NYC DOE OFFICE OF SUSTAINABILITY

Annual Report

2020–21

OFFICE OF SUSTAINABILITY
NYC Department of Education

About this Report

The Annual Report is an overview of the New York City Department of Education's (DOE) sustainability programs and partnerships in Fiscal Year 2021 (FY21), spanning July 1, 2020 – June 30, 2021, reported from the DOE Office of Sustainability. This report includes information pertaining to energy and climate, waste management and reduction, school gardens, outreach and education, and compliance with local laws and Chancellor's Regulations.

Accessibility: This document has been remediated to be ADA 2.0 WCAG compliant and compatible with end user's installed, dedicated screen reader software. The content has been tagged and content ordered to be read in the author's intended logical reading order. Tables are keyboard navigable, and the content architecture is identifiable per the end user's software preference settings. Alt text has been inserted in the metadata of the file to describe graphics and images pertinent to the content.

On the Cover:

TOP: Students help out with recycling at Scholars Academy, Queens.

MIDDLE: Solar installation on the rooftop of P.S. 229, Queens with Custodian Engineer Keith Hennin.

BOTTOM: Special education teacher Sandra Sun leads a lesson on flowers at P.S. 811Q @ P.S. 37, Queens.

BACKGROUND: Students explore hydroponics at P.S. 14, Queens.

In This Report

Contact Information

NYC Department of Education Office of Sustainability | Division of School Facilities
44-36 Vernon Boulevard, 510A, Long Island City, New York, 11101
schools.nyc.gov/sustainability | bit.ly/NYCDOESustainability
sustainability@schools.nyc.gov | 718.349.5726

Letter from the Director of Sustainability

Dear Educators, Staff,
and Community Members,

The last year has been a challenging period that will forever be remembered in a multitude of ways. DOE employees have risen to the moment, demonstrating resilience and dedication daily—our Custodians and Division of School Facilities team kept our buildings open and safe, educators adapted to remote learning and caring for the social-emotional needs of our students, and food service teams fed children and adults as part of pandemic emergency management.

Our agency's progress with sustainability has continued forward—carbon emissions were reduced nearly 9% last year, fifteen new rooftop solar systems were added, we convened the first DOE Climate Education Leadership Team, and DOE developed an outdoor learning policy for schools. Our office also leveraged virtual platforms to conduct more than double our normal amount of trainings and events, reaching more DOE employees than ever before!

We must continue to minimize carbon footprints, support the whole child, and comprehensively connect youth, community, and facilities with the most pressing issues. To guide this important work, we formed a DOE Sustainability Equity and Inclusion Task Force to establish meaningful and actionable goals to drive greater diversity, equity, and inclusion in our processes and programs. We are proud to present our revised mission statement:

> **"The DOE Office of Sustainability drives transformative change in all NYC schools through resources and programs that increase efficiency of facilities, address environmental impacts, and aim to provide all stakeholders with opportunities for action.**
>
> **Education is integral to our work to deliver purposeful and comprehensive stakeholder engagement, greater climate resiliency, expanded climate literacy, and opportunities for student empowerment to better ensure social equity and a healthy environment for all generations."**

Our commitments:

- Improving school building environments by reducing greenhouse gas emissions, maximizing waste diversion and creating green spaces that optimize learning outcomes and contribute to healthy communities.
- Empowering our diverse school communities through inclusive and equitable engagement to create positive, sustainable changes.
- Creating meaningful learning experiences for all stakeholders regardless of prior knowledge—recognizing that systemic change is best accomplished through developing coalitions and communities.
- Developing new approaches, partnerships, and implementing technologies to drive school facility improvements and address dynamic community needs in a changing climate.

Thank you for your interest and commitment to school sustainability!

