	✓	
Market Development	$1,070,000,000	8.4%		✓	✓	✓	✓
NY Green Bank	$675,000,000	5.3%	✓	✓	✓	✓	✓
NY-Sun	$373,000,000	2.9%	✓		✓	✓	✓
Innovation and Research	$148,000,000	1.2%			✓	✓	✓
Energy Storage	$45,000,000	.4%	✓		✓	✓	✓
Total	**$12,728,000,000**						

1 Estimates of future financial commitments pertaining to Large-Scale Renewables and Offshore Wind were developed using the assumptions included in Appendix A of "White Paper on Clean Energy Standard Procurements to Implement New York's Climate Leadership and Community Protection Act".

2 Estimates do not include the potential cost savings that could accrue from the updates to Federal renewable energy tax credits that were passed by the U.S. Congress in December 2020.

3 Financial commitments relating to potential Tier 4 procurements have not been included in this estimate. As of the publication date, the size and cost of any future Tier 4 commitments remain uncertain. The first Tier 4 Request for Proposals was recently issued in early 2021.

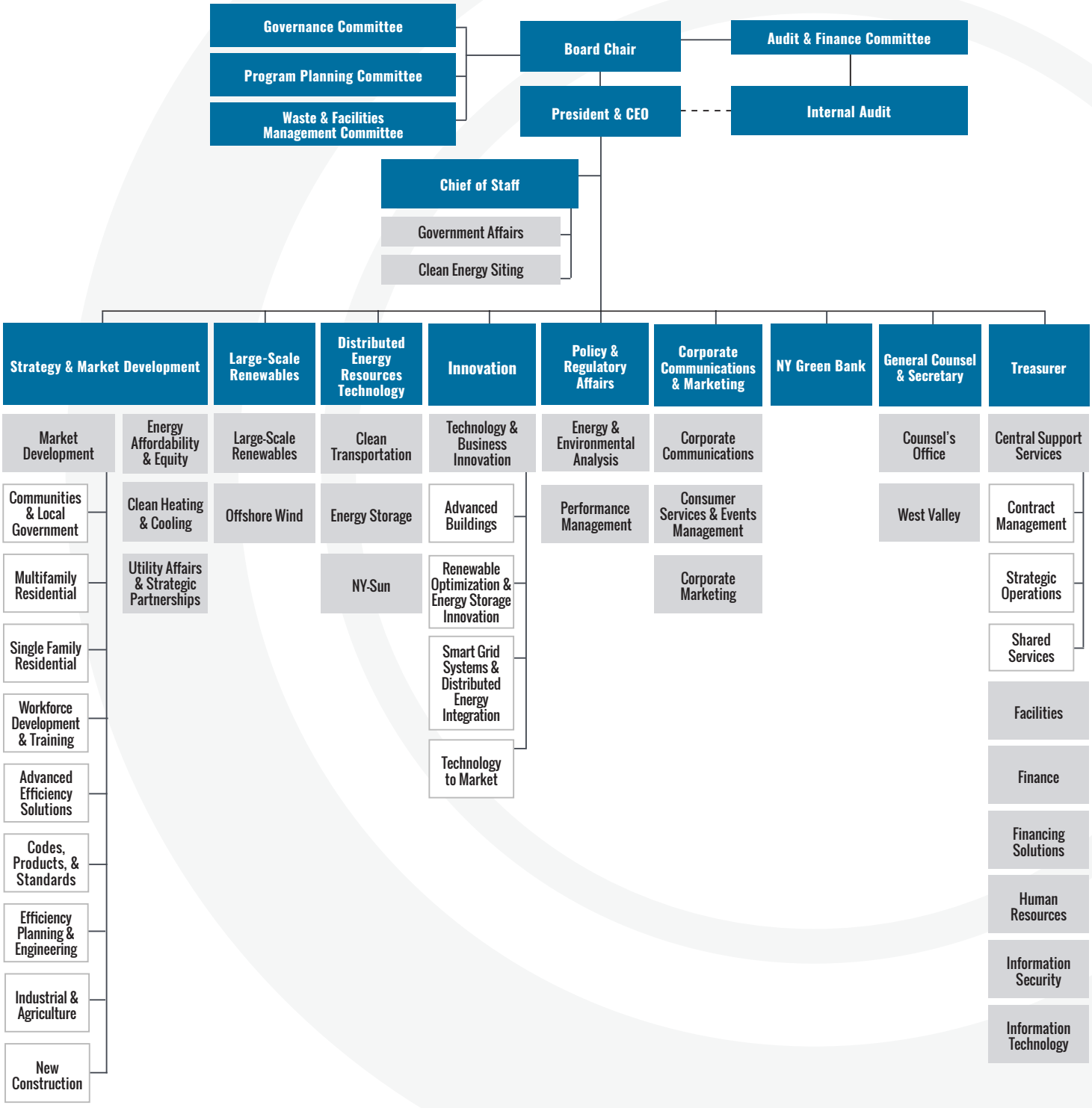

81.8%
Clean Energy Standard
$10,416
ANTICIPATED THREE-YEAR COMMITMENTS ($M) 2021–2024
.4%
Energy Storage
$45 M
2.9%
NY-Sun
$373 M
5.3%
NY Green Bank
$675 M
1.2%
Innovation and Research
$148 M
8.4%
Market Development
$1,070 M

Appendix

NYSERDA'S STRUCTURE

NYSERDA is a public benefit corporation created in 1975 under Article 8, Title 9 of the State Public Authorities Law.

NYSERDA is governed by a board consisting of 13 members, including the commissioner of the Department of Transportation, the commissioner of the New York State Department of Environmental Conservation, the chair of the New York State Public Service Commission, and the president and CEO of the New York Power Authority, who all serve ex officio. The remaining nine members are appointed by the Governor with the advice and consent of the State Senate and include, as required by statute, an engineer or research scientist, an economist, an environmentalist, a consumer advocate, an officer of a gas utility, an officer of an electric utility, and three at-large members. The board chair is designated by the Governor.


