



Fiscal Year 2022–2023

Greening New York State

12th Progress Report on State Green Procurement
and Agency Sustainability



GreenNY

Message from the Chairs

New York State is a leader in sustainable government operations.

The Fiscal Year 2022–2023 (FY 22–23) **Greening New York State** report explains how the 75 Affected Entities covered by Governor Kathy Hochul's Executive Order 22: Leading by Example: Directing State Agencies to Adopt a Sustainability and Decarbonization Program (E.O. #22) have taken actions to lower the environmental footprint of New York State government (State) across a wide range of topic areas. Those areas include reducing greenhouse gas (GHG) emissions and waste, decreasing the use of hazardous substances, and enhancing the landscapes we manage. The holistic nature of the State's GreenNY program is one of its greatest strengths and we are blazing a trail for others to follow.

Accomplishments by Affected Entities in FY 22–23 include:

6.88 trillion BTUs
of energy savings logged
through the BuildSmart
2025 program

17 new or updated
GreenNY purchasing
specifications approved

\$227 million spent on
green products and services

93%
overall
recycling
rate

This progress is set to continue accelerating under Governor Hochul's leadership and E.O. #22. This nation-leading directive on sustainable State operations names the GreenNY Council as the implementing body of the State's lead-by-example programs. E.O. #22 empowers the GreenNY Council to continue supporting New York State's successful green procurement and operational improvement programs and sets ambitious environmental performance targets for State operations.

These include 11 trillion BTUs of energy savings at State facilities by 2025; 100% renewable electricity use in State government by 2030; a 100% Zero Emissions Vehicle (ZEV) light-duty fleet by 2035 and medium- and heavy-duty fleets by 2040; decreasing the embodied carbon in construction projects; reducing waste and eliminating single-use plastics from State operations; reducing the use of hazardous substances; and promoting biodiversity and natural carbon storage on lands managed by the State. Alongside these ambitious pursuits, E.O. #22 also includes provisions to ensure State operations do not disproportionately impact disadvantaged communities (DACs).



We look forward to building upon the progress made to date and seeing New York State continue to lead by example through projects and initiatives advancing toward the goals of E.O. #22.



Justin E. Driscoll | President and CEO
NY Power Authority

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Doreen M. Harris | President and CEO
New York State Energy Research
and Development Authority

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Jeanette Moy | Commissioner
Office of General Services

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Sean Mahar | Interim Commissioner
Department of Environmental Conservation

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Blake Washington | Budget Director
Department of Budget

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GreenNY Council Membership

Co-Leads: DEC, DOB, NYSERDA, NYPA, OGS

Members: DOH, ESD, DOT, OPHRP, EFC, DASNY, MTA



Executive Summary

In FY 22–23, New York State Affected Entities continued to decrease the environmental footprint of State operations across a wide range of topic areas.

The GreenNY Council continued to assist Affected Entities with meeting Executive Order 22 (E.O. #22) directives by developing new project guidance, providing technical assistance, creating training opportunities for agency staff, and hosting engagement events for Sustainability Coordinators.

FY 22–23 Highlights

- **Staff Engagement** – 100% of Affected Entities have a designated Sustainability Coordinator, and the percent of entities with full-time coordinators increased from 13% to 19% in FY 22–23.
- **Sustainability Coordinators** – gathered from across the State for the Annual GreenNY Forum to share successes and challenges associated with their progress toward E.O. #22 targets.
- **Waste Reduction** – the State University of New York (SUNY) created a task force on the elimination of single-use plastics.
- **Recycling and Composting** – in the last four reporting years, over 90% of the solid waste generated by Affected Entities was recycled or composted, compared to a 50% recycling rate in FY 08–09.
- **Reducing Toxic Chemical Use** – 100% of entities with laboratory facilities have indicated they are taking action to reduce the purchase and use of toxic chemicals.
- **Clean Energy and Renewables** – E.O. #22 Affected Entities logged 6.88 trillion BTUs of energy saving projects as of the end of FY 22–23.
- **Refrigerant Management** – 17 Affected Entities reported refrigerant management emissions in FY 22-23, an 89% reporting increase over FY 21-22.
- **Sustainable Transportation** – 70 of the 75 Affected Entities submitted ZEV Conversion Plans accounting for over 99% of the 22,100 total vehicles in the State’s light-duty fleet.
- **Sustainable Landscaping** – of Affected Entities that have outdoor land, a third are providing educational signage and/or public outreach about natural resources.
- **Species and Habitat Protection** – 10 entities reported having an early detection rapid response protocol in place to identify invasive species on agency lands in FY 22–23.
- **Water Conservation** – the Olympic Regional Development Authority (ORDA) invested in new high-efficiency snowmaking equipment, which will reduce the impact of their water withdrawals on nearby ecosystems.
- **Green Infrastructure** – the New York Power Authority (NYPA) planted a rain garden with native plants at the New York Energy Zone Visitor Center in Utica.
- **Climate Resilience** – the Battery Park City Authority (BPCA) is working on two interrelated resilience projects as part of the Lower Manhattan Coastal Resilience (LMCR) Project to protect Battery Park City and the Lower Manhattan coast from the threats of storm surge and sea level rise.
- **Green Specifications and Centralized Procurement** – the GreenNY Council is partnering with the Department of Environmental Conservation (DEC) and SUNY’s Center for Sustainable Materials Management to complete a comprehensive review and update of existing GreenNY specifications.
- **Buying Green** – Affected Entities reported approximately \$227 million spent on green products and services.
- **Restricting the Use of Bottled Water** – City University of New York (CUNY) campuses installed more than 50 water bottle refilling stations in FY 22–23.

FY 22–23 By the Numbers



75

**Affected Entities
working together
to Lead by Example**

10,000



*tons of material composted
by Affected Entities*

6.88

**trillion BTUs of
energy savings logged through
the BuildSmart 2025 program**



93%

**overall State
recycling rate**



100%

**of Affected Entities
have a designated
Sustainability Coordinator**

17

**new GreenNY Specifications
finalized and approved**



\$227

**million spent on
green products
and services**



DEC planting a tree with Interim Commissioner Sean Mahar

Advancing Sustainability

Through the GreenNY program New York State is committed to leading by example, taking action to fight climate change, and reducing the environmental footprint of its operations.

Affected Entities are taking action on a wide range of environmental issues, from reducing GHG emissions and decreasing waste, to eliminating hazardous substances and increasing green procurement opportunities. These actions are a win-win for the environment and for Affected Entities, as they can reduce operating costs, improve employee health, and reduce environmental impacts.

Affected Entities consistently set an example of sustainable government operations for the rest of the nation, and their efforts took a significant step forward when Governor Hochul signed Executive Order 22 (E.O. #22) during Climate Week in September 2022. This order replaced and superseded E.O.s # 4, 18, 88, and 166, and set new standards and environmental performance requirements for State government. E.O. #22 also designated the GreenNY Council as the implementing body for the directives in the E.O.

Environmental performance requirements in E.O. #22 include:

- 100% of electricity used in State operations will come from renewable energy by 2030.
- 100% of light-duty nonemergency fleet vehicles will be ZEVs by 2035 and 100% of medium- and heavy-duty fleet vehicles will be ZEVs by 2040.
- 11 trillion BTUs of energy savings will be achieved by 2025 through BuildSmart 2025.
- Ensuring that new State facilities that enter design and permitting starting in 2024 are avoiding use of fossil fuel combustion infrastructure.
- Waste disposal will be reduced 10% every 5 years until reaching a goal of 75% reduction from a FY 2018–2019 baseline.
- Single-use plastics will be eliminated in State operations.
- Toxic substances will be reduced in State operations.
- Habitats maintained by Affected Entities will be enhanced, including support for native pollinators.
- State facilities will work to increase the resilience of their buildings and operations in the face of changing climate risks.
- Reducing embodied carbon in common construction materials.

Complementing E.O. #22 and the Climate Act, Governor Hochul's 2024 State of the State Address and Executive Budget included \$47 million to support a new goal of planting 25 million native trees by 2033. These trees will provide major benefits to New Yorkers including energy savings and water conservation. Tree planting aligns with the strategies to support the Low Impact Development, Climate Risk Incorporation, and Promoting Biodiversity and Habitat Protection goals of E.O. #22. Affected Entities are following the Governor's lead by incorporating tree planting into their sustainability work.



NYSERDA President and CEO
Doreen M. Harris planting a tree.



New York Power Authority President and CEO Justin Driscoll, Judge Eugene Nicandri, former Vice Chairman of the NYPA Board of Trustees and Parks Commissioner Erik Kulleseid presided over a ribbon cutting of the Robert Moses State Park Administration Building and Park Police building and planted a tree adjacent to the Nicandri Nature Center.



OGS Commissioner Jeanette M. Moy planting a tree.

In addition, E.O. #22 takes steps to ensure that State government operations do not overburden Disadvantaged Communities (DACs).

DACs are areas that meet criteria outlined by the Climate Justice Working Group, meant to identify communities that are underserved and have borne the impacts of legacy pollution. Identifying such communities allows the State to ensure DACs benefit from the transition to a clean energy economy.

E.O. #22 supports the Climate Leadership and Community Protection Act (Climate Act) by directing Affected Entities to lead by example in achieving the State's sustainability goals.

New York State created a Climate Action Council to prepare a Scoping Plan to serve as the roadmap to achieve the State's bold clean energy and climate goals. The Climate Action Council released its Scoping Plan in January 2023. The Plan calls for the GreenNY Council to take further actions to assist the State in meeting its Climate Act requirements, including issuing new procurement specifications and operational directives to incentivize procurement of low carbon products and lowering the embodied carbon in products and materials utilized by Affected Entities.

E.O. #22 directs the 75 Affected Entities to incorporate sustainability into all aspects of their operations and assign a Sustainability Coordinator. Affected Entities are also encouraged to create a Sustainability Team to support the work of the Council. The teams are comprised of appropriate staff involved in identifying, approving, and implementing sustainability or energy projects and environmental justice matters, and include an executive sponsor.

The GreenNY Council has begun implementation and continues to leverage resources, create guidance, streamline sustainability reporting, and make it easier for Affected Entities to achieve the State's ambitious climate and sustainability goals.

Under E.O. #22, the reporting process for Affected Entities has been consolidated. Now there is a single, annual, GreenNY reporting form. The GreenNY team also puts out topic-specific requests for information that supplement the reporting form to better determine E.O. #22 progress and to support planning. For FY 22–23, all 75 Affected Entities reported under E.O. #22, the highest rate of compliance to date. This summary compiles their responses to the FY 22-23 reporting form. Progress reports for other executive orders can be found on the [GreenNY website](#), which includes more detailed information, webinars, fact sheets, and case studies on sustainable operations and purchasing.

For FY 22–23, all 75 Affected Entities reported under E.O. #22.

Updated Guidance Provides GreenNY Support

In FY 22-23, Office of General Services (OGS) and New York State Energy Research and Development Authority (NYSERDA) developed Embodied Carbon Guidance to support Governor Hochul's "Leading by Example" E.O. #22. Per this guidance, all Affected Entities will collect data on their procurement of four common construction materials – concrete mix, asphalt mix, steel, and glass.

Affected Entities will track the quantities of these materials and, where they exist, the environmental product declarations (EPDs) for those materials.

EPDs are reports that provide the environmental impact and greenhouse gas impact of a given product, and with this data we will be able to establish a baseline of what materials are procured on State projects, and allow the State to set data-based targets for reduction of our environmental impact in the future.



Operating Green

Engaging the Green Team

Achieving New York State’s ambitious climate and sustainability goals calls for collaboration and coordination between State government entities.

The day-to-day work to lower the emissions and environmental impact from State operations is led by Sustainability Coordinators and their teams across the 75 Affected Entities covered by E.O. #22. Sustainability Coordinators are fundamental to catalyzing change and breaking down barriers in an organization. Their work is bolstered with the support of an executive sponsor and members from facilities, finance, fleet management, procurement, and a tenant representative, if applicable. This core team structure helps encourage collaboration and learning to spread out the workload and identify cross-cutting solutions. Empowering a Sustainability Team with decision-making authority increases employee buy-in and enhances opportunities to integrate sustainability into operations and culture.

The GreenNY Council regularly provides resources and opportunities for Sustainability Teams to increase engagement through the monthly GreenNY newsletter, the SharePoint Action Agenda Wiki, information on the [GreenNY website](#), and more.

The GreenNY Council's annual GreenNY Forum took place at NYPA and featured more than 65 participants sharing their successes and challenges and learning from those working to implement E.O. #22 requirements.

The GreenNY Council held its annual GreenNY Forum at NYPA's office in White Plains in November 2023. More than 65 participants from agencies and authorities across the State shared their successes and challenges and learned from others who are working to implement E.O. #22 requirements. The event included presentations by sustainability experts, topic-specific breakout sessions, and a tour of NYPA's Integrated Smart Operations Center (iSOC). The annual forum provides an opportunity to discuss challenges and share best practices and lessons learned. The breakout sessions allowed Sustainability Coordinators to engage on topics that are most relevant to their entity or that they are finding particularly challenging. Facilitators of the breakout sessions offered guidance and opened the floor to productive discussion.



Ashley Dougherty, Governor Hochul's Assistant Secretary for Environment, spoke on behalf of the Governor's Office on the important work Sustainability Coordinators are doing to support the Governor's sustainability objectives.

In FY 22–23 the number of entities with full-time Sustainability Coordinators increased from 13% to 19%. The full list of Sustainability Coordinators can be found on the [GreenNY website](#).