Best regards,

Meredith McDermott
Director, Office of Sustainability

Equity & Inclusion

In the Spring of 2020, as Covid-19 highlighted racial disparities in NYC and the reckoning of the Black Lives Matter movement swept the nation, we reflected as an office on what we could do to advance equity and anti-racism as it relates to our work. As such, we formed a voluntary Equity and Inclusion Task Force, meeting regularly for group discussion and program restructuring. Recognizing our dedication but lack of expertise in best practices and methods, we collaborated with other DOE offices who were more established in this work: the Office of Equity and Access, the Translation & Interpretation Unit, the Division of Multilingual Learners, and the Office of School Wellness Programs. One key outcome was an updated mission statement and commitments to define and propel our equity and inclusion work forward.

After reworking our mission statement and goals, we began implementing changes:

PROGRAMMATIC

- Developed a rubric for our Sustainability Project Grant that provided additional grant points for schools with a higher-than-average Economic Need Index (>72%), a metric that calculates the percentage of students in a school population facing economic hardship.
- Incorporated questions around Culturally Responsive Sustaining Education (CRSE), food access, and environmental justice into the annual Sustainability Survey and Sustainability Plan that school-based Sustainability Coordinators are required to complete.
- Embedded demographic questions in student-facing program applications, leading to representation in the Youth Leadership Council and rFUTURE that better reflects the diversity of our school communities and allows for different perspectives.

EVENTS

- Offered translated captions in our Teams Live events for six of the top seven home languages for NYC's English Language Learners.
- Hosted multiple events on environmental justice in partnership with WE ACT for Environmental Justice.
- Made Environmental Justice a central theme of our 2021 Youth Climate Summit.
- Gathered demographic data as part of event registration for participants, giving a better idea of who is and is not participating or able to engage *(see Putting Data Into Action).*
- Attended internal and partner workshops on food justice, environmental justice, and disability etiquette.

COMMUNICATIONS

- Created a YouTube account to upload recorded events with closed captioning and subtitle options.
- Curated Partner resources to create a dedicated Environmental Justice (EJ) section on our Resource Portal.
- Made this year's Annual Report our first-ever Americans with Disabilities Act (ADA) compliant report.

We recognize that this important equity work is never done, and we still have a long way to go in further strengthening ourselves and our programs; however, we are devoted to positive change and making improvements. Our commitments for the upcoming 2021–22 school year include the following:

1. Increase program participation in schools with a higher than DOE average (74%) Economic Need Index (ENI).
2. Increase participation in underrepresented school districts who haven't been involved with Office of Sustainability programming.
3. Align sustainability programming to priority neighborhoods established by the Mayor's Task Force on Racial Equity & Inclusion (TRIE).

School Sustainability Coordinators

New York City is the only school district in the nation that requires each school to designate a Sustainability Coordinator as mandated by organizational policy. The designee, along with the Custodian Engineer, are primary school-based contacts for the Office of Sustainability. Our goal is to develop programs and opportunities that empower Sustainability Coordinators to lead impactful sustainability initiatives at their schools.

Sustainability Coordinator Designation

Per Local Law 41 and Chancellor's Regulation A-850, principals are required to designate a Sustainability Coordinator every Fall. Designation rates have climbed steadily since 2017; we were pleased to see in FY21 that the number of schools that designated a Sustainability Coordinator rose to 1,623, our highest level to date! Principals can designate any school-based employee besides themselves or the Custodian Engineer.

Sustainability Coordinator and Science Teacher Marcia Moore shows off the Demonstration Solar Installation being constructed on the rooftop of the Science and Medicine Middle School, Brooklyn.

Key Responsibilities of Sustainability Coordinators:

- Submit annual school Sustainability Plan and annual Sustainability Survey in accordance with Chancellor's Regulation A-850
- Form Green Teams to build support at schools
- Attend sustainability trainings by the Office of Sustainability and/or partner organizations
- Liaise with DOE Office of Sustainability
- Work with school and building staff to develop and expand school-based sustainability efforts, including waste/composting/recycling procedures, energy efficiency and conservation, grants, curriculum, student initiatives, and other supporting programs.

> "Thank you so much for your support for our school. Our students enjoy learning and working on topics about sustainability. The topic also opens up so many connections to project based learning for our students."