Governance Committee
Program Planning Committee
Waste & Facilities Management Committee
Board Chair
Audit & Finance Committee
President & CEO
Internal Audit
Chief of Staff
Government Affairs
Clean Energy Siting
Strategy & Market Development
Large-Scale Renewables
Distributed Energy Resources Technology
Innovation
Policy & Regulatory Affairs
Corporate Communications & Marketing
NY Green Bank
General Counsel & Secretary
Treasurer
Market Development
Energy Affordability & Equity
Large-Scale Renewables
Clean Transportation
Technology & Business Innovation
Energy & Environmental Analysis
Corporate Communications
Counsel's Office
Central Support Services
Communities & Local Government
Clean Heating & Cooling
Offshore Wind
Energy Storage
Advanced Buildings
Performance Management
Consumer Services & Events Management
West Valley
Contract Management
Multifamily Residential
Utility Affairs & Strategic Partnerships
NY-Sun
Renewable Optimization & Energy Storage Innovation
Corporate Marketing
Strategic Operations
Single Family Residential
Smart Grid Systems & Distributed Energy Integration
Shared Services
Workforce Development & Training
Technology to Market
Facilities
Advanced Efficiency Solutions
Finance
Codes, Products, & Standards
Financing Solutions
Efficiency Planning & Engineering
Human Resources
Industrial & Agriculture
Information Security
New Construction
Information Technology

NYSERDA BOARD MEMBERS

Richard L. Kauffman
NYSERDA Chair

Sherburne B. Abbott
Vice President for Sustainability Initiatives and
University Professor of Sustainability Science and Policy, Syracuse University

Charles Bell
Programs Director, Consumers Union

Kenneth D. Daly
President, St. Thomas Aquinas College

Kate Fish
Executive Director, Adirondack North Country Association

Jay L. Koh
Managing Director and Founder, Lightsmith Group

Mark A. Willis
Senior Policy Fellow, New York University, Furman Center

Gil Quiniones
President and CEO, New York Power Authority

John B. Rhodes
Chair, New York State Public Service Commission

Basil Seggos
Commissioner, New York State Department of Environmental Conservation

Marie Therese Dominguez
Commissioner, New York State Department of Transportation

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State of New York
Andrew M. Cuomo, Governor

New York State Energy Research and Development Authority
Richard L. Kauffman, Chair | Doreen M. Harris, Acting President and CEO

Resolution No. ____

RESOLVED, that the outlook for the Authority's energy, economic environmental program priorities and strategic vision entitled *Toward a Clean Energy Future: A Strategic Outlook 2021-2024*, submitted to the Members for consideration at this meeting with such non-substantive, editorial changes and supplementary schedules as the President, in her discretion, may deem necessary or appropriate, is recommended to be adopted and approved by the Board as the Authority's updated Strategic Outlook; and

BE IT FURTHER RESOLOVED, that it is recommended that the Members of the Authority do hereby approve the Authority's Mission Statement as presented at this February 2, 2021 meeting.

New York's Regional Greenhouse Gas Initiative Operating Plan Amendment for 2021

Background

In New York, responsibility for implementing the Regional Greenhouse Gas Initiative (RGGI) is shared by the Department of Environmental Conservation (DEC) and the New York State Energy Research and Development Authority (NYSERDA). DEC and NYSERDA program responsibilities are contained in coordinated regulations:

- DEC established New York's CO2 Budget Trading Program and the State's share of the total regional cap through a rule (6 NYCRR Part 242) and revisions to an existing rule (6 NYCRR Part 200, General Provisions). Part 242 establishes the cap-and-trade provisions, as well as program compliance responsibilities and other program aspects.
- NYSERDA set up the CO2 Allowance Auction Program through regulations (21 NYCRR Part 507). Part 507 establishes administrative procedures for the auction process and provides that proceeds from the sale of the allowances will fund projects and programs for "energy efficiency, renewable or non-carbon emitting technologies, and innovative carbon emissions abatement technologies with significant carbon reduction potential, and for reasonable administrative costs incurred by the Authority."

The NYSERDA regulations include a provision to annually convene a group of stakeholders representing a broad array of energy and environmental interests. This group advises NYSERDA regarding strategies to best utilize RGGI funds. NYSERDA's RGGI Operating Plan is reviewed and revised on an annual basis. NYSERDA holds an open meeting of the stakeholder group each year, inviting input on how to achieve greater scale of implementation, advance activities that realize benefits in disadvantaged communities, expand private investments and partnerships, and address barriers to program success

The Draft 2020 Operating Plan Amendment was presented to stakeholders for comment in December 2019 and was approved by NYSERDA's Board in January 2020. The 2020 Operating Plan was then compiled based on the NYSERDA Board approval. Subsequently, certain adjustments were made to certain program funding allocations originally approved in the January 2020 Plan. Appendix 1 provides an analysis of the revenues and program funding allocations planned for the fiscal years ending March 31, 2020 as compared to actual/projected results.

This document represents the 2021 Operating Plan Amendment and provides program descriptions and funding levels for the April 2021-March 2024 timeframe.

Review of Programs and Budgets for the 2021 Operating Plan

New York State invests RGGI proceeds to support comprehensive strategies that best achieve the RGGI greenhouse gas emissions reduction goals, through energy efficiency, renewable energy, and carbon abatement strategies, pursuant to 21 NYCRR Part 507. The programs in the portfolio of initiatives are designed to support the pursuit of the State's greenhouse gas emissions reduction goals by:

- Deploying commercially available energy efficiency and renewable energy technologies;
- Building the State's capacity for long-term carbon reduction;
- Empowering New York communities to reduce carbon pollution, and transition to cleaner energy;
- Stimulating entrepreneurship and growth of clean energy and carbon abatement companies in New York; and

- Creating innovative financing to increase adoption of clean energy and carbon abatement in the State.

The initiatives described below represent program activity proposed for the 2021 Operating Plan. The 2021 Operating Plan portfolio builds on the 2020 portfolio, with an increasing focus on disadvantaged communities. The funding level for each program previously approved and the amounts planned for FY21-22 through FY23-24 are reflected in Table 1 below.

RGGI programs have and will continue, alongside other state programs, to contribute to economy-wide greenhouse gas emissions reductions and provide benefits to New York's historically overburdened and underserved communities. NYSERDA's CO_2 Allowance Auction Program regulations reflect the provision of the Climate Leadership and Community Protection Act "that 40%, and no less than 35%, of the overall benefits from the investment of the [CO_2 Allowance Auctions] proceeds" will be realized in disadvantaged communities. Appendix 2 of this Operating Plan amendment provides an indication of how RGGI program commitments through 2019 are anticipated to result in benefits for disadvantaged communities based on an interim definition of disadvantaged communities, as the Climate Justice Working Group continues its work to arrive at a long-term definition. Appendix 2 also provides an estimate of how RGGI commitments post-2019 will benefit disadvantaged communities. NYSERDA's annual budget process will examine the allocation of projected funds expected to advance this goal. NYSERDA estimates that 39% of post-2019 commitments are expected to provide benefits to disadvantaged communities, an increase from the estimate of 23% of pre-2020 portfolio commitments.

