The 693kW solar array at Robert Moses State Park in Suffolk County generates as much electricity as the park consumes, making it the first energy-neutral state park in the nation.
Message from the Commissioners

Through the leadership of Governor Andrew M. Cuomo, New York has experienced steady progress toward the adoption of sustainable practices and operations by State government. New York’s Green Procurement and Agency Sustainability program is an ambitious effort led by our two agencies, the Department of Environmental Conservation (DEC) and the Office of General Services (OGS), working together to implement Executive Order No. 4 (EO 4), which was continued by Governor Cuomo in January 2011. This Fifth Progress Report documents the achievements that have been attained thanks to the work of dedicated staff in agencies and authorities across the State.

New York State is a national leader in “green” or environmentally preferable purchasing. Buying green products supports all of EO 4’s environmental priorities including reductions in waste, toxics, energy, and water use. As agencies have become more comfortable with the goals and benefits of green procurement, the EO 4 Interagency Committee, led by DEC and OGS, has increased its emphasis on making purchasing easier. Toward this end, we are pleased to announce the creation of a new “Green Procurement” team within OGS Procurement Services that will focus on the issuance of contracts with green offerings. The availability of recycled content copy paper on centralized contracts has been the driving force behind increasing purchases of 100% post-consumer recycled content copy paper, which reached 57% of dollars spent on copy paper in FY 15-16, the highest percentage spent since tracking began, and a 35 percentage point increase from the 22% spent in FY 08-09.

Considerable strides have also been made to incorporate sustainability into State operations. New York is leading the nation under Governor Cuomo’s comprehensive policy for a clean, more affordable and resilient energy system, called Reforming the Energy Vision. In February 2017, Governor Cuomo announced that State-supported solar power in New York increased nearly 800% from 2011 to 2016. As an example, the electricity generated by the recently completed 693kW solar array at Robert Moses State Park will cover the entire annual energy usage of the park and make it the first energy neutral state park in the nation. In support of these efforts, OGS will make awards in 2017 for a centralized photovoltaic systems (solar) contract for use by State agencies, authorities, and local governments.

This year’s waste generation and recycling data show the enormous progress made in recycling construction and demolition (C&D) debris. State agencies and authorities reported the highest level of C&D materials recycled in the past eight reporting years. The Department of Transportation (DOT) and the Metropolitan Transportation Authority (MTA) helped to lead this effort. Also in 2016, MTA’s New York City Transit division was honored for incorporating innovative features into the newly renovated Mother Clara Hale Bus Depot, including a green roof, solar wall, and the capture and reuse of rainwater for washing buses. It earned a New York State Environmental Excellence award in 2016 for these efforts, as well as bragging rights as the first LEED (Leadership in Energy & Environmental Design) certified bus depot in the country.

These successes are made possible by the dedicated work of Sustainability Coordinators designated by agencies and authorities across the State, who tirelessly advocate for the adoption of sustainable practices within their organizations, and tailor projects to fit their agency’s unique mission. They also keep track of the information necessary to produce this Progress Report. We are committed to supporting their efforts and building upon their achievements in order to bring a greener, more sustainable, and more efficient government to the people of the State of New York.

RoAnn M. Destito,
Commissioner,
Office of General Services

Basil Seggos,
Commissioner,
Department of Environmental Conservation
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Executive Summary

The vision of a vibrant, innovative, and sustainable economy underlies Executive Order No. 4 (EO 4), which establishes a State Green Procurement and Sustainability Program, and Executive Order No. 18 (EO 18), which restricts the purchase of bottled water by the State. In 2011, Governor Andrew M. Cuomo continued both orders.

EO 4 directs the approximately 73 State agencies, authorities, and other entities covered by the Order ("agencies") to incorporate sustainability into all aspects of their operations. To accomplish this, agencies are required to implement a Sustainability and Environmental Stewardship Program and assign an employee to serve as Sustainability and Green Procurement Coordinator ("Sustainability Coordinator"). EO 4 also created an Interagency Committee on Sustainability and Green Procurement ("Interagency Committee") co-chaired by the Commissioners of the Office of General Services (OGS) and the Department of Environmental Conservation (DEC), and charged it with several tasks, including preparation of this report.

EO 18 directs executive agencies to eliminate the purchase of bottled water. Agency reporting under EO 18 has been combined with reporting under EO 4. Both are summarized in this report.

Progress Toward a Green New York

The past eight reporting years, from FY 2008-09 ("08-09") to FY 2015-16 ("15-16"), have seen steady progress toward a greener New York. Overall paper use and waste generation levels (with some adjustment for a surge in demolition debris, described in more detail below) declined in FY 15-16, continuing the State’s encouraging downward trend.

Sustainability is a process, and the most successful agencies enjoy the executive support, personnel infrastructure, and financing needed to continually review their operations, measure progress, embrace innovation, and overcome challenges. Of the 66 entities reporting in FY 15-16, 88% have designated Sustainability Coordinator, an increase from 82% the previous year. 26% of agencies have a sustainability team. To be effective, agencies need a champion or team of champions who are willing to lead and coordinate the agency’s commitment to sustainability. Agencies which embody that model include the Office of Parks, Recreation and Historic Preservation (Parks), the Jacob K. Javits Center ("Javits Center"), the City University of New York ("CUNY"), the Metropolitan Transportation Authority ("MTA"), and DEC.

Reducing and Recycling Waste

EO 4 and EO 18 have significantly impacted how State agencies generate and handle waste. Agencies have significantly reduced paper use, decreased waste generation, increased recycling rates, and purchased 100% post-consumer recycled content copy paper at high levels. The executive agencies covered by EO 18 have virtually eliminated the purchase of bottled water.

The majority of agencies adopted paper use reduction practices starting in FY 08-09. A shift to double-sided printing and electronic transactions resulted in a 49% decrease in paper use through FY 15-16, a highly encouraging trend that saved $19.6 million in FYs 11-12 through 15-16, a total of $40.9 million since reporting began in FY 08-09, and will continue to save approximately $7 million per year going forward. By far the greatest amount ($4.2 million), and more than one-half (57%) of dollars spent on copy paper in FY 15-16 went to purchase 100% post-consumer recycled content, processed chlorine-free copy paper. This represents a 35 percentage point increase from the 22% (or $3.3 million) spent in FY 08-09.

By reducing copy paper use, New York saved $36 million in FYs 11-12 through 15-16 and will continue to save approximately $7 million per year.
*The modest increase in paper purchased in FY 14-15 is primarily due to a 20 percentage point increase in agencies reporting compared to previous years. In FY 15-16, paper use declined even though the number of reporting agencies increased by 5 percentage points.

While FY 15-16 saw a bump upwards in overall waste generated, the increase is entirely due to two large entities, the Department of Transportation (“DOT”) and MTA generating significantly more construction and demolition (“C&D”) debris than the previous year, for a total of 189,270 additional tons. When this number is subtracted from the total, the overall amount of waste generated for FY 15-16 is 390,745 tons, a 52% decrease from FY 08-09, and a modest decrease from the previous reporting year, even though the number of reporting agencies increased. This maintains the State’s encouraging waste reduction trend.

*The large increase in waste generated in FY 10-11 is primarily due to MTA reporting 200,000 tons more waste generated (most likely C&D debris) as compared to the previous or following years. **The large increase in waste generated in FY 15-16 is due to DOT and MTA reporting 189,270 tons more C&D debris generated as compared to the previous year. The blue dashed lines indicate the amount of waste generated for FYs 10-11 and 15-16 when those increases are subtracted. In FY 10-11, the increased waste was disposed of, not recycled. In FY 15-16, the increase in materials generated was entirely recycled, leading to a notable increase in the overall recycling rate.
The remarkable story told by the data in the chart above is the enormous progress agencies have made in recycling C&D debris. In FY 10-11, the State saw a similar increase, of 200,000 tons, of waste generated by MTA. None of that increased material was recycled, causing a dip in the recycling rate to 45%, its lowest recorded level. In FY 15-16, all of the increased material was recycled, causing a bump in the recycling rate to 78%, its highest recorded level.

In FY 15-16, DOT reported 64.4 lane miles of cold in place asphalt recycling, a significant increase from zero miles the year before, that resulted in an increase of 136,013 tons of C&D debris generated, and also recycled, by DOT over the previous year. MTA adopted an ambitious C&D recycling goal in 2014, and reports that of the 105 construction projects that generated C&D in FY 15-16, 32 achieved a 100% diversion rate and 48 recycled more than 90% of the material generated, resulting in an increase of 53,257 tons of C&D recycled by MTA over the previous year. Together, these trends account for the significant jump in the overall amount of materials recycled.

Driven by increased rates of recycling construction and demolition debris, the State's overall rate of recycling soared to 78% in FY 15-16. Here, debris to be recycled is moved by conveyor belt as part of MTA's construction of the Second Avenue Subway in Manhattan.

In FYs 12-13 through 15-16, agencies reported recycling rates of 70% or above, which represents a 20 percentage point increase from FY 08-09 and well surpasses the statewide recycling goal of 50% established pursuant to the Solid Waste Management Act of 1988. Of the 580,015 tons of waste generated in FY 15-16, 452,962 tons were recycled or composted, more than the total amount of waste generated in the previous fiscal year.

The total amount of organic material composted in FY 15-16 increased 34% over the amount composted in FY 14-15, to 19,647 tons. Food scrap composting, a subset of that number, rose 20% to 8,885 tons, primarily as a result of increased composting on SUNY campuses across the state.

The executive agencies covered by EO 18 have virtually eliminated the purchase of bottled water. Fourteen agencies continue to use bottled water under special circumstances, such as for soldiers on active duty. 88% of authorities and other reporting entities not covered by EO 18 have elected to comply anyway, restricting bottled water use to special circumstances.
Reducing the Environmental Impacts of Operations

Overall, agency reports document the widespread adoption of green practices that are helping to reduce energy use, employee travel, waste, water use, and the use of toxic chemicals. Other initiatives, such as the use of renewable energy, the purchase of Zero Emission Vehicles (ZEVs) and the adoption of employee workplace charging programs are still in their infancy but promise growth in future years. In FY 15-16:

- 95% of agencies use webinars or videoconferencing at least some of the time to reduce employee travel, with 20% using them all of the time.

- 89% use electronic means to provide documents to the public all or most of the time, and 82% use electronic means to receive documents or information from the public all or most of the time.

- 87% of agencies responsible for performing or contracting for cleaning at their facilities use green cleaning products all or a majority of the time. 81% use fragrance-free products, 78% use concentrated products, and 75% have reduced the number of different kinds of cleaning products used.

- 86% of agencies use carpooling and fleet management practices at least some of the time to reduce employee vehicle miles traveled.

- 85% set weather-appropriate building temperature control ranges to conserve energy at all or a majority of their facilities.

- 83% use two-sided printing either all or a majority of the time.

- 71% of agencies responsible for indoor pest management use integrated pest management (IPM) at all or a majority of their facilities.

- 73% of agencies have installed ENERGY STAR® equipment and appliances at all or a majority of their facilities.

- 68% use high efficiency plumbing fixtures in at least some of their facilities.

- 64% of agencies have an office supply reuse program in place in at least some of their facilities.

- 61% of agencies responsible for landscaping at their facilities are using practices that preserve or maximize the use of native vegetation to support pollinators and reduce water and energy use at least some of the time.

- 58% of agencies responsible for turf and ornamental pest management use non-chemical means of pest control at all or a majority of their facilities.

- 52% of agencies responsible for turf and ornamental management reported avoiding nursery stock treated with insecticides at all or a majority of their facilities.

Saving Money and Buying Green

Overall, New York’s experience has shown that sustainable practices do not cost more and can even save money, especially energy and waste reduction.

On average for FY 09-10 through FY 14-15, 38% of agencies reported saving money through energy reduction, 34% saved money by eliminating the purchase of bottled water, and 33% saved money through waste reduction and reuse. Most reported either a reduction or no change in costs due to the implementation of projects across EO 4’s other areas of focus: 52% for water and natural resource conservation, 51% for non-chemical pest control or integrated pest management (“IPM”), 45% for recycling and composting, 48% for green cleaning, and 42% for green procurement. Significantly fewer agencies (3% to 12% depending on the activity) experienced increases in costs. More than one-third did not have estimates for changes in costs due to their activities.
On average, almost two-thirds (61%) of dollars spent on janitorial paper in FY 15-16 went to purchase 100% recycled content paper, a significant increase from the 34% of dollars spent on such paper in FY 08-09. The encouraging trends for both copy and janitorial paper purchasing indicate widespread culture change and illustrate the power of State contracting, as they were facilitated by statewide contracts for 100% recycled paper first issued by OGS in the summer of 2008.

Systems for tracking green purchases are in development. Combining agency reports with the total spent on 30% or more post-consumer recycled content copy paper, 100% recycled janitorial paper, re-refined oil, green computers, environmentally preferable cleaning products, environmentally preferable lighting products, green floor coverings, and solar electric systems, overall green purchasing by State entities amounted to $66.3 million in FY 15-16.

EO 4 requires the Interagency Committee to annually select a minimum of three priority categories of commodities, services, and technologies, and at least 12 priority commodities, services, and technologies within each category for which to develop green specifications. To date, the Committee has finalized 43 green specifications covering a broad and diverse array of 84 products and services, including computers, cleaning products, lighting, pest management, and sustainable landscaping. Many of these specifications are among the most protective in the country.

OGS issued an impressive number of green contracts to support the purchase of EO 4-compliant goods and services. The contract for “Recycling and Trash Removal Services” offers 11 different recycling options, including the composting of food waste and other organics, and includes provisions for training, educational outreach, and waste composition analysis. Offerings on the multi-state contract for “Environmentally Preferable Cleaning Products, Programs, Equipment and Supplies” are fully green and in compliance with New York State law and EO 4 requirements. Twelve categories of products are covered, including general purpose cleaners, floor maintenance chemicals, and even disinfectants.

Close to all agencies reporting, 97%, consulted the green procurement specifications when making purchases at least some of the time in FY 15-16, and 63% did so all or a majority of the time. As New York’s green procurement program continues to mature, with more green contracts issued and better tracking systems put into place, reporting on green purchasing should become more robust.

Overall, sustainable practices do not cost more and can even save money, especially energy and waste reduction.
Challenges and Success Stories

Reports from the field in FY 15-16 highlighted progress and several important success stories.

Former challenges being met include:

**Tracking of solid waste.** The past eight years of measuring waste has resulted in the creation of tools and changes of processes that have made it easier for agencies to track their performance. The “Recycling Services and Trash Removal” contract is helping to enhance this trend, since it includes both training and tracking services.

**Increasing the purchase of 100% post-consumer recycled content copy paper.** Purchases have continued to increase, reaching the highest level yet recorded in FY 15-16, at 57% of overall paper purchases, despite initial concerns about price and performance. Statewide contracts for 100% recycled copy and janitorial paper by OGS Procurement Services continue to support this trend, and data for the last seven years shows that 100% recycled copy paper, on average, costs the same or less than other papers.

**Promoting adoption of green cleaning practices.** Green cleaning continues to be widely practiced, despite initial concerns about price and performance. The “Environmentally Preferable Cleaning Products” contract, as well as robust green offerings by preferred sources, are making it easier for agencies to identify and purchase high-performing, fully green cleaning products at a competitive price.

**Overcoming barriers to green purchasing.** Actions taken by OGS to issue new green contracts, identify green products on existing contracts (such as “Floor Coverings and Lamps”), and give prominent exposure to green purchasing at the annual Purchasing Forum, continue to help agencies identify and purchase green products at a competitive price.

Issues that are the focus of current improvement efforts include:

**Tracking green purchasing.** Most financial accounting systems currently used by agencies do not track green purchasing data. Barriers include a lack of standard definitions and a coding system for green products. The EO 4 Subcommittee on Green Procurement is exploring options that would allow for the tracking of green purchasing in OGS’s new e-catalog and the Statewide Financial System.

**Renewable energy.** In FY 15-16, agencies generated 67 million kWh of energy through on-site renewable energy generation, enough to power 6,200 homes for one year. A series of ambitious initiatives launched by Governor Cuomo in the past two years, including the goal of sourcing 50% of New York’s electricity from carbon-free renewables by 2030, generation of renewable energy at all 64 SUNY campuses by 2020, and creation of a centralized contract for solar power purchase agreements (PPAs), promise to increase that number significantly in future years.

**Cleaning the Fleet.** The average fuel efficiency of agency light duty fleets was 22.53 miles per gallon in FY 15-16. In the past two years, Governor Cuomo initiated a number of programs to accelerate the use of ZEVs by both the private and public sector across the State. These actions should improve efficiency over time as new, more fuel efficient vehicles are purchased by agencies.

**Staff, funding, and high-profile senior management support.** The most successful agency sustainability programs have a full-time Sustainability Coordinator, a multi-disciplinary team, enthusiastic executive level support, effective methods for tracking progress, and a reliable source of funding. Leaders such as the MTA, CUNY, the Javits Center, Parks, and DEC provide strong models for others to follow. The EO 4 reporting process itself is a powerful tool for measuring performance and gaining executive support.

**Capturing the savings associated with sustainable practices.** Many agencies find it hard to track the savings associated with greening operations and to capture those savings for further improvements. CUNY has an innovative financing system that allows campuses to use efficiency savings on further improvements. They have also established a revolving Sustainable Investment Fund.
Leased spaces. Agencies located in leased spaces can find it difficult to ensure that EO 4 requirements are being followed, especially at properties not managed by OGS. Sharing space with other tenants can also make tracking waste difficult. The EO 4 Interagency Committee continues to explore how to provide more effective training to agencies housed in leased space.