In addition to designated Sustainability Coordinators, nearly 60% of Affected Entities have a Sustainability Team with three or more staff members. These teams are hard at work: three-quarters of Affected Entities report that they regularly engage with staff on sustainability – primarily via emails and team meetings or project-specific meetings – and several have crafted and published Sustainability Plans.



Some examples of successfully engaging Sustainability Coordinators and other interested stakeholders during FY 22–23 include:

- Sustainable **City University of New York (CUNY)** developed individualized campus Energy Master Plans (EMPs) for all senior campuses. These EMPs provide a list of projects that can be implemented to optimize or upgrade energy-utilizing equipment that will help campuses meet energy and GHG reduction targets.
- **DEC** launched Sustainability 101, a live, mandated, training session for all agency staff. It describes what sustainability is, the State's directives, what **DEC** is doing as an agency, and what role employees play in meeting its goals. In addition, **DEC** has a monthly sustainability newsletter that goes out to all staff. The central office and regional teams also host events throughout the year – such as on Earth Day and during the holidays – to engage employees. Sustainability staff also regularly travel to sites to meet with frontline staff and discuss how their operations can be made more sustainable.
- **NYPA** partnered with Westchester Community College to offer training to general maintenance staff on native-plant best management practices. The trainings provided information on why to use native plants, how to design landscapes with native plants, and how to maintain landscapes using nature-positive practices. The training also provided information on key plants native to our region that are highly beneficial to butterflies and local food webs.
- **NYPA** has an internal Sustainability Advisory Council, with Senior Vice President/Vice President representation from over 30 departments. The Advisory Council provides input to the development of sustainability plans and programs and assigns subject matter experts to support implementation of specific projects and initiatives. This provides an efficient governance structure for implementing cross-departmental sustainability initiatives.

Engagement Spotlight: SustainAble U

Beginning in September 2023, the Operations and Engagement (OnE) Working Group, in partnership with **NYPA**, rolled out a four-part training series for Sustainability Coordinators and their teams called SustainAble U. The training provided an introduction to climate change science and explored the causes of climate change, its projected impacts globally and in New York State, as well as mitigation and adaptation strategies.

SustainAble U was originally developed for **NYPA** staff to understand the context of climate change. After receiving feedback from Affected Entities that Sustainability Coordinators would value additional training opportunities, OnE Working Group decided to collaborate with **NYPA** and adapt this training program for all members of GreenNY and their internal teams. Staff from **Battery Park City Authority (BPCA)**, **Department of Labor (DOL)**, and **New York Power Authority (NYPA)** divided the training into a four-part interactive webinar series that ran from September to December. SustainAble U was well received and is now permanently hosted on the GreenNY SharePoint.



Waste Reduction, Recycling, Composting, and Special Waste

Waste Reduction and Reuse

Affected Entities are leading by example in reducing waste and incorporating reuse and repair strategies into everyday operations.

SUNY College of Environmental Science and Forestry (ESF)

launched a reusable container program at the Trailhead Café in spring 2023, offering reusable clamshells and soup cups as the default container for applicable to-go orders and eliminating single-use food containers.

The GreenNY program plays a significant role in how Affected Entities generate and handle waste. It offers training and support to Entities seeking to implement more ambitious waste reduction initiatives. Affected Entities reported generating nearly 2 million tons of waste in FY 22–23, 89% of which was clean construction and demolition (C&D) debris. This represents a 3.6% decrease in waste generation from the previous year.

Through E.O. #22, New York State committed to decreasing State agency waste disposal by 10% every 5 years from a FY 18–19 baseline, until reaching a goal of 75%. Improving data quality and collection techniques are crucial first steps to reducing waste, and many Affected Entities are working on improving data collection with technical assistance and programming offered by GreenNY. Affected Entities are also establishing baselines and exploring ways to understand their waste generation better. Waste audits are one way to identify new types and quantities of waste generated. Changes to agency operations, such as new telecommuting programs, can be documented in waste audits, too. In addition to waste audits of everyday operations at facilities and offices, some Affected Entities took the additional step of auditing special events to understand the waste generated from those events. For example, **ORDA** facilitated a waste audit of the 2023 World University Games held at **ORDA** facilities.



Reuse, Refill, Repeat



SAVE \$0.25 ON YOUR CAMPUS COFFEE PURCHASE WHEN YOU BRING YOUR REUSABLE MUG!

CUNY LaGuardia Community College

food services give a discount to customers who bring in a personal reusable mug when purchasing coffee or tea.

Affected Entities took action to reduce waste in numerous ways in FY 22–23, including:

- Having procurement policies designed to prevent waste, such as ordering items with less plastic or polystyrene packaging or purchasing in bulk to reduce packaging.
- Employing practices such as collecting RSVPs for events and donating leftover food to reduce food wasted at facilities.
- Leveraging the **OGS State Surplus Property Program** and developing their own entity- and facility-specific programs to reduce waste and reuse materials wherever possible.
- Increasing the use of electronic rather than paper communication within and outside of entities.

Examples of successful waste prevention initiatives in FY 22–23 include:

NYSERDA diverted nearly 40 lateral filing cabinets, 14 bookshelves, and more than 60 chairs through the OGS State Surplus Property Program

SUNY Cortland donated nearly 1,800 cubic yards of clothes, bedding, and school supplies to Cortland Reuse

Division of Homeland Security and Emergency Services (DHSES) eliminated the use of single-use to-go meal boxes at the Fire Academy

Affected Entities reported generating nearly 2 million tons of waste in FY 22–23, 89% of which was clean construction and demolition (C&D) debris that was recycled.

Affected Entities are getting a head start on the single-use plastics elimination requirements in E.O. #22.

Hudson River Park (HRP) updated all its beverage vending machines so that they are now plastic free, being one of the first locations where the sale of canned still water was piloted, and **SUNY** created a task force on the Elimination of Single-Use Plastics.

In 2022, the **Department of Transportation (DOT)** conducted a bridge replacement project on Route 19 over Oatka Creek. Instead of sourcing new materials, the contractor reused burlap material that was already on-site to capture the slurry runoff required to protect the creek below. They also limited the quantity of select fill needed for the construction of wildlife ledges on both the north and south embankments. The contractor utilized the existing space on the south side and laid out the heavy fill in a way that still accommodates wildlife passage, thus saving the select fill quantity to place on the north abutment.



DOT's bridge replacement project on Route 19 over Oatka Creek.

NYPA conducted waste audits that included visual inspection of waste generating areas and bulk wastes, and physical sorting of bagged municipal solid waste and recycling at all NYPA and Canals facilities. The findings of the waste audits are being used to inform waste reduction plans at each site that align with the requirements of E.O. #22 and the TRUE Zero Waste Program in which NYPA is registered.





BPCA rolled out 50 new recycling bins in the park to improve the diversion of recyclables and has seen a 10% increase in their diversion rate.



CUNY College of Staten Island's compost program is up and running. Students and staff monitor composting progress regularly.



CUNY Brooklyn College conducted a food scraps collection event to raise awareness about food waste.

Recycling, Composting, and Special Waste

Reporting for FY 22–23 showed an encouraging trend of high recycling rates by Affected Entities. In the last four reporting years, more than 90% of the solid waste generated by entities was recycled or composted, compared to a 66% recycling rate in FY 18–19.

In FY 22–23, the overall Affected Entity recycling rate was 93%. Across all Affected Entities, approximately 1.9 million tons of waste were recycled or composted in FY 22–23, including approximately 1.8 million tons of clean C&D debris.

The FY 22–23 reporting process was the first one in which Affected Entities were asked to report weights and volumes for special wastes that were recycled, such as paint, rechargeable batteries, mercury-containing products, and other special and hazardous wastes. E.O. #22 requires Affected Entities to address special and hazardous wastes in their Waste Diversion Plans, which were due in July 2024. The FY 22–23 reporting form served as an early opportunity for Affected Entities to establish baselines and identify improvements for tracking data on these materials.

Affected Entities composted a total of 9,759 tons of material in FY 22–23. Diverting organic waste and food scraps that cannot be avoided or donated to composting, anaerobic digestion, or other forms of reuse reduces methane generation in landfills. Composting sequesters significant amounts of elemental carbon while simultaneously producing a beneficial amendment that improves soil health and reduces the need for energy-intensive fertilizers and hazardous pesticides.

A few examples of successful recycling and composting initiatives in FY 22–23 include:

- **CUNY** Hunter College implemented a food scraps collection pilot program that allowed them to identify significant differences between pre- and post-consumer food scraps generation in kitchen and cafeteria spaces, as well as to address contamination issues.
- **DEC** transported food scraps from the new Buffalo office to the Reinstein Woods Environmental Education Center for composting. Compost from those food scraps was then utilized to plant a new pollinator garden at the Buffalo office, promoting a circular approach to local food scraps management.
- **OGS** recycled 770,000 gallons of NYS Clean hand sanitizer that were stored on the runways at the Oriskany facility.
- **Metropolitan Transportation Authority (MTA)** Metro-North Railroad and **NYPA** diverted a combined total of more than 2,000 gallons of expired hand sanitizer. **NYPA** was able to recycle the sanitizer as a commodity for reuse in manufacturing processes.
- **SUNY Oswego** found that custodial staff time required for waste collection could be reduced from 6 hours to 45 minutes by decreasing the number of waste receptacles and implementing a centralized waste collection system.

DEC piloted Recycle Right NY tip strips at select DEC campgrounds that were handed out to campers. Preliminary findings indicate the tip strips can reduce contamination in the campground recycling stream, which constitutes a significant portion of the waste generated at DEC facilities.



In FY 22–23, there was an overall Affected Entity recycling rate of 93%.

The breakdown below shows the total quantity of materials recycled by Affected Entities in FY 22-23. “Office recyclables” (paper, glass, plastic, metal) amount to significantly less weight than non-office recyclables, such as bulk metals and compostables, which are heavier. C&D debris material includes concrete, asphalt, brick, and clean wood that come from building construction, renovation, and demolition, as well as highway construction and maintenance.

Type and Tons of Material Recycled by Affected Entities FY 22-23

	Tons	Percent Total
Clean C&D Debris	1,771,928	94.7%
Bulk Metals	42,923	2.3%
Office Recyclables	23,436	1.3%
Maintenance and Equipment	22,502	1.2%
Compostables	9,759	0.5%
TOTAL	1,870,548	100%

In FY 22–23, 94.7% of the total waste recycled was clean C&D debris.

Reducing Toxic Chemical Use

Chemicals

Reducing and eliminating toxic substances in State entities improves human and environmental health.

Following GreenNY procurement specifications is one way that Affected Entities minimize or eliminate the use of certain chemicals. Affected Entities can also implement green cleaning practices that mitigate potential hazards posed to employees and the public at State facilities. Some Affected Entities are using smaller volumes of cleaners by using automated dispensers, implementing methods that require no chemicals, or choosing less-hazardous chemicals. Agencies are removing stored chemicals that are no longer needed and evaluating ways to reduce the use of toxic chemicals in the future.

Noteworthy advances that reduced toxic chemical use FY 22-23:

- **ORDA** identified and inventoried old chemicals in facility garages and maintenance areas for **CleanSweepNY** pickup, creating a cleaner and safer working facility. **DEC's** CleanSweepNY facilitates safe disposal of unwanted pesticides and chemicals from agricultural or nonagricultural businesses.
- The **Public Employment Relations Board (PERB)** and the **Buffalo Fiscal Stability Authority (BFSA)** purchased green cleaning products for staff to use for light office cleaning, which discourages employees from bringing in their own potentially toxic cleaning products. This creates a safer work environment and educates staff on greener and effective alternatives.
- **DEC** invested in new computer numerical control (CNC) routers for its sign shops, which significantly reduces the amount of polyvinyl chloride (PVC) lettering used for signs. DEC is testing out new designs for trail signs that stand up to the weather without PVC paint. **DEC** regions also continue to expand use of cedar picnic tables and signposts, avoiding pressure-treated wood.
- **CUNY** campuses have a policy to seek ways to reduce to reduce the use of toxic chemicals.



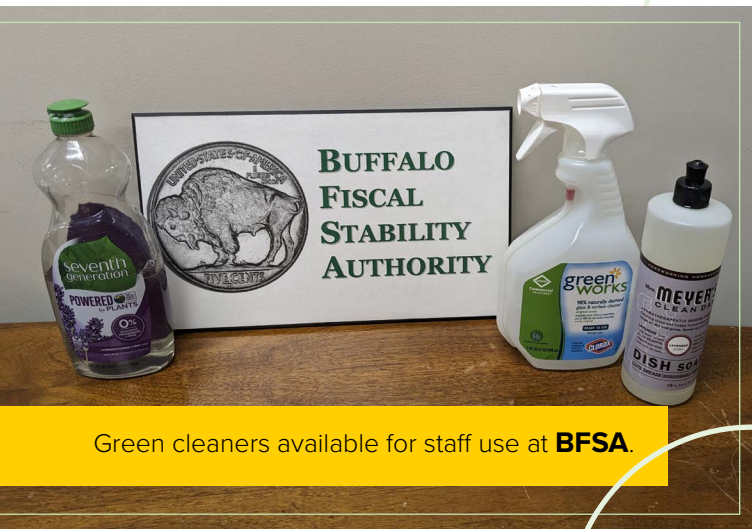
Ice paint being collected from **ORDA** at a CleanSweepNY event

100% of the entities with laboratory facilities are taking action to reduce the purchase and use of toxic chemicals, as well as cleaning out inventory to reduce the storage of toxic chemicals in the labs.