The funding allocation values represented in Table 1 provide an estimate of when funds will be assigned to each program. These figures do not reflect when funds will be spent or when contracts will be signed. The table also reflects cumulative funding allocations through FY19-20, original and revised funding allocations for FY20-21, and forecasted allocations for FY21-22 through FY23-24.

Multi-year programs that have remaining funds available for program expenditures but are not receiving additional funding under this Plan Amendment are not described below. Those programs will continue with the planned expenditure of their previously allocated funding as outlined in the 2020 RGGI Operating Plan.

For all RGGI-funded activities, NYSERDA will provide timely progress reports utilizing best practice protocols for project tracking and evaluation.

Program Descriptions

NYPA NY-Sun Customer Incentives

The NY-Sun and NYSERDA Solar Electric initiatives are driving the growth of the solar industry and making solar more affordable for all New Yorkers. The program provides declining incentives for the installation of systems and works to reduce solar project costs. RGGI funding will enable customers of the New York Power Authority (NYPA) and municipal power companies to participate in NY-Sun. The Operating Plan Amendment proposes to provide $6 million in funding during FY20-21, $3 million during FY21-22, and $1 million during FY22-23.

ChargeNY

ChargeNY has been pursuing three strategies to promote plug-in electric vehicle (PEV) adoption by consumers across New York. First, NYSERDA implemented the Drive Clean rebate program for PEVs in March 2017, accelerating

purchases of PEVs by reducing higher upfront costs. Second, NYSERDA will continue to invest in marketing and awareness-building activities to build interest in PEVs among the general public. A focus on building greater public knowledge and awareness of the capabilities of PEVs is essential to spur more private investment in PEV purchases and PEV charging stations. This work may also include other market development activities, such as policy and business model development studies that support new ways for critical stakeholders, such as utilities, local governments, and car dealers, to get involved in the PEV market. Third, NYSERDA will also support the installation of PEV charging stations at workplaces, municipal lots, and multi-family buildings – location types that have been seen to be effective drivers for PEV adoption based on usage data reported from previous installations. Regions of the State that have seen faster PEV adoption will be identified for additional charging station support, which ensures investments in infrastructure support areas with the greatest potential for additional PEV drivers. ChargeNY will also initiate the deployment of a network of direct current (DC) fast charging stations across the State. This Operating Plan amendment proposes to provide additional funding of $21.5 million in FY21-22, $16.3 million in FY22-23, and $15 million in FY23-24 to support continuation of current and additional ChargeNY strategies to ensure effective engagement with the market to build scale and ensure a focus on a just transition into future years.

LIPA Energy Efficiency and Renewable Energy

These funds enhance the portfolio of clean energy activities for energy consumers on Long Island, as approved by the Long Island Power Authority (LIPA) and administered by PSEG-Long Island. Funding and reporting requirements are established through a Memorandum of Understanding between NYSERDA and LIPA, which ensure that RGGI funds meet the requirements of the RGGI regulations that funds are used to support energy efficiency and clean energy activities, as well as advancing the goal of benefits of investments in disadvantaged communities. For this 3-year budget proposal, this operating plan amendment proposes to repurpose $40 million in previously approved funds for energy storage projects on Long Island. LIPA has agreed to procure 200 megawatts of bulk storage or non-wires alternatives storage, allowing funds originally allocated for storage incentives on Long Island to be repurposed to support continuation of funding for LIPA's energy efficiency program. NYSERDA is working with LIPA to maintain the level of market activity designed with the previous RGGI allocations. With this funding re-allocation, as well as additional funds, the Operating Plan is proposed to maintain support for LIPA-implemented energy efficiency and clean energy activity in the amount of $20 million each year for the calendar years 2021-2023. The LIPA Board of Trustees approves an annual energy efficiency program plan, which details the activities that these funds will support.

Assisted Home Performance with ENERGY STAR

To maintain statewide access to fuel neutral, whole buildings energy efficiency opportunities, these funds will maintain support for moderate-income customers of municipal utilities (which cannot be funded through the Clean Energy Fund) to access Assisted Home Performance with ENERGY STAR as a comprehensive energy efficiency services program for existing one-to-four family homes. RGGI funding will allow the program to target customers using oil and propane for space and domestic water heating purposes. The funds will offset part of the cost for consumers to replace inefficient oil and propane heating equipment and other measures that have a direct impact on reducing oil and propane consumption (e.g., insulation, air sealing). The annual contribution proposed for FY21-22 through FY23-24 is based on current annual incentives offered for municipal utility customers.

EmPower

Similar to Assisted Home Performance with ENERGY STAR, funds to support EmPower New York, which provides energy efficiency services for low-income New Yorkers, are targeted to customers of municipal utilities heating with oil, propane, kerosene, wood or coal, but may also be applied to homes heating with natural gas, and which are also targeted to customers of municipal utilities. Measures supported by EmPower include insulation, air sealing, and heating system upgrades. The annual contribution proposed for FY21-22 through FY23-24 is based on current annual incentives offered for municipal utility customers.

Pilot Projects with Municipal Utilities

The Amendment proposes an allocation of $1M annually over the three-year plan to develop partnerships with municipal utilities and/or rural cooperatives for innovative approaches to energy efficiency or clean energy investments that will both advance the realization of the CLCPA renewable and zero-emission electricity system goals for these systems, as well as provide insights for technology applications or clean energy market approaches that can be applied in service territories across the State. NYSERDA will work with the municipal utilities as well as other state energy agencies and authorities on valuable projects, which may include activities for low- and moderate-income energy efficiency, renewable energy integration into existing systems, battery storage applications, and other demonstrations that may help leverage funding from third-party sources and which will advance deep decarbonization for the utility systems and the state generally.