—Kendra Brown, Sustainability Coordinator & Arts/Humanities Teacher at P.S. 108 Assemblyman Angelo Del Toro Educational Complex, Manhattan

School Sustainability Plans

Once designated, Sustainability Coordinators are required to develop an annual Sustainability Plan to set goals and create roadmaps for project implementation for the school year. The plan results provide valuable information on how we can best support schools with current trends. The Sustainability Plan asks Sustainability Coordinators to select at least one action item across five Focus Areas:

Sustainability Education | Health & Wellness | Waste/Recycling | Energy Conservation/ Efficiency | Communication & Outreach

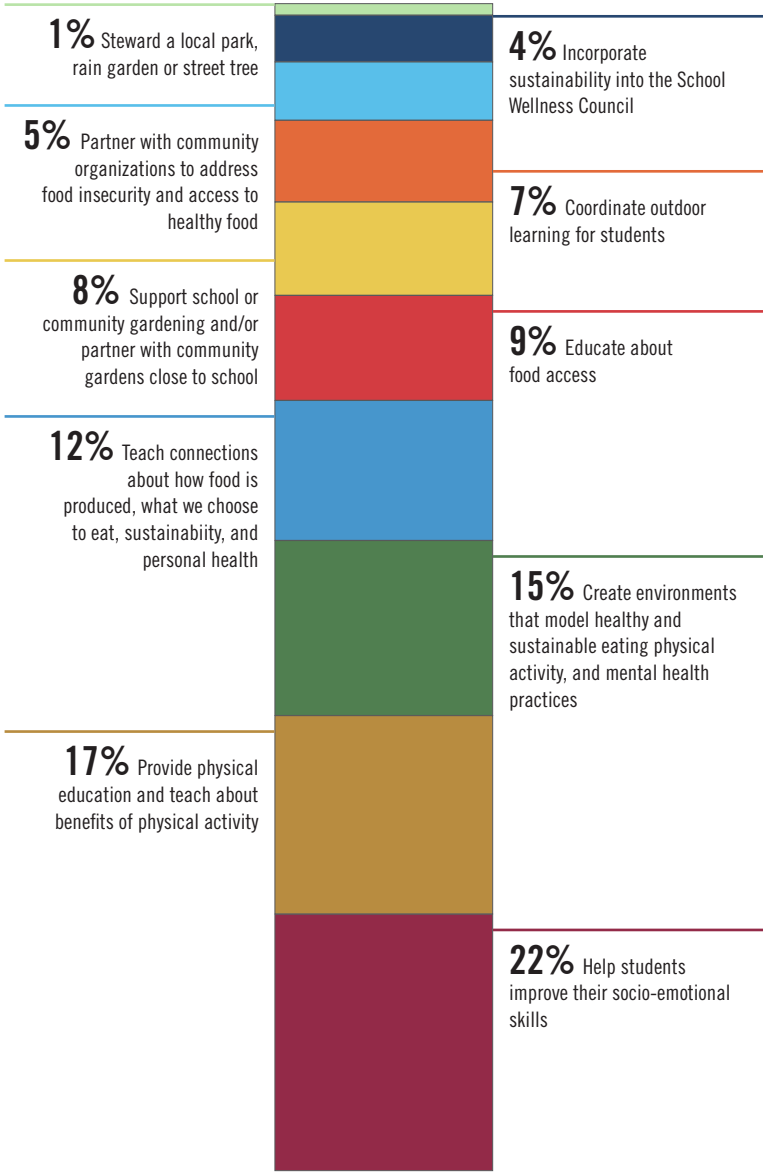
In FY21, we adapted the Sustainability Plan questions, including the *Focus Areas*, to add topics that were topmost on educators' minds, such as remote learning, Culturally Responsive Sustaining Education (CRSE), environmental justice, and food justice.

Elementary Teacher and Sustainability Coordinator Kerri Durante explores compost tumblers with students in the School of Math, Science, and Healthy Living's garden in Brooklyn.

Special Education Teacher and Sustainability Coordinator Alix Almonord of P.S. K369 Cory L Cox School, Brooklyn.