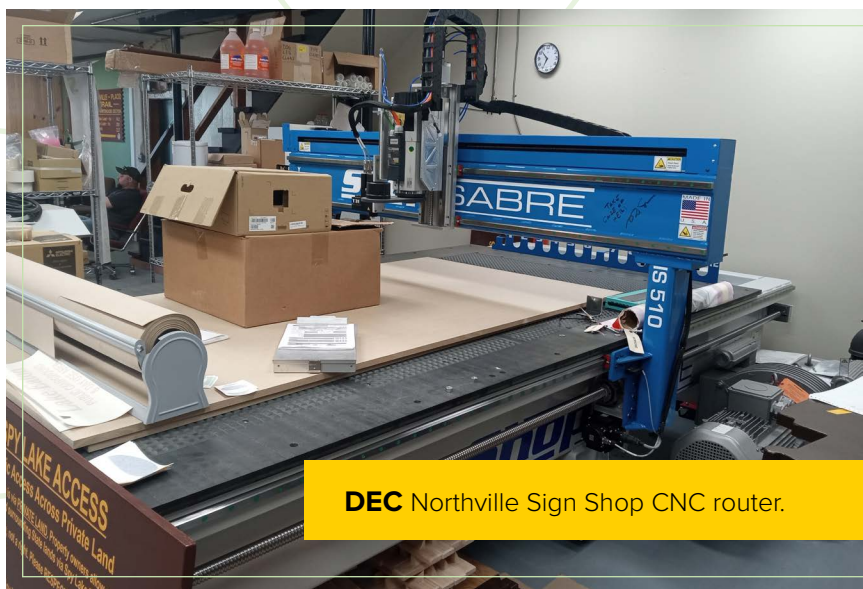
70% reported using cleaning products that are fragrance free in all or a majority of their facilities

GreenNY purchasing specifications include restrictions on unnecessary fragrance ingredients.

Creating cleaner, greener, and healthier laboratories leads to fewer hazards in the future. Using fragrance-free products reduces potential adverse health reactions and maintains a healthy working environment.



Green cleaners available for staff use at **BFSA**.



DEC Northville Sign Shop CNC router.

*In FY 22–23,
77% of Affected
Entities reported
implementation of
IPM programs at
all or most of their
indoor facilities.
A 14% increase
compared to
FY 21–22.*

Pest Management

Affected Entities continue to implement Integrated Pest Management (IPM) and Integrated Vegetation Management (IVM), reducing the use of toxic chemicals at their facilities. IPM practices require understanding pest lifecycles in order to implement controls tailored to eliminating food, water, and favorable habitat, along with choosing the least hazardous pesticide, if pesticides are necessary. IVM practices reduce or eliminate the need for toxic chemicals that may harm native pollinators and aquatic life, while promoting ecosystem health, native biodiversity, and the control of invasive species. FY 22–23 reports demonstrate a 20% increase in Affected Entities with IPM programs implemented at 50–100% of their indoor facilities, and a 10% increase in Affected Entities implementing nonchemical means of pest management for turf and ornamental plantings at all or most of their facilities compared to FY 21–22.

A few examples of successful IPM and IVM implementation reported in FY 22–23 include:

- The **Javits Center** has a feral cat initiative that controls rodents at loading docks at a low cost and without the use of harsh chemicals. IPM on the rooftop farm and in a greenhouse reduces the farmers' need for pesticides.
- **HRP** uses border collies to control geese and reduce their populations, resulting in less bird waste and reduced compaction on lawns. In addition, horticulture vinegar is used to control weeds in some areas, reducing staff time spent manually weeding.
- **SUNY Albany** is one of several schools that has started low- and no-mow initiatives this year. This has been well-received, especially where such areas are wet, steep, or otherwise difficult to mow.
- **SUNY Polytechnic Institute** worked with a bee relocater to move bees without harming them.
- **SUNY Maritime** College has adopted an aggressive, active cleaning regime and a ban on food in classrooms to reduce pests.
- **SUNY New Paltz** removes branches and shrubs near the building envelope, limiting access for pests.
- **DEC** used solarization, a non-chemical method using sunlight, to increase the temperature of soil to kill or weaken plant pathogens, which has shown some promise to control mugwort in DEC Region 3 pollinator meadow. Manual removal of invasives from pollinator gardens has worked and is a good team-building exercise for staff.
- **DOT** used more than 42,776 pounds of natural mycorrhizal fungi on 23 projects to foster root growth for turf and other plantings, instead of using chemical fertilizers.
- **NYPA** manages transmission rights-of-way (ROW) using IVM practices to promote biodiversity and ecosystem health while ensuring the safe and reliable transmission of power. Since 2013, NYPA has been accredited by the Right-of-Way Stewardship Council, demonstrating NYPA's commitment to sustainable ROW stewardship.

42% of entities use non-chemical means of pest management for turf and ornamental plantings at all or most facilities

10% increase from FY 21–22

36% of entities avoid purchasing nursery stock treated with insecticides at all or most facilities

8% increase from FY 21–22

30% of entities went above and beyond and used non-chemical means of pest management in outdoor areas where not required

Thirteen Affected Entities had labs, and all reported the adoption of at least two of the following methods: reducing the purchase and use of toxic chemicals, cleaning out old inventory and reducing the storage of toxic chemicals, and initiating a sharing program between different labs or lab units to avoid unnecessary purchasing and storage of chemicals. Specifically, 46% of these labs have adopted a sharing program allowing labs to share toxic/hazardous chemicals before expiration to avoid waste, while increasing information sharing on green chemical substitution.

BPCA reports 100% of their indoor facilities use IPM chemical reduction/elimination strategies and 100% of their outdoor facilities use nonchemical means of pest management for turf and ornamental plantings, and they also avoid nursery stock treated with insecticides.



BPCA demonstrates Rat Ice as a successful IPM control.





DEC Region 3 staff using IVM control: manual removal of invasive species mugwort from the pollinator garden at the Cortland office. Manual removal of invasive vegetation eliminates the need for toxic chemical herbicides while simultaneously expanding the habitat of native pollinator species. Healthy, intact ecosystems act as a natural barrier to invasive pests.



HRP demonstrating IVM control practices and manual pulling of invasives. HRP also had success with border collies as an IPM control. The results are non-impacted geese-free lawns for the public to enjoy.



100% of **HRP** indoor facilities use IPM, 100% of their exempt outdoor facilities utilize both IPM/IVM practices, and 50–100% of their outdoor facilities utilize nonchemical means of pest management for turf and ornamental plantings, and they also avoid nursery stock treated with insecticides.





The Office of Parks, Recreation and Historic Preservation's (OPRHP) Sustainability Team demonstrates continued success with both IVM and IPM at various locations.

Roosevelt Island Operating Corporation (RIOC) reports 100% of indoor facilities use IPM and 100% of outdoor facilities use nonchemical means of pest management for ornamental plantings.

The Farm at **Javits Center** demonstrates successful IPM detection and control: spider mites were detected and controlled by establishing a predatory mite species (*Phytoseiulus*, pictured below). Precise timing is essential for this pest management method to be successful, as healthy populations of *Phytoseiulus Persimilis* must be established before the spider mite populations get too high to control. This control method reduces the need for insecticidal soaps.

Javits Center reports 50–100% of their facilities use IPM, with 100% using chemical reduction/elimination strategies for pest management.

IVM control of invasive barberry and other invasive vegetation by volunteer hand-pulling and bagging, and by the use of goats, followed by IPM detection and biocontrol of emerald ash borer.





OGS replaced the exterior at the Empire State Plaza with color-changing LED lights.

E.O. #22 incorporates the BuildSmart 2025 goal in its requirements. BuildSmart 2025 is the collective effort by Affected Entities to reduce site energy use by 11 trillion BTUs by 2025, from a 2015 baseline.

Clean Energy and Renewables

Energy Efficiency

Eleven trillion BTU represents approximately one-third of all energy consumed by Affected Entities. E.O. #22 directs each Affected Entity to work with **NYPA** to achieve their allotted portion of the overall energy savings target for State operations.

NYPA, through its BuildSmart program, supports Affected Entities as they plan for, act on, and track progress toward New York State's ambitious energy efficiency goal. NYPA's BuildSmart program sets individual energy savings targets, establishes interim milestones and deliverables, and provides resources to set Affected Entities on a path toward meeting the collective E.O. #22 energy savings goal. In addition to its management of the overall BuildSmart program, NYPA delivers energy efficiency and clean energy solutions to State entities. NYPA has committed to assisting Affected Entities in implementing energy savings projects as part of BuildSmart 2025. At the close of FY 22–23, NYPA-implemented projects made up 70.4% of State progress toward the BuildSmart 2025 goal.

E.O. #22 establishes NYPA's New York Energy Manager (NYEM) as the system of record for all energy data from covered facilities and requires all Affected Entities to ensure their energy data are entered in NYEM. Data collected in NYEM will be used by the GreenNY Council to develop a GHG baseline for State agency operations. Data may also be used by the council to support development of goals and guidance related to building decarbonization, electrification, and renewables. Project level energy saving data entered into NYEM is used to demonstrate progress toward an Affected Entity's portion of the BuildSmart 2025 goal as well as the cumulative State progress toward the 11 trillion BTU goal.

Many Affected Entities have completed energy audits or master plans and are taking action on recommended energy conservation and reduction measures. With committed projects underway, E.O. #22 Affected Entities logged 6.88 trillion BTUs of energy saving projects by the end of FY 22–23, putting the State on track to meet its energy efficiency goal of 11 trillion BTUs by end of year 2025.

In FY 22–23, a number of Affected Entities reported working to reduce their GHG emissions through purchasing green power or constructing renewables on-site. Five Affected Entities now purchase Renewable Energy Certificates (RECs), four directly purchase green energy, and seven use photovoltaic (PV) systems and installation services. **Adirondack Park Agency (APA), DEC, OPRHP, and SUNY** currently generate energy on-site. A total of 17 SUNY campuses have PV arrays on campus or metered to campus.

As of March 2023:

6.88 trillion BTUs of energy saving projects are either underway or completed, which represents 62.5% of the 11.0 trillion BTU goal

Half of all Affected Entities report making significant energy upgrades at their facilities during FY 22–23

63% of all entities report they anticipate increasing their buildings' efficiency before 2025

Highlights from energy-efficiency projects initiated, in progress, or completed in FY 22–23 include:

- **DEC** uses sustainably harvested premium wood pellets to heat the Ray Brook State Office Complex, including DEC, APA, and New York State Police (NYSP) Headquarters. On-site PVs are used at multiple locations to generate electricity.
- **Department of Corrections and Community Supervision (DOCCS)** pursued chiller and boiler replacements, controls upgrades, and retro-commissioning studies at several facilities in collaboration with NYPA that will improve building efficiency and system control. DOCCS also has Solar Power Purchase Agreements for solar farms constructed and operating at five correctional facilities.
- **HRP** conducted light-emitting diode (LED) conversions at their boathouses, tennis courts, and outdoor park locations, reducing energy consumption and maintenance since LED bulbs need to be replaced less often. They also converted wall air-conditioning units to split system heating, ventilating, and air-conditioning (HVAC) units, further reducing energy consumption and resulting in additional cost savings.
- **Office of Children and Family Services (OCFS)** plans to use solar thermal for heating hot water as a component of implementing ASHRAE Level 2 Energy Audit findings, with implementation planned for FY 25–26. Technical considerations and economic evaluations for implementing NYPA's proposal for installing PV systems at Industry Residential Center (Rush Landfill) and Brookwood Residential Center for electricity generation connected to the grid are also ongoing. They also report that more than 75% of OCFS-operated youth program centers receive grid-purchased electricity from renewable sources.
- **OGS** implemented an impressive LED lighting upgrade with help from NYPA to convert the site exterior lighting at the Empire State Plaza. The project will result in annual savings of more than \$600,000 and enable color control through the plaza for special events.
- **Office of Mental Health (OMH)** utilized an OGS procurement contract to bid, select, and install a 2.5-megawatt solar PV system with a 510-kilowatt battery storage capacity. The project, when operational, is expected to produce 3,774 megawatt hours annually resulting in a 26% annual reduction of the facility's utility electric demand and a \$45,000 per year cost savings.
- **Port of Oswego Authority (POA)** recently opened its 22,000-metric ton grain storage and handling facility to grain deliveries. Doing so substantially reduces GHGs: since farmers can now deliver their grain locally with a short trip to the port via water transport, more than 4,500 truck trips will be saved, and almost \$95,500 will be saved in road repair costs within the first 5 years of opening the port.
- **NYPA** partnered with the Electric Power Research Institute's (EPRI) Incubatenergy Initiative, a start-up company that provides hourly grid carbon intensity data in multiple regions of the State and across the country. Using this interval carbon data, NYPA developed a prototype carbon tracking dashboard for their White Plains office building.