Disadvantaged Communities Schools and Buildings

The Amendment proposes an allocation of $37.4M over the three-year plan to invest in low-carbon solutions for schools, public housing, and other buildings located within and serving disadvantaged communities. This work would build upon NYSERDA preK-12 program to provide both professional resources needed for planning and funding of demonstrations to create a model for decarbonization of schools. In addition to providing financial support for green/clean schools, the initiative would support curriculum development, workforce training, and assessments of improvements of indoor air quality associated with the building upgrades – providing a broad range of benefits to families and communities. This initiative would also fund pilots of electrification and other low-carbon solutions in affordable and public housing to drive future capital investment in proven decarbonization solutions.

Clean Energy Communities

An allocation of $3 million annually for FY21-22 through FY23-24 will be used to support the Clean Energy Communities Leadership Round, an update to the original Clean Energy Communities program. The Leadership Round is designed to augment the overall initiative by seeking community engagement in activities that are more impactful, innovative, and sustainable over time, and provide a model of other communities in the program or for communities entering the program. In the Leadership Round, communities continue to work with regional coordinators to prioritize and implement high-impact actions, such as adoption of stretch building codes and community choice aggregation, as well as earn new forms of recognition. Allocations from this program will be applied to drive activities across the state, including for those municipalities that do not pay into the system benefits charge.

Community and Stakeholder Engagement

NYSERDA will seek to building local capacity and improve stakeholder engagement through this Amendment, which proposes $1 million in annual funding from FY21-22 through FY23-24 to increase engagement of residents and communities, support the participation of community-based and advocacy organizations in stakeholder meetings, and supporting local projects. In 2021, NYSERDA will launch a network of Community Energy Hubs, which will build on the success of the Community Energy Engagement Program, wherein community and locally-based organizations across New York State provided outreach and education services to help low-income residents and small businesses make informed energy choices and access incentives and other resources to implement clean energy projects. The Hubs will be designed to enhance community-level engagement and capacity building by supporting clean energy concierge services. These services will be provided to residents, small businesses, nonprofits and multifamily building owners in disadvantaged and underserved communities to increase awareness and adoption of clean energy programs and solutions, with the focus of creating a more inclusive clean energy economy.

In addition, NYSERDA will help to increase the capacity of organizations to advance clean energy projects at the local level. NYSERDA will advance a pilot effort to increase the potential for community-based organizations to plan for and develop community-scale clean energy projects that can benefit disadvantaged communities with capacity development grants. Funds allocated in this operating plan will allow for statewide activities alongside efforts supported through the Clean Energy Fund.

NYSERDA will also seek to improve the ability for community-based organizations to actively participate in stakeholder engagement and process. Many local organizations often lack the resources and capacity to effectively engage on policy and initiative development, often excluding perspectives from their communities and constituents from the planning process. To ensure that community-based organizations have the resources to engage in stakeholder meetings and public comment processes, NYSERDA will allocate resources to provide stipends to offset the cost of participation as part of a pilot initiative to identify solutions for improving and increasing stakeholder engagement.

Renewable/Net Zero Energy Demonstrations

The statewide Net Zero Energy for Economic Development initiative was launched in 2019. The initiative is supporting new construction or renovation work on existing buildings that is designed to achieve net zero energy or net zero carbon performance. Eligible building types include commercial, industrial, institutional and mixed-use facilities, and project awards are also based on the ability of the project to advance the goals of the local Regional Economic Development Council Strategic Plan or State Priority Issue Area. The RGGI funds are designed to support at least one project in Long Island and is offered alongside support from the Clean Energy Fund, available for projects located in the rest of the State. This Operating Plan Amendment assumes a continued $1 million contribution in each of the three years of the 2021 Operating Plan.

Priority Population Workforce Development

The proposed allocation of $11 million over the three-year plan to expand access to NYSERDA's On-the-Job Training program, which provides wage subsidies to businesses that hire new workers, high efficiency HVAC and electrification career pathways training to prepare new workers for jobs, and support new initiatives to test the Pay for Success model for workforce training-outcomes, and fund fellowship positions for organizations serving disadvantaged communities. All activities will have a focus on priority populations and disadvantaged communities.

Clean Energy Fund

Through the Clean Energy Fund (CEF) and its portfolios, NYSERDA is advancing the goals of the Climate Leadership and Community Protection Act (CLCPA). As approved by the Commission, the CEF delivers on its primary goals to reduce greenhouse gas emissions, increase renewable energy generation, increase energy efficiency, and attract greater private investment in clean energy, with investment portfolios that are designed to achieve scale in clean energy markets. These key CEF objectives dovetail with the RGGI investment parameters, creating a unique opportunity to leverage CEF and RGGI funds to help achieve New York's broader CLCPA and clean energy objectives. In designing the CEF, NYSERDA originally planned to dedicate $250 million in RGGI funds to the CEF portfolio over 10 years, supporting the $3.42 billion Market Development and Innovation and Research activities. In designing the CEF, NYSERDA originally planned to dedicate $250 million in RGGI funds to the CEF portfolio over 10 years, supporting the $3.42 billion Market Development and Innovation and Research activities.

The 2020 Operating Plan advanced a plan to restore funds supporting the CEF portfolio, while also realizing annual balanced budgets. In keeping with this plan, while accounting for new revenue and commitment projections, NYSERDA will allocate to the CEF $33.64 million in FY21-22 and $24.11 million in FY22-23, bringing the aggregate amount committed to the CEF in line with the original schedule to dedicate $25 million annually, and allocating $25 million for FY23-24. Should revenues continue according to current projections, continued contributions to the CEF in future years (through 2025) will be maintained at $25 million per year.

Green Jobs-Green New York

The Green Jobs-Green New York (GJGNY) Program, created under the Green Jobs-Green New York Act of 2009, provides New Yorkers with access to energy assessments, installation services, low interest financing, and pathways to training for various green-collar careers. The GJGNY program was originally funded with $112 million of RGGI funds, of which $26 million was allocated to a residential revolving loan fund to provide low interest financing for residential energy efficiency improvements, residential solar photovoltaic (PV) systems (effective April 2014), solar thermal systems, and high efficiency pellet stove heating systems through NYSERDA's Renewable Heat NY program. Interest rate changes reviewed with the GJGNY Advisory Council and effectuated in September 2016 are resulting in a reduced level of RGGI funds required to support the financing and refinancing of GJGNY loans and ensuring that RGGI funds are directed towards providing GJGNY loans to low-to-moderate income consumers and consumers who may lack access to traditional financing sources.