For instance, here are the action items under the Health & Wellness Focus Area and how Sustainability Coordinators responded:

This year for Health & Wellness my school will:



Annual Sustainability Survey

In the spring, Sustainability Coordinators are required to complete the Sustainability Survey, an indicator for how successful schools were in implementing their Sustainability Plans. In FY21, over 1,300 eligible schools responded to the survey, a 2.3% year-over-year increase. This year's responses provided insight into the innovative ways educators adapted their sustainability lessons and programs for virtual and outdoor learning; a few examples are featured below.

Virtual Adaptions & Outdoor Learning

From March 2020 and onward, with the outbreak of Covid-19, Sustainability Coordinators had to adapt their lessons and programs to include virtual supports, outdoor learning, and at-home activities. We are constantly amazed at the unique skills, interests and collaboration Sustainability Coordinators bring to their role. Here are some examples of the creative ways they pivoted during the 2020–21 school year:

Wilma Ambrose, Science Teacher at Brighter Choice Community School in Brooklyn, shifted her school's Green Team meetings to weekly virtual sessions that allowed her to also reach parents, spurring the formation of Sustainability Family meetings that featured activities, such as Sustainability Literacy Night and a Sustainability Game Night. A partnership with Edible Schoolyard led to bi-monthly virtual plant-based cooking sessions, allowing parents to prepare nutritious meals with their children from their own kitchens. Wilma also worked on a Wellness Council initiative, the Weekend Skate Club, to promote additional physical activity for students and families.

Windy DeStefano, Civics & ELA teacher at Long Island City High School in Queens, and her Green Team created monthly videos for the school newspaper and posted weekly tips on their Instagram Stories about topics like recycling, organic foods, and the benefits of having plants in the workspace and at home. Their favorite project was "A Plant in Every Classroom," which allowed them to spread joy while improving the oxygen in the building and the mental well-being of their community.

Robert Markuske, who teaches Environmental Policy at the NY Harbor School on Governor's Island, used our Sustainability Project Grant to partner with Earth Matter to hire a former student to bike to students' homes to collect organics. His students created videos to memorialize the organics processes and even spoke at a NYC Council meeting to bring organics collection back to NYC. They also wrote letters to NY State Assembly members in favor of bills that support oyster and mollusk shell re-use for marine restoration.

Lauren Burkett (middle), a Paraprofessional at P.S. 150 in Brooklyn, worked with the Afterschool Director **Donavan Swanson** (left), and the Parent Coordinator **Rockel Holmes** (right), to organize a family walks competition, encouraging health and wellness at home during Covid. Their scholars participated in a weekly CookShop program that teaches nutrition and cooking skills and fosters enthusiasm for fresh, whole foods. To help keep their school community safe and healthy, the school also provided dinners for twenty-five families and held a coat drive, distributing coats to twenty scholars.

Education & Engagement

Covid-19 forever changed the way we engage with stakeholders, bringing new opportunities and platforms to more easily reach over 135,000 employees and 1.1 million students. After a quick pivot to virtual programming at the onset of the pandemic, we developed a robust online presence in FY21. In fact, we offered the most workshop and engagement opportunities in our ten-year history—including our first Professional Learning Community, new teacher-led Professional Learning opportunities, and direct student engagement sessions for all grade levels. In total, we conducted 50 trainings and events, reaching 3,175 people. Several of these sessions were recorded, allowing several thousands more educators and students to view them later via our YouTube page.

Virtual Education & Engagement Highlights:

Student Engagement Sessions: To leverage remote learning platforms, we delivered student content on sustainability topics to virtual classrooms across the city. We created elementary and secondary content on topics ranging from Environmental Justice to Ocean Ecology.

Green Team Series: Leading a virtual green team requires adaptation of activities, which is not an easy task for teachers already burdened with remote instruction and/or intermittent in-person instruction. To provide support, we led a four-part series featuring remote-friendly ideas such as how to involve parents at home and how to create a green team website. Month after month, participants returned, and this grew into a strong support network.