Donating surplus property for reuse outside government. Agencies continue to report the need for a more streamlined process for donation of old furniture and equipment to local governments or not-for-profit organizations. A number of SUNY campuses and NYPA are pioneers in reuse activities.

Staff training and culture change. Training and engagement are powerful tools for addressing obstacles to the adoption of green practices. In 2016, the Interagency Committee created a new Operations and Engagement Subcommittee and charged it with helping Sustainability Coordinators troubleshoot challenges and enhance communication. It is working closely with the Training Subcommittee and OGS staff to launch a new EO 4 website called “GreenNY,” and create fact sheets on green cleaning, green purchasing and surplus value. In December 2016, the new Subcommittee hosted the first annual GreenNY Forum, which brought Coordinators together to discuss their efforts to green operations and learn about new initiatives and resources.

New and Noteworthy Initiatives in FY 15-16

People, Planning, and Money

- In lieu of appointing a single Sustainability Coordinator, DEC launched a “silo-busting,” sustainability structure that includes a Leadership Team and Sustainability Coordinators in each Region, supported by each Region’s Operations Supervisor. Monthly and quarterly meetings are held with executive staff and the Commissioner.

Waste Reduction

- SUNY Potsdam improved their campus-wide Move Out Program and donated 4 tons of reusable goods.

- DASNY, CUNY Lehman College, SUNY Canton and SUNY Potsdam reduced printing and saved on paper, toner, and maintenance costs by purchasing print management software.

Recycling

- MTA achieved record levels of C&D debris recycling in FY 15-16 after establishing an ambitious diversion goal in 2014. They also generated $1 million in revenue from the sale of scrap metal.

- SUNY campuses collected food scraps for composting in record numbers – 2,305 tons in FY 15-16 – more than double the 882 tons they reported composting in FY 14-15.

- SUNY Oneonta calculates that their recycling program saved $260,000 over the past 3 years.

Reducing Pesticide Use

- SUNY Canton and SUNY Potsdam planted a bee and butterfly garden on campus where they’ve adopted sustainable practices and educated the community on the link between non-chemical pest management and pollinator protection.

Green Cleaning

- The Development Authority of the North Country has reduced the quantity of chemicals in inventory for three years running by carefully assessing need prior to purchasing and looking for less toxic alternatives.
Energy Efficiency

- SUNY Albany replaced metal halide lights in their sports arena with LEDs, resulting in a 45% reduction in lighting power use. Overall, the university is saving $500,000 per year due to sustainability initiatives.

- The Javits Center has decreased energy consumption by 2.1 million kWh since FY 14-15 through demand response management and everyday energy monitoring.

Renewable Energy

- Parks completed a 693 kW solar array at Robert Moses State Park, making it the first energy neutral state park in the nation.

- The Olympic Regional Development Authority entered a PPA for 5.3 MWh of solar power at Gore Mountain.

- CUNY Queens College installed solar panels on the roof of a campus dorm along with batteries. In the event of a grid failure, the dorm would be able to use energy from the battery backup systems and remain occupied.

Sustainable Transportation

- The Environmental Facilities Corporations (“EFC”) lowered their vehicle miles traveled (“VMT”) by nearly 20%, bringing their two year decline in VMT to 36%.

- The New York State Authority (“Thruway”) installed fast electric vehicle charging stations at four of their travel plazas between New York City and Albany, capable of providing many vehicles with a full charge in less than an hour.

Water Conservation and Reuse

- SUNY Oswego upgraded their plumbing fixtures to high efficiency units in a 200 bed residence hall for a 30% reduction in water use.

Green Infrastructure and Sustainable Storm Water Management

- SUNY Empire State College constructed a large bioretention area which slows the flow of almost 100% of the storm water coming from impervious surfaces on campus.

Sustainable Landscaping

- Parks installed large-scale native plant and pollinator gardens.

- The Capital District Transportation Authority switched to the installation of low maintenance, native plants.

Education and Training

- CUNY added recycling education modules in all new student and staff orientations.

Green Procurement

- EFC modified its printing contracts to reduce the number of copies made and require contractors to use 100% post-consumer content recycled paper.

Restricting the Use of Bottled Water

- The Division of Military and Naval Affairs analyzed their practice of storing bottled water in disaster preparedness kits and decided to buy only what is needed for a specific mission, eliminating potential waste.

- In nine months of use, SUNY Farmingdale’s water bottle filling stations dispensed the equivalent of more than 300,000 16 oz. plastic water bottles.
Achieving the Promise of Sustainability

A sustainable economy is healthy, vibrant, innovative, resilient, and diverse. Building a sustainable future requires persistent innovation as New Yorkers work together to shift from the inefficient use of energy and materials toward a new paradigm that emphasizes efficiency, closed-loop and cradle-to-cradle product purchasing, toxic-free products and practices, and the protection of natural resources and ecosystems. Government efforts are informed by efforts in the private sector (for example, by the winners of New York State’s Environmental Excellence Awards), and these leadership practices provide a business model for others, giving businesses, institutions, and individuals the inspiration and information they need to incorporate sustainability into their business operations.

There are approximately 73 State agencies, authorities, offices, commissions, boards, and public benefit corporations (“agencies” or “affected entities”) currently covered by EO 4. Under the Executive Order, each are directed to incorporate sustainability into all aspects of their operations. EO 18 requires agencies to “eliminate the expenditure of State funds for the purchase of bottled water.” To accomplish these goals, agencies are required to develop and implement a Sustainability and Environmental Stewardship Program, implement effective waste reduction and recycling strategies (including eliminating the use of bottled water), and assign an employee to serve as Sustainability Coordinator. These coordinators serve the crucial function of incorporating sustainability into the day-to-day operations of their agency.
Both Orders require the Commissioners of OGS and DEC to report regularly on progress, in consultation with members of the Interagency Committee on Sustainability and Green Procurement, on which they are co-chairs. EO 18 authorizes combined reporting for the two Executive Orders, and one form has been used for agency reports since FY 09-10.

Reporting has remained robust since the first year of reporting in FY 08-09, when 69 EO 4 reports were filed by the roughly 100 entities covered by the Order at that time. In 2011, Governor Cuomo initiated a consolidation effort among State agencies and authorities in order to improve government efficiency and performance. Taking into account joint reporting, approximately 73 reporting entities are now covered by the Order. A record number of agencies, 66, or 90% of all covered entities, filed reports in FY 15-16. This summary compiles those individual reports and uses more recent information when necessary to provide a complete picture of progress.

The Benefits of Sustainability

Shifting government operations and procurement toward a sustainable framework has the potential to significantly reduce pollution and waste while saving taxpayer dollars. New York is comparable to a Fortune 500 company, with a considerable environmental footprint and remarkable purchasing power. Currently, New York State government:

- Operates more than 16,000 facilities totaling 225 million square feet, with an estimated annual utility bill of $600 million.
- Generates close to 400,000 tons of solid waste, more than a quarter of which is office waste.
- Operates more than 24,000 vehicles.
- Spends approximately $8 billion per year on the purchase of commodities, services, and technology.

Some of the key benefits of greening State government include:

**Waste Prevention.** Reducing or eliminating waste reduces agency costs, as well as the pollution, water use, greenhouse gas emissions, energy and labor costs associated with raw material harvesting, resource extraction, transportation and manufacturing, and the end-of-life management of wastes. Greenhouse gas emissions can be reduced by more than 8 metric tons of CO2 equivalent (MTCO₂e) by reducing office paper use by just 1 ton. Reusing, upcycling, or sustainably remanufacturing a product conserves the energy, labor, and materials embedded in the product, effectively closing the loop and contributing to waste prevention.

**Recycling.** Diverting materials for recycling and purchasing products with recycled content avoids the environmental impacts associated with raw material harvesting and the disposal of waste, including habitat loss, energy use, water use, and pollution. Each ton of paper recycled saves enough energy to power the average American home for six months and reduces greenhouse gas emissions by 1 MTCO₂e. Recycling also creates jobs. According to the Institute for Local Self-Reliance, every 10,000 tons of waste kept out of the landfill can

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**EO 4 INTERAGENCY COMMITTEE**

**CHAIRS:**

- OGS and DEC

**MEMBERS:**

- Division of Budget (DOB)
- Dormitory Authority of the State of New York (DASNY)
- Empire State Development (ESD)
- Environmental Facilities Corporation (EFC)
- Department of Health (DOH)
- NYS Energy Research and Development Authority (NYSERDA)
- Power Authority of the State of New York (NYP"
- Department of Transportation (DOT)
create 10 recycling jobs or 75 material reuse jobs. The depletion of natural resources can also weaken the economy and hinder economic growth.

**Reducing Toxic Chemical Use.** Reducing or eliminating toxics use (for example by reducing the use of pesticides or using green cleaning products) creates a healthier work environment for State employees, visitors, and facility residents, resulting in better health, fewer sick days, and higher productivity. It also reduces toxic bioaccumulation in the environment; toxic exposure to manufacturing employees; and the associated costs of managing toxic materials during use, transportation, and disposal, including the significant cost of cleaning up contaminated sites. Products made without toxic chemicals are also easier and safer to recycle and reuse.

**Conserving energy.** Using less energy reduces the pollution, water use, greenhouse gases, materials input, and costs associated with energy generation. Redirecting our energy sources away from fossil fuels toward clean, renewable energy, such as wind and solar, is creating jobs in New York State. Over time, renewable energy technologies create a net-positive, regenerative effect on the environment, allowing air, water, and land to return to a healthy state.

*Sustainability projects reduce pollution and waste, save taxpayer money, and foster collaboration, innovation, and the realization of multiple benefits. They also support a wide range of New York State goals and initiatives.*

**Conserving Water and Other Natural Resources.** Conserving water and practicing sustainable resource management protects water quality, wildlife habitat and ecosystems. It also avoids the energy use and costs associated with the treatment and delivery of potable water. Sustainably managed ecosystems provide many services to New Yorkers, including the purification of water and air; waste decomposition and detoxification; CO2 sequestration; pollination; local timber; areas for hunting, fishing, recreation, ecotourism, and wildlife viewing; and the use of natural systems for scientific education.

**Holistic Thinking and Multiple Benefits.** When project teams consider a wide range of opportunities and potential impacts, they are better able to achieve multiple benefits. For example, an energy efficiency project that embraces the additional goal of improving indoor air quality avoids a potential pitfall and increases project benefits. Lean efforts to streamline licensing projects can reduce paper use and help government respond more quickly.

**Reducing Silos and Fostering Innovation.** EO 4 has increased communication across agencies and authorities, and allowed for the sharing of best practices and results. In turn, successful programs are serving as role models for local governments and the private sector. Green procurement specifications provide a clear market signal that drives sustainable innovation and helps build a more diverse, resilient, and stable economy.

Here are a few New York State initiatives directly supported by the work occurring under EO 4:

- New York’s **Beyond Waste** sustainable materials management plan establishes a goal of reducing waste disposed from 4.1 to 0.6 pounds per person per day by 2030.
- New York’s **Green Cleaning Program** (*Chapter 584 of the Laws of 2005*) requires elementary and secondary schools to use environmentally preferable cleaning products.
- The **Pollinator Task Force** issued recommendations in 2016 to address pollinator population loss in New York State.
- Under the **Regional Greenhouse Gas Initiative**, multiple states are working together to cap and reduce CO2 emissions from the power sector.
- **Executive Order No. 88** drives improvements in energy efficiency in State buildings, with the goal of reducing energy-use intensity (EUI) 20% by 2020.
- The 2015 **New York State Energy Plan, Reforming the Energy Vision**, and **The Clean Energy Standard** call for ambitious action to meet clean energy goals, such as deriving 50% of electricity from renewables by 2030.
The **Clean Energy Fund** is a 10-year, $5 billion commitment to energy efficiency and renewable energy to implement the State Energy Plan.

**NY-Sun** helps make solar energy affordable for all New York residents, with the goal of adding more than 3 GW of installed solar capacity across the State by 2023.

**K-Solar** helps public schools lower their energy costs through clean, local power.

The **Multi-State ZEVs MOU and Action Plan** is a collective commitment by New York and seven other states to have at least 3.3 million ZEVs operating on their roadways by 2025.

**Clean Fleets NY** requires that at least 50% of new, administrative-use vehicles purchased by select State agencies be ZEVs, including battery electric, plug-in electric hybrid, or hydrogen fuel cell vehicles.

Through **ChargeNY**, the State is investing toward the goal of installing 3,000 electric vehicle charging stations across the State to support the addition of 40,000 plug-in electric vehicles on the road in New York by 2018.

In 2015, New York joined the **International ZEV Alliance** to work with partners across the globe to expand the electric vehicle market and phase out fossil fuel vehicle sales by 2050.

**Green Jobs – Green NY** provides access to training for energy efficiency, renewables, and other green-collar careers.

The **Governor’s Office of Storm Recovery, NY Rising**, and the **Community Risk and Resiliency Act** help impacted communities with reconstruction following storm events.

The **Environmental Protection Fund** supports land acquisition, waterfront revitalization, municipal recycling, and pollution prevention. This year the Governor championed a continued historic investment ($300 million) in this crucial fund, first created in 1993.

The **NY State Excelsior Conservation Corps** provides internships and volunteer opportunities that educate and allow participants to gain hands-on stewardship experience in parks and other natural areas.

**Taste NY and Buy NY** expands the market for food and beverages produced in New York State.

**New York FreshConnect Farmers’ Markets** provide fresh foods in high need neighborhoods while supporting locally sourced foods and local farmers.

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Sustainability is the simultaneous pursuit of environmental quality, economic prosperity and social well-being for present and future generations. It includes environmental justice and concern for the health of natural ecosystems and maintaining biodiversity.
Operating Green

New York enjoys the services of a wide range of government agencies. Facilities include office space, hospitals, group homes, prisons, laboratories, parks, forests, campgrounds, golf courses, fish hatcheries, highways, railroads, power plants, and universities. Each is required to adopt a sustainability program to reduce the adverse public health and environmental impacts of their operations. Agencies are given wide latitude to design programs that work best in the context of their unique mission. Areas of focus include: materials use reduction, reuse, recycling and composting (including food waste); toxics use reduction; energy efficiency; renewable energy; transportation; water and natural resource conservation; and the purchase of green products, services, and technology.

An overarching theme of sustainability work is “continuous improvement.” The strength and resiliency of a system is increased when it is diverse, decentralized, and produces results that can be replicated. These attributes are reflected in the efforts New York State employees are taking to green our State’s operations and purchasing.

- The work is diverse, as the priorities of each agency are shaped by their unique mission, facilities, and capacity.
- The work is decentralized, as each agency doing the work also experiences the benefits and challenges, and is able to identify the next level of effort needed based on that experience.
- The results can be replicated because success achieved by a particular agency can spur like-minded efforts by another agency.

As the chart below illustrates, the work is done in a continuous feedback loop of vision, effort, measurement, troubleshooting, and building on success. A healthy system continuously innovates to identify solutions that elegantly address challenges without creating new problems.

The EO 4 reporting structure makes agency efforts more effective and resilient by helping agencies assess their progress and share lessons learned. Agencies are taking different approaches that vary in size and structure. However, each is achieving successful trainings, programs, engagement, and results. Sharing obstacles allows for collaborative problem solving, while sharing successes inspires further innovation.
Some perennial challenges may require new policies or culture change, and may take years to yield a solution. Each employee who changes their printing habits, asks for a pitcher of water at meetings instead of bottled water, or seeks carpoolers to the meeting is moving New York State in the right direction. Each and every action, no matter how simple, moves us toward a more sustainable future. The key is to be vigilant, persistent, and process-oriented in order to maintain traction and momentum. A drop in performance one year can be a springboard for renewal and greater achievement the next.

The sections below present performance metrics and cost information for each focus area of sustainable activity. They summarize the challenges experienced by agencies, share how some have navigated those challenges to achieve even greater success, and highlight noteworthy new initiatives begun, underway or completed in the reporting period. Each achievement rests on years of effort and brings us closer to the vision of operating green.

**Leading the Green Team: People, Planning and Money**

The backbone of EO 4 is collaborative work. Collaboration is enhanced when Sustainability Coordinators or teams have a recognized, formal role in an agency’s structure that enables them to cut across silos, when they engage and connect both operations staff (“boots”) and policy makers (“suits”), and when they have adequate resources to carry out their work.

A stellar example of a successful team is CUNY’s sustainability program, “CUNY Conserves,” described in detail in last year’s report. Each of CUNY’s 19 campuses has their own Sustainability Council, supported by a full-time central office Sustainability Coordinator and staff. The program’s Sustainable Investment Fund is now in its fourth year. In 2016, it received 21 applications for funding. The fund was started with a philanthropist’s $1 million donation. It has been set up as a revolving loan fund for energy conservation projects that include a short-payback period, rapid implementation, and operations and maintenance (O&M) studies. In FY 2017-18, CUNY will be rolling out “Boots and Suits,” a focused communication program designed to allow building operators and senior campus administrators to “speak the same language” and understand each other’s perspective on issues such as demand response, peak load management and resource allocation.

Other agencies with strong sustainability programs include MTA, the Javits Center, Parks, the Port Authority of New York and New Jersey (Port Authority), and the Development Authority of the North Country.

**Findings**

Of the 66 entities reporting in FY 15-16, 58, or 88%, had a designated sustainability coordinator, an increase from 51, or 82%, the previous year. At 10 agencies, or 15%, the coordinator serves in a full-time capacity as Sustainability Coordinator only. A total of 17 agencies, or 26%, have a sustainability team. These are encouraging trends. To be effective, agencies need a champion or recognized team of champions who are willing to lead and coordinate the agency’s commitment to sustainability.

A total of 29 agencies (44%) are working on or have finalized formal sustainability plans, up from 23 (37%) the previous year. These plans help agencies track their actions, learn from their success (or challenges), and inspire additional improvement. Only 5 agencies (8%) have a dedicated budget or fund for sustainability initiatives.