In June of 2020, NYSERDA launched a 0% financing loan initiative available for up to 12 months or until $20 million in loans were approved. Demand far exceeded estimates after only 15 days. Most of these loans will be issued in FY20-21 and funded from the revolving loan fund (resulting in an increase in the funding allocation required for the program for FY20-21), with bond proceeds reimbursing funding beginning in FY21-22. The Plan includes funding totaling approximately $48 million from FY21-22 through FY23-24 (an average of approximately $16 million per year) for continuation of GJGNY residential financing, including making 3.49% 15-year unsecured financing available to consumers living in federal census block groups where more than 50 percent of households have household income less than 120% of area median income (and allowing consumers living outside of these communities to qualify for this rate if they meet this income threshold), and also offering access to financing for consumers who may not qualify for traditional unsecured loan underwriting criteria and meet NYSERDA's "Tier 2" underwriting criteria.

Transfer to State – Clean Energy Tax Credits

The New York State Budget for FY20-21 directed NYSERDA to transfer $23 million in RGGI funds to the State General Fund to support clean energy tax credits. For the purpose of developing this proposed Operating Plan Amendment, NYSERDA assumes that the annual State Budget for FY21-22 through FY23-24 will include similar directives and has therefore allocated $69 million in funding for such transfers for FY21-22 through FY23-24.

Transfer to State – Environmental Protection Fund

The New York State Budget for FY20-2021 directed NYSERDA to transfer $5 million in RGGI funds to the Environmental Protection Fund (EPF). This operating plan assumes annual funding to support EPF programs that advance New York's leadership in reducing greenhouse gas emissions such as Climate Smart Communities, Smart Growth, and Greenhouse Gas Management.

Anticipated Future Funding Allocations

The projected revenues and program funding allocations are presented below in Table 1. Additionally, the table presents program administration and evaluation costs, ongoing RGGI, Inc. costs, State Cost Recovery Fees, and other factors. The table below presents an increase in program administration funding, and which reflect the projected increased need to support additional activities anticipated due to new program activity. As noted, program funding allocations are equal to projected revenues on an annual basis.

Funding Assumptions

The Operating Plan for FY20-21 through FY22-23 assumes future auction revenues of $6.82 based on the results of the most recent RGGI auction in September 2020. NYSERDA proposes to base the future revenue prices on the September auction price, rather than the December price ($7.41), to be conservative and in the event the December auction price is not sustained over the planning period (considerably higher than the Emissions Containment Reserve price)

Table 1: Revenues and Program Funding Allocations

Category	Program	Cumulative FY19-20	FY20-21 Original Plan	FY20-21 Revised	FY21-22	FY22-23	FY23-24	Total
Proceeds	Number of allowances	392,188,425	20,087,261	20,308,920	21,874,920	20,993,401	19,447,553	474,813,218
	Allowance price	$3.33	$5.20	$6.70	$6.82	$6.82	$6.82	$3.93
	RGGI Auction Proceeds	1,306,349,512	104,453,755	136,141,216	149,186,951	143,174,997	132,632,308	1,867,484,984
	Interest Earnings	17,921,696	2,195,000	199,000	101,000	73,000	52,000	18,346,696
	Total Revenues	**1,324,271,208**	**106,648,755**	**136,340,216**	**149,287,951**	**143,247,997**	**132,684,308**	**1,885,831,680**
Renewable Energy	NY SUN NYPA Customer Incentives	20,000,000	-	6,000,000	3,000,000	1,000,000		30,000,000
	NY SUN Community Solar/K-solar	7,500,000	-	-	-	-		7,500,000
	NY SUN Long Island incentives	55,000,000	-	-	-	-		55,000,000
	Renewable Heat NY	10,300,083	-	-	-	-		10,300,083
	Advanced Renewable Energy	2,837,698	-	-	-	-		2,837,698
	NYS Generation Attributes Tracking System	789,933	-	-	-	-		789,933
	NYSERDA PV incentives	5,319,821	-	-	-	-		5,319,821
Energy Efficiency	Clean Energy Workforce Opportunity Program	15,000,000	-	-	-	-		15,000,000
	LIPA Efficiency and RE	204,600,000	25,000,000	25,000,000	20,000,000	20,000,000	20,000,000	289,600,000
	Energy Storage (LIPA territory)	52,926,434		(40,000,000)				12,926,434
	EmPower NY	27,955,148	200,000	300,000	300,000	300,000	300,000	29,155,148
	Assisted Home Performance with Energy Star	25,520,757	300,000	200,000	200,000	200,000	200,000	26,320,757
	Pilot Projects with Municipal Utilities				1,000,000	1,000,000	1,000,000	3,000,000
	Disadvantaged Communities Schools/Buildings				13,000,000	8,600,000	15,800,000	37,400,000
	Multifamily Performance Program	15,162,316	-	(115,633)	-	-		15,046,683
	Multifamily Carbon Emissions Reduction	5,833,019	-	-	-	-		5,833,019
	Solar Thermal incentive	4,342,677	-	(115,730)	-	-		4,226,947
	Municipal Water/Wastewater	1,245,242	-	-	-	-		1,245,242
	Green Residential Buildings	2,744,601	-	-	-	-		2,744,601
Innovative GHG Abatement Strategies	Southern Tier Competition (76 West)	11,000,000	-	-	-	-		11,000,000
	Brookhaven National Lab- ION Collidor	25,000,000						25,000,000
	Electric Vehicle/Charge NY	23,500,000	-	-	21,500,000	16,300,000	15,000,000	76,300,000
	Advanced Buildings & Industrial Innovations	14,616,038	-	(1,308,384)	-	-		13,307,654
	Climate Research & Analysis	8,729,380	-	(84)	-	-		8,729,296
	Competitive GHG Reduction Pilot	1,013,533	-	(40,883)	-	-		972,650
	Clean Energy Business Development	5,809,987	-	-	-	-		5,809,987
	Transportation Research	3,819,311	-	-	-	-		3,819,311
	PV Manufacturing consortium	8,500,000	-	(20,000)	-	-		8,480,000
	Carbon Sequestration	1,000,000	-	-	-	-		1,000,000
Community Clean Energy	Cleaner Greener Communities	94,261,895	-	-				94,261,895
	Clean Energy Communities	4,273,120			3,000,000	3,000,000	3,000,000	13,273,120
	Climate Smart Communities	7,674,999						7,674,999
	Community Energy Engagement	1,400,000			1,000,000	1,000,000	1,000,000	4,400,000
	Economic Development Growth Extension	5,843,047		-				5,843,047
	Energy to Lead	3,000,000	-		-			3,000,000
	Renewable/Net-Zero Energy Demonstrations	6,000,000	1,000,000	-	1,000,000	1,000,000	1,000,000	9,000,000
	Priority Population Workforce Development				2,000,000	2,000,000	7,000,000	11,000,000
	Regional Economic Development & GHG Reduction	10,289,945	-	(43,502)	-	-		10,246,443
CEF	Transfer to(from) Clean Energy Fund	73,790,932	16,477,887	52,338,026	33,789,264	21,331,778	25,000,000	206,250,000
Directed	NYS Environmental Tax Credits	133,000,000	23,000,000	23,000,000	23,000,000	23,000,000	23,000,000	225,000,000
	NYS Environmental Protection Fund	-		5,000,000	5,000,000	5,000,000	5,000,000	20,000,000
	Electric Generation Facility Cessation Mitigation/ Just Transition	30,000,000	20,000,000	20,000,000	-	-		50,000,000
	Green Jobs-Green NY- Original Legislation	112,000,000	-	-	-	-		112,000,000
	Green Jobs-Green NY- Additional Funding	105,025,275	12,000,000	37,700,000	12,000,000	18,500,000	17,518,656	190,743,931
	Transfer to Clean Energy Standard	719,424						719,424
	NYS Budget Transfer	90,000,000	-	-	-	-		90,000,000
Administration and Other Non-Program Costs	Program Administration	33,096,359	6,500,000	6,500,000	7,500,000	7,500,000	7,500,000	62,096,359
	Program Evaluation	9,155,429						9,155,429
	Commensurate Benefit/Litigation reserve	21,900,366	-	-	-	-	-	21,900,366
	RGGI Inc Startup Costs	1,598,204	-	-	-	-	-	1,598,204
	RGGI Inc pro-rata costs	8,358,667	1,000,000	825,000	825,000	825,000	825,000	11,658,667
	State Cost Recovery	12,817,568	1,170,868	1,121,406	1,173,687	1,101,203	1,130,668	17,344,532
	Total Funding Allocations	**1,324,271,208**	**106,648,755**	**136,340,216**	**149,287,951**	**131,657,981**	**144,274,324**	**1,885,831,680**
	Surplus/(Shortfall)	-	-	-	-	11,590,016	(11,590,016)	-
	Cumulative Surplus(Shortfall)	**-**	**-**	**-**	**-**	**11,590,016**	**0**	**-**