Clean Energy Spotlight: **SUNY Clean Energy Master Planning**

SUNY recently completed Clean Energy Master Plans to achieve decarbonization based on the Climate Act standards. The plans were guided by Construction Fund's Directive IB-2, which establishes clean building standards for construction on all SUNY campuses. First adopted to implement a 2007 SUNY board resolution requiring new buildings to meet LEED Silver standards, Directive IB-2 is constantly updated. It now requires the following:

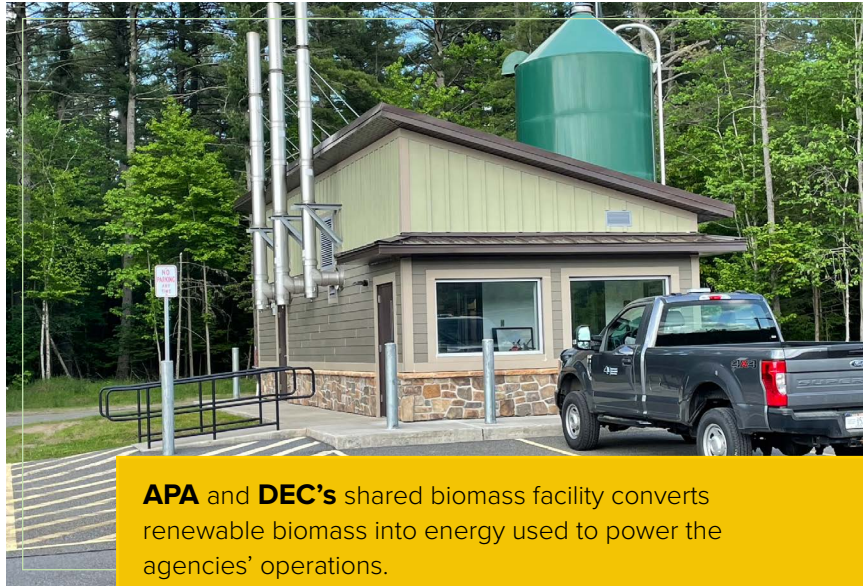
- All projects must comply with the NYStretch Energy Code (2020) and achieve certain energy use intensity targets.
- All new construction projects are designed to net-zero carbon goals (e.g., all new or replacement systems are electrically powered, with limited exceptions).
- All major renovations achieve deep energy retrofits.
- Designers must calculate energy use intensity, energy savings, and GHG emissions.
- Environmental product declarations for embodied carbon reporting are required.

The Clean Energy Master Plans also included various scenarios to achieve energy use intensity targets through combinations of technologies at different costs.

Energy Innovation Spotlight:

CUNY is focused on adopting innovative technology to support sustainability. One way they are embracing innovation is through the use of open-source Direct Digital Control (DDC) systems for building automation. Historically, facilities have struggled with complexities and incompatibilities in procuring building control systems. Absent standards and requirements for interoperability and competitive procurement, control systems that were procured from multiple vendors could not be integrated into a single platform. This hampered building operations and drove up maintenance costs and increased the overall cost of ownership. Open DDC systems, however, rely on standards for communications and data sharing, and permit controls from multiple vendors to be integrated into a single platform. This paves the way for competitive procurement and cost savings, while at the same time expanding the marketplace for new and innovative control products and solutions. DDC systems also give building operators a consistent user interface across a whole portfolio of buildings and campuses, regardless of what building system is being used.

NYPA is exploring opportunities to increase land use efficiency by co-locating energy generation and agriculture. These so-called agrivoltaics solutions enable solar panels to be sited on active farmland. In January 2023 NYPA completed a [study](#) with the Electric Power Research Institute on Leading Practices for Agrivoltaics. The study aimed to better understand barriers to and opportunities for co-locating solar and agriculture.



APA and **DEC's** shared biomass facility converts renewable biomass into energy used to power the agencies' operations.

Refrigerant Management

New York State government continues to make progress in decreasing emissions from refrigerants both through statewide regulation and reducing emissions from State operations.

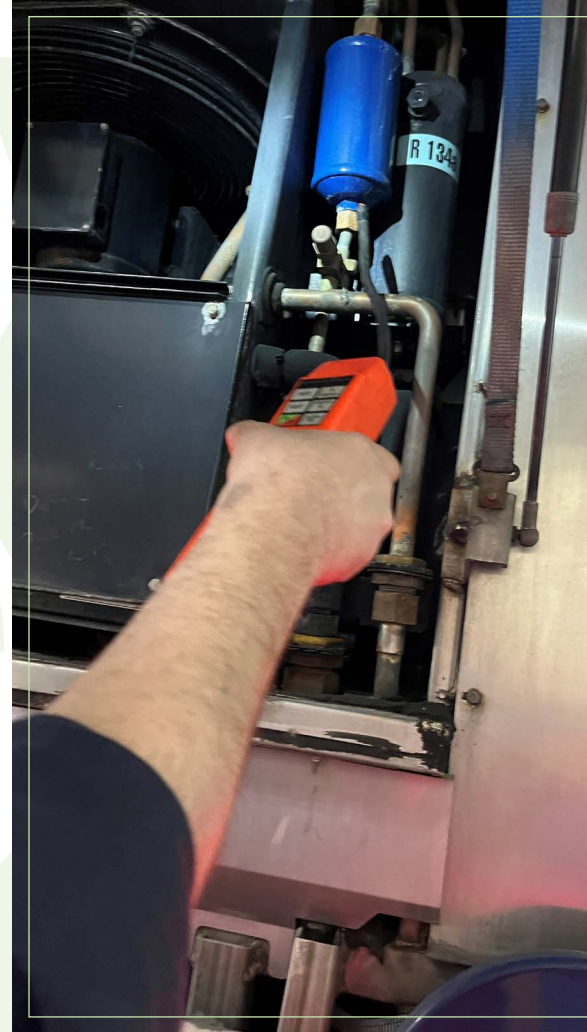
In 2023, **DEC** proposed new Part 495 and updated Part 494 regulations targeting incredibly potent fluorinated GHGs including sulfur hexafluoride and hydrofluorocarbons (HFCs). These important regulations are in alignment with the Climate Action Council's Scoping Plan recommendations and will help New York State meet its Climate Act emission-reduction requirements.

In addition, **DEC** completed the first two HFC-free demonstrations in partnership with the North American Sustainable Refrigeration Council (NASRC) and the New York State Pollution Prevention Institute (NYSP2I). These projects are reducing the GHG emissions in DACs and paving the way for other entities across New York State to transition to natural refrigeration systems. By using New York State demonstration projects as training sites, NASRC will be able to coordinate free technician training events to increase opportunities for the local technician workforce to learn about natural refrigerant equipment and systems. These training opportunities will help build the workforce necessary to make the transition of agency equipment to versions that utilize natural refrigerants.

Affected Entities continued making progress in tracking and eliminating their refrigerant emissions in FY 22–23. Of the 75 reporting entities, 32 stated that they utilize unsealed refrigerant containing equipment with 25 having chillers for buildings, 19 having heat pumps, 17 having commercial food and beverage coolers, and 4 having chillers for other types of facilities besides buildings.

A total of 17 Affected Entities reported their refrigerant emissions in FY 22–23, an 89% increase over FY 21–22. Twenty-six different refrigerants were used by these entities. Reported emissions totaled 43,057 metric tons of carbon dioxide equivalent (CO₂e), the equivalent of emissions from 9,360 cars driven for a year.

As part of efforts to reduce refrigerant emissions in FY 22–23, **Central New York Regional Transportation Authority (Centro)** put their transit vehicles on a regular schedule for refrigerant leak detection. Maintenance technicians use a combination of dye, detectors, and spray to check for refrigerant leaks, then repair any that are found.



A **Centro** maintenance technician conducting a leak detection test on a bus.

Reporting of refrigerant emissions improved in FY22-23, with a total of 17 Affected Entities reporting their emissions.

Sustainable Transportation

New York State offers its residents a wealth of options for sustainable transportation ranging from high-speed rail, commuter rail, subways, buses, ferries, and tramways to electric and human-powered bikes.

While we still rely on automobiles to reach the majority of our destinations, we are making strides to ensure these trips minimize GHG emissions and other pollutants.

Under E.O. #22, all New York State Affected Entities are required to submit a light-duty ZEV Conversion Plan identifying the nonemergency fleet vehicles subject to the electrification mandate. These plans also outlined the path toward a 100% all-electric fleet specific to the vehicles and operations of each Affected Entity. Seventy of the 75 Affected Entities submitted Conversion Plans accounting for more than 99% of the 22,100 total vehicles in our light-duty fleet. Across the entire fleet, 21% of vehicles met the definition of emergency vehicles under NYS Vehicle and Traffic law. Most of these were accounted for by lighted enforcement vehicles from: NYSP, DOCCS, MTA, OPRHP, and DEC. After adjusting for these exempted vehicles, Affected Entities have approximately 17,500 light-duty vehicles to be converted to ZEVs by 2035.

Currently, 6% of all nonemergency light-duty fleet vehicles are ZEVs. The pathways to 100% vehicle electrification vary greatly, depending on each entity's mission, fleet count and composition, charger access, and usage. Some Affected Entities will be able to reach 100% ZEVs by 2028 or earlier, while most light-duty fleets will not be fully electric until after 2030, when the hardest vehicle cases are anticipated to be converted. This effort is a timely one, as the age of the State's fleet has increased on average since the COVID-19 pandemic. While this will improve fleet performance and reduce maintenance, meeting these targets will require the State to procure vehicles at a faster rate than it currently does, with a projected 74% increase from the current number of vehicle purchases to meet targets in 2026, when the fleet is expected to be more than 25% ZEVs.

Vehicle conversion targets set in the conversion plans will now serve as an important reference for Affected Entities as they set out to procure vehicles to ensure they remain on target. They should be highlighted in annual business cases and other vehicle purchase justification processes. They will also enable entities to better assess near- and long-term charging needs across their facilities, improve their ability to proceed from quantifying total charger needs year over year, and initiate site-specific studies to identify how the balance of charging will be met across parking lots, garages, maintenance facilities, and supplemented through public off-site charging.

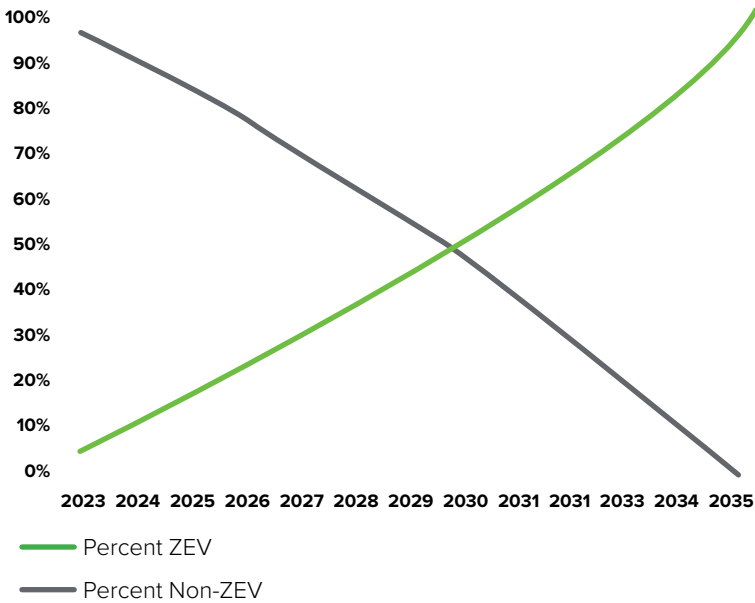
Affected Entities will now start the process of creating plans that set targets to meet the 100% ZEV conversion mandate for medium- and heavy-duty vehicles by 2040. With less market supply compared to light-duty vehicles, medium- and heavy-duty targets may require additional specificity in outlining the gaps in available vehicles and features. Affected Entities currently oversee more than 11,400 medium- and heavy-duty vehicles.

Estimated NYS ZEV Conversions

Light-duty non-emergency fleet

ZEV conversion estimates for all Affected Entities under E.O. #22 by end of calendar year 2035

Source: NYS Light-duty ZEV Conversion Plans.



As Affected Entities set out to designate their own fleet-specific target, a bigger picture study was completed through **NYSERDA** and **OGS**. The study will provide guidance for a coordinated transition by identifying best practices in hardware selection, vehicle-to-port ratios, and other guidelines for an effective electric conversion, as well as estimated anticipated costs and savings.

Key Milestones

2023

plans submitted for light-duty, non-emergency fleet conversion

2025

plans due for medium/heavy-duty conversion

2027

100% of school bus purchases to be ZEV

2035

100% of light-duty, non-emergency fleet to be ZEV
100% of school bus fleet to be ZEV
end of sales for internal combustion engines in new vehicles

2040

100% of medium- and heavy-duty fleet to be ZEVs

Between OGS and NYPA, New York is currently overseeing an expansion of more than 600 charging ports for fleets at State facilities in the near term and installing the wiring for rapid expansion of an additional 500 ports.

Installations at State facilities will include a wide range of equipment tailored to the needs of each agency's fleet and operations, including standard level 2 chargers, DC fast chargers, and off-grid solar chargers with battery storage. This effort will continue to expand to bring an increasing array of chargers to meet the needs of State fleets.