**Savings and Costs**

This reporting year again has shown that sustainable practices do not typically cost more, and in many cases save money through energy use reduction, paper use reduction, and waste reductions combined with higher levels of recycling. Many energy projects do require up-front, capital investment, but most result in operational savings. Projects with less potential to reduce costs can still be valuable. Many are able to be accomplished when they tie into the mission of the agency, yield operational improvements, support health and comfort of staff, or are aligned with a facility or service that is being upgraded and is able to accommodate better, more sustainable outcomes.
A great example of a project with multiple benefits is DASNY’s upgrade of its copier fleet. The agency moved from having 133 different devices with disparate toners, service contracts, ages, and capabilities to 32 state-of-the-art machines with print management control software. The investment was significant and the Return on Investment (ROI), based solely on avoided service and toner costs, is projected at 6.5 years. Paper savings are tracking at over 30%. The biggest wins from the project are better resources for staff and higher security for printed and scanned documents. This length of return is high for a State project, but when the additional non-cost benefits related to support of staff, workflow, and security improvements are considered, the benefits of implementation become obvious.

Tracking Savings and Addressing Up-Front Costs

MTA reports that a primary challenge with implementing sustainable practices is making the case for investing in projects that may have increased up-front costs. While MTA does not have a budget exclusively dedicated to sustainability, each department works to incorporate sustainable attributes into new capital projects. Sustainable construction methods are cheaper in the long run, but generally they are more expensive up-front than conventional methods, and the focus remains on keeping down initial costs. Without a thorough life-cycle analysis, it is often difficult to see the justification for increased up-front costs. In response, MTA is building a new, enterprise-wide Asset Management System that will make it easier to analyze costs and savings over the life of a project. In an effort to increase awareness, Sustainability Guidelines have also been developed and distributed to all Capital Project Managers to encourage them to incorporate sustainable practices into their projects.

A closely related challenge is that many agencies find it hard to measure the savings associated with sustainability improvements. A number of agencies are addressing this challenge through innovative approaches.

- CUNY is working to achieve real-time monitoring (RTM) of energy use on each of their campuses. Once installed, RTM systems will allow each college to track energy use in 15 minute increments, allowing them to make informed choices to reduce peak and overall energy use, as well as spot anomalies that indicate malfunctions. Utilities are willing to pay their customers for responding when called upon to reduce energy use. In FY 15-16, CUNY held a number of “demand response” (DR) trainings for each school that simulated DR events. They also coordinated the development of DR plans, all focused on ways to lower demand in response to utility requests. In the spring of 2016, in anticipation of a long hot summer and increased energy demand, CUNY Conserves established a “war room” with engineers on call during DR days to help colleges respond as quickly as possible.

- The Javits Center successfully participated in DR programs offered by both ConEdison and the New York Independent Systems Operator. This, along with close auditing of their energy bill performed by their third party energy dashboard supplier, created a revenue stream for sustainability projects.

- DASNY signed onto a peak demand reduction contract with their utility, which saved them money on electricity and earned them a payout of approximately $5,000 per year.

- The Westchester Medical Center’s Green Team is working on developing a dashboard to capture all savings associated with sustainability initiatives.

Challenges and Success Stories

Many challenges can be addressed by taking into account benefits that go beyond the required fiscal investment and potential savings. These can include improvements to business line, product or service quality, and employee health and wellbeing. Many of the challenges discussed below are being addressed by clearly building such co-benefits into project intent and implementation. The most successful projects engage people, seek to be creative, and look beyond the confines of the stated problem.

- The United Nations Development Corporation reports that: “As a result of an energy use reduction project, our perimeter exterior lighting was improved which will enhance security in those areas.”
Staffing

As with any long-term initiative, changes in staff can impact reporting or the development of sustainability plans at an agency. When an agency’s designated Sustainability Coordinator changes, all agencies are encouraged to quickly designate a replacement. The majority of Sustainability Coordinators are not dedicated full-time to that role. To ensure a smooth transition for EO 4 reporting, we have begun asking for additional contact information for contributors to each agency’s report.

Several agencies have created excellent ways to maintain continuity and integrate sustainability throughout their agency. Others have succeeded by focusing greening efforts on specific projects.

- The Battery Park City Authority’s entire parks division staff (more than 70 people) is involved in implementing the agency’s sustainability plan in one way or another. Everything they do, from composting and organic garden maintenance to sidewalk cleaning and compactor collection, are done with organic supplies and sustainability in mind. Green practices are at the core of the park division’s organization at every level.

- At the Development Authority of the North Country, the number of toxic chemicals in inventory has been reduced by 63% since 2011 when a team of experts was named to spearhead the effort at the division level.

Widening the Lens to Overcome Obstacles and Capture Benefits

A prominent challenge reported frequently is that many sustainability improvements are process changes that require a shift in effort, meaning more labor and attention to process is often needed, especially at first, to achieve greater sustainability. For example, it is easier to throw all waste in one bin than it is to figure out what should be thrown where, and contract for different types of removal services, not to mention monitor and measure progress.

Sustainability also encourages agencies to optimize in ways that may be outside their experience. Thruway experienced such a challenge this reporting year with the installation of wind turbines. The project was financed as a capital investment to support New York’s goal of increasing renewable energy use while lowering electricity costs (over the life of the turbines). The challenge has been maintenance: the effort and skills needed to maintain the turbines is outside their staff’s current experience and has proved difficult. New York might realize greater traction in renewable energy and other transformational sustainability initiatives by supporting agencies through training or even the issuance of state contracts for maintenance services.

- The Development Authority of the North Country reports that while reuse often results in cost savings in regard to materials, it can require additional investments of staff time and equipment.
The best examples of conquering these disincentives come from the SUNY and CUNY systems. They have realized the value of positive community engagement and connection, and have built programs to achieve that good-will benefit. The effort is no less resource intensive, but understanding and marketing all the benefits has led to success.

- **SUNY Canton** improved their campus-wide Move Out Program and donated 6,000 lbs. of reusable goods to more than 10 different local organizations, including the Boys and Girls Club and the Humane Society.

- **SUNY Morrisville** is growing more food on campus and incorporating the work into many of its degree programs, educating students and providing fresh produce for the dining halls and campus restaurant.

- **CUNY** has included a resiliency goal in their move towards renewable energy production, making it much easier to support each installation of solar arrays. Queens College and Sustainable CUNY are partnering with the U.S. Department of Energy’s Sustainable and Holistic Integration Energy Storage and Solar (SHINES) program to install both solar panels and batteries on the roof of a campus dorm. In the event of a grid failure, the dorm can remain occupied, with energy drawn from the battery backup systems.

**Outside Recognition and Marketing**

Participation in outside certification and recognition programs can make it easier for an agency to communicate success, market sustainability initiatives, and achieve a long-lasting commitment to sustainability.

- The SUNY system is using the Association for the Advancement of Sustainability in Higher Education’s Sustainability Tracking Assessment and Rating System (AASHE Stars) to help them create a stronger reputation for triple bottom line performance. AASHE Stars supports in several areas, including community engagement, buildings and operations, and education.

- The Westchester Medical Center has initiated an application for Westchester Green Business Challenge (WGBC) certification. The application requires 89 actions and offers an additional 119 volunteer actions designed to help set policies, take action and measure performance in areas including: organizational commitment, energy, materials management in waste and recycling, materials management in purchasing, transportation, land use, and water.

**New and Noteworthy Initiatives in FY 15-16**

- **DEC** launched a new collaborative, multi-disciplinary sustainability structure in 2016 that includes a Leadership Team, a Central Office Team, and a Regional Sustainability Team made up of a Sustainability Coordinator from each region as well as each Region’s Operations Supervisor. Instead of a single sustainability coordinator, the teams are co-led by two staff, one drawn from the Operations Division and one from the Pollution Prevention Unit, supported by staff from the regions and executive. This structure is proving effective at “silo-busting,” connecting boots and suits, and completing successful projects.

- **Parks** appointed Sustainability Coordinators in each region.

**Waste and Paper Use Reduction Goals**

New York’s *Beyond Waste* sustainable materials management plan, adopted in 2010, establishes a 20-year goal of reducing the average amount of waste New Yorkers dispose of from 4.1 to 0.6 pounds per person per day. The plan marks a shift from focusing on “end-of-the-pipe” waste management to looking “upstream” at how materials that would otherwise become waste can be avoided or better utilized as part of an efficient, vibrant economy. EO 4 is specifically discussed in the plan as a valuable step forward in integrating waste prevention and recycling into State operations.
Waste Reduction Goal

Given the importance of prevention, the EO 4 Interagency Committee established a waste reduction goal of reducing total office waste generated by 10% per full-time employee equivalent (FTE) per year, starting with the baseline year of FY 09-10. Office waste includes paper, plastics, metal and glass generated by office facilities. Total waste generated is the sum of materials that are recycled, as well as materials sent to disposal. The purpose of estimating waste generation per FTE is to enable agencies to compare their performance from one year to the next by avoiding the variation associated with changing staffing levels.

The goal was applied to office waste only because the Interagency Committee determined that a single metric for measuring reductions in other types of waste would not be comparable over time. Agencies whose primary purpose is transportation or construction generate very large quantities of bulk metals and construction and demolition debris regardless of the size of their staff. Agencies that manage waste generated by the public, such as Parks, SUNY and CUNY, also experience variation unrelated to staff size. For these reasons, the goal should be viewed as a meaningful way for agencies to measure their own performance, but not as a way to compare performance across agencies.

While the waste reduction goal of 10% per FTE per year applies to office facilities and office waste only, data on all materials generated—recycled and disposed—is still collected, but waste generated by the public and wastes unrelated to staffing levels, such as C&D debris, scrap metal, and laboratory wastes, is reported separately wherever possible. The Interagency Committee encourages agencies to develop meaningful waste reduction goals for wastes specific to their own operations and to report on progress made toward reaching those goals in their agency’s EO 4 report.

Paper Use Reduction Goal

The goal established for paper use reduction is a 10% reduction in copy paper purchased per FTE per year by weight, starting with the baseline year of FY 09-10. In addition, the Committee asks agencies to report the quantities of all janitorial paper purchased, and to identify steps taken to reduce the use of janitorial paper, such as paper towel use. As with waste reduction, the paper use goal provides a meaningful way for agencies to assess their progress in reducing paper use over time. Comparison between agencies is discouraged, given the large variation in paper use across agencies based on mission.

Waste Reduction and Reuse

Agencies report that the EO 4 reporting process encourages them to take a more detailed look at the waste they generate and develop more effective waste management practices. Overall waste generation data continued to indicate a favorable downward trend, recycling rates stayed strong, and executive agencies have virtually eliminated the purchase of bottled water.

Findings

FY 15-16 saw a significant bump upwards in overall waste generated, to 580,015 tons, but the increase is entirely due to two large entities, DOT and MTA, generating significantly more construction and demolition (C&D) debris than the previous year, for a total of 189,270 additional tons. When this number is subtracted from the total, the overall amount of waste generated for FY 15-16 is 390,745 tons, a 52% decrease from FY 08-09, and a modest decrease from the previous reporting year, even though the number of reporting agencies increased by 5 percentage points. This maintains the State’s encouraging waste reduction trend (see chart on page ii of this report).

The remarkable story told by the data and agency reports in this reporting year is the enormous progress made in recycling C&D debris. In FY 10-11, the State saw a similar increase, of 200,000 tons, of C&D debris generated, which happened to be by the MTA. Although MTA additionally generated and also recycled an impressive quantity of C&D debris in that year, a total of 151,000 tons, none of the 200,000 ton bump in C&D debris generated was recycled, which caused a dip in the overall State recycling rate to 45%, its lowest recorded level.
In FY 15-16, DOT reported 64.4 lane miles of cold in place asphalt recycling, a significant increase from zero miles the year before, that resulted in an increase of 136,013 tons of C&D debris generated, and also recycled, by DOT over the previous year. MTA adopted an ambitious C&D recycling goal in 2014, and reports that of the 105 construction projects that generated C&D in FY 15-16, 32 achieved a 100% diversion rate and 48 recycled more than 90% of the material generated. As a result, when MTA generated an additional 53,257 tons of C&D debris in FY 15-16, all of it was recycled. Together, these two agencies’ efforts account for the significant jump in the overall amount of waste recycled, to 78%, the highest level ever recorded.

Office waste accounted for 8% of the total waste generated in FY 15-16, while non-office waste accounted for 92%. The amount of office waste generated fell in FY 15-16 by 11% compared to the previous year. Overall, office waste has gradually decreased 31% from 68,855 tons generated in FY 09-10 to 47,410 tons in FY 15-16, an encouraging trend.

With the adoption of waste conservation techniques, such as double-sided printing and the use of electronic documents, agencies have significantly reduced the overall amount of paper purchased and consumed. This has led to significant reductions in the amount of waste generated and purchasing costs. In FY 15-16, 61 agencies reported purchasing 223,538 boxes of copy paper worth $7.44 million, a 10% drop in the quantity purchased from the previous year, even though the number of agencies reporting rose by 5 percentage points. The amount spent on copy paper has fallen by an impressive 49% since FY 08-09 when agencies reported spending $14.54 million on copy paper. This reduction adds up to $19.6 million in savings in FYs 11-12 through 15-16, $40.9 million in savings since reporting began, and approximately $7 million in savings per year going forward. (See chart on p. ii, and more detailed discussions on pages 36-38 of this report).

In FY 15-16, agencies reported use of the following waste reduction strategies:

- 83% agencies use two-sided printing either all (27%) or most (56%) of the time.
- 89% of reporting agencies use electronic means to provide documents to the public either all (21%) or most (68%) of the time.
- 82% use electronic means to receive documents or information from the public either all (14%) or most (68%) of the time.
- 73% use SharePoint, intranet, or other electronic means to share documents among employees either all (18%) or most (55%) of the time.
- 64% have an office supply reuse program in place at least some of their facilities; 32% have them in place at all (14%) or a majority (18%) of their facilities.
In addition, 34% of agencies reported using controls to track and manage printing, such as the mandatory use of employee or student ID cards, to limit excessive paper use all (8%), most (9%), or some (15%) of the time.

Savings and Costs

On average over the past seven years, a significant number of agencies (32%) reported saving money through waste reduction. More than half have reported either a reduction or no change in costs. Only a very small number, 4%, have reported an increase in costs. More than 40% said they did not know.

Improvements in reuse have resulted in reductions in waste management costs and improved environmental benefits. Many waste reduction strategies require staff education and participation. DEC and NYPA have both successfully engaged their staff by having zero waste events which rely on staff bringing their own plates and utensils as well as composting and recycling. Zero waste events are a true example of agencies and staff being environmentally, socially, and economically responsible. Waste is virtually eliminated, organics are diverted, and employees are engaged in sustainable action.

Success Stories, Challenges and Lessons Learned

Measuring Waste Generation and Recycling

In general, the continued focus on measuring waste and improving tracking tools and processes have made it easier for agencies to manage their performance. The “Recycling Services and Trash Removal” contract supports these efforts as it includes both training and waste tracking services.

Despite considerable progress over the past several years, opportunities for improvement still exist. At some facilities, centralized dumpsters collect waste generated from office and non-office sources, or from State agency employees and other building occupants, making it difficult to measure one source in isolation.

In addition, waste haulers may not have the equipment needed for measurement. For example, NYSERDA contracts with a waste hauler that does not have scales on their trucks. The authority’s small size and the relatively low value of the contract makes successful renegotiation with a different vendor unlikely. Therefore, NYSERDA’s reported numbers only reflect their recycling efforts where accurate measurement is possible.

Another challenge is changes in office space or waste collection. When an agency experiences a significant relocation or a purge of paper documents, for example, their reporting may be skewed. It is important in these cases to appropriately describe the reason for the disparity. Once the event is over, waste generation should drop dramatically.

- MTA’s Assistant Director of Environment and Sustainability developed a waste management calculator for capital projects that allows for more accurate tracking of waste generated and recycled during construction.
Leased Spaces

Location in leased space raises unique challenges. The EO 4 Reporting Subcommittee made improvements to the reporting form for FY 15-16 to help agencies determine who is responsible for filling out which aspect of the report. In general, agencies housed in OGS buildings with a “3Rs” program are not required to answer the waste questions, and agencies that do not perform or contract for pest management or cleaning are not required to respond to questions on those topics. The Subcommittee will continue to work with agencies to clarify these issues.

Leases entered into by OGS contain standard provisions on a number of sustainable practices, including green cleaning and integrated pest management. DEC and OGS are currently working together to enhance this language.

Agencies housed in buildings owned by parties outside State government should speak with their landlord at the beginning of the lease term or the beginning of an EO reporting period and enlist their assistance.

In 2016, the Interagency Committee created a new Subcommittee on Operations and Engagement and charged it with enhancing communications among Sustainability Coordinators and helping them troubleshoot challenges. In December 2016 the Subcommittee hosted the first annual GreenNY Forum which brought Coordinators from more than 34 agencies together to share their experience and learn about new initiatives. One panel was dedicated to leased spaces and included staff from OGS and DASNY who are experts in real estate development, real property law and leasing. Dialogue continues on how to operate sustainably in leased space.

Waste Audits

Conducting a detailed waste audit continues to be the most effective way to obtain data on the content and quantity of waste generated. Every year, agencies report positive experiences with audits and say the data gathered has given them valuable insight into their waste management practices. A Waste Audit Guidebook and other resources are available on OGS’ EO 4 webpage.

Some agencies conduct waste audits annually. DEC continues to perform a waste audit at least once a year at its Albany headquarters, and representatives from other agencies are welcome to participate as a training exercise. DEC will provide technical assistance to individual agencies upon request.