Note: *Totals may not sum exactly due to rounding. Fiscal years begin on April 1st and end on March 31st.

Table 2: RGGI Cash Flow

Category		Cumulative 3/31/20	FY20-21	FY21-22	FY22-23	FY23-24	Thereafter
Proceeds	Number of allowances	392,188,425	20,308,920	21,874,920	20,993,401	19,447,553	
	Allowance price	$3.33	$6.70	$6.82	$6.82	$6.82	
	RGGI Auction Proceeds	1,306,349,512	136,141,216	149,186,951	143,174,997	132,632,308	
	Interest Earnings	17,921,697	199,000	101,000	73,000	52,000	
	Total Revenues	**1,324,271,208**	**136,340,216**	**149,287,951**	**143,247,997**	**132,684,308**	
Renewable Energy	NY SUN NYPA Customer Incentives	3,572,351	100,000	3,000,000	8,000,000	13,000,000	2,327,649
	NY SUN Community Solar/K-solar	1,005,741	1,082,377	1,082,377	1,082,377	1,082,377	2,164,751
	NY SUN Long Island incentives	46,784,073	2,745,754	2,735,086	2,735,087	-	-
	Renewable Heat NY	9,089,270	670,222	540,591	-	-	-
	Advanced Renewable Energy	2,837,698	-	-	-	-	-
	NYS Generation Attributes Tracking System	185,973	201,320	201,320	201,320	-	-
	NYSERDA PV incentives	5,288,571	31,250	-	-	-	-
Energy Efficiency	Clean Energy Workforce Opportunity Program	15,000,000	-	-	-	-	-
	LIPA Efficiency and RE	204,600,000	25,000,000	20,000,000	20,000,000	20,000,000	-
	Energy Storage (LIPA territory)	108,500	2,000,000	10,000,000	817,934	-	-
	EmPower NY	27,814,813	300,000	300,000	300,000	440,335	-
	Assisted Home Performance with Energy Star	25,092,507	200,000	200,000	200,000	628,250	-
	Pilot Projects with Municipal Utilities			1,000,000	1,000,000	1,000,000	-
	Disadvantaged Communities Schools/Buildings			1,300,000	12,745,000	8,109,000	
	Multifamily Performance Program	14,583,931	300,000	162,752	-	-	-
	Multifamily Carbon Emissions Reduction	5,833,019	-	-	-	-	-
	Solar Thermal incentive	4,226,947	-	-	-	-	-
	Municipal Water/Wastewater	1,245,242	-	-	-	-	-
	Green Residential Buildings	2,744,601	-	-	-	-	-
Innovative GHG Abatement Strategies	Southern Tier Competition (76 West)	9,106,257	1,500,000	393,743	-	-	-
	Brookhaven National Lab- ION Collidor	25,000,000	-	-	-	-	-
	Electric Vehicle/Charge NY	11,421,245	22,000,000	22,878,755	16,300,000	3,700,000	-
	Advanced Buildings & Industrial Innovations	10,829,772	1,962,189	515,693	-	-	-
	Climate Research & Analysis	8,289,128	440,168	-	-	-	-
	Competitive GHG Reduction Pilot	972,650	-	-	-	-	-
	Clean Energy Business Development	5,596,227	213,760	-	-	-	-
	Transportation Research	3,766,908	52,403	-	-	-	-
	PV Manufacturing consortium	8,480,000	-	-	-	-	-
	Carbon Sequestration	1,000,000	-	-	-	-	-
Community Clean Energy	Cleaner Greener Communities	69,024,957	12,196,712	8,198,634	4,263,290	578,302	-
	Clean Energy Communities	984,962	332,878	3,332,878	3,899,545	3,899,545	823,313
	Climate Smart Communities	4,983,020	538,395	538,395	538,395	538,395	538,399
	Community Energy Engagement	324,092	671,876	1,404,032	1,000,000	1,000,000	-
	Economic Development Growth Extension	5,562,723	-	280,324	-	-	-
	Energy to Lead	1,796,977	300,000	300,000	300,000	303,023	-
	Renewable/Net-Zero Energy Demonstrations	3,000,000	4,000,000	-	1,000,000	1,000,000	-
	Priority Population Workforce Development			2,000,000	2,000,000	7,000,000	
	Regional Economic Development & GHG Reduction	9,763,011	483,432	-	-	-	-
Clean Energy Fund	Transfer to Clean Energy Fund	73,790,932	52,338,026	33,789,264	21,331,778	25,000,000	-
	Transfer to NY Green Bank	-	-	-	-	-	-
Directed	NYS Environmental Tax Credits	133,000,000	23,000,000	23,000,000	23,000,000	23,000,000	-
	NYS Environmental Protection Fund	-	5,000,000	5,000,000	5,000,000	5,000,000	-
	Electric Generation Facility Cessation Mitigation	30,000,000	16,666,667	1,666,667	1,666,666	-	-
	Green Jobs-Green NY- Original Legislation	112,000,000	-	-	-	-	-
	Green Jobs-Green NY- Additional Funding	105,025,275	37,700,000	12,000,000	18,500,000	17,518,656	-
	Transfer to Clean Energy Standard	719,424			-	-	-
	NYS Budget Transfer	90,000,000	-	-	-	-	-
	NYS Temporary Budget Transfer	5,679,455	(3,786,304)	(1,262,101)	(631,050)	-	-
Administration and Other Non-Program Costs	Program Administration	33,076,133	6,520,226	7,500,000	7,500,000	7,500,000	-
	Program Evaluation	5,967,402	1,594,014	1,594,013	-	-	-
	Commensurate Benefit/Litigation reserve	21,900,366	-	-	-	-	-
	RGGI Inc Startup Costs	1,598,204	-	-	-	-	-
	RGGI Inc pro-rata costs	8,358,667	825,000	825,000	825,000	825,000	-
	State Cost Recovery	12,756,080.00	1,121,406	1,173,687	1,101,203	917,855	274,301
	Total Expenses	**1,183,787,104**	**218,301,771**	**165,651,110**	**154,676,545**	**142,040,738**	**318,091,696**
	Cash Increase/(Decrease)	140,484,104	(81,961,555)	(16,363,159)	(11,428,548)	(9,356,430)	(42,159,391)
	Cash Balance	**140,484,104**	**58,522,550**	**42,159,391**	**30,730,843**	**21,374,413**	**-**