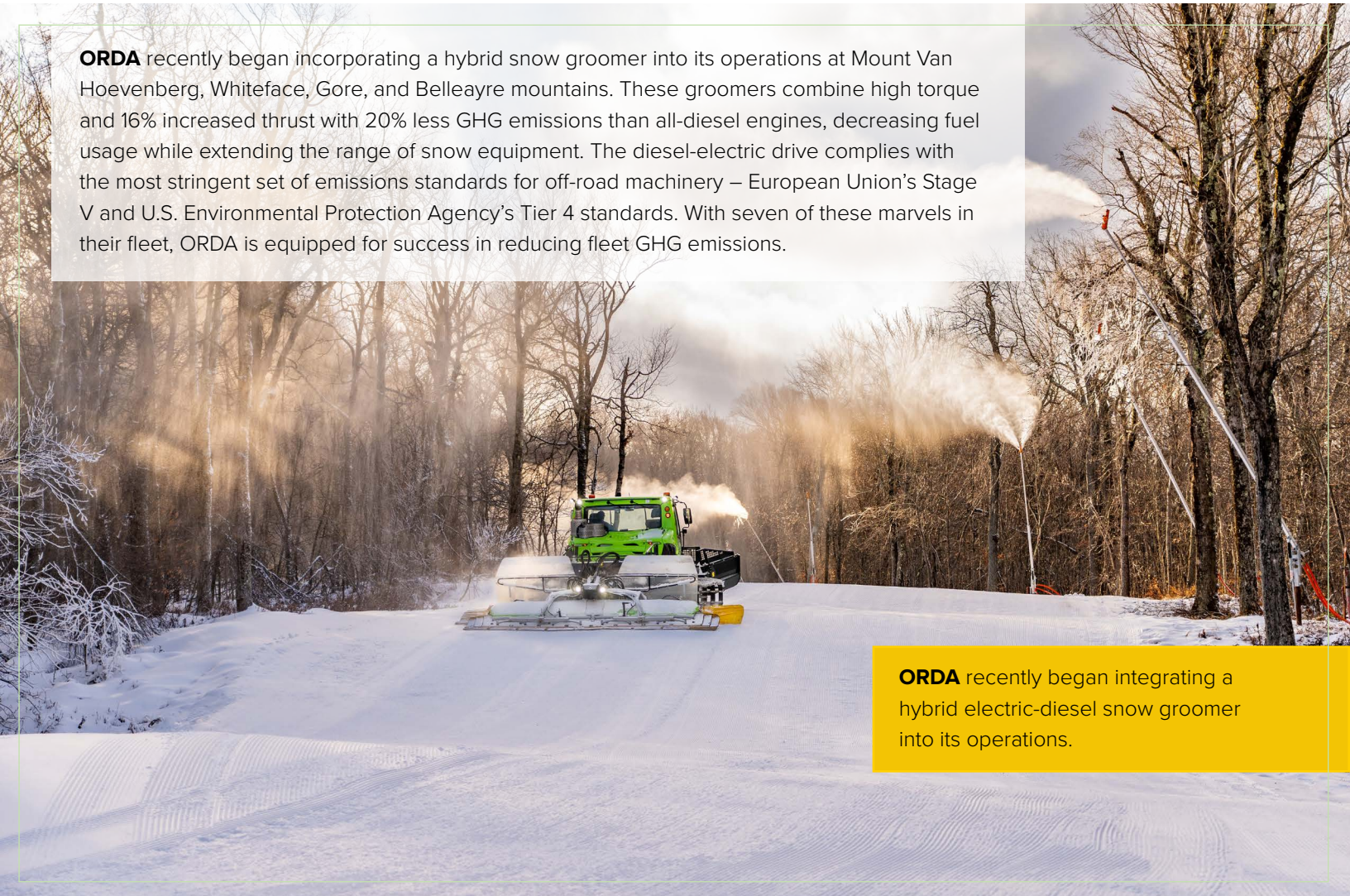
Just as much of the State fleet's refueling needs for gasoline engines are met at commercial stations, electric vehicle (EV) charging will require the use of publicly available chargers to supplement in-facility sessions. Electrical capacity, parking operations, and other constraints may limit the number of chargers that can be installed in the near term. Fuel cards are widely used already across more than 70% of Affected Entities, with most offering some commercial charging access through agreements with select networks.

Success Story: ORDA

ORDA recently began incorporating a hybrid snow groomer into its operations at Mount Van Hoevenberg, Whiteface, Gore, and Belleayre mountains. These groomers combine high torque and 16% increased thrust with 20% less GHG emissions than all-diesel engines, decreasing fuel usage while extending the range of snow equipment. The diesel-electric drive complies with the most stringent set of emissions standards for off-road machinery – European Union's Stage V and U.S. Environmental Protection Agency's Tier 4 standards. With seven of these marvels in their fleet, ORDA is equipped for success in reducing fleet GHG emissions.



ORDA recently began integrating a hybrid electric-diesel snow groomer into its operations.



NYPA's Senior Director of eMobility shows an electric truck from its fleet to **DEC**, **NYSERDA**, and **OGS** GreenNY Council Commissioners.



OGS hosts an EV Ride and Drive event at the Harriman Campus in Albany to give fleet drivers hands-on experience before taking them out on the road.



NYPA and Tesla each developed 8-charger installations at the site at Hancock Town Hall in Delaware County shown above. The hub is the largest open-access high-speed location in the Southern Tier region. As of the end of the FY22-23 reporting period NYPA had installed 122 public fast chargers as part of the EVolve program.

Sustainable Landscaping

With more than 31 million acres of land in New York State – and Affected Entities owning or leasing a significant portion of it – sustainable landscapes are as important as ever.

60% of reporting entities manage land and outdoor space.

Land owned and leased by the State includes natural and designed habitats and ecosystems, such as wetlands, forests, rights-of-way, parks, and gardens. These parcels can range from hundreds to thousands of square feet. Any open space, no matter the size, can become a sustainable landscape.

Sustainable landscapes utilize native plants and are maintained using multiple strategies that respond to the surrounding environment to support biodiversity; **protect pollinators**; manage water; reduce pesticide and fertilizer use; conserve energy and resources; and enhance public awareness, education, and engagement. By creating and maintaining sustainable landscapes, Affected Entities are working toward many of the goals outlined in E.O. #22.

In FY 22–23, Affected Entities reported sustainable landscaping methods such as establishing no-mow lawns, planting native plants, and using electric equipment for maintenance. Affected Entities are also increasingly using landscapes as a form of public engagement and education.

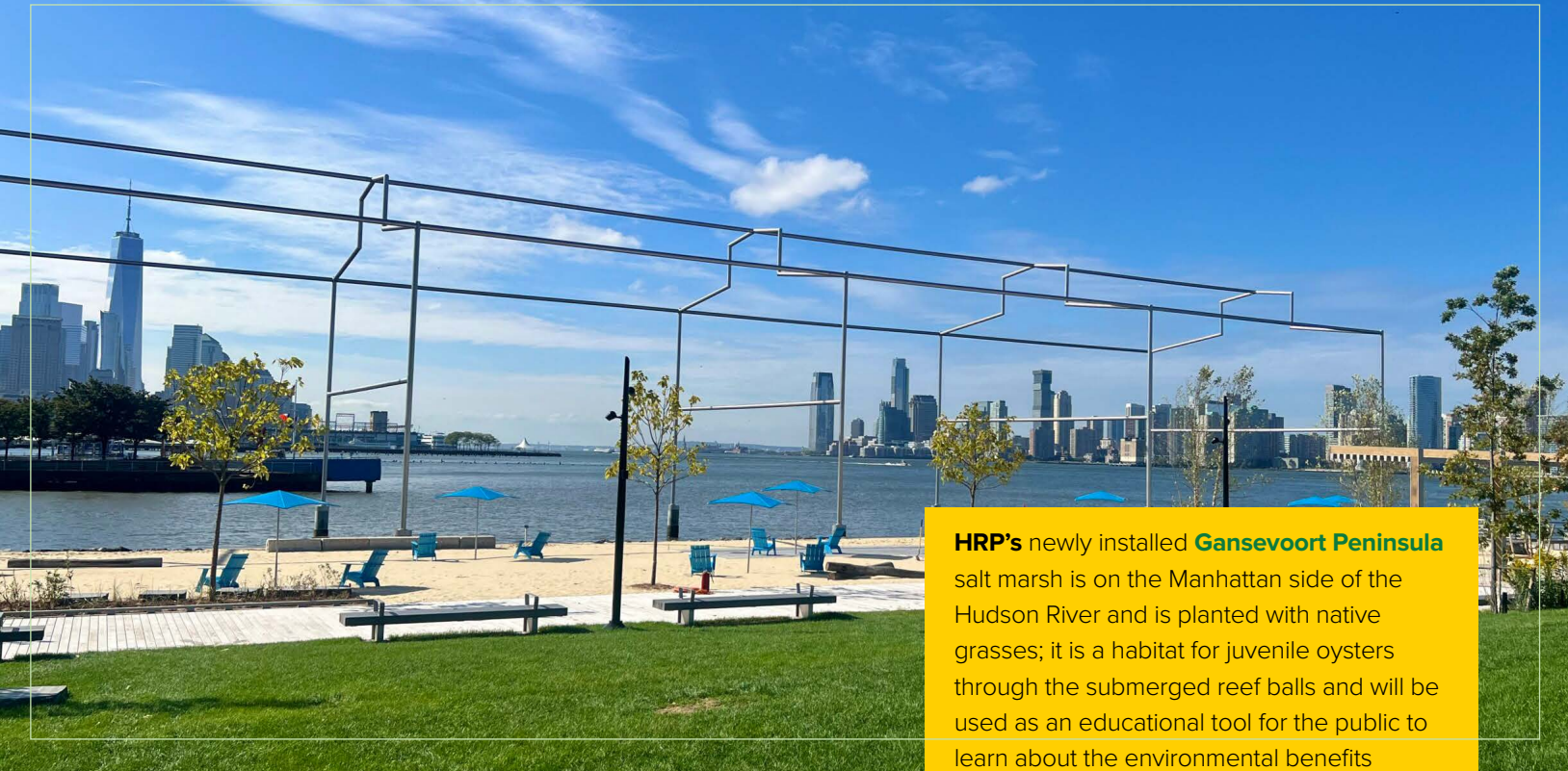
Using sustainable landscapes to engage and educate the public connects people to nature and enforces the importance of protecting our land in ways that are sustainable for the future.

50% of entities managing outdoor space use sustainable landscape practices.

- **BPCA** utilizes iNaturalist as a platform to monitor the wildlife, engage the public within their open spaces, and participate in bioblitzes*.
- **DOL** has started a garden club on their parcel of the Harriman Campus. Additionally, they are reviewing their decorative landscaping beds to incorporate more native plantings to support wildlife.
- **CUNY of Staten Island** planted drought-resistant plants as part of their **Willowbrook Mile Project** to reduce year-round maintenance needs.
- **OGS** planted pollinator-friendly plants at the Syracuse and Utica facilities in the summer of 2023. Additional future landscaping projects are planned for OGS facilities on Long Island and in Poughkeepsie.
- **SUNY**
 - **Albany** campus construction and site projects will include sustainable landscapes. The campus is also part of the Stormwater Coalition of Albany County.
 - **Binghamton** has constructed a pollinator garden in the central quad of campus, which is strategically located to enhance awareness and education and has been the center of several events – including a pollinator plant sale.
 - **ESF** expanded their commitment to engaging their students and connecting them to nature and is the first to join the Nature Positive Universities Pledge as one of the founding universities. ESF also uses iNaturalist to monitor the wildlife and engage the public.
 - **Oneonta** had students help implement a pollinator garden on campus.

33% of entities provide educational signage and/or public outreach about protecting natural resources.

*A bioblitz is a short-term, intensive survey of the biodiversity in a specific area, where participants work together to identify as many species as possible



HRP's newly installed **Gansevoort Peninsula** salt marsh is on the Manhattan side of the Hudson River and is planted with native grasses; it is a habitat for juvenile oysters through the submerged reef balls and will be used as an educational tool for the public to learn about the environmental benefits of intertidal ecosystems.



NYPA Tree Power native-tree planting event in fall 2022 at the Municipal Housing Authority of Yonkers. NYPA's **Tree Power** program distributes more than 1,000 native trees across the State each year. Among their many benefits, these trees provide habitat for native biodiversity, remove carbon from the atmosphere, and improve building energy efficiency through reduced heating and cooling needs as the trees provide shade and a wind break. Over 1,300 trees were distributed in 2023, with more than a third provided to disadvantaged communities.

Planning for the future is another important aspect of sustainable landscapes and **SUNY Potsdam** completed a Landscape Master Plan to ensure they are prepared.

Species and Habitat Protection

Invasive Species

Invasive species are non-native organisms that can cause harm to the environment, the economy, and human health.



CUNY College of Staten Island students and staff are working to eradicate invasive Japanese knotweed from their campus.

A lack of predators, the ability to adapt to various habitat conditions, and faster reproductive rates allow certain populations of certain non-native species to increase quickly. Invasive species can outcompete native ones for resources, disrupt food webs, spread disease among humans and livestock, damage crops, and negatively impact recreation and associated income. They can be introduced intentionally (e.g., when invasive plants are used for landscaping) or unintentionally (e.g., when firewood carries insects and diseases that can harm the ecosystem). As a hub for international trade and travel, New York State has one of the highest rates of non-native introductions in the country, but Affected Entities play a significant role in preventing the spread of invasive species by actively surveying their land, identifying infestations early, and restoring native ecosystems.

Some examples of Affected Entities leading by example to protect New York State from invasive species in FY 22–23 include:

- **DOT** is actively managing research projects for the development of biocontrol for invasive plants on right-of-ways.
- **NYS Canal Corporation** has developed an operational plan to detect the round goby and reduce its movement through the Champlain Canal. This plan includes scheduled lockings, double flushing of locks, and communication protocols for critical stakeholders.
- Six **SUNY** campuses are actively managing invasive species on their grounds using a variety of techniques, including volunteer hand removal, selective insecticide injections, and goat grazing.

OPRHP allocates more than \$2 million per year in invasive species management for more than 350,000 acres of land.