Virtual Sustainability Showcase: Our annual end of year celebration was postponed in FY20 due to the pandemic, but we brought the event back to life this year in a big way! Chancellor Meisha Porter delivered opening remarks and the theme of the Showcase highlighted Climate Education efforts and honored DOE essential workers—Custodians, food service employees, and teachers. Participants joined workshops on recent climate education efforts, outdoor learning, and youth activism. Many of these were led by teacher and students themselves!

Professional Learning Communities: We continued our Race Against Waste and Zero Waste Pledge programs for a third year, but the pandemic conditions necessitated a shift in how they operated. As a result, we realigned the program to a new structure called a Professional Learning Community (PLC). This format allowed participants to meet virtually throughout the school year and fostered the easy exchange of ideas and resources while forming a supportive network of like-minded educators. We intend to expand the PLC format in the coming year to topics such as special education and green teams.

Putting Data into Action!

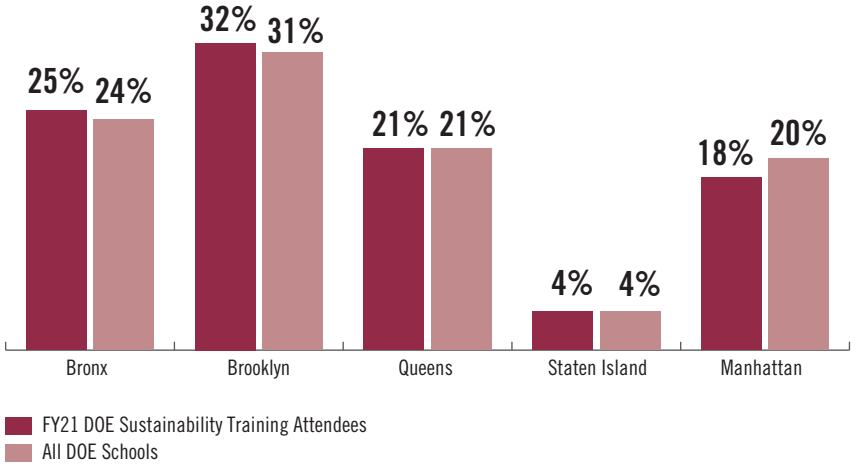
In FY21, we standardized registration data for all of our trainings to provide a complete profile of all attendees. This data is helpful to advance equity and inclusion goals and allows our office to make increasingly strategic decisions about outreach and programming. We can now utilize data to better understand who attends trainings and how that population is reflective of the larger system and barriers. We are encouraged to see that the proportion of attendees is representative of the entire DOE school network *(see charts on the right).*

Another way we used data from event registrations and our annual survey was to target our education offerings to match stakeholder interests, skills, and school location. This evolution in perspective pushed the team to think critically about professional learning opportunities, and outreach transitioned from individual topics to an intersectional approach. Topics included the following:

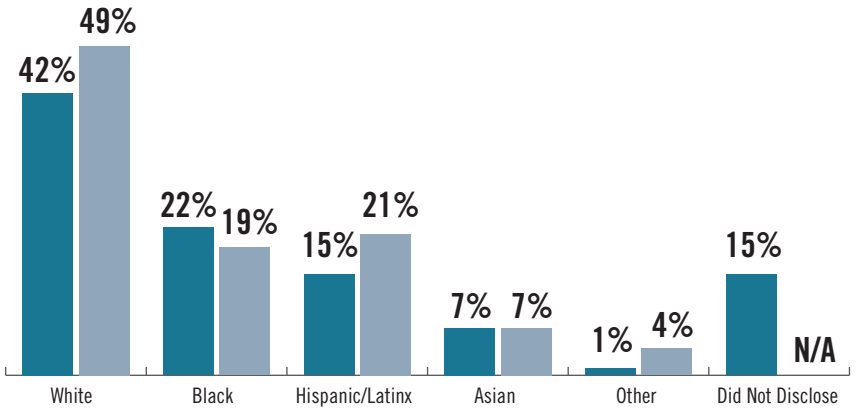
- ***Solar Panel Exploration:*** Connecting Clean Energy Infrastructure to Building Occupants
- ***Empowering Future Sustainability Leaders:*** Educator and Student Leadership Team Development
- ***Climate Hope & Action:*** Embracing Optimism and Solutions in a Changing Climate
- ***D17 and the Natural World:*** Connecting Green Teams in District 17 to Local Natural Spaces
- ***Growing Wider Perspectives:*** Building Capacity to Support Garden Educators

Themes developed for targeted offerings will be used in central trainings in the coming school year, while strategic data analysis will continue to drive specialized professional learning opportunities.