Note: *Totals may not sum exactly due to rounding. Fiscal years begin on April 1st and end on March 31st

Appendix 1
January 2020 Operating Plan Revenues and Program Funding Allocations Compared to Actuals/Projections

Category	Program	FY19-20 Budget (rev Jun2019)	FY19-20 Actual
Proceeds	Number of allowances	20,298,765	20,298,765
	Allowance price	$5.62	$5.52
	RGGI Auction Proceeds	114,079,059	112,023,819
	Interest Earnings	2,779,000	2,756,894
	Total Revenues	**116,858,059**	**114,780,713**
Renewable Energy	NY SUN NYPA Customer Incentives	-	-
	NY SUN Community Solar/K-solar	-	-
	NY SUN Long Island incentives	-	-
	Renewable Heat NY	-	-
	Advanced Renewable Energy	-	-
	NYS Generation Attributes Tracking System	-	-
	NYSERDA PV incentives	-	-
Energy Efficiency	Clean Energy Workforce Opportunity Program	-	-
	LIPA Efficiency and RE	25,000,000	25,000,000
	Energy Storage (LIPA territory)	52,926,434	52,926,434
	EmPower NY	200,000	200,000
	Assisted Home Performance with Energy Star	300,000	300,000
	Pilot Projects with Municipal Utilities		
	Disadvantaged Communities Schools/Buildings		
	Multifamily Performance Program	(51,174)	(51,174)
	Multifamily Carbon Emissions Reduction	(2)	(2)
	Solar Thermal incentive	-	-
	Municipal Water/Wastewater	-	-
	Green Residential Buildings	-	-
Innovative GHG Abatement Strategies	Southern Tier Competition (76 West)		
	Brookhaven National Lab- ION Collidor		
	Electric Vehicle/Charge NY	5,000,000	-
	Advanced Buildings & Industrial Innovations	(198)	(198)
	Climate Research & Analysis	(6,533)	(6,533)
	Competitive GHG Reduction Pilot	-	-
	Clean Energy Business Development	-	-
	Transportation Research	(15,050)	(15,050)
	PV Manufacturing consortium	-	-
	Carbon Sequestration	-	-
Community Clean Energy	Cleaner Greener Communities	(1,132,660)	(4,420,042)
	Clean Energy Communities		1,700,000
	Climate Smart Communities		
	Community Energy Engagement		
	Economic Development Growth Extension		
	Energy to Lead	-	-
	Renewable/Net-Zero Energy Demonstrations	4,000,000	6,000,000
	Priority Population Workforce Development		
	Regional Economic Development & GHG Reduction	-	-
CEF	Transfer to(from) Clean Energy Fund	4,454,010	17,509,699
Directed	NYS Environmental Tax Credits	23,000,000	23,000,000
	NYS Environmental Protection Fund		
	Electric Generation Facility Cessation Mitigation/ Just Transition	-	-
	Green Jobs-Green NY- Original Legislation	-	-
	Green Jobs-Green NY- Additional Funding	12,400,000	10,400,000
	Transfer to Clean Energy Standard		
	NYS Budget Transfer	-	-
Administration and Other Non-Program Costs	Program Administration	2,232,436	2,232,436
	Program Evaluation		
	Commensurate Benefit/Litigation reserve	-	-
	RGGI Inc Startup Costs	-	-
	RGGI Inc pro-rata costs	829,257	441,876
	State Cost Recovery	1,035,371	877,100
	Total Funding Allocations	**77,245,457**	**83,168,112**
	Surplus/(Shortfall)	39,612,602	31,612,602
	Cumulative Surplus(Shortfall)	**8,000,000**	**-**