Reusing Surplus Property

The reuse of surplus property, such as old desks, file cabinets, and binders, remains a challenge. Agencies continue to report the need for a simpler and more comprehensive process to facilitate re-use between agencies and donation to outside entities. This issue was also addressed by a panel at the GreenNY Forum in December, and efforts continue to make it easier for agencies to donate to county, town, or not-for-profit agencies.

New and Noteworthy Initiatives in FY 15-16

Among the waste reduction strategies introduced in FY 15-16, there is a trend toward the expansion of reuse initiatives, improved waste measurement, and reductions in the use of paper towels.

- SUNY Potsdam improved their campus-wide Move Out Program and donated 4 tons of reusable goods.
- SUNY Oneonta created a campus thrift store.
• **SUNY Buffalo** expanded their “Don't Throw It Out” Program (collection of clothing, shoes, furniture, etc. on move out day from students) to include more dorms and collection points.

• **NYPA’s Sustainability Department** is developing an internal software tool which will allow enhanced data collection and the analysis of waste management trends across their operations. They also implemented a zero-waste initiative for internal events that is reducing costs and the amount of disposable tableware entering the waste stream.

• **DEC Region 3’s Hudson Valley** headquarters undertook a waste audit to focus their waste reduction and recycling efforts. The audit revealed that 25% of the waste leaving the office was paper towels from the rest rooms. The sustainability team prepared a proposal for replacing the outdated hand dryers in the rest rooms with more energy efficient dryers to help reduce paper towel waste. It is expected the dryers will be installed and paper usage will decrease significantly within the next year.

• **SUNY Cortland and SUNY Maritime** also reduced janitorial paper purchases by purchasing and installing energy efficient hand dryers.

• **DASNY, CUNY Lehman College, and SUNY Canton and Potsdam** reduced printing and saved on paper, toner, and maintenance costs by purchasing print management software.

• Many of **DEC’s regional offices** participated in a “Reduce, Reuse, Rejoice” holiday campaign. Through the use of posters, social media, and lobby displays, staff and the general public were educated about opportunities for waste prevention during the holidays.

• **DEC’s regional and central offices** conducted clothing, book, and e-scraps recovery drives to benefit local community groups.

### Recycling and Composting

Reports for FY 15-16 continue to document a robust and encouraging trend of high recycling rates by State agencies, which are helping to reach the State’s aggressive 2030 waste reduction and recycling goal. Composting has become an increasingly important component of recycling. Diverting excess food and food scraps from disposal has many potential benefits, including the support of food insecure populations. Diverting food scraps and other organic waste to composting or anaerobic digestion reduces methane generation in landfills and sequesters significant amounts of elemental carbon, all while producing a beneficial soil amendment that contributes to healthy soil and reduces the need for energy-intensive fertilizers and pesticides.

#### Total Waste Generated and Percent Recycled

<table>
<thead>
<tr>
<th></th>
<th>Total Tons of Waste Generated</th>
<th>Tons of Materials Recycled</th>
<th>Percent Recycled</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2008-09</td>
<td>815,000</td>
<td>410,500</td>
<td>50%</td>
</tr>
<tr>
<td>FY 2009-10</td>
<td>507,929</td>
<td>318,181</td>
<td>63%</td>
</tr>
<tr>
<td>FY 2010-11</td>
<td>682,043*</td>
<td>308,566</td>
<td>45%*</td>
</tr>
<tr>
<td>FY 2011-12</td>
<td>531,059</td>
<td>355,865</td>
<td>67%</td>
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<tr>
<td>FY 2012-13</td>
<td>501,125</td>
<td>355,226</td>
<td>71%</td>
</tr>
<tr>
<td>FY 2013-14</td>
<td>389,510*</td>
<td>273,712</td>
<td>70%</td>
</tr>
<tr>
<td>FY 2014-15</td>
<td>398,895</td>
<td>280,172</td>
<td>70%</td>
</tr>
<tr>
<td>FY 2015-16</td>
<td>580,015**</td>
<td>452,962**</td>
<td>78%**</td>
</tr>
</tbody>
</table>

*The large drop in the recycling rate in FY 10-11 is due to one large generator reporting a much higher amount of C&D generation and disposal. **The large increase in FY 15-16 for waste generated and materials recycled is due to two large generators reporting a much higher rate of C&D generation, but this year all the increase in material was also recycled, driving up the recycling rate to its highest reported level.
Findings

In the last four reporting years, 70% or more of the solid waste generated by State agencies was recycled or composted, compared to a 50% rate of recycling in FY 08-09. In FY 15-16, that percentage rose to the highest level ever recorded, 78%, due to impressive increases in the recycling rate of construction and demolition (C&D) debris by DOT and MTA (see the chart on page ii, and more detailed discussions on pages 10-11 and 17 of this report).

- The total amount of organic material composted in FY 15-16 rose by 5,022 tons to 19,647 tons, a 34% increase from the 14,625 tons composted in FY 15-16.

- Food scrap composting rose by 1,470 tons to 8,885 tons, a 20% increase from the 7,415 tons composted in FY 14-15, primarily as a result of increased composting on SUNY campuses across the state.

In FY 15-16, the number of agencies that reported composting rose slightly to 16 from 15 in the previous reporting year. SUNY and the Department of Corrections and Community Supervision (DOCCS) accounted for 87% of all material composted in FY 15-16, with SUNY increasing their composting by 4,429 tons and DOCCS increasing their composting by 333 tons over the previous reporting year.

SUNY campuses also collected food scraps for composting in record numbers – (2,305 tons in FY 15-16) – well over the 882 tons they reported composting in FY 14-15. Many colleges have found a way to either compost on site or send their compostables to a local facility.

The pie chart below provides a breakdown of the total quantity of materials recycled by agencies, on average, in FY 15-16. Because waste types are split out by weight, “office recyclables” (paper, bottles and cans) amount to significantly less than non-office recyclables, which weigh more. C&D material includes concrete, asphalt, brick and clean wood that come from building construction, renovation and demolition, as well as highway construction and maintenance.

| Tons of Material by Type Recycled by EO4 Reporting Entities FY 15-16 |
|-------------------------------|------------------|------------------|------------------|------------------|------------------|
| Clean Construction & Demolition Debris | 58,084 | 14% |
| Bulk Metals | 19,647 | 4% |
| Office Recyclables (paper, glass, etc. from all facilities, not just office buildings) | 7,538 | 3% |
| Maintenance and Equipment Recycling | 41,935 | 14% |
| Compostables | 33,980 | 18% |
| Other | 291,777 | 45% |

Savings and Costs

On average over the past seven years, a significant plurality of agencies (50%) reported a reduction (15%) or no change (35%) in costs as a result of recycling efforts. A much smaller number (7%) reported an increase in costs. More than 40% reported that they did not know. The agencies reporting savings had more comprehensive waste reduction, reuse, recycling and composting programs.
As agencies divert more waste into recycling and composting, opportunities are being created to save on avoided garbage disposal costs.

*SUNY Oneonta* calculates that their recycling program saved them $260,000 over the past 3 years.

- In a particularly creative move, *CUNY York College* negotiated a contract with their vendor for free grease and scrap metal recycling in return for providing storage space for the vendor’s large equipment. This has translated into a $135,000 reduction in their recycling contract annually.

- *CUNY Borough of Manhattan Community College* diverted 1,300 cubic yards of waste from disposal and as a result saved close to $35,000 on their trash bills. *SUNY Oswego, DEC Region 3, MTA, and Parks* also reported savings from decreased garbage pickups.

Some agencies are making money by directly marketing their collected recyclable materials. In FY 15-16:

- *MTA* generated $1,060,047 from the sale of scrap metal from the *Long Island Railroad*.

- The *Niagara Frontier Transportation Authority* made $26,000 from the recycling of used oil and scrap metal.

- *SUNY Oneonta* made $2,799 from the recycling of cardboard.

- *SUNY Upstate* has experienced significant cost savings through the recycling and/or reuse of metals, electronics, cell phones, sharps containers, medical equipment, and printer cartridges.

The *Javits Center* instituted a “pay as you throw” system. Clients are charged by the amount of waste they create, which incentivizes more diversion into recycling and composting. The Center decreased their bottom line spending on waste management with this approach.

* Fluctuations in the percentage of agencies reporting are due to changes in the ability of agencies to track savings and costs from year to year. There is steady reporting of savings or no change in costs compared to increases in cost.

Some agencies have faced an increase in costs or a decrease in revenue despite best efforts to recycle and compost. *CUNY Hostos Community College* has recently begun paying for its recycling service because they were told the market for their recyclables is not as robust as it once was. *SUNY Cortland* reports an increase in recycling at residence halls, which has also created an additional cost to their operations budget. *Parks* is experiencing increased costs for recycling roll-off containers from their hauler. Some of this may be due to the charging of premiums for single-stream recycling, in order to cover the cost of removing and disposing of contamination in the source-separated materials.
Success Stories, Challenges, and Lessons Learned

Source Separation and Education

CUNY reports that college communities do not always separate materials properly which results in the contamination of recyclables with garbage and the loss of recyclables mistakenly placed in the garbage. Most colleges agree that better signage and more recycling containers are needed to make recycling more effective. Many other reporting agencies also indicate that good education and clear signage is key achieving high levels of accurate source separation.

That said, CUNY’s campuses have consistently made improvements each year to streamline their recycling programs and improve the capture rates of materials. Part of their success can be credited to including recycling education modules in all new student and staff orientations. Every year, CUNY campuses participate in the national “Recyclemania” competition.

- SUNY Stony Brook reports that better signage has improved the quality of their recyclables in dorm areas.
- SUNY Oswego relabeled all their recycling and trash receptacles in FY 15-16, conducted recycling training for staff and residents, and replaced non-recyclable take out containers with containers compatible with the campus recycling program.
- DEC’s Region 2 and central offices have redesigned their recycling signage to capture even more material for recovery, and would be happy to share their model language with other agencies.
- SUNY New Paltz has placed a recycling bin next to all trash bins at main building entrances on campus and standardized aesthetics.

Campgrounds and Wilderness Areas

DEC notes that convenience packaging is increasing garbage generated at campgrounds and forest preserve properties. The Olympic Regional Development Authority’s challenge for composting is that most venues are in wilderness areas with a lot of public traffic. Composting can draw black bears in so it’s challenging to compost without causing human/bear conflicts.

New and Noteworthy Initiatives in FY 15-16

Among the recycling strategies introduced in FY 15-16, impressive actions were taken to recycle C&D debris and compost organic material and food scraps. Investment in public outreach and employee engagement was also notable, as was a trend toward the adoption of single stream recycling.

Recycling C&D Debris

- MTA New York City Transit updated its capital program management specifications in 2014 to include a 75% C&D debris diversion goal. Since then, more and more projects have it included in their construction documents. At a minimum, 10% of projects are audited to assess recycling efforts in the field. Of the 105 construction projects that generated C&D in FY 15-16, 32 achieved a 100% diversion rate and 48 diverted more than 90%.

- DOT performed 64.4 lane miles of cold in-place asphalt recycling in FY 15-16, which diverted 136,013 tons of C&D material from disposal.

DOT performed more than 64 lane miles of cold in-place asphalt recycling in FY 15-16, which diverted 136,013 tons of C&D material from disposal.
DEC Region 3 deconstructed an 8,000 sq. ft. wooden structure and recovered 22 tons of shingles and 140 tons of wood waste.

Composting

- SUNY composting initiatives continued to expand across their campuses. SUNY Canton converted 5,000 pounds of food scraps into a nutrient rich soil amendment for use on campus landscaping.
- SUNY Oswego started a food waste composting program in one dining hall diverting approximately 50 pounds of food per day.
- SUNY Oneonta partnered with the City of Oneonta to apply for, and were awarded, a $420,000 grant from DEC’s Climate Smart Communities Grant Program to create a regional compost facility. Once the facility is operational, all the food waste from campus will be sent there instead of to the landfill.
- SUNY Morrisville produces biodiesel from waste cooking oil, recycles farm waste through an anaerobic digester and composts.
- SUNY Albany expanded food scrap composting into offices and all dining halls and earned the ranking of 10th in the nation for per capita food scrap composting in a nationwide campaign.
- Six of DEC’s nine regional offices and their central office are now composting and two regions have expanded their composting capacity. Region 4 Schenectady began composting food scraps and created a lobby display to educate visitors and staff.
- The Roosevelt Island Operating Corp partnered with the Roosevelt Island Garden Club (a community-based organization) to create a composting program for Island residents, which produced approximately 10 tons of compost material.
- CUNY Macaulay Honors holds a composting day every Thursday at Lincoln Square Park, where it invites the public to join in their composting efforts.
- CUNY Lehman College developed a new “NYC Compost Project” food-scrap drop-off and composting site on campus to make it convenient for students and city residents to bring their food scraps for composting.
- Parks updated the educational composting display at Letchworth State Park. Patrons can view examples of backyard composting systems and are given pamphlets regarding the benefits of composting.

Miscellaneous

- DEC’s Region 4 Stamford office has upgraded the buildings’ recycling bins and has created a public outreach display in the lobby for visitors and staff about the benefits of recycling.
- Ag and Markets collected returnable containers and then donated them to the Regional Food Bank as a revenue source.
- NYPA’s sustainability team conducted an in-depth evaluation of the root cause of disposable beverage container waste as part of a Lean Six Sigma efficiency initiative. One easy to implement solution was to provide reusable, washable coffee mugs to the café vendor in the lobby of their building.
- All employees in OGS owned and managed buildings now use a two-basket recycling system at their desks. Commingled recycling and rechargeable battery collection bins are centrally located in each building.

SUNY Albany earned the rank of 10th in the nation for per capita food scrap composting.
Reduction of Toxic Chemical Use

Agencies continued their efforts to reduce toxic chemical use in FY 15-16. Safer pest management and green cleaning continued to be practiced by most agencies, with new efforts made to test non-toxic approaches and phase out the use of commonly used toxins, such as bleach.

Pest Management

Most agencies continue to use Integrated Pest Management (IPM) to prevent indoor pests. IPM is a set of practices that minimize pesticide use and focus on prevention through monitoring, good sanitation and structural and biological controls, with least-toxic pesticide use as a last resort. OGS has been a leader on the use of IPM in public buildings for the past 26 years.

A clear majority of agencies are now using solely mechanical, sanitary, cultural or biological means to control pests on their lawns and grounds, as required under the EO 4 specification for "Turf and Ornamental Management." Currently, a number of specific types of facilities and uses are exempt from that specification, including golf courses, land in agricultural production, and utility rights of way. The Governor's Pollinator Task Force Report, issued 2016, recommends that the specification be amended to require the avoidance of nursery stock treated with insecticides (including a special class of insecticides known as neonicotinoids) and require exempt uses to practice IPM or Integrated Vegetation Management (IVM).

Least toxic and non-toxic pest and vegetation management practices protect public health, promote healthy ecosystems, and help to ensure greater natural species diversity along rights-of-way. Both also help to promote the diversity of local pollinators such as honeybees and the endangered Karner Blue butterfly.

Findings

In FY 15-16:

- 71% of agencies responsible (either directly or through contractors) for indoor pest management reported using IPM at all (57%) or a majority (14%) of their facilities. This represents an increase from the 64% of agencies reporting that rate of use in FY 14-15, and a notable increase in facilities using IPM at all of their facilities (up 14 percentage points from 43% in FY 14-15). Only 3% do not practice IPM at any of their facilities.

- 58% of agencies responsible for turf and ornamental pest management reported using non-chemical means of pest control at all (33%) or a majority (25%) of their facilities. This represents an increase from the 50% of agencies reporting that rate of use in FY 14-15, an encouraging trend. Only 8% do not follow such practices at any of their facilities.

This year, questions were added to the survey regarding the use of IPM and IVM on golf courses, rights-of-way and other facilities exempted from the “Turf and Ornamental Management” specification.

- 48% of agencies responsible for pest management at exempted facilities reported using IPM or IVM at all (26%) or a majority (22%) of such facilities. Only 13% did not practice IPM or IVM practices at any such facilities.

- 52% of agencies responsible for turf and ornamental management reported avoiding nursery stock treated with insecticides at all (30%) or a majority (22%) of their facilities.
Savings and Costs

On average over the past seven years, a significant plurality of agencies (51%) reported a reduction or no change in costs as a result of practicing IPM, IVM or non-chemical means of pest control. In contrast, a much smaller percentage (9%) reported an increase in costs. Over one-third said they did not know.

* Fluctuations in the percentage of agencies reporting are due to changes in the ability of agencies to track savings and costs from year to year. There is steady reporting of no change in costs compared to increases in cost.

Success Stories, Challenges and Lessons Learned

Agency reports documented widespread and enthusiastic adoption of IPM, IVM, and non-chemical means of pest management over the past six years, with some agencies reporting the exclusive and successful use of such approaches, including OGS, Parks, and the Battery Park Parks Conservancy. An increasingly small number of agencies (two in FY 15-16, the lowest yet) received reports from one or more of their facilities that less toxic or non-toxic means of pest control can be more expensive or less effective.

- **SUNY Stonybrook** reports that efforts to reduce herbicide use have resulted in the increased use of man power to eradicate weeds on campus, which is more expensive.

- **DOT** has implemented a good housekeeping IVM program in which they purchase only the quantities of herbicides required to treat the amount of vegetation to be managed, thus reducing costs and hazardous waste. The greatest challenge has been controlling noxious and invasive plants in highway rights-of-way. Noxious weeds often can't be controlled mechanically without presenting a significant hazard to maintenance personnel. Many invasive species can be spread inadvertently by mowing and other mechanical control methods. An effort to avoid mowing invasive species, and to clean mowers after use, has been put in place.