Office of Sustainability Training attendees as represented by the Borough where they work:



Office of Sustainability training attendees represented by race:



Data is rounded to the nearest percentage point.

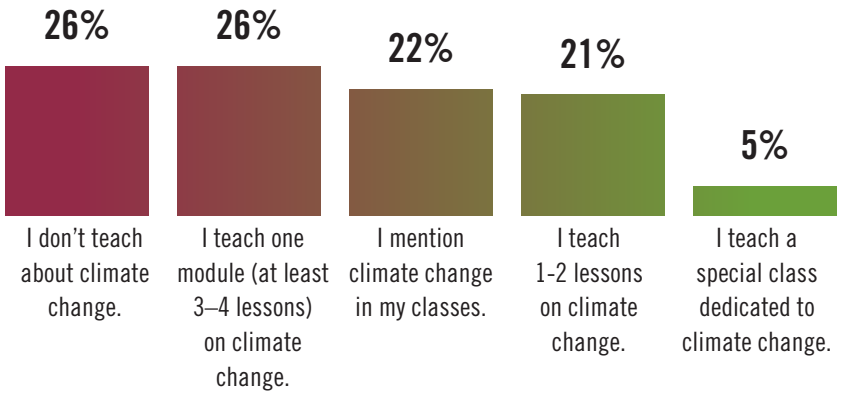
Climate Education

RESEARCH & IMPLEMENTATION

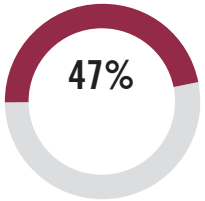
Our annual Sustainability Plan (Fall 2020) and end-of-year Sustainability Survey (Spring 2021) incorporated a series of questions on climate education to deepen our understanding of Sustainability Coordinators' experiences and/or perspectives as this topic increases in importance and demand. A total of 1,258 coordinators responded to both surveys. Through our ongoing Research-Practice Partnership with Teachers College, Columbia University, extensive analysis provided insight on understanding of climate change, comfort level, and frequency of teaching/speaking with students about the climate.

Overall, **71.8%** of Sustainability Coordinators said they were "very concerned" about climate change and an additional **25.2%** said they were "somewhat concerned," representing a solid majority. Of note, teachers indicated they were more concerned about climate change than other staff types who took the survey. However, when we asked Sustainability Coordinators who are teachers (614 or 46%) if they teach about climate change, half of the educators said they do not.

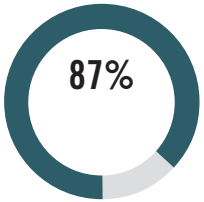
Chart 1: "Do you teach about climate change?"



Further analysis revealed that teachers who do not teach about climate change primarily base this on the following two reasons:



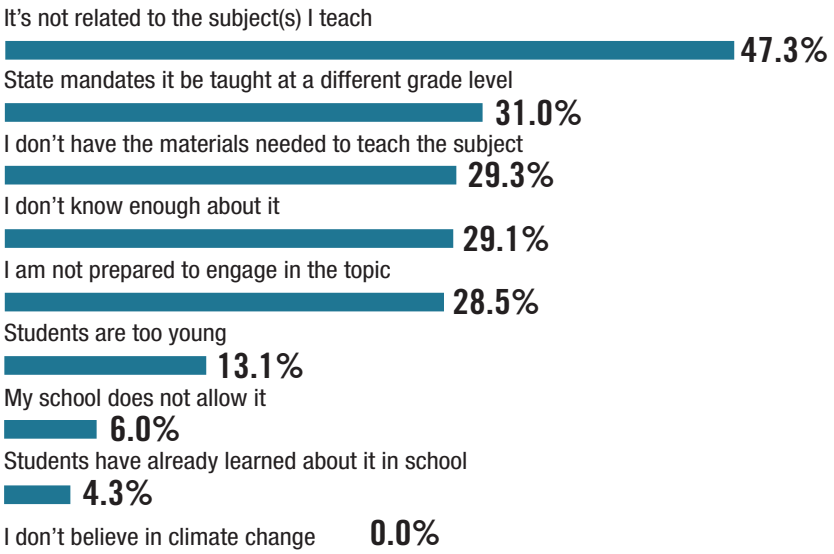
They do not view the topic as related or relatable to the subject they teach.