11 entities

addressed invasive species on lands they manages during FY 22–23.

10 entities

reported having an early detection rapid-response protocol in place to identify invasive species on agency lands in FY 22–23.



Bicknell's Thrush.



Monarch butterfly.

Endangered Species

New York's endangered species efforts protect sensitive habitats and correct fish and wildlife problems before certain species are threatened.

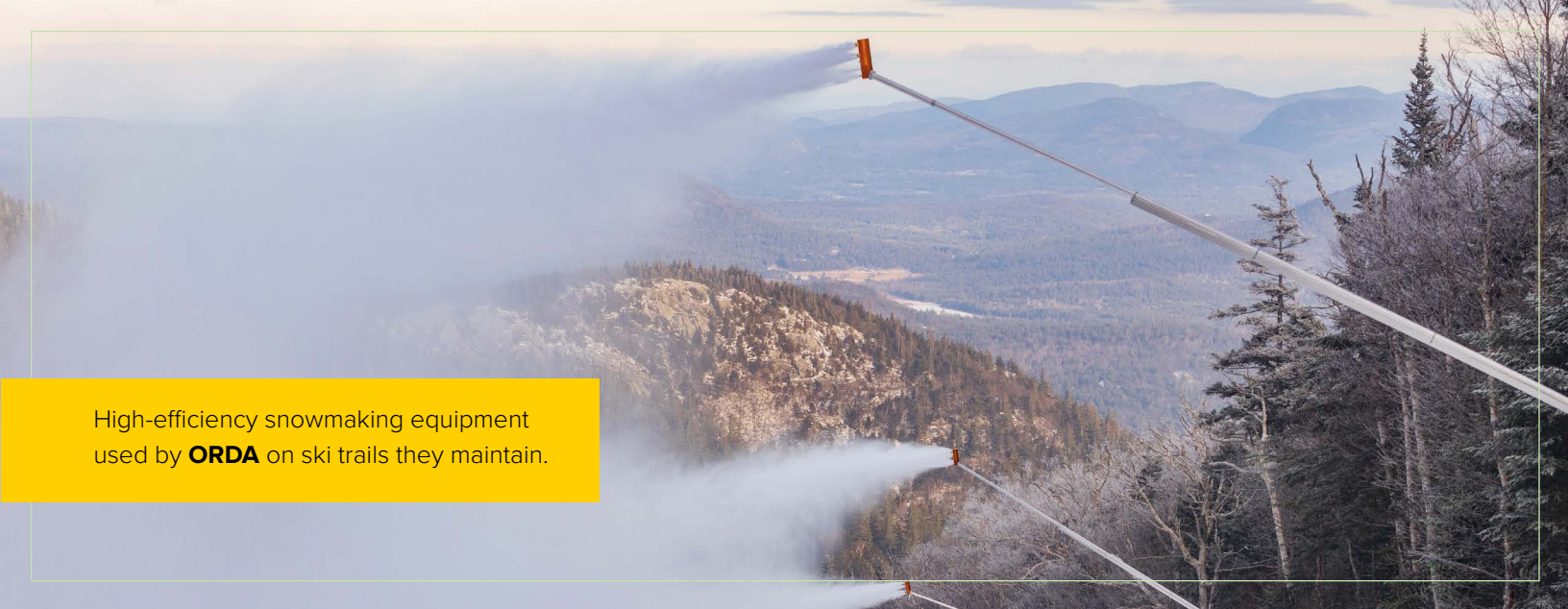
Affected Entities were proactive in aiding endangered species in FY 22–23. Their efforts were focused on protecting species from ongoing threats such as habitat loss, development and land use changes, and the effects of climate change. Due in part to efforts by State entities, multiple species are recovering their numbers. Progress will continue, as E.O. #22 contains language directing Affected Entities to ensure that their operations do not have an adverse impact on endangered species. In addition, DEC created and issued guidance to assist Affected Entities in this endeavor.

Examples of Affected Entities working to improve the status of our rarest species in FY 22–23 include:



NYSBA and Thruway Authority maintain Peregrine Falcon nesting boxes on many bridges throughout the State.

- **ORDA** is protecting Bicknell's Thrush (BITH). The BITH is a New York State-designated species of special concern and has been petitioned for listing under the federal Endangered Species Act due to range contraction caused by climate change. BITH have been documented at both Whiteface Mountain and Gore Mountain ski centers, some of the best remaining Alpine habitat left in the State. In the development of the most recent amendment to Whiteface Mountain's Unit Management Plan in 2022, high-intensity construction activities are prohibited above 2,800 feet in elevation from May 15 to August 1 as BITH are known to return to their high-elevation summer breeding grounds during this time period. Future development is also limited above 2,800 feet as to not cause any harm to the bird. During the public comment period for this Unit Management Plan Amendment (UMPA), the Northern New York Audubon submitted a letter to **ORDA** stating the mitigation efforts as described in the UMPAs are sufficient to protect the nesting birds.
- **New York State Bridge Authority (NYSBA)** and **Thruway Authority** maintain Peregrine Falcon nesting boxes on many bridges throughout the State. It is a symbiotic relationship. The bridges provide high vantage points for these birds of prey and create a safe nesting zone away from human interference, while the falcons keep pigeons off the bridges. Keeping the pigeons at bay is beneficial in increasing the life of the bridge as pigeon droppings are harmful to the paint and steel of the structure. Since the program's inception, the number of pigeons nesting on bridges has dramatically decreased. These nest boxes have been instrumental in assisting breeding falcons to successfully nest and raise their young. The productivity of bridge-nesting peregrines has contributed substantially to the recovery of this species in New York State and throughout the northeastern United States.
- **NYPA** is proactively creating habitat for monarch butterflies, a species in decline that is being evaluated for federal listing under the Endangered Species Act. By converting mowed turf grass lawns to native pollinator meadows, NYPA is creating new habitat for this species. NYPA is also evaluating opportunities to modify land management practices to enhance existing monarch habitat. NYPA is also incorporating monarch habitat maps into decision-making on new development projects, thus proactively protecting a species in decline.



High-efficiency snowmaking equipment used by **ORDA** on ski trails they maintain.

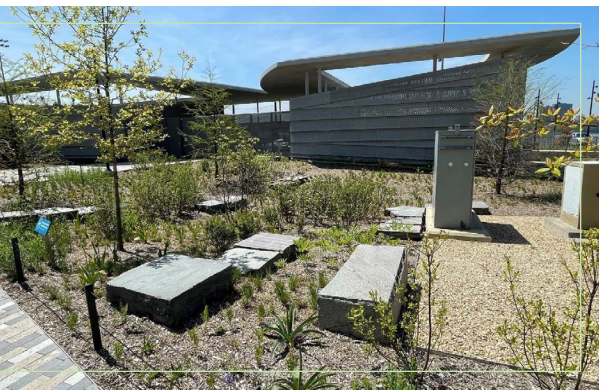
Water Conservation

Water conservation is fundamental for New York State’s sustainability.

The process of withdrawing, treating, and delivering potable water can be costly in terms of energy use, chemical use, and labor requirements. Affected Entities are taking measures to reduce water waste and improve efficiency in all aspects of water use.

While New York State is generally not as water stressed as other parts of the country and the world, conserving water still makes sense for many reasons. Reducing water waste has an immediate economic benefit through saving money on infrastructure operating costs. The environmental impact of the withdrawal and discharge of process water is minimized when water is used efficiently. Mindful and deliberate use of water is socially equitable because future generations may rely on the same sources we do – only if they are used responsibly today. Finally, promoting a culture of efficiency improves the resilience of Affected Entities and their neighboring communities.

While existing water sources should be sufficient to meet today’s requirements, increasing demand and climate change may affect future water availability. Climate change is expected to increase air temperatures and change precipitation patterns. This will increase the likelihood of short but intense droughts where water availability is stressed due to lower soil moisture, reduced groundwater recharge, and increased evapotranspiration (possibly due in part to vegetation changes and shifts in growing seasons). In short, the reliability we have come to expect from our water infrastructure may not be consistent in the future, so implementing water conservation today will promote resilience for tomorrow’s challenges.



The rain garden on Gansevoort Peninsula at Hudson River Park.

Highlights from water conservation projects in FY 22–23 include:

- **HRP’s** new rain garden on the Gansevoort Peninsula will reduce the park’s irrigation demand while improving water quality.
- **ORDA** invested in new high-efficiency snowmaking equipment. These new cannons will allow flexibility in maintaining a suitable skiing surface during increasingly uncertain winter conditions while reducing the impact that their water withdrawals have on nearby ecosystems.
- **SUNY Albany**, in partnership with Regenerative Solutions Inc. (Regen), is leading research on developing green, environmentally sustainable, low-cost sorbents that remove per- and polyfluoroalkyl substances (PFAS) from water. To remediate PFAS-contaminated soil, sediment, and shallow groundwater, the research team is working on using plant uptake followed by a thermal process to destroy PFAS accumulated in harvested plant biomass.



NYPA created a rain garden at the New York Energy Zone Visitor Center in Utica.

Green Infrastructure, Stormwater, Low-Impact Development, and Climate Risk

Green Infrastructure

As open space is developed, rain and snowmelt are no longer able to soak into the ground and instead flow into our natural waterbodies, potentially carrying pollutants and debris with them and overwhelming our natural systems.

Impervious surfaces, such as buildings and parking lots, do not allow precipitation to soak into the soil. Instead, rainfall and snowmelt run off as stormwater into stormwater systems or natural waterbodies. This runoff can transport pollutants and cause flooding, erosion, and other damages to aquatic habitat, personal property, and infrastructure such as roads, culverts, and sidewalks. Green infrastructure reduces the negative impacts of stormwater runoff by mimicking natural processes that slow or treat stormwater at its source. Green infrastructure is more cost-effective than constructing new stormwater and sewage catchment and treatment systems. Additional positive benefits of green infrastructure include beautiful greenery, expanded wildlife habitat, improved air quality, energy savings, urban cooling, and enhanced resilience to climate change.

E.O. #22 aims to increase the amount of green infrastructure installed by Affected Entities by directing them to evaluate and incorporate green infrastructure into all construction projects regardless of size.

A few examples of Affected Entities successfully deploying green infrastructure in FY 22–23 include:

- **BPCA** is evaluating the effectiveness of four types of permeable pavers as a part of a larger pilot to measure efficiency, durability, and installation, with two new types installed in the last year.
- **NYPA** planted a rain garden at the New York Energy Zone Visitor Center in Utica in 2023 to increase water filtration and showcase the use of green infrastructure and native-planting designs to visitors. NYPA also completed designs to include a new rain garden as part of the update to the Blenheim-Gilboa Visitor Center. The designs direct rooftop runoff into rain gardens, where the stormwater can infiltrate into the soil, reducing stormwater volume and improving stormwater quality, as well as utilize native plantings.

- **SUNY ESF's** renovation project included storm water collection tanks under parking lots, landscaped bioswales, and rain gardens. ESF also revitalized the hardwood forest on the Syracuse campus with two separate pollinator-friendly plantings. Members of the campus community planted approximately 180 plants of 27 species in an existing planting bed. This area is certified as a Monarch Waystation by Monarch Watch. These plantings were designed by ESF's native pollinator ecologist and co-chair of the Bee Campus Committee. Native plants were grown in ESF's greenhouses and distributed to members of the local community.

Climate Resilience and Low Impact Development

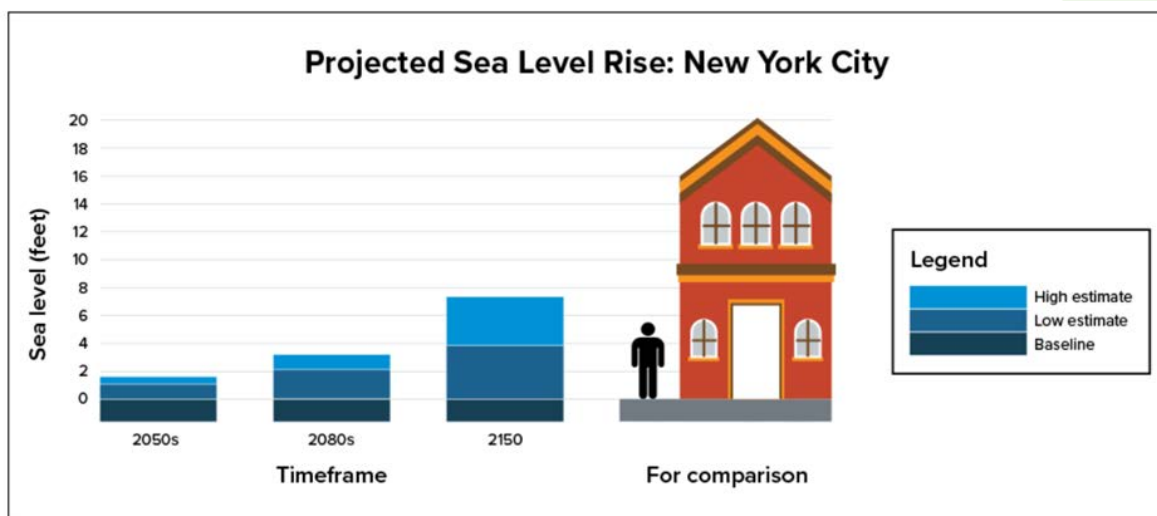
Climate change is creating conditions that are increasing the frequency and severity of extreme weather events, with heavier rainfall, stronger winds, and higher storm surges along the coast.