- **CUNY Borough of Manhattan Community College** is using EPA-designated green products for landscaping which has resulted in reduced costs for hazardous waste pickup.

- **Parks** continues lead on the use of organic alternatives and IPM. All the golf courses in Parks’ system have adopted a progressive model for the use of IPM on turf grass, first developed in collaboration with the New York State IPM Program and Cornell University at the world famous Bethpage State Park golf facility in 2009. The program has reduced the overall number of pesticide and fertilizer applications as well as the size of treated areas, and led to the use of less toxic products with higher efficacy and lower costs. The program has resulted in cost savings, water conservation, and improved water quality in surrounding areas.

- **Parks** has also increased their use of goats to eliminate poison ivy and reduce mowing.

- **CUNY Lehman College** uses cryogenic pest control equipment to manage bedbugs, which saves money and is non-toxic.
New and Noteworthy Initiatives in FY 15-16

- SUNY Canton and SUNY Potsdam planted a bee and butterfly garden on campus where they've adopted sustainable practices and educated the community on the link between non-chemical use and pollinator protection.

- The United Nations Development Corporation reports that IPM enables a proactive approach which helps eliminate the need for toxic treatments and greatly minimizes problem areas.

- The Roosevelt Island Operating Corporation uses pet friendly pesticides at its outdoor facilities and restricts the use of certain toxic chemicals.

Green Cleaning

Healthy working and learning environments help New Yorkers thrive. The State’s Green Cleaning Program, which is managed by OGS, was established in statute for schools and for agencies under EO 4. By adopting green cleaning practices and purchasing state approved green cleaning products, schools and agencies across the state have eliminated or reduced the use of toxic cleaning products.

Findings

In FY 15-16, agencies responsible for performing or contracting for cleaning services at their facilities reported that:

- 87% use green cleaning products that meet EO 4 specifications and can be found on OGS's List of Approved Products all (38%) or a majority (49%) of the time. This year, for the first time, no agencies reported that they never use products from the list, an improvement over the three agencies reporting that way the year before.

- 81% use fragrance-free products and 78% use concentrated products all or a majority of the time.

- 76% reported the use of walk-off mats and microfiber mops and cloths to reduce the overall amount of chemicals used.

- 78% reported that they reduced the number of different kinds of cleaning products used.

These responses align with those from previous years, and show continued commitment to reducing the use of toxic products for cleaning. Several agencies reported the introduction or continuation of systems of inventory control that allow them to purchase fewer cleaning products. Concentrated products were also used, which can reduce the costs and carbon footprint of packaging and transportation.
Savings and Costs

Over the past seven years, the percentage of agencies reporting a reduction or no change in costs as a result of adopting green cleaning practices has held close to the period average of 48%. The number of agencies reporting an increase averaged 11%. More than a third said they did not know the effect of green cleaning on their spending.

Success Stories, Challenges and Lessons Learned

A substantial number of agencies reported on successes in FY 15-16. Some challenges were also reported.

- The Development Authority of the North Country reviews chemical inventories prior to chemical purchases to determine if another substance already in stock can be used instead, or if there are less toxic alternatives, resulting in a steady reduction in chemical inventories over multiple years.

- Niagara Frontier Transportation Authority has implemented a web-based material safety management system, in which incoming materials are pre-screened for toxic characteristics prior to approval.

- Olympic Regional Development Authority has installed concentrated green cleaning product stations in most of their venues. These stations automatically dilute the product to ensure that there is no over-use.

- SUNY Albany also employs dilution control for green cleaning products, which has reduced waste.

- DASNY reported that more information on scents and toxins in cleaning products is needed, since many people still bring in their own toxic wipes, scented oils, and sprays to work. Training would help to educate staff about approved products and their proper use. New York State Department of Public Service noted that there has been some difficulty in finding an effective green replacement for brass cleaner.

New and Noteworthy Initiatives in FY 15-16

- DOT began an effort to encourage maintenance staff to control brush with a combination of mechanical means and small amounts of herbicides. The objective is to pre-empt more costly tree removal work later; it is easier, safer and less costly to remove brush than to remove trees that can be hazardous to the traveling public. They have also been applying a “natural” herbicide to determine its effectiveness compared to conventional herbicides. While initial results were less than satisfactory, follow up testing is scheduled for FY 16-17 to see if equipment modifications would improve effectiveness.

Energy Efficiency

If energy-efficiency improvements have never been made in a building, or have not been made in the last couple of years, rapidly changing technologies can offer significant opportunities to upgrade existing systems to save energy and money. It is often possible to reduce energy use by 5-10% just by implementing simple changes, especially when coupled with employee education that includes purchasing, maintenance and fleet staff. Simple changes include low and no cost actions, such as adjusting temperature set points and putting procedures in place to ensure lights are off during vacant hours. These practices must be embraced and visibly endorsed as a priority by the highest levels of management to foster a workplace culture of sustainability. After simple changes have been made, an energy study can help building managers identify opportunities for deeper cost-savings.
Findings

In FY 15-16, agencies reported that:

- A significant majority, 73%, have installed ENERGY STAR® equipment and/or appliances at all (38%) or a majority (35%) of their facilities. Only 11% have not purchased such equipment at all.

- 60% used motion detectors to reduce unnecessary lighting at all (25%) or a majority (35%) of their facilities. Only 6% did not use such sensors at all.

- 85% set weather-appropriate building temperature control ranges to conserve energy at all (47%) or a majority (38%) of their facilities.

Compared to FY 14-15, the percentage of agencies reporting that they implemented these simple changes declined 4 percentage points for the purchase of ENERGY STAR® equipment while increasing 5 percentage points for the use of motion detectors and 10 percentage points for the setting of temperature control ranges.

Savings and Costs

On average over the past seven years, a significant number of agencies, 38%, reported a reduction in costs as a result of their energy use reduction efforts. 19% reported no change in costs, and only 5% reported an increase in costs. More than one third said that they did not know. This uncertainty may be due to the challenge of tracking energy use and correlating changes in use to a specific project.

Agency experience shows that energy efficiency can have a positive impact on agency budgets, and it is important to emphasize that the savings are realized in the agency’s operating budget – where it can be most easily redirected to other agency priorities. However, the potential for saving money is still too often overlooked.

Challenges and Success Stories

While the data is positive, achieving efficient energy practices can be challenging. Success requires not only initial project implementation, but re-evaluation, the consideration of new initiatives, and periodic employee education to ensure that best practices (e.g. turning off computers at the end of the day) are imbedded in an organization’s culture. Without all these components, backsliding may occur, and sustainability projects may not be pursued, be halted, or be ineffective.

Agencies that have been able to bring these pieces together successfully are reaping the benefits of sustainability:

- SUNY Albany reports that “We have saved significant money in our utility budget due to sustainability initiatives – over $500,000 a year.” These savings were realized by establishing a temperature set point policy, modifying the scheduling of air handling units to match building occupancy patterns, reducing both heating and lighting over school breaks, and holding annual educational campaigns, initiatives that promise to reap continued savings year-to-year.
New and Noteworthy Initiatives in FY 15-16

- **SUNY Albany** replaced metal halide lights in the SEFCU Arena with LED lighting, resulting in a 45% reduction in lighting power use even while increasing lighting levels to meet NCAA standards.

- **SUNY Albany** also funded and established a new Instrumentation, Controls and Commissioning shop focused on diagnostics and advanced metering to optimize building performance.

- **The Javits Center** decreased energy consumption by 2,112,908 kWh compared to FY 14-15 through demand response management and continuous energy monitoring.

- DEC’s Ray Brook Office was named “Facility of the Year” by NYPA for reducing energy consumption by 21%.

- The **Office of Information Technology Services** is replacing PC’s with zero clients – computers without localized storage which use less energy.

- **SUNY Optometry** upgraded to LED lighting in its exit stairwells that will use less energy.

- **NYPA** implemented several projects to reduce energy consumption and its carbon footprint, including LED upgrades, advanced lighting controls, HVAC optimization technologies, and various plug load management strategies.

- **CUNY** increased the granularity of its HVAC and lighting zones to reduce unnecessary usage while continuing to serve occupied areas.

Renewable Energy

New York State is leading the nation under Governor Cuomo’s comprehensive policy for a clean, more affordable and resilient energy system. The Clean Energy Standard, adopted in 2016, is the most comprehensive and ambitious clean energy goal in the state’s history and requires that 50% of New York’s electricity come from renewable energy sources by 2030.

There are several ways in which agencies can support renewable energy technology, including purchasing green power and leasing or purchasing renewable energy technology. Some agencies are doing both: purchasing green power and generating on-site renewable energy. Projects are being deployed across the State.

In February 2017, Governor Cuomo announced that state-supported solar power in New York increased nearly 800% from December 2011 to December 2016. The Governor said, “Our investments in this clean energy resource create jobs, reduce carbon emissions, support economic growth, and help build a cleaner, greener New York for all.”

One of the most recent accomplishments within state government is the completion of a 693kW solar array at Robert Moses State Park (pictured on the cover of this report). According to Parks Commissioner Rose Harvey, “Under Governor Cuomo’s leadership, State Parks is embracing the use of clean energy technology.” The electricity generated will cover the entire annual usage of the park, making it the first energy neutral state park in the nation.
The system, built by Parks employees, will also relieve some energy costs at Jones Beach State Park and save $150,000 annually.

**Findings**

Several agencies took advantage of renewable energy opportunities in FY 15-16:

- 29% either purchased Renewable Energy Credits (RECs) (12%), generated on-site renewable energy (11%), or did both (6%).

According to the U.S. Energy Information Administration, the average home uses 10,812 kWh of energy per year. Affected entities reported generating 67,119,713 kWh of energy through on-site renewable energy generation alone in FY 15-16 – enough to power 6,200 homes for one year.

**Savings and Costs**

On average over the past two reporting years, 39% of agencies reported a reduction (19%) or no change (21%) in costs due to their renewable energy generation or purchasing efforts. More than a third said that they did not know. The number of agencies reporting an increase in costs declined 13 percentage points, from 25% to 12%.

**Success Stories, Challenges and Lessons Learned**

As with energy efficiency, the upfront cost of renewable energy projects can be a barrier to implementation. However, with tools like power purchase agreements (PPAs), where a developer arranges for the design, permitting, financing, and installation of a solar energy system on a customer or host site property for little to no cost, these projects are becoming more achievable for state agencies.

OGS is currently working on a centralized contract for the installation of solar panels and equipment, including technical assistance from the New York Power Authority, and the purchase of solar generated electricity through a PPA between a solar developer and an agency. The contract will provide a clear path forward for agencies to use PPAs and includes a “model” PPA that agencies can modify to meet their own project needs.

**New and Noteworthy Initiatives in FY 15-16**

- As mentioned previously, **CUNY Queens College** is installing solar panels and batteries on the roof of a campus dorm. In the event of a grid failure, the dorms will draw energy from the battery backup system.

- **SUNY New Paltz** is constructing a 217 kW solar system at the Elting Gym and Sojourner Truth Library. The Gym will also have a 200 kWh battery storage array providing backup power to the building, which serves as the region’s Red Cross Shelter.

- **CUNY Borough of Manhattan Community College** is installing 916 solar arrays which will be capable of generating 325 kW.

- The **Olympic Regional Development Authority** entered into a PPA for 5.3 MW of solar power at Gore Mountain ski resort.

- **MTA Metro North** installed five dual solar/wind parking lot lights at the Tarrytown Station that operate independently of the electrical grid. There were no pre-existing transmission lines at the location.

- The **Niagara Frontier Transportation Authority** added a solar installation to its Frontier Bus Garage.
Sustainable Transportation

DEC organized a “Green Your Commute Day” event in which more than 800 employees walked, biked, took public transit, carooled, or drove an electric vehicle to work and reduced carbon emissions by 8.5 tons in just one day.

Findings

In FY 15-16, agencies reported that:

- 95% used webinars or videoconferencing at least some of the time to reduce employee travel, with 20% using them all of the time.
- 86% use carpooling and fleet management practices at least some of the time to reduce employee vehicle miles traveled (VMT).
- Of the 43 agencies reporting VMT data in the last two fiscal years, 18, or 42%, reduced VMT between FY 14-15 and 15-16. Total VMT reported by 54 agencies in FY 15-16 was 72.96 million miles.
- The average fuel efficiency of agency light duty fleets (including SUVs, trucks, vans, and sedans) was 22.53 miles per gallon (MPG), a slight increase of 0.3 since the last reporting period. In comparison, the average fuel efficiency of light duty vehicles across the U.S. in 2016 was 25.09 MPG.
- 4% of the current light duty fleet is made up of Zero Emission Vehicles (ZEVs) (415 out of 9,942 vehicles), and 6% of light duty vehicles acquired in FY 15-16 were ZEVs (38 out of 603 vehicles).
- A plurality of agencies promote and support policies to reduce employee commuter miles all or a majority of the time, including carpooling (40%) and public transportation (48%).
- Three agencies, NYSERDA, NYPA, and the Long Island Power Authority (5% of those reporting) have a workplace charging program in place.
- Some agencies promote and support the use of compressed pay periods (14% all or a majority of the time, 48% at least some of the time, and 52% never) and telecommuting (6% all or a majority of the time, 45% at least some of the time, and 55% never).
In addition to agency level initiatives to reduce commuter miles, the State encourages the use of public transportation by its employees through the NYS-Ride program, which lowers the cost of commuting by transit by allowing employees to purchase public transportation fare using pre-tax dollars.

### Savings and Costs

On average over the past two reporting years, 38% of agencies reported a reduction (16%) or no change (22%) in costs due to their efforts to green transportation practices. Only 7% experienced an increase in costs. More than half said they did not know.

### Challenges and Success Stories

Multiple agencies stated that a major obstacle to utilizing more fuel efficient vehicles was the higher cost premium. A few agencies stated that the lack of public transportation options in rural areas made it difficult for them to promote the use of it by employees. In addition, some work schedules do not align with public transit options, or with the vagaries in timing in public transit options.

In order to address the cost premium of fuel efficient vehicles, DEC and OGS have begun leading aggregate purchases of plug-in hybrid electric vehicles for State agencies, authorities, and local governments through the New York State Vehicle Marketplace. Aggregate purchasing has the potential to significantly lower costs and increase the number of zero emission vehicles (ZEVs) in the State’s fleet.

### New and Noteworthy Initiatives in FY 2015-16

- **EFC** lowered their VMT by nearly 20%, bringing their two year decline in VMT to 36%.
- **MTA** installed electric vehicle charging stations at 4 of their metro-north train stations for public use. This included the Cortlandt, Beacon, and Southeast stations, as well as at the North White Plains Parking Garage.
- **Thruway** installed direct current fast electric vehicle charging stations at four of their travel plazas between New York City and Albany. These stations charge EVs at 50 kW, fast enough to provide many vehicles with a full charge in less than an hour, making them practical for long-distance EV transportation.
- **SUNY Oneonta** installed a dual port electric vehicle charger on campus for staff, students, and visitors.
- **Buffalo Fiscal Stability Authority** reimburses employees who take public transportation up to a prescribed amount. Not only does this incentivize employees to take transit, it also saves the authority money.
- The **Niagara Frontier Transportation Authority** installed a cell-phone waiting area where drivers can wait in their cars to pick up passengers. This lowers emissions by eliminating the need for drivers to continually drive around the terminal while waiting to pick someone up.
- **DEC** organized a “Green Your Commute Day” event in which more than 800 employees from across the State walked, biked, took public transit, carpooled or drove an electric vehicle to work and reduced carbon emissions by 8.5 tons. Planning is underway for an even larger interagency led event in 2017.
- **SUNY Cortland** instituted Zip Car on their campus, which netted the campus an annual revenue of $3,000 while reducing the number of vehicles on campus by an average of 15 vehicles per Zip Car.
Conserving Water and Other Natural Resources

According to the U.S. Drought Monitor, 2015 began with almost 30% of the continental United States experiencing moderate to exceptional drought. Although it is natural for normal fluctuations in weather patterns to cause periods of drought, some scientists believe that a warming climate may result in more severe drought events in the future. Fortunately, New York State is rich in freshwater – in fact, it is home to the largest unfiltered water supply in the country. These resources can be preserved and protected for future generations through conservation, efficient use, and reuse, measures that will increase in importance as drought conditions accelerate.

A range of measures, including high efficiency plumbing fixtures, the reclamation and reuse of grey water, and the collection of rainwater for landscaping and washing vehicles, can help to ensure that residents have perpetual access to freshwater, our most precious natural resource.

Indoor Water Conservation and Reuse

Findings

Many agencies are already implementing indoor water conservation measures. In FY 15-16, agencies reported that:

- 68% use high efficiency plumbing fixtures in at least some or all of their facilities.
- 22% use greywater collection in at least some of their facilities.

Savings and Costs

On average over the past seven years, a significant plurality of agencies (52%) reported a reduction (16%) or no change (36%) in costs as a result of implementing indoor water conservation measures. In contrast, a much smaller number (4%) reported an increase in costs. Over a third said they did not know.

- NYPA switched to low flow water fixtures and aerators at their White Plains office which led to reduced consumption of municipal water and reduced energy consumption from heating the water, yielding sizeable cost savings.

Success Stories, Challenges and Lessons Learned

Becoming more sustainable is always going to mean changes for an agency, and change can be a challenge. Although water conservation can result in long term savings, reduced consumption, and more efficient operations, the upfront cost of upgrading infrastructure can be a barrier.