They lack preparation (materials or knowledge) to feel comfortable teaching about climate change.

Because not all Sustainability Coordinators are teachers, we asked all respondents if they teach *or talk* about climate change. Those who don't teach or talk about climate change provided the following reasons *(see chart below)*. Read how we are addressing these gaps on the following page.

Chart 2: "Why don't you talk to (or teach) students about climate change?"



DOE CLIMATE EDUCATION LEADERSHIP TEAM

To address gaps in climate education as presented on the previous page and to prepare the DOE for climate education integration across all subject areas, the DOE Office of Sustainability and Office of Curriculum, Instruction, and Professional Learning created the first DOE Climate Education Leadership Team (CELT) *(see Appendix for list of members)*. In Year 1, the CELT was comprised of forty educators from all subject areas, grade levels, and boroughs. The team met virtually throughout FY21 with a mission to identify opportunities for climate education within curriculum standards, integrate across disciplines, deliver professional learning, and provide organizational leadership as the need and demand increased in schools. A significant milestone of Year 1 of the CELT was the development and facilitation of six teacher-led professional learning events with a "for teachers, by teachers" approach. Our goal is to expand this model in the coming school year to address the knowledge gap surrounding climate education and to further integrate climate change education across topics. We are grateful to the Department of Citywide Administrative Services (DCAS) for funding a 'per session' incentive for CELT members, further elevating the importance and timeliness of these efforts to support NYC climate goals.

YOUTH LEADERSHIP COUNCIL

This year's Youth Leadership Council (YLC) continued to mobilize student sustainability action with support from NYC Service, expanding to include thirty-five high school students in its third year and first fully virtual year. Covid-19 and virtual meetings provided the ability for our YLC to increase the robustness of their engagement with younger student peers across the city, namely the launch of two new projects: a mentorship program and a green team workshop series. Additionally, the YLC played a larger role in our third annual Youth Climate Summit, supporting a "for student by student" approach. The YLC continues to be mutually beneficial to high school student participants and our office. We benefit from their perspective, and YLC students develop leadership skills while gaining an understanding of climate advocacy and sustainability policy.

> "...This past year has been very eye-opening, and I would like to work even more within the YLC to expand my knowledge on climate change. Spreading awareness and empowering schools to save energy and be more sustainable has been extremely fulfilling and has made me even more passionate about climate policies... I also want the opportunity to get more of the YLC involved in their own communities around New York City, by hosting workshops about different climate policies present today."

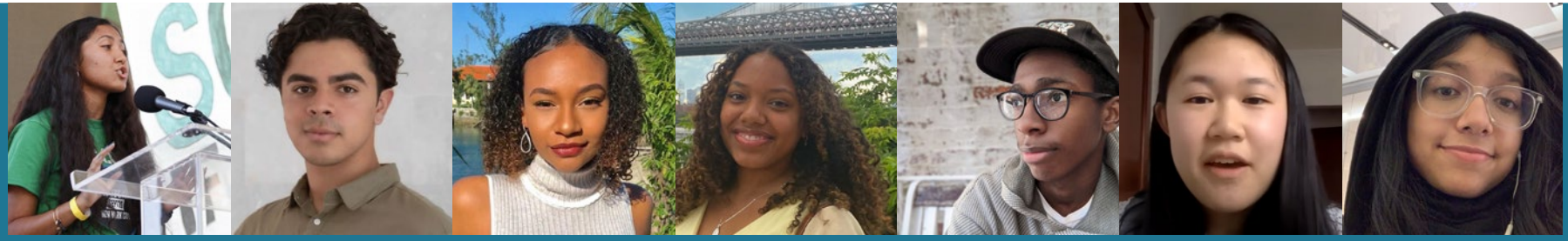
—YLC Member, 11th Grade, Townsend Harris High School, Queens