At the same time, average climate conditions are predicted to shift, including higher temperatures and sea level rise. E.O. #22 aims to build resilient State facilities that will continue to serve New Yorkers through their full useful life, even as the climate continues to change.

E.O. #22 also encourages the use of low impact development (LID) strategies that emphasize conservation and use of on-site natural features to protect water quality and reduce flooding. In the FY 22–23 reporting period, Affected Entities provided baseline data on these emerging reporting requirements.

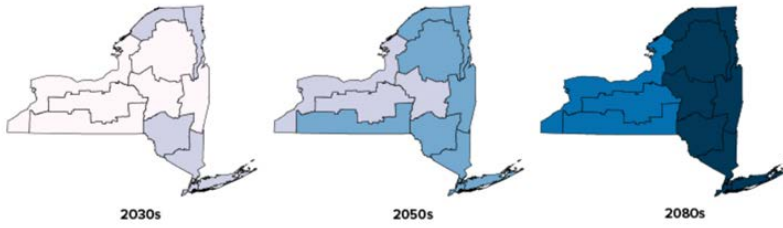
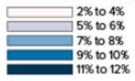
Highlights from LID and climate resilience projects include:

- **NYPA** completed a Climate Vulnerability Assessment to better understand climate risks and to inform asset management planning and investment options across NYPA's service territory.
- **OPRHP** developed a Climate Action Plan and is developing Climate Change Guidance documents.
- **DEC** continues to provide support to Affected Entities in completing Climate Vulnerability Assessments.
- **BPCA** is working on two interrelated resilience projects as part of the LMCR Project to protect Battery Park City and the Lower Manhattan coast from the threats of storm surge and sea level rise.
- **Central Pine Barrens Joint Planning and Policy Commission (CPB)** highlighted their comprehensive land use plan that promotes compact, orderly, and efficient development in the compatible growth area of the Central Pine Barrens. This low impact approach promotes sustainable growth while preserving the largest remaining natural area of Long Island, which is more than 50,000 acres.

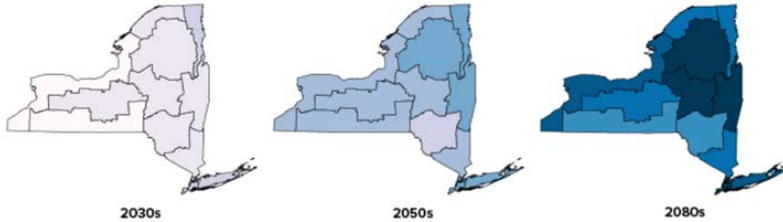
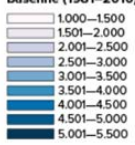


Projected annual precipitation in NYS during 21st century

Change in precipitation since baseline (1981-2010), percent

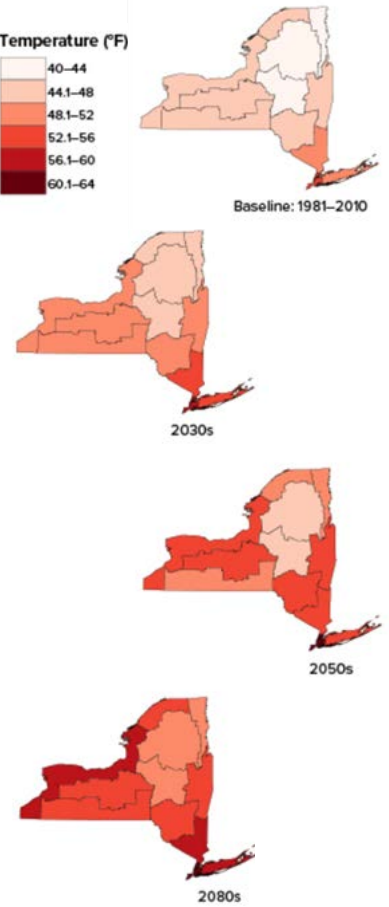
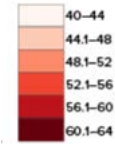


Change in precipitation since baseline (1981-2010), inches



Projected average temperature in NYS during 21st century

Temperature (°F)



BCPA's Coastal Resilience Projects plan for future climate conditions, designing for a 2050 100-year storm. The South and North/West Battery Park City Resilience Projects, part of LMCR, will protect the park and the adjacent community against more severe and more frequent storms with integrated coastal flood risk management systems.

BCPA's Ball Fields and Community Center Resilience Project included construction of an independent flood barrier system along the eastern, northern, and southern boundaries of the BPC Ball Fields. The approximately 800-linear foot barrier system protects the 80,000-square foot playing surface used annually by some 50,000 local youth and the adjacent community center from the risks associated with storm surge and sea level rise.

BPC BALLFIELDS RESILIENCY

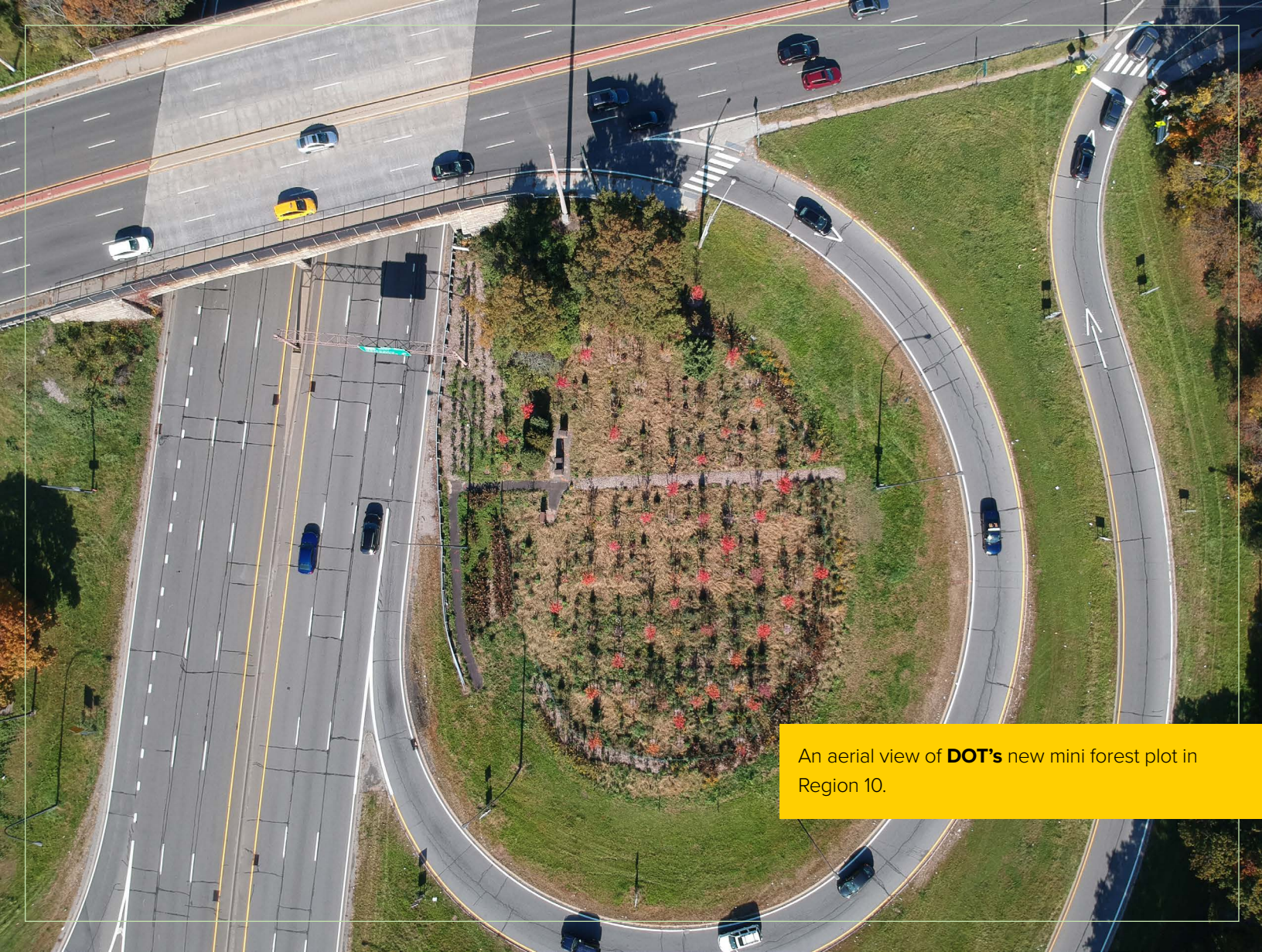
NORTH / WEST BATTERY PARK CITY RESILIENCY

SOUTH BATTERY PARK CITY RESILIENCY

A map of BPCA Resilience projects.

2050s 100-YEAR FLOODPLAIN

SOURCE: NEW YORK PANEL ON CLIMATE CHANGE (NPCC)



An aerial view of **DOT's** new mini forest plot in Region 10.

Green Infrastructure Spotlight: DOT's Mini Forest Pilot Project

In spring 2023, **DOT** (Region 10 Long Island) executed a work order under a capital construction contract in Hempstead for the preparation of a mini forest pilot project. The goal of the project was reforestation of a small plot of land (less than one acre) using the Miyawaki method. This method allows dense forests to grow 10 times faster and become 30 times more dense than traditional planting using native saplings or small trees.

- Anticipated environmental benefits of the mini forest project include carbon capture, increased air filtration, increased biodiversity for wildlife, expansion of habitat for pollinators, filtration of stormwater, and mitigation of the heat island effect.
- Economic benefits include long-term reduced maintenance costs and lower fuel consumption resulting from reduced mowing. The mini forest can act as a living snow fence, reduce sheet runoff and erosion, and reduce difficult-to-mow areas.

This project's success will be a model for future efforts to leverage fast-growing plant communities to help combat and mitigate negative impacts to vegetation along State roadways from invasive insect and plant species and the warming climate, while providing habitat to support pollinators that are vital to regional agriculture and the local economy.



Buying Green

Green Spending

New York State continues to prioritize environmentally preferable purchasing in FY 22–23 with Affected Entities investing approximately \$227 million in green products and services.

Approximate data on green spending across the State were obtained by reviewing sales reports from OGS-centralized contracts and spending data reported by Affected Entities through the GreenNY reporting survey.

As shown in the table below, computers and green cleaning products were once again among the highest spend categories. There was also a significant increase in the amount spent on procurement of transportation equipment and ZEVs compared to past years’ reports. This reflects of the work that is being done to transition the statewide fleet to 100% ZEVs by 2035 for light-duty vehicles and by 2040 for medium- and heavy-duty vehicles – a goal that was reiterated in E.O. #22.

Affected Entities often leverage the centralized contracts set up by OGS to purchase products that fall into these high-spend categories. Beyond these contracts, Affected Entities also frequently referenced OGS Preferred Sources as a key source for sustainable purchases in FY 22–23. In many cases, the environmentally preferable versions of such products or services are of similar or higher quality and have a comparable cost to non-green alternatives. OGS provides a [list](#) of competitively priced green products offered on State contract and through Preferred Sources.

Top 10 Green Purchasers, FY 22–23

Agency and Spend

Department of Transportation	\$53,625,000
Capital District Transportation Authority	\$39,757,000
State University of New York	\$16,416,000
Office of General Services	\$16,342,000
City University of New York	\$15,617,000
Niagara Frontier Transportation Authority	\$15,244,000
Metropolitan Transportation Authority	\$8,598,000
Thruway Authority	\$7,479,000
Information Technology Services	\$6,963,000
Department of Corrections and Community Supervision	\$6,052,000

Summary of Green Spending by Product Category, FY 22–23

Product	Estimated Spend (\$)
Integrated Pest or Vegetation Management	48,425,000
Transportation Equipment	39,945,000
Green Cleaning Products and Services	34,080,000
Computers	25,266,000
Zero Emission Vehicles	24,894,000
Furniture	14,990,000
Printers	6,586,000
Janitorial Paper	5,474,000
Paint	3,794,000
Lighting	3,724,000
Copy Paper	3,662,000
Floor Coverings	2,856,000
Others	2,761,000
Solar Power Purchase Agreements	2,694,000
Re-refined Motor Oil	1,931,000
Apparel and Textile Material	1,862,000
Solar Photovoltaic Systems	1,173,000
Recycling or Composting Services	915,000
Appliances	494,000
Batteries (rechargeable)	339,000
Outdoor Furniture and Playground Equipment	314,000
Non-Chemical Pest Management Services for Outdoor Spaces	272,000
EV Charging Stations	158,000



OGS won its seventh consecutive Electronic Product Environmental Assessment Tool (EPEAT) Purchaser Award in 2023 thanks to the aggregate purchase by New York State entities of sustainable electronics. These purchases resulted in approximately \$1.8 million in cost savings.



DEC purchased electric landscaping equipment.

DEC became the first New York State entity to commit to transitioning all of its lawn maintenance equipment to zero-emissions models. This builds upon their previous purchases of electric equipment, such as riding and push mowers, trimmers, blowers, and carts, and expands the initiative in the coming years.

GreenNY Procurement Specifications

New York State has a robust program to advance the procurement of environmentally preferable products, managed through the GreenNY Council. There are currently 90 GreenNY specifications, which cover more than 130 different commodities, services, and technologies.

Affected Entities are mandated by E.O. #22 to use the GreenNY specifications when making procurements. A complete list of approved **specifications** and their full text is available on the GreenNY website.