A number of other agencies have overcome this obstacle by taking advantage of the opportunity afforded by new construction or planned renovations. For example, MTA built an impressive greywater bus washing system into the newly constructed Mother Clara Hale Bus Depot, which won a New York State Environmental Excellence Award in 2016 as the first LEED certified bus depot in the country. Parks is replacing low efficiency plumbing fixtures with high efficiency fixtures as renovations occur or fixtures require replacement. The United Nations
Development Corporation reused high efficiency plumbing fixtures being replaced as part of a restroom renovation in one building to replace broken, less efficient fixtures at a different building.

Agencies that do not own the buildings they occupy report that implementing water conservation can be a challenge due to the nature of lease agreements and landlord restrictions. For example, the Long Island Power Authority is located in a large commercial building and has found it challenging to incorporate water conservation into the services provided by the landlord.

Measuring success can also be a challenge. At the Javits Center, the nature of hosted events changes annually and some events require more water use than others. Changing variables like this can make it difficult for agencies to accurately compare water use data from year to year.

Sharing challenges and successes among agencies can inspire new ideas, promote partnerships, and embolden agency advocates to address inefficiencies. Although every agency is different, sharing success stories can spur innovation.

**New and Noteworthy Initiatives in FY 15-16**

- **CUNY** as a whole continues to be a role model with their commitments to reducing water consumption. Most schools are installing or have installed touchless faucets. Lehman College campus buildings now use meters to measure water use. Borough of Manhattan Community College uses grey water from the HVAC system in the cooling tower at Fiterman Hall. The College of Staten Island is storing greywater in underground tanks for use in the campus sprinkler system and Brooklyn College is building a new blue roof on the science building.

- The Capital District Transportation Authority refitted their bus washing facility to reclaim grey water for reuse.

- The Development Authority of the North Country’s Water Quality division has begun to utilize rainwater collection to wash vehicles (their materials management facility has practiced this for several years).

- SUNY Oswego upgraded their plumbing fixtures to high efficiency units in a 200 bed residence hall for a 30% reduction in water use. SUNY Albany has installed water submeters, which allows for the tracking of water use at individual facilities.

- The Department of Taxation and Finance is encouraging their landlords to implement cost saving water consumption fixtures through their leases.

- The United Nations Development Corporation has installed a passive grading system that collects runoff for landscaping and an irrigation system that uses sensors to prevent wasted water.

- Westchester Medical Center is initiating rainwater reuse to regenerate pond-less landscape water features (waterfalls, fountains, etc.).

**Green Infrastructure and Sustainable Storm Water Management**

Green infrastructure applications, whether scaled small or large, reduce the negative impacts of storm water runoff, water pollution, sewer overflows and flooding. Green infrastructure practices can be more economically viable as compared to building or expanding traditional storm water and sewage treatment systems. They can also yield numerous additional benefits including aesthetic improvements, recreational enhancements, wildlife habitat resources, cleaner air, energy savings, urban cooling, and climate change mitigation.

Green infrastructure solutions can be applied on different scales. New York State’s Forest Preserve, parks, and other State-owned lands include large, natural tracts of forests, floodplains, and wetlands. These naturally
occurring ecosystems are critical to providing the benefits of green infrastructure. Other structures, such as street trees and rainwater collection systems have been installed in smaller or more urban settings.

Sustainable storm water management, an important subset of green infrastructure, uses both the natural environment and engineered systems to help manage storm water in a way that conserves, protects, and sometimes enhances ecosystem values and functions. Practices include rain gardens, green roofs, vegetated swales, bio retention areas, rain barrels, and permeable pavement. Many examples of large or small green infrastructure and sustainable storm water management projects can be found on a variety of state properties.

Findings

In FY 15-16, agencies responsible for landscaping at their facilities reported that:

- 38% are using large-scale green infrastructure practices (such as forests, riparian buffers, floodplains, and wetlands) on at least some of their facilities.
- 59% are implementing smaller-scale green infrastructure practices (such as rain gardens, urban trees, green roofs, and green walls) on at least some of their facilities.
- 55% are using practices that minimize the use of potable water and help manage stormwater by harvesting and reusing rainwater (e.g. rain barrels, cisterns, vehicle washing, fountains etc.) on at least some of their facilities.

Success Stories, Challenges and Lessons Learned

Agencies reported encountering some challenges, primarily related to monitoring and maintenance. Agencies in leased spaces often encounter landlord challenges when the lease language for the property does not cover these practices.

- **MTA** found that monitoring storm water retention systems has been challenging; however, experience is being gained with monitoring and building management systems.
- **SUNY Cortland** has implemented storm water management runoff programs with success. However, additional time and material charges have been incurred in order to keep the systems running smoothly.
- **SUNY Stony Brook** continues to be a “Groundwater Guardian Green Site” designated by the Groundwater Foundation, for their outstanding groundwater stewardship.

New and Noteworthy Initiatives in FY 15-16

- **CUNY Lehman College** is metering water use at certain campus buildings. One academic building has more than 11,000 sq. ft. of green roof spaces that filter rainwater and increase energy efficiency.
- **CUNY Borough of Manhattan Community College** has installed trees to serve as a wind break from the Hudson River. The tree pits are filled with Cornell structural soil to absorb excess storm water.
- **SUNY Empire State College** constructed a new building which contains a large bioretention area which slows the flow of almost 100% of the storm water coming from impervious surfaces on campus.
- **SUNY Cortland** installed a storm water retention area under a newly built, 50 space parking lot.
Sustainable Landscaping

Sustainable landscaping practices are regenerative and responsive to local ecological conditions. They actively contribute to the development of healthy communities by restoring diverse habitats, promoting diversity and the growth of native species, contributing to clean water and air, using less energy inputs, sequestering carbon, and decreasing the need for irrigation and added soil nutrients. They create value through significant economic, social, and environmental benefits which are cost-efficient over the long term.

Varying soil conditions, precipitation, plant habitats, and micro-climates should be taken into account when planning a sustainable landscape. Plant, soil amendment, pest management, and water use choices should be made with the goals of conservation, reducing chemical use and preventing erosion in mind. Planting invasive species should be avoided and native plants should be given priority. The field of sustainable landscaping continues to evolve in response to changing climate conditions.

Findings

In FY 15-16, agencies responsible for landscaping at their facilities reported that:

- 55% use practices that preserve or enhance soil (e.g. planning windbreaks or using compost created on site) on at least some of their facilities, and 14% are using such practices at all of their facilities.

- 61% use practices that preserve or maximize the use of native vegetation to support pollinators and reduce water, energy and toxic chemical use on at least some of their facilities. Such practices include low- or no-mow policies, or the planting of xeric, native, or pollinator-friendly plants.

Success Stories, Challenges and Lessons Learned

- **DEC Region 5 Warrensburg and Ray Brook** tried sustainable landscaping in the past but encountered concerns with aesthetics which ultimately resulted in the practices being discontinued.

- **The Niagara Frontier Transportation Authority** has challenges with sustainable landscaping at airport locations due to safety concerns. Landscaping near runways must be properly groomed to discourage wildlife habitat nesting areas.

- **SUNY Albany** implemented a recent project for a new turf field which was designed improperly, despite incorporating sustainable landscape practices into the request for proposals from bidders.

New and Noteworthy Initiatives in FY 15-16

- **Parks** installed large scale native plantings and pollinator gardens. They have mitigated stream bank erosion by performing stream bank stabilization and marsh restoration.

- **SUNY Canton** is using compost as a soil amendment to reduce chemical fertilizer applied to gardens. Native plants and pollinator plants have been established, and no-mow zones have been increased.

- **SUNY Stony Brook** discourages the use of fertilizers and prefers to use organic solutions when planting on campus and in the greenhouse.

- **SUNY Oneonta** received a $910,000 EFC grant to develop green infrastructure on campus.

- The **Capital District Transportation Authority** now installs low maintenance, native plants on its properties.
The Development Authority of the North Country Materials Management facility began using a new hydroseeding mulch mixture to reduce the amount and frequency of watering newly planted areas.

Westchester Medical Center installed windscreen plantings around parking garages. Additional planting has been done around storm water basins to create native areas and no-mow regions.

**Savings and Costs**

On average over the past seven years, of agencies that contract for landscaping or manage it themselves, a significant plurality (52%) reported a reduction (16%) or no change (36%) in costs as a result of implementing sustainable landscaping and stormwater management measures. In contrast, a much smaller number (5%) reported an increase in costs. Over a third said they did not know.

**Education and Engagement**

For any agency to meet sustainability goals, staff must be aware of those goals and have the tools they need to achieve them. Staff and other stakeholders, such as facility users, students and residents, must be familiar with and comfortable participating in sustainable practices, such as recycling or green cleaning. The EO 4 Training Subcommittee and Operations and Engagement Subcommittee (OnE) help to ensure that sustainability coordinators and staff have the tools, resources, and connections they need to achieve success.

Employees are often unaware of the cumulative effects of their daily choices. Seemingly innocent behaviors can add up to energy waste, health and safety issues, negative environmental impacts, and unnecessary expenses. Agencies are encouraged to provide basic sustainability awareness training, continuously encourage better practices in the workplace, and empower employees to change their behaviors.

Training should focus on the average employee while separately targeting staff that conduct purchasing or manage facilities or fleets. It is important to provide guidance regarding: modifications in green purchasing practices and standards; the purchase and installation of rapidly changing technology; and methods which optimize the performance of new technology. The intentional integration of best practices into the agency’s way of doing business and reinforcement by upper level management is essential to continued progress.

**Findings**

Improved education and training is the strategy cited most frequently by Sustainability Coordinators as a potential solution to numerous challenges, especially those that involve changing behavior. For example, SUNY Canton states that “a well-done employee training program is key to an effective green cleaning program.”

In New York State, the need for training assistance is high. In FY 15-16, agencies reported that:

- 92% do not have a dedicated budget for sustainability.
74% do not have a sustainability team charged with helping to implement sustainability policies or projects.

47% are taking advantage of the training offered by the EO 4 Training Subcommittee.

44% are providing their own training to staff about sustainability.

Most agencies share sustainability information with staff through simple, low- or no-cost ways that rely on existing resources, such as posting information on internal websites, convening workgroups or green teams, emailing a Green Bulletin to all staff, and holding events on Earth Day, America Recycles Day, or Green Your Commute Day. For agencies in leased facilities, tenant newsletters may be passed along to staff with notices about recycling updates and green cleaning. The goal of these activities is not just to educate; they also shine a light on best practices and achievements that help us learn about and build on each other’s work.

For example, last year, two agencies, the Javits Center and Parks, were awarded a New York State Environmental Excellence award by Governor Cuomo. This year, the Committee sent information out to all Sustainability Coordinators, encouraging them to assess their projects for submission for the award. Participation in the program not only benefits the honorees, it helps promote sustainability to wider audience.

Success Stories, Challenges and Lessons Learned

Generally speaking, if a sustainable action is embedded in an automatic system (for example, the powering down of all computers at 6 p.m.), implementation is easy. Where an activity requires staff or patron participation, there will be a continuous need for messaging, training, and the restating of goals over time.

Training topics suggested by agencies in FY 15-16 include green cleaning, surplus value, and green procurement. This year, several fact sheets were created and posted on the OGS website and distributed to sustainability coordinators. These fact sheets include an Introduction to Green Purchasing, Green Products Available on Contract, Plug-in Electric Vehicles, and a case study on DASNYs Green Building effort. OGS and the Training Subcommittee jointly hosted a widely attended webinar on how to use OGS’s Centralized Contracts. It further explained how to purchase environmentally friendly products and described potential benefits of the purchases.

Parks’ success with implementing sustainable practices at their golf facilities is primarily due to a robust educational program. The introduction of Integrated Pest Management (IPM) at the Bethpage State Park golf facility, carried out in conjunction with the New York State IPM Program and Cornell University, was approached in stages to learn best practices and to educate the players about changes to the courses’ appearance. Player education was critical to the success of the project, especially because there was often a period of time when the course would not look as aesthetically pleasing as it had looked in the past. Without public awareness of the course’s efforts to employ environmentally friendly practices, players may have thought the staff had become inattentive to maintenance.

In addition, maintenance staff had to be intentional in not resorting to harmful chemicals during the transition period. Although there was an initial investment to move to IPM, in both training and costs, Parks was able to develop a golf turf management program that is less reliant on chemical pesticides and reduces chemical exposures. Annual satisfaction surveys have shown that golfers do not perceive a difference in quality of the IPM managed putting greens.

By continuously promoting the changes with both workers and players, and using IPM as a regular protocol, Parks has achieved long-lasting success. IPM is now used at all golf courses in the State park system, including the world renowned Black Course at Bethpage State Park, which has twice been host to the U.S. Open.
New and Noteworthy Initiatives in FY 15-16

- The *Niagara Frontier Transportation Authority* offers environmental training to its employees on an annual basis which focuses on reducing potential environmental impacts from the various activities the authority carries out day to day, including waste reduction.

- *DOT* has an extensive program to train new and existing Certified Commercial Pesticide Applicators and Technicians. The training program is key to reducing the use of toxic chemicals because it teaches new staff, and updates existing staff, on how to use pesticides in a manner that obtains the highest level of control with the least amount of pesticides possible – for their benefit and the benefit of others.

- *Parks* offers Solar Installation, Energy Auditor, Green Professional (GPRO), and various energy efficiency and sustainability trainings to its staff.

- *MTA* is increasing awareness about the benefits of sustainability by developing and distributing Sustainability Guidelines to all Capital Project Managers to encourage them to incorporate sustainable practices into their projects.

- *New York State Bridge Authority* has developed guidance memos about sustainability which have been circulated to staff on such topics as single stream recycling, source paper reduction, re-use of office products, green procurement and recycled content.

Training programs help to change culture and attitudes toward green practices, and to increase awareness of green tools and methods.
Buying Green

New York State is a national leader in green purchasing. Also known as environmentally preferable purchasing (EPP), it involves the selection of goods and services that positively impact or have less harmful impacts on public health and the environment compared to traditional products. Buying green products supports all of EO 4’s environmental priorities regarding waste, toxics, energy, water, and natural resources.

Through the volume of its procurement, government can harness the energy of the market to produce products that perform better and cost less. As supply increases, prices should decrease, and high-performance green products and services will become more affordable for all consumers.

In general, the Interagency Committee anticipates that green products for which specifications are approved under EO 4 will be competitively priced compared to their conventional counterparts. Many green products, such as traffic safety equipment made from recycled plastic, glass beads in reflective paint made from recycled glass, and remanufactured toner cartridges, are consistently less expensive than conventional products. Many others, including 100% recycled content janitorial paper, green computers, green cleaning products, and soy-based ink, are consistently comparable in price to conventional products. Fuel-efficient vehicles and appliances may be more expensive up front but result in lower life cycle costs over time due to energy savings.

Green products also generally perform well compared to conventional products. After seven years of experience under EO 4, only a handful of agencies (three in FY 15-16) reported that green cleaning products were not as effective as conventional cleaners, while 87% of agencies reported using green cleaners all or a majority of the time. This result corresponds to the State Education Department’s 2010 survey of schools, which found that green cleaning products “cost the same or less,” work as effectively, and last longer (because they are concentrated and have more accurate dispensing systems) than their traditional counterparts.

The price of some green products, such as various types of recycled content copy paper or re-refined oil, while generally competitive, may still be higher than conventional products in response to fluctuations in market demand or regional supply. Under current OGS statewide contracts for “truckload” and “less than truckload” lots of recycled copy paper, the price of 100% post-consumer recycled content paper is very competitive, with bulk purchases having the lowest pricing. For copy paper sold in quantities of "less than truckload" lots, pricing for 100% post-consumer recycled content paper is only slightly higher than the price for 30% post-consumer recycled content paper. The OGS “miscellaneous office supplies” statewide contract gives agencies a very wide range of choices of brands, amount of recycled content and paper type, and vendor catalogs make it easy to compare prices and product specifications. Agencies willing to shop around should have no difficulty finding cost-effective recycled content paper.

In the case of re-refined oil, a clear majority (81%) of State contracts for such oil are awarded on low bid, while 19% (due to regional differences in price) are awarded within the State’s 10% price preference for recycled content products. New York was the first state to buy re-refined motor oil in 1990, and helped build the market. The oil consistently meets all performance standards, with few reported problems over 25 years. In 1990, Safety Kleen re-refined approximately 30 million gallons of oil in Canada. It now returns more than 200 million gallons to the marketplace each year.
Purchasing Recycled Paper

Paper is an essential commodity purchased in large quantities by the State. Paper manufacturing uses significant amounts of energy and natural resources and is a major source of pollution and greenhouse gas emissions. To reduce these impacts, EO 4 requires the purchase of copy paper and the printing of agency publications on paper made from 100% post-consumer recycled content, and copy and janitorial paper that is processed chlorine free.

The term “processed chlorine free” (PCF) refers to recycled paper in which the recycled content and any virgin material is unbleached or bleached without the use of chlorine or chlorine derivatives. Post-consumer material has completed its life as a consumer item and will be disposed of as solid waste if not recovered. The higher the post-consumer content, the more materials were diverted from the waste stream. The intent of OGS is to award janitorial paper contracts requiring 100% post-consumer content. However, where this is not practicable, OGS aims for 100% recycled, or total recovered fiber, with a lesser amount of post-consumer fiber content. The tables below present data on the amount of copy and janitorial paper purchased in five out of the past six fiscal years, broken out by percentage of recycled content.

**Key Copy Paper Findings**

- By far the greatest amount, and more than one-half (57%) of dollars spent on copy paper in FY 15-16 ($4.2 million), went to purchase 100% post-consumer recycled content, processed chlorine-free paper. This represents a 35 percentage point increase from the 22% (or $3.3 million) spent on such paper in FY 08-09.

- 66% of agencies in FY 15-16 reported buying at least some 100% post-consumer recycled content, processed chlorine-free copy paper, and only 36% of agencies reported buying less than 30% recycled content copy paper.