Appendix 2
RGGI Commitments Benefiting Disadvantaged Communities

			SUBJECT TO CLCPA						
	Category	Program	Cumulative Commitments 12/31/19	Estimated LMI/ Disadvantaged Community Benefit	%	Post-2019 Commitments	Estimated LMI/ Disadvantaged Community Benefit	%	Total
SUBJECT TO CLCPA	Renewable Energy	NY SUN NYPA Customer Incentives	9,706,046	3,397,116	35%	20,293,954	7,102,884	35%	30,000,000
		NY SUN Community Solar/K-solar	1,249,272	-	0%	6,250,728	-	0%	7,500,000
		NY SUN Long Island incentives	51,200,565	-	0%	3,799,435	-	0%	55,000,000
		Renewable Heat NY	9,634,826	-	0%	665,257	-	0%	10,300,083
		Advanced Renewable Energy	2,837,698	-	0%	-	-	0%	2,837,698
		NYS Generation Attributes Tracking System	789,933	-	0%	-	-	0%	789,933
		NYSERDA PV incentives	5,319,821	-	0%	-	-	0%	5,319,821
	Energy Efficiency	Clean Energy Workforce Opportunity Program	15,000,000	-	0%	-	-	0%	15,000,000
		LIPA Efficiency and RE	204,600,000	61,380,000	30%	85,000,000	25,500,000	30%	289,600,000
		Energy Storage	301,575	-	0%	12,624,859	-	0%	12,926,434
		EmPower NY	27,783,474	27,783,474	100%	1,371,674	1,371,674	100%	29,155,148
		Assisted Home Performance with Energy Star	25,074,497	25,074,497	100%	1,246,260	1,246,260	100%	26,320,757
		Pilot Projects with Municipal Utilities				3,000,000	1,050,000	35%	3,000,000
		Disadvantaged Communities Schools/Buildings				37,400,000	37,400,000	100%	37,400,000
		Multifamily Performance Program	15,046,683	-	0%	-	-	0%	15,046,683
		Multifamily Carbon Emissions Reduction	5,833,019	-	0%	-	-	0%	5,833,019
		Solar Thermal incentive	4,226,947	-	0%	-	-	0%	4,226,947
		Municipal Water/Wastewater	1,245,242	-	0%	-	-	0%	1,245,242
		Green Residential Buildings	2,744,601	-	0%	-	-	0%	2,744,601
	Innovative GHG Abatement Strategies	Southern Tier Competition (76 West)	10,262,850	-	0%	737,150	-	0%	11,000,000
		Brookhaven National Lab- ION Collidor	25,000,000	-	0%	-	-	0%	25,000,000
		Electric Vehicle/Charge NY	11,188,399	-	0%	65,111,601	9,766,740	15%	76,300,000
		Advanced Buildings & Industrial Innovations	13,307,654	-	0%	-	-	0%	13,307,654
		Climate Research & Analysis	8,729,296	-	0%	-	-	0%	8,729,296
		Competitive GHG Reduction Pilot	972,650	-	0%	-	-	0%	972,650
		Clean Energy Business Development	5,809,987	-	0%	-	-	0%	5,809,987
		Transportation Research	3,819,311	-	0%	-	-	0%	3,819,311
		PV Manufacturing consortium	8,480,000	-	0%	-	-	0%	8,480,000
		Carbon Sequestration	1,000,000	-	0%	-	-	0%	1,000,000
	Community Clean Energy	Cleaner Greener Communities	94,261,895	-	0%	-	-	0%	94,261,895
		Clean Energy Communities	2,086,963	-	0%	11,186,157	3,600,000	32%	13,273,120
		Climate Smart Communities	5,321,157	-	0%	2,353,842	-	0%	7,674,999
		Community Energy Engagement	675,730	-	0%	3,724,270	3,000,000	81%	4,400,000
		Economic Development Growth Extension	5,562,723	-	0%	280,324	-	0%	5,843,047
		Energy to Lead	3,000,000	-	0%	-	-	0%	3,000,000
		Renewable/Net-Zero Energy Demonstrations	3,000,000	-	0%	6,000,000	-	0%	9,000,000
		Priority Population Workforce Development				11,000,000	7,150,000	65%	11,000,000
		Regional Economic Development & GHG Reducti	10,246,443	-	0%	-	-	0%	10,246,443
	Directed	NYS Environmental Tax Credits	133,000,000	19,950,000	15%	92,000,000	13,800,000	15%	225,000,000
		NYS Environmental Protection Fund	-	-		20,000,000	7,000,000	35%	20,000,000
		Elec Generation Facility Cessation Mitigation/ Just Transition	30,000,000	30,000,000	100%	20,000,000	20,000,000	100%	50,000,000
		Green Jobs-Green NY- Original Legislation	112,000,000	39,200,000	35%	-	-	0%	112,000,000
		Green Jobs-Green NY- Additional Funding	105,025,275	36,758,846	35%	85,718,656	53,401,530	62%	190,743,931
		Transfer to Clean Energy Standard	719,424	-	0%	-	-	0%	719,424
		NYS Budget Transfer	90,000,000	-	0%	-	-	0%	90,000,000
		SUBTOTAL	**1,066,063,956**	**243,543,933**	**23%**	**489,764,167**	**191,389,088**	**39%**	**1,555,828,123**
Excluded	CEF Administration and Other Non-Program Costs	Transfer to(from) Clean Energy Fund	73,790,932			132,459,068			206,250,000
		Program Administration	31,931,071			30,165,288			62,096,359
		Program Evaluation	5,999,519			3,155,910			9,155,429
		Commensurate Benefit/Litigation reserve	21,900,366			-			21,900,366
		RGGI Inc Startup Costs	1,598,204			-			1,598,204
		RGGI Inc pro-rata costs	7,746,048			3,912,619			11,658,667
		State Cost Recovery	12,606,619			4,737,913			17,344,532
		SUBTOTAL	**155,572,759**			**174,430,798**			**330,003,557**
		TOTAL	**1,221,636,715**			**664,194,965**			**1,885,831,680**

Resolution No. ____

RESOLVED, that revisions to the "Operating Plan for Investments in New York Under the CO_2 Budget Trading Program and the CO_2 Allowance Auction Program" as presented to the Members for consideration at this February 2, 2021 meeting, with such non-substantive, editorial changes and supplementary schedules as the Acting President and Chief Executive Officer, in her discretion, may deem necessary or appropriate, are recommended for approval;

AND BE IT FURTHER RESOLVED, that the Members direct the Acting President and Chief Executive Officer to develop a revised operating plan incorporating such revisions as soon as reasonably possible.