In September 2023, the **New York State Procurement Guidelines** were updated to clarify that Affected Entities should consider compliance with E.O. #22 – and its GreenNY procurement specifications – as part of their form, function, and utility requirements. In practice, this means that Affected Entities’ procurement of commodities and services is contingent upon those commodities or services meeting GreenNY specification standards when there is a relevant specification to adhere to, with certain exceptions outlined in E.O. #22. This change is important for ensuring that the State is giving adequate consideration to products’ environmental attributes when making purchases.

OGS is partnering with **DEC** and **SUNY’s** Center for Sustainable Materials Management to complete a comprehensive review of all existing GreenNY specifications. Once the project is complete – expected to be in early 2025 – the specifications will be user-friendly, streamlined, and will leverage the latest verified third-party certifications.

OGS is also working to align the List of **Preferred Source Offerings**, a list of products and services, with the newly updated specifications. Purchasing from Preferred Sources first, when offerings that meet an Affected Entity’s form, function, and utility are available on the list, is mandatory for many Affected Entities, pursuant to State Finance Law. This project will make finding GreenNY specification-compliant products from Preferred Sources easier for Affected Entities’ procurement teams.

Once these two projects conclude, the GreenNY Council will develop training and provide guidance for agency procurement teams to ensure Affected Entities are leveraging their buying power to support the State’s ambitious climate goals.

17 GreenNY specifications that received final approval from the GreenNY Council in FY 22–23:

- Heating and Cooling Equipment (Heat Pumps)
- Passenger Vehicles
- Brooms
- Disinfectant Delivery Devices
- Mops
- On-site Chemical Generation Units
- Powered Floor Maintenance Equipment
- Sorbents
- Sponges and Scrubbers
- Waste Baskets and Recycling Containers
- Wiping Rags and Clothes
- AAA, AA, and D Batteries
- Disinfectants
- Electric Hand Dryers
- Trash Bags
- Copy Paper and Other Paper Supplies
- Paint, Primer, and Coatings

OGS Centralized Contract Updates

Green Cleaning Contract – A new contract was issued in June 2022 for environmentally preferable cleaning products. The new contract is a multistate procurement, led by Massachusetts, and is structured similarly to the previous green cleaning contract, with all products meeting certain environmental criteria.

Computer Aggregate Buy – **OGS** Procurement Services continues to offer EPEAT-certified computers through its aggregate buy program.

About 25% of surveyed Affected Entities created user guides and trainings or directly integrated green purchasing into their own purchasing policies to help their procurement teams find GreenNY specification-compliant products and services. As members of the GreenNY Procurement working group, these Affected Entities are sharing their knowledge and tools with other agencies and authorities.

The GreenNY Council is partnering with **DEC** and **SUNY's Center for Sustainable Materials Management** to complete a comprehensive review of all existing GreenNY specifications.



DEC employees taking a green procurement training.

Eliminating Bottled Water Purchasing

New York State previously recognized it can reduce its environmental impact by eliminating the unnecessary purchase of single-use water bottles.

Signed in 2009, E.O. #18, “Restricting the Use of Bottled Water at State Facilities and Promoting Executive Agency Sustainability,” directed executive agencies to curb their spending on bottled water. E.O. #22 expanded that restriction to all Affected Entities, including some authorities. Specifically, E.O. #22 states that Affected Entities shall “not expend State funds for the purchase of bottled water.” This definition includes any bottled water in any size – not just plastic single-serving bottles.

An impressive 92% of Affected Entities reported that their bottled water purchasing practices were compliant with E.O. #22 during the fiscal year. Affected Entities are actively taking steps to eliminate their need to purchase bottled water. Entities are working on plans to install reusable water bottle filling stations, provide staff with reusable bottles, test water potability, and use filtration systems.

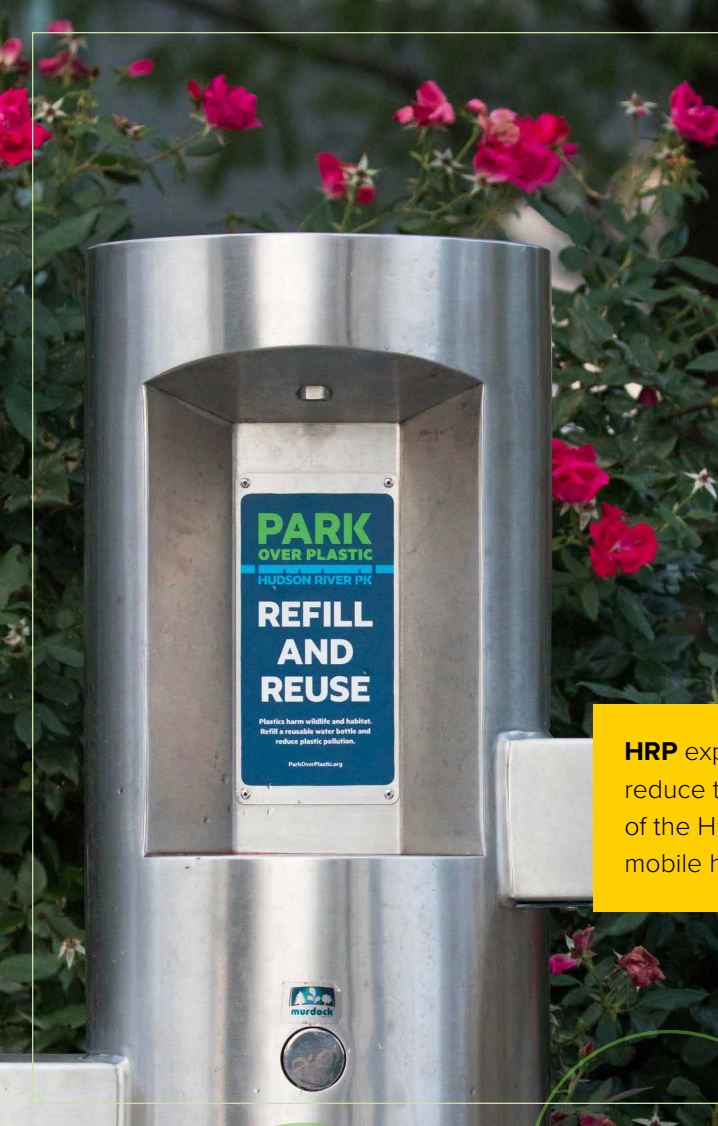


Several Affected Entities reported successes already, including:

- **CUNY** campuses installed more than 50 water bottle refilling stations in FY 22–23.
- **NYPA** installed additional plumbed water coolers to replace existing 5–10-gallon water bottles at their Niagara location.
- **DEC** is working with the Village of Stamford to extend the village’s water main to the DEC office and bring potable water to the facility. Additionally, a new well is being drilled at the Salmon River Fish Hatchery in Altmar.

NYPA installed additional plumbed water coolers at the Niagara site to reduce bottled water use.

92% of Affected Entities reported purchasing practices regarding bottled water were compliant with E.O. #22.



HRP expanded its Park Over Plastic® initiative to help reduce the Park's plastic footprint and improve the health of the Hudson River. The organization has deployed mobile hydration stations and installed water stations.

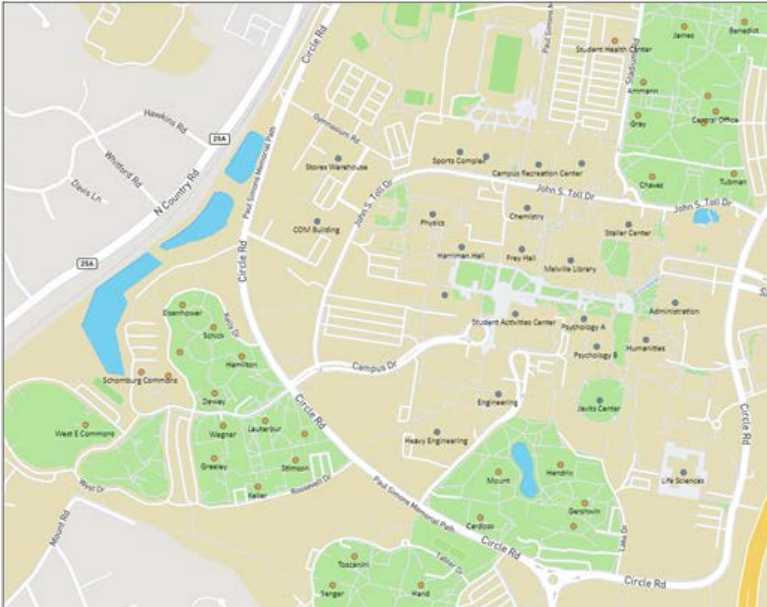
Water Bottle Filling Station Dashboard

The Water Bottle Filling Station Dashboard shows how many water bottles are refilled each month. Select a building to learn more.

Have a suggestion or feedback? Interested in getting involved in our Fill It Forward® program? Contact us at: sustainability@stonybrook.edu

* In August 2018, the SBU Office of Sustainability partnered with the Faculty Student Association (FSA) to introduce the Fill It Forward program to the university. The Fill It Forward program is designed to incentivize students to use reusable water bottles on campus by giving prizes for refilling their bottles and discontinuing the use of plastic disposable bottles. [Click here to learn more.](#)

Annual Average Fill Count	
234,330	Campus
43,748	Campus Recreation Center # of Filling Stations - 9
12,878	Melville Library # of Filling Stations - 3
6,758	Stinson # of Filling Stations - 2



SUNY Stony Brook's online bottle filler map, which students and staff use to find one of the 100-plus conveniently located stations.



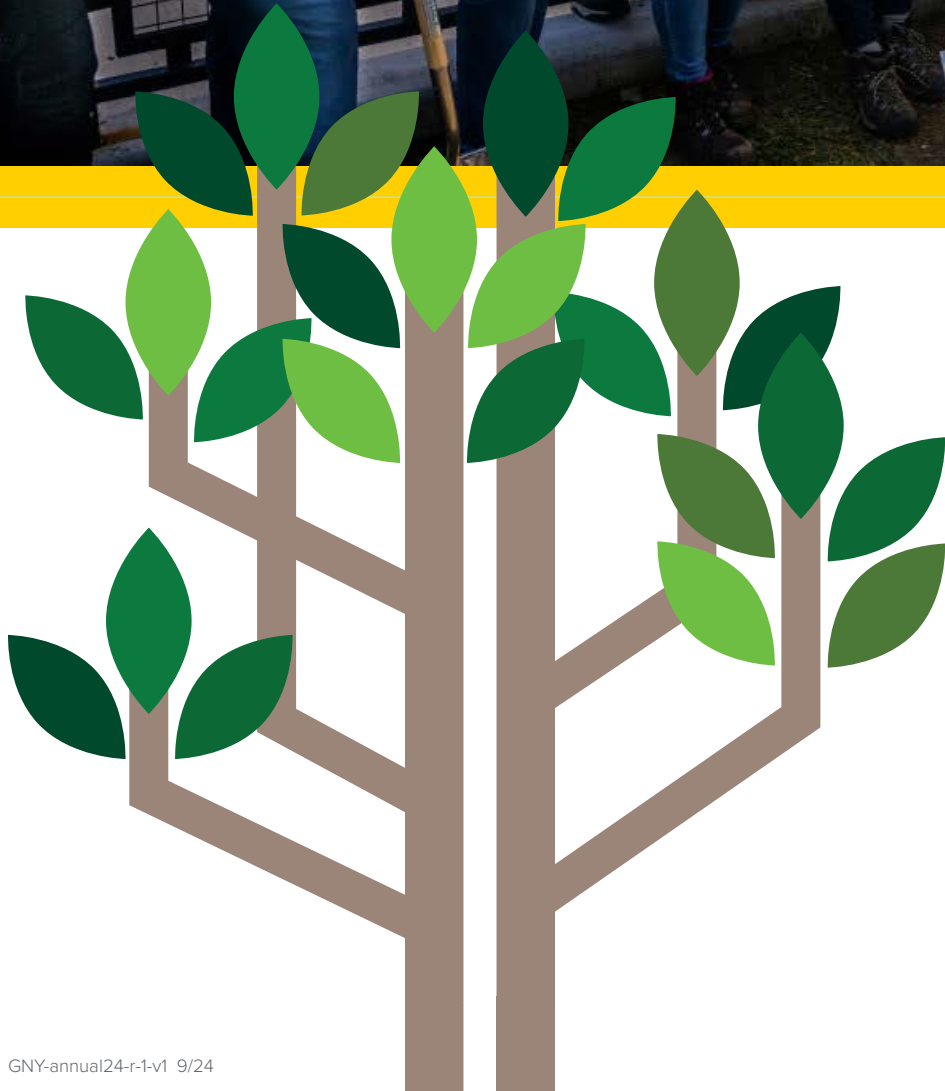
Conclusion

In FY 22–23, New York State’s Affected Entities set a strong example by actively reducing GHG emissions, minimizing waste, cutting down on hazardous substances, purchasing sustainable products, and improving the lands and habitats under their care.

The GreenNY Council supported these efforts by enhancing State government capacity for sustainability through training, guidance, and other engagement activities. These advancements lay a solid groundwork for the State to accelerate and meet the new environmental and sustainability goals outlined by Governor Hochul in E.O. #22.

New York State continues to enhance its environmental and sustainability performance each year, contributing to a more sustainable future for all New Yorkers.





Cover:

CUNY College of Staten Island students planting trees on Arbor Day.

Back Cover:

NYPA staff and representatives from the City of Yonkers and Yonkers Municipal Housing Authority planting native trees as part of NYPA's Tree Power Program in 2022.



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