- Approximately one-third of agencies (36%) continued to purchase paper with less than 30% recycled content in FY 15-16. However, those purchases accounted for only 11% of total copy paper purchased, down from 21% of the total in FY 9-10.
### Copy Paper Purchases by Amount of Recycled Content

<table>
<thead>
<tr>
<th>100% Recycled Chlorine-free</th>
<th>Agencies Reporting Purchases</th>
<th>FY</th>
<th>% of Agencies Reporting Purchases</th>
<th>Total Boxes Purchased</th>
<th>Total Dollars Spent</th>
<th>Average Price per box</th>
<th>% of Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>09-10</td>
<td>77%</td>
<td>159,857</td>
<td>$6,320,148</td>
<td>$39.5</td>
<td>49%</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>12-13</td>
<td>75%</td>
<td>111,289</td>
<td>$3,558,738</td>
<td>$32</td>
<td>52%</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>13-14</td>
<td>65%</td>
<td>99,945</td>
<td>$2,948,224</td>
<td>$29</td>
<td>43%</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>14-15</td>
<td>64%</td>
<td>140,792</td>
<td>$4,354,301</td>
<td>$31</td>
<td>55%</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>15-16</td>
<td>66%</td>
<td>123,821</td>
<td>$4,202,536</td>
<td>$34</td>
<td>57%</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>09-10</td>
<td>61%</td>
<td>110,028</td>
<td>$3,803,229</td>
<td>$34.5</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>12-13</td>
<td>54%</td>
<td>84,783</td>
<td>$2,579,189</td>
<td>$30</td>
<td>38%</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>13-14</td>
<td>65%</td>
<td>77,577</td>
<td>$2,382,439</td>
<td>$31</td>
<td>40%</td>
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<tr>
<td>32</td>
<td>14-15</td>
<td>57%</td>
<td>83,527</td>
<td>$2,739,832</td>
<td>$33</td>
<td>35%</td>
<td></td>
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<td>39</td>
<td>15-16</td>
<td>64%</td>
<td>78,438</td>
<td>$2,402,276</td>
<td>$31</td>
<td>32%</td>
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</table>

<table>
<thead>
<tr>
<th>30%-99% Recycled</th>
<th>Agencies Reporting Purchases</th>
<th>FY</th>
<th>% of Agencies Reporting Purchases</th>
<th>Total Boxes Purchased</th>
<th>Total Dollars Spent</th>
<th>Average Price per box</th>
<th>% of Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>09-10</td>
<td>30%</td>
<td>81,407</td>
<td>$2,665,794</td>
<td>$33</td>
<td>21%</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>12-13</td>
<td>37%</td>
<td>18,091</td>
<td>$690,368</td>
<td>$38</td>
<td>10%</td>
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<tr>
<td>15</td>
<td>13-14</td>
<td>33%</td>
<td>40,290</td>
<td>$1,482,989</td>
<td>$37</td>
<td>22%</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>14-15</td>
<td>29%</td>
<td>24,233</td>
<td>$795,008</td>
<td>$33</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>15-16</td>
<td>36%</td>
<td>21,277</td>
<td>$833,689</td>
<td>$39</td>
<td>11%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>&lt;30% Recycled</th>
<th>Agencies Reporting Purchases</th>
<th>FY</th>
<th>% of Agencies Reporting Purchases</th>
<th>Total Boxes Purchased</th>
<th>Total Dollars Spent</th>
<th>Average Price per box</th>
<th>% of Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>09-10</td>
<td>N/A</td>
<td>351,292</td>
<td>$12,789,171</td>
<td>N/A</td>
<td>100%</td>
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<tr>
<td>48</td>
<td>12-13</td>
<td>N/A</td>
<td>214,163</td>
<td>$6,828,295</td>
<td>N/A</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>13-14</td>
<td>N/A</td>
<td>217,812</td>
<td>$6,813,652</td>
<td>N/A</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>14-15</td>
<td>N/A</td>
<td>248,552</td>
<td>$7,889,141</td>
<td>N/A</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>15-16</td>
<td>N/A</td>
<td>223,536</td>
<td>$7,438,501</td>
<td>N/A</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

In an important development, an analysis of paper purchasing data revealed that 100% post-consumer recycled content copy paper is not more expensive than copy paper with little to no post-consumer recycled content. On the contrary, on average over the past four fiscal years, 100% post-consumer recycled content copy cost, at $31.50 per box, virtually the same as 30-99% post-consumer recycled content copy paper, at $31.25 per box, and was significantly less expensive than copy paper with less than 30% post-consumer recycled content, at $36.75 per box.

**Key Janitorial Paper Findings**

- 61% of dollars spent on janitorial paper in FY 15-16 (or $4.3 million) went to purchase 100% recycled content, processed chlorine-free paper. This amount represents a 27 percentage point increase from the 34% (or $1.2 million) spent on such paper in FY 2008-09.

- Only nine agencies continued to purchase unrecycled janitorial paper in FY 15-16. Such purchases accounted for only 12% of all janitorial paper purchases.

- Due to the difficulties associated with measuring janitorial paper purchases, the number of agencies reporting such purchases, of any kind, is consistently lower than that reporting for copy paper.
New specifications is proposed Trans Model Packaging

In April, Green Specifications and Centralized Procurements

Some did not have detailed information available. Agencies reported purchasing colored paper, card stock, plotter paper, graph paper, bond paper, map paper, steno pads, and rolls of engineering paper. Several agencies reported dollar amounts for these purchases, while some did not have detailed information available.

Other Paper Purchases

The EO 4 report form contained an open-ended item requesting information on other types of papers purchased, including quantities and dollar amounts. 36 entities reported purchasing other types of paper in FY 15-16. Agencies reported purchasing colored paper, card stock, plotter paper, graph paper, bond paper, map paper, steno pads, and rolls of engineering paper. Several agencies reported dollar amounts for these purchases, while some did not have detailed information available.

Green Specifications and Centralized Procurements

Green Specifications

In April 2016, four green specifications were approved by the Interagency Committee for a total of 43 specifications currently approved for use in state procurement. The approved specifications include: Model Packaging; Printing (amended); Sustainable Landscaping; and Wheel Weights. As a result of the approval of Model Packaging language, there are now five broad categories for the specifications—Electronics/Appliances, Transportation, Office and Building Operations, Food Service, and Model Packaging Language that cover a total of 84 different commodity, service, or technology products. For example, the Desktop and Laptop Computer specification covers three types of devices: desktop, notebook (including laptops) and tablets. A summary of the new specifications is provided below on page 42, and a complete list of approved specifications is available on the New York State OGS website.
In addition, nine green specifications were tentatively approved by the Interagency Committee which, after a public comment period, were approved on April 28, 2017.

- Disinfectants and Sanitizers
- Floor Finishes and Finish Removers
- Furniture
- General Purpose Cleaners
- Hand Cleaners, Hand Soaps, Hand Sanitizers and Personal Care Products
- Lighting
- Monochrome Printer Cartridges
- State Funded Food
- State Funded Travel

Centralized Green Procurements

The New York State OGS Procurement Services is the state’s centralized procurement office, establishing and managing nearly 1,500 contracts for commodities, services, and technology, including many contracts containing environmentally friendly products and services. Procurement Services is dedicated to helping customers meet their green procurement goals by providing environmentally preferable purchasing contracts which are driven by four major directives:

- The New York State Green Cleaning Law (Chapter 584 of the Laws of 2005; State Education Law § 409-i)
- Executive Order No. 4 (Green Procurement and Agency Sustainability)
- Executive Order No. 18 (Eliminate State Purchases of Bottled Water)
- Executive Order No. 142 (Directing State Agencies and Authorities to Diversity Transportation Fuel and Heating Oil Supplied Through the use of Bio-Fuels in State Vehicles and Buildings)

Examples of environmentally preferable procurements either issued or developed by Procurement Services in FY15-16 include the following:

Microcomputer and Related Systems

Users of the OGS centralized contracts for microcomputers continue to realize both savings and environmental benefits by purchasing computers that meet EPEAT requirements through the Aggregate Buy Program conducted by Procurement Services. During the 2015-2016 fiscal year, Procurement Services completed the 2014-2015 aggregate buy (which ended in December of 2015), and in 2016 issued a new aggregate buy. Since 2008, the year that OGS began including EPEAT requirements in the buy program, an impressive number of EPEAT registered electronic devices have been purchased as shown in the following table. For the period between April of 2015 and December of 2015, approximately $49.2 million was spent on the purchase of EPEAT registered computers through the 2014-15 aggregate buy program. The overall buy for 2014-15 was $109.3 million, as shown below.

<table>
<thead>
<tr>
<th>Aggregate Buy Program</th>
<th>EPEAT Silver</th>
<th>EPEAT Gold</th>
<th>Spend* (millions of $)</th>
<th>Savings** (millions of $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 2008 through March 2009</td>
<td>418,915</td>
<td></td>
<td>$154.9</td>
<td>$130.9</td>
</tr>
<tr>
<td>April 2009 through June 2010</td>
<td>47,369</td>
<td>405,964</td>
<td>$188.3</td>
<td>$143.8</td>
</tr>
<tr>
<td>June 2010 through January 2012</td>
<td>7,606</td>
<td>194,530</td>
<td>$127.8</td>
<td>$130.9</td>
</tr>
<tr>
<td>February 2012 through January 2014</td>
<td>569,106</td>
<td></td>
<td>$199.8</td>
<td>$188.4</td>
</tr>
<tr>
<td>April 2014 through December 2015</td>
<td>235,156</td>
<td></td>
<td>$109.3</td>
<td>***</td>
</tr>
<tr>
<td>Totals</td>
<td>473,890</td>
<td>1,404,756</td>
<td><strong>$580.3</strong></td>
<td><strong>$594.1</strong></td>
</tr>
</tbody>
</table>

Notes: *Spend represents the total amount spent by users of the aggregate buy program. **Savings represents the difference between the price of the computers purchased through the aggregate buy compared to the prices on the state contract. ***Data unavailable at the time of publication.
Recycling and Trash Removal Services

In December of 2016, OGS Procurement Services awarded a procurement for Recycling and Trash Removal Services, which offers contract users a centralized contracting vehicle for meeting the recycling and composting requirements contained in the EO 4 specification for Solid Waste Recycling and Management Services. The procurement includes eleven lots for the recycling of materials including single stream materials, comingled materials, metal food containers, glass, plastics, cardboard, mixed paper, white office paper, shredded paper, scrap metal, and construction & demolition materials, and also two lots for composting—one for green waste and one for organics. The contract contains requirements for reporting so that contract users can track the amount of materials being recycled and disposed of and includes recycling revenue for some of the recycling lots.

Recycled Copy Paper, Envelopes and Opaque Rolls

OGS continues to offer copy paper, envelopes and opaque rolls containing recycled content through the following centralized contracts which were issued in 2012 and 2013:

- **Recycled Copy Paper** (Group 50211, Award 22478) (100% and 30% post-consumer recycled content)
- **Recycled Copy Paper, Truckload Lots** (Group 50213, Award 22446) (100% post-consumer recycled content)
- **Recycled Opaque Rolls** (Group 50208, Award 22551) (30% post-consumer recycled content)
- **Envelopes, Wove, Kraft** (Group 50030, Award 22508) (30% post-consumer recycled content)

These contracts provide users with the opportunity to purchase paper with recycled content that meets language contained in the Order itself and the EO 4 specification for Printing. All paper available on these contracts that is 100% post-consumer recycled content is also processed chlorine free. Reported sales for these contracts was approximately $6.4 million in 2015.

Green Cleaning

OGS continues to offer green cleaning products through its Environmentally Preferable Cleaning Products, Programs, Equipment and Supplies contract that was awarded in March of 2015. This contract includes 12 lots covering general purpose cleaning, floor maintenance, disinfectants and sanitizers, vacuum cleaners, hand soaps, de-icing, compostable bags, entryway mats, and a full range of microfiber products. This contract includes products that meet New York’s green cleaning law for schools and the EO 4 specifications for Industrial and Institutional Cleaning Products, Hand Cleaners, Electric Hand Dryers and Vacuum Cleaners.

Provisions for training, tracking purchases and record keeping are also included, many at no extra charge. Sales of green products through this award were estimated to be approximately $2.25 million in FY 15-16, up from approximately $1 million in FY 14-15, an encouraging trend.

Why Use Green Cleaning Products?

- Create a healthier work environment by removing toxic free residues, keeping employees healthier and happier and reducing employee absenteeism and healthcare costs.
- Improve indoor air quality by reducing indoor dust, dust, and chemical exposure.
- Provide a healthier environment for the public and employees.
- Lower the environmental impact/impact of the facility.
- Meet school’s obligations under the New York State Green Cleaning Law (Chapter 77 of the Laws of 2009) and Under this law, schools are required to procure and use environmentally sustainable cleaning and maintenance products.
- Under Executive Order 4, state agencies, public authorities and public benefit corporations are required to procure cleaning products that meet environmental specifications for Environmentally Preferable Cleaning Products. Review the EO specifications at: ep roam.open.nys.gov.

State agencies must consider purchasing through Preferred Sources if the product meets the form, function and utility. - OGS Centralized Contract: Environmentally Preferable Cleaning Products (Group 50010; Award 21801) Who to Ask for Help

The following individuals are available to assist you with questions about the contract: 

- **OGS Procurement Services**
  - Tel: 607-477-2040
  - Fax: 607-477-2041
  - E-mail: procurement@ogs.ny.gov
  - Website: www.ogs.ny.gov

Who Can Use this Contract

- Authorized Users of OGS centralized contracts are permitted to use the Environmentally Preferable Cleaning Products contract to purchase cleaning products that meet the EO 4 specifications.

About the Contract

The Environmentally Preferable Cleaning Products contract is a multiple-purchase procurement that includes 179 product categories of environmentally preferable cleaning products. All the green paper, chemical and potential paper products included in this contract are recognized as “Independent Third-Party Certified” which means that the environmental claim, as well as the product performance, is verified and certified by an established and legitimate, nationally-recognized third-party certification program. The 179 product categories are:

- General Purpose Cleaners
- Floor Maintenance Cleaners
- Disinfectants and Sanitizers
- Specialty Cleaners
- Industrial Equipment & Service
- General Cleaning Aspirators, Squeegees & Sponges
- Hand Soaps, Sanitizers and Soapless Cleaner Products
- Soap and Shaving Products
- Waste Recycling/Computing Car Units
- Disposable Janitorial Paper Products
- Strainers and Other Cleaning Devices
- Linen

In addition, under the terms of the contract, all vendors awarded in Categories 1-6 must offer and perform an initial field assessment as part of transitioning their customers to a green cleaning program and provide training to users of the products.

Green Cleaning Saves Money

- Compare cleaning products across all categories.
- Compare overall savings and cost effectiveness.
- Product Specification: A single green cleaning product may be found in one category to eliminate the need to purchase multiple standard cleaning products.
- Product Elimination: Some green cleaning equipment eliminates the need to purchase toxic chemical.
- Sales: Cleaners. Sales of cleaning chemicals contribute to a healthier environment for employees and users.

OGS Procurement Services has established a training program for customers to use green cleaning products. This program is designed to help agencies buy green and operate more sustainably. This one features green cleaning.

The Training Subcommittee has made a series of guides to help agencies buy green and operate more sustainably. This one features green cleaning.
Floor Coverings and Related Services

In FY 15-16, OGS continued to offer carpet meeting the EO 4 specification for Carpet and Carpet Tile through its piggyback contract with the National Joint Powers Alliance. By using this contract, authorized users can recycle their existing carpet, purchase new carpet that meets the EO 4 specification for Carpet and Carpet Tile, and establish a pattern of purchasing that is both environmentally sustainable and prevents used carpeting materials from being disposed of in landfills. Sales of carpet and carpet tile that meet the EO 4 specification were approximately $640,000 in FY 15-16 and $1.40 million throughout the life of the contract. In 2017, Procurement Services began the process of replacing this award, and expects to issue new contracts by the end of the year.

Oil Lubricating, High Detergent (Re-refined Motor Oil)

OGS continues to offer re-refined motor oil under the Oil, Lubricating, High Detergent contract (Group 05700, Award 22300) which was issued in 2011. This contract provides users with the opportunity to purchase re-refined motor oil that meets the requirements of the EO 4 specification for Lubricating Oil, High Detergent, which requires State entities to purchase lubricating oil that meets or exceeds a minimum percentage of post-consumer material content by weight of 55%. In FY 15-16 approximately $700,000 dollars of sales took place through this contract for a total of $6.7 million since inception of the contract. In FY 15-16, Procurement Services began the process of replacing this award, and expects to award a replacement contract in 2017.

Hydraulic Oil, High Detergent, Returnable Drums (Re-refined Hydraulic Oil)

During FY 15-16, OGS also continued to offer re-refined hydraulic oil under the Hydraulic Oil, High Detergent, Returnable Drums contract (Group 05701, Award 22260) which was issued in 2011. This contract provides users with the opportunity to purchase re-refined hydraulic oil that meets the requirements of the EO 4 specification for Hydraulic Oil, High Detergent which requires State entities to purchase lubricating oil that meets or exceeds a minimum percentage of post-consumer material content by weight of 55%. Approximately $300,000 dollars of sales take place each year through this contract for a total of $1.0 million since inception of the contract.

Electric Lamps

OGS continues to offer energy efficient lighting through its piggyback contract with the National Association of Procurement Officials’ (NASPO) Value Point Facilities MRO contract (#1862) for Lamps, Ballasts and Lighting Equipment. Included in this contract is "Hot List" pricing for frequently purchased items which receive increased discounts off of the Value Point pricing, and this list includes items which meet the EO 4 specification for Compact Fluorescent Lighting as well as additional environmentally preferable lighting products. Similar to the Floor Coverings and Related Services contract, the Lamps, Ballasts, and Lighting Equipment contract also includes a guide to assist users in identifying products that meet the EO 4 specification. This contract was awarded in May of 2015 and expires in February of 2017, at which time the “Hot List” was transitioned to the OGS Industrial Supply Contract. Approximately $1.4 million of environmentally preferable lighting products are purchased through this contract each year including products such as reduced wattage bulbs and DLC certified bulbs and fixtures.

Photovoltaic Systems

Since 2009, solar powered photovoltaic systems have been offered through the OGS contract for Photovoltaic Systems (Group 05302, Award 21806), which is a statewide piggyback contract off of GSA’s contract GS-07F-0108J. In 2016 sales of solar products were approximately $1.1 million through this contract.
Green Specifications Finalized in 2016

Amended Printing

This specification was revised to update the recommended portion of the specification requirements to reference Ecologo Certification Criteria Document UL2803 and to recommend the avoidance of silver halide coatings, maximize the use of process-free printing plates, and maximize the recycling of aluminum plates.

Model Packaging Language

This specification was created to formalize the packaging language included in each EO4 specification and to establish the packaging requirements in its own specification.

The specification requires that packaging comply with Environmental Conservation Law (ECL) 37-025 and not contain inks, dyes, pigments, adhesives, stabilizers, or any other additives to which any lead, cadmium, mercury or hexavalent chromium is intentionally added or contain incidental concentrations of lead, cadmium, mercury or hexavalent chromium which together are greater than 100 parts per million by weight (0.01%). It also encourages effected entities to use bulk packaging, reusable packaging, innovative packaging that reduces the weight of packaging, reduces packaging waste, or utilizes packaging that is a component of the product; require that packaging remain the property of the supplier; and require that packaging maximizes recycled content and/or meets or exceeds the minimum post-consumer content level for packaging in the U.S. Environmental Protection Agency Comprehensive Procurement Guidelines; and require packaging to be either recyclable or compostable.

Sustainable Landscaping

This specification adopted the “Guidance for Federal Agencies on Sustainable Practices for Designed Landscapes” with addendum “Supporting the Health of Honey Bees and Other Pollinators,” which include guidance on site selection and planning, protection of soils, minimizing the use of water, preserving and protecting native vegetation, materials selection, preserving existing historic facilities and cultural landscapes, and construction, operations and maintenance.

Wheel Weights

This specification sets environmental standards for the purchase of wheel weights and automatic/continuous wheel balancers.

The specification prohibits effected entities from purchasing wheel weights or automatic/continuous wheel balancers that contain intentionally added lead and encourages effected entities to avoid the purchase of wheel weights or automatic/continuous wheel balancers that contain intentionally added mercury and to purchase wheel weights that have recycled content. Buying Green, Savings and Costs

Buying Green

Nearly all agencies reporting in FY 15-16 (97%) said that they review and use the EO 4 procurement specifications, as required by EO 4 when making purchasing decisions, a ten percentage point increase from the 87% that reported doing so in FY 14-15. An impressive majority, 63%, reported reviewing and using the specifications all (27%) or a majority of the time (36%).

The greatest commitment to EO 4’s green purchasing directives was demonstrated by DASNY, NYSERDA, CUNY and Parks, which reported spending $62,378, $61,315, $30,551, and $22,220 on green products, respectively. Reported expenditures for green purchases among the remaining entities ranged from $1,995 to $9,689 with a total of $198,442 reported for all agencies.

Combined with the amounts spent on the purchase of EPEAT registered computers through the aggregate buy program ($49.2 million on a pro-rated basis), copy paper with 30% or more post-consumer recycled content ($6.6 million), janitorial paper with 100% recycled content ($4.3 million), re-refined motor oil ($700,000), environmentally preferable cleaning products ($2.25 million), photovoltaic systems ($1.08 million), environmentally preferable lighting products ($1.4 million), and the purchase of EO 4 carpet ($640,000), the overall green purchasing by State entities amounted to approximately $66.3 million in FY 15-16.

DASNY replaced 133 copiers with 32 state-of-the-art machines that feature print management control software. Paper costs have declined by 30%, and non-monetary benefits include better service, workflow and security.
Savings and Costs

In FY 15-16, 41% of reporting agencies reported either a reduction (6%) or no change (35%) in costs as a result of buying green, while over half (53%) reported that they did not know. The lowest percentage of agencies since reporting began reported an increase in costs (6%). Overall, data regarding the cost of green procurement is encouraging. On average over the past seven years, a plurality of agencies (41%) reported a reduction (15%) or no change (27%) in costs as a result of implementing green procurement practices. A smaller number (12%) reported an increase, while 46% did not know.

- MTA saved money on electrical costs by purchasing LED lighting (as compared to compact fluorescent bulbs) and purchasing energy saving air conditioners.

![Cost of Green Procurement FY 09-10 to FY 15-16](image)

* Fluctuations in the percentage of agencies reporting are due to changes in the ability of agencies to track savings and costs from year to year. There is steady reporting of savings or no change in costs compared to increases in cost.

Success Stories, Challenges, and Lessons Learned

As agencies have become more comfortable with the goals and benefits of green procurement, the focus of the Interagency Committee has shifted from developing green specifications—“defining green”—to making it easier for agencies to purchase green products and services. The issuance of wholly green procurements and contracts based on green specifications developed under EO 4, such as Microcomputer and Related Systems, Recycled Copy Paper, Environmentally Preferable Cleaning Products, Photovoltaic Systems and Refined Motor and Hydraulic Oil, are a crucial step forward. Also promising and important are the creation of tools for agencies to identify green products available on conventional contracts, such as the EO 4 Product Guides developed for Floor Coverings and Lamps.

Additional developments include the integration of green purchasing into the State Procurement Guidelines, and the invitation to vendors of recycled and remanufactured commodities to promote their offerings at the annual State Procurement Forum. Challenges that remain include the development of tools for agencies to identify green offerings available through the new State e-catalog system, and the adoption of more effective methods for agencies to track their green purchases.

Agency success stories are heartening. CUNY reports that green procurement choices are now commonplace across their campuses for a range of different items and services, including paper, cleaning supplies, paint, carpeting, and energy efficient servers, networks and computers. All CUNY colleges now use recycled-content copy paper. As the market for green products has grown, CUNY reports that prices have also become more competitive.
Finding Green Products that Work Well at an Affordable Price

The majority of statewide contracts are not exclusively green, and it can be time consuming for purchasers to navigate offerings and identify green products. As consumer demand has grown, the market has responded, and more green products with high levels of performance are available than ever before. Unfortunately, however, some companies have resorted to "greenwashing," which is the making of green claims that are intentionally misleading, or provide too little information to allow meaningful comparison.

Two agencies have responded to this challenge by adding boilerplate requirements to their competitive bidding process to include the seeking out of green vendors wherever possible. One is CUNY Queensborough College. Another is NYPA, which has implemented a new procurement system that requires all their suppliers to complete a sustainability survey when submitting bids. This information is used to benchmark sustainability performance across their supply chain, with the goal of mitigating supply chain risk and increasing the sustainability efforts of vendors. The Javits Center is also planning to include sustainability criteria in their bid review process.

In other instances, the market has not yet responded with green alternatives. For example, the Division of Housing and Community Renewal has found it difficult to procure hybrid electric vehicles in the small SUV and mini-van categories because few options exist at a reasonable price. DEC has had the same challenge with SUVs and pickup trucks.

Tracking Green Procurement

Few agencies have a system for tracking green purchases, and the Statewide Financial System (SFS) does not currently track them. OGS and DEC are working together to develop standard definitions and a coding system for green products. Over time, building the capability of the SFS and the new e-catalog to track green purchasing will support more consistent methods of reporting across the State.

- The Development Authority of the North Country continues to enhance its electronic purchasing tracking system to allow green purchases to be tracked across Divisions. This may be a good model for other agencies. In FY 15-16, the authority revisited its green tracking list and created an updated spreadsheet reporting system that allows for the sorting and summarizing of products purchased, as well as keeping track of cost savings.

Purchases by Contractors

Agencies that contract out for janitorial and other services must work cooperatively with those contractors to achieve green procurement. The Javits Center notes that when the use of green cleaning products is not included in an existing contract for cleaning services, off-contract requests for the use of green cleaners is more expensive. DASNY reports that a similar challenge exists in construction-related procurement.
Recycled Paper

The increased rate of 100% post-consumer recycled content paper purchasing by agencies in FY 15-16 provides solid evidence of successful culture change, supported by the power of State contracting. The issuance of statewide contracts for 100% post-consumer recycled content copy paper and 100% janitorial paper in the summer of 2008 has kept prices low for the past seven reporting years, as documented by data showing that on average, over the past four fiscal years, agencies paid virtually the same amount for 100% post-consumer recycled content copy paper (at $31.50 per box) as for 30-99% recycled paper (at $31.25 per box), and significantly less than for copy paper with less than 30% post-consumer recycled content (at $36.75 per box).

Only a handful of agencies (three in FY 15-16), report that 100% recycled content copy paper is more expensive. In order to take advantage of the best pricing opportunities, agencies are encouraged to shop around and provide as much lead time as possible, especially for large purchases. The number of reports raising issues about the performance of 100% post-consumer recycled copy paper was also low (four in FY 15-16), and included Civil Service, whose exam materials must adhere to a particularly high level of purity, since even a small mark could be perceived as an apostrophe and alter the interpretation of a test question.

New and Noteworthy Initiatives in FY 15-16

- **EFC** modified its printing contracts to reduce the number of copies made and require contractors to use 100% post-consumer content recycled paper.

- The **Westchester Medical Center** is engaged in an initiative to evaluate options for the purchase of new stretcher mattresses that include a mattress identified as green by Practice Greenhealth, in that it has reduced levels of chemicals in the fabric and foam, and is made from non-hazardous fire retardant materials.

- The **Javits Center** is pursuing green cleaning and green procurement training for their staff, which should help them better identify green products.
Restricting the Use of Bottled Water

Background

EO 18 directed all executive agencies to “develop and implement a plan to eliminate the expenditure of State funds for the purchase of bottled water for use at executive agency facilities” within 180 days of May 5, 2009, with each agency’s goal being “to eliminate such expenditure by May 1, 2010.” EO 18 defines “executive agencies” as “any department, agency, division, commission, bureau, or other entity of the State over which the Governor has executive power.” Following an outreach effort by OGS in 2009, which included the broader universe of public authorities and public benefit corporations covered by EO 4, 66 State entities designated an EO 18 coordinator. Of these, 59 submitted EO 18 plans, under which 29 stated that they had already eliminated the purchase of bottled water and 22 requested exemptions to continue purchasing under certain circumstances. The primary reasons cited were the need for additional time to install filtration systems, maintaining emergency supplies, and locations and circumstances where tap water was not potable or unavailable. EO 18 allows such exemptions.

Findings

Agency reports for FY 15-16 continue to indicate excellent compliance with the directives of EO 18. All executive agencies required to comply with EO 18 report that they are in compliance. In addition, of the 28 authorities and other entities reporting not covered by EO 18, 21 (75%) nonetheless adopted the goal of eliminating bottled water use and reported compliance.

Eight executive agencies covered by EO 18 and 14 entities not covered by EO 18 (but nonetheless in compliance) said they still require exemptions allowing the purchase of bottled water in one or more locations. Entities with large centralized offices served by reliable municipal water supplies generally reported no need for exemptions. The main need for exemptions arose for entities with staff working in remote locations, where a source of potable tap water is unavailable.

In brief, the report for FY 15-16 continues to document that the executive agencies covered by EO 18 have virtually eliminated the purchase of bottled water. No covered agencies are purchasing bottled water without an exemption, and only 8 continue to use bottled water under special circumstances. In addition, 79% of authorities, public benefit corporations, and university systems not required to eliminate bottled water use have restricted it to special circumstances.

Savings and Costs

In FY 15-16, 23% of agencies and authorities reporting said they reduced costs by eliminating bottled water use, 42% experienced no change in costs, and only 5 (9%), reported an increase in costs. The remaining 22% did not know.

Of the five agencies reporting an increase in costs, two of them are the university systems, SUNY and CUNY. A number of CUNY campuses noted that water bottle refilling stations have upfront costs: the station itself costs around $1,000, and filters are about $143 each. Both university systems report that the installation and maintenance of water bottle refilling stations is costing more than they used to spend on bottled water. This makes sense, because both university systems are doing much more than reducing their own purchases of bottled water—they are going above and beyond by significantly reducing the expense and environmental impact of the purchase of bottled water from outside vendors by their students.

CUNY, however, has also found that transitioning from the purchase of large cooler bottles to water filtration systems has reduced costs. They were also able to reduce the cost of filtration systems by 50% by purchasing from a preferred source.
Most agencies report that their spending on bottled water isn’t declining further because they are either spending no money on bottled water or they only spend on exempt purposes, which aren’t changing significantly on an annual basis. Most report that the majority of savings occurred in the first year of implementation of the Order.

Total exempted spending on bottled water for one agency decreased due to improvements in protocols for stocking emergency supplies, and for another due to providing municipal water to previously unserved facilities.

Although EO 18 reporting does not require quantified cost savings, entities are asked to report the amount they have spent on bottled water purchases over the past year. An estimated $150,000 of State funds were reportedly spent on bottled water in FY 15-16. The most significant expenditures were:

- **The Division of Military and Naval Affairs** spent approximately $49,000 to supply bottled water to “State active duty soldiers serving on missions which require them to perform duties in areas where it would be impossible to bring water in.”

- **NYPA** spent $24,200 to supply crews working on remote power lines and facilities without currently available potable water. They are in the process of replacing water coolers with water service stations in facilities that are capable of new water service connections.

- **Parks** spent $18,300 on bottled water for facilities that have old pipes, lead pipes, or other water supply issues.

- **CUNY** spent $29,300 on bottled water. Since they are not required to comply with EO 18, some of their schools continue to purchase bottled water, although they are encouraged not to. Some of their bottled water goes toward events. Other spending includes supplying *Medgar Evers College*, which doesn’t have sufficient water fountains.

### Challenges and Success Stories

- Eight entities (down from 11 in FY 09-10) said that potable water was unavailable at certain facilities. The majority of these are sites operated by **DOT** and **Thruway**, while some are remote facilities operated by **NYPA**, **DEC**, and **Parks**. In a number of these instances, upgrades continue to be implemented.

- Seven entities continue to purchase bottled water for emergency use.

- Six entities indicated they needed to continue purchasing water to meet the special needs of employees, clients or the public. Examples include water for detained youths during transport over long distances, soldiers on active duty, transit employees working in remote locations, and patients.

- Only seven entities not covered by EO 18 continue to purchase bottled water for uses not exempt under the Order. For example, the **Central New York Regional Transportation Authority** purchases five gallon bottles of water for water coolers at two locations, but it has installed tap water filters at a third location and is looking into doing the same at the other locations.
There are still some instances of convenience usage, especially for meetings or conferences. SUNY Empire State College reported that while they are very supportive of the no bottled water policy, they have run into some instances where bottled water may be a good option. One is where the University is providing a boxed lunch to people who are traveling, for example on a field trip or tour. If water is not offered, people have to choose soda or a sugared beverage instead. Another is when speakers are using a podium, where a cup of water is more likely to spill.

These challenges are real, because while the use of reusable water bottles would be the ideal solution in both scenarios, culture change is slow, and not everyone has adopted the habit of traveling with their own reusable bottle. At the same time, the meeting culture of providing water to participants has been one of the harder traditions to break. As CUNY Hunter College notes, “convenience and paradigm shifting” are important as we work to eliminate bottled water purchasing. The most innovative initiatives are working to change this culture and reduce the amount of bottled water purchased by caterers or sold by State vendors to students and other clients. Successes include:

- The Office of General Services has installed bottle filling stations in many of the buildings it operates across the State.

- Most SUNY campuses have installed water bottle filling stations and continue to add more.

- Most CUNY campuses have installed water bottle filling stations and are using signage and educational videos to encourage their use instead of the purchase of bottled water. Stations are constantly being added.

**New and Noteworthy Initiatives in FY 2015-16**

- The Division of Military and Naval Affairs analyzed their previous practices of storing bottled water with disaster preparedness kits and made the decision to only buy what is needed for a specific mission, thereby eliminating stockpiling and potential waste.

- In nine months of use, SUNY Farmingdale’s water bottle filling stations dispensed the equivalent of more than 300,000 16 oz. plastic water bottles.

- SUNY New Paltz installed 50 “gooseneck” retrofits to older water fountains, allowing them to more easily fill water bottles. Elkay bottle filling stations are now their “campus standard for water fountains.”

- SUNY Oneonta gave every freshman a sturdy reusable water bottle.

- SUNY Oswego’s outreach and education programs to reduce disposable water bottle use have been very successful with minimal investment. Staff paid for by the student Sustainability Fee were used to launch a “TapIn” campaign, which diverted 20,000 plastic water bottles from the waste stream in just 8 weeks. Metrics were obtained through an app people use to scan their refillable bottle each time it was used. The system was simple to use and made tracking and data collection automatic.
Conclusion

The agency reports compiled and summarized for FY 15-16 demonstrate continued and encouraging progress toward the adoption of sustainable practices and purchasing by New York State government. Through the leadership of Governor Cuomo, agencies continue to reduce paper use and waste, recycling has reached new highs, non-chemical control of pests for turf and ornamentals has jumped, green cleaning remains strong, and OGS has issued important green contracts. Model agencies have led efforts to install on-site renewable energy, capture rainwater, and reduce toxic chemical use. Through continued focus on achieving the goals of sustainability and green procurement, the progress made by State agencies to date has established a solid promise of continuing innovation and success.