YOUTH CLIMATE SUMMIT

Adapting to a socially distanced world, we held our Third Annual Youth Climate summit virtually each Tuesday in March, broadening impact by allowing for more attendees and additional time for schools to create their Climate Action Plans (CAP). Hosting online allowed us to open the keynote segments to students of all ages, teachers across all grade levels, partner organizations, and other interested parties, drawing 377 unique attendees, a 44% increase over the previous year. Dedicated high school cohorts also attended weekly workshops and CAP sessions. We incorporated more youth voice than ever, with Youth Leadership Council members introducing keynotes, presenting actions taken at their schools, and fully leading the CAP sessions for peer cohorts.

Three youth keynotes from around the country shared their stories as they relate to environmental and climate justice. Each day of the summit included a CAP segment so that students had time to reflect between sessions and incorporate takeaways from the day's speakers and workshops. The CAP sessions also enabled students from nearby schools to meet and share ideas, providing a rare ability to connect with peers with similar interests outside immediate circles. The Summit concluded in the fourth week with a career panel, moderated by a YLC member and featuring professionals from a variety of industries and sectors.

> "My favorite part of the Youth Climate Summit was being able to be a part of and hear experiences from many people from many places. They had great stories no matter what our age and were super motivating."
>
> ***—High School Cohort Attendee, 10th Grader, Maspeth High School, Queens***



Youth Climate Summit Speakers Jade Lozada of TREEage, John Paul (JP) Mejia of Sunrise Movement, Lauren Ritchie of the Eco Gal, Gabby Mendoza of the Young Women's Leadership School in Queens, Michael Magazine of Gramercy Arts High School in Manhattan, Sara Poon of Bronx High School of Science, and Maimuna Muntaja of Townsend Harris High School in Queens.

rFUTURE

Made possible by an ongoing partnership with Clean Green Music Machine (CGMM) and The Bronx's Theatre Arts Production Company High School (TAPCo), we had the opportunity to offer a third year of rFUTURE. This program enables participating high school students to use their voices and talents to create societal change through music. Eight student artists were paired with a professional musician mentor to write original lyrics and music on a sustainability-inspired topic of their choice, culminating in a streaming performance in June 2021. TAPCo teachers also provided a group of students a unique opportunity to hone videography skills through documentation of the songwriting workshops, editing, and the creation of video vignettes that accompanied live performances and enhanced the program overall. The program was run virtually from the application process to production and even to the event itself; this proved to be advantageous in that the student/mentor and production teams could meet more frequently and fluidly. This dynamic supported community building amongst students, mentors, and support staff within and between groups and ended up being one of the key program benefits for all involved. Highlights of the 2020–21 school year program included the first Spanish-speaking trio and special education student, furthering our office's commitments to create diverse, accessible, and inclusive programs. The musical production debuted on Facebook live and was simulcast on YouTube, reaching over 11,500 viewers to date!

rFUTURE musicians Edgar Encarnacion, Wilkin Ruan, and Gustavo Acevedo of Crotona International High School, Bronx

rFUTURE musician Gevalia Vega of the Manhattan School for Career Development

Schools recognized for achieving S.E.E.D. Certification

Prior to the pandemic, twenty-four schools started the journey of receiving recognition in our sustainability certification pilot program, the S.E.E.D. (Sustainability, Efficiency, & Environmental Dedication) Certification. When the lockdown started in March 2020, this was put on temporary hold to determine if the certification was feasible for schools given the abrupt change in school operations. In September 2020, we re-tooled the certification criteria to address the "new normal," and sixteen schools re-committed to earning certifications by completing an adapted list of sustainability actions across eight categories. We are incredibly proud of the resilience and dedication of these schools for demonstrating their commitment to sustainability in the toughest of times! At the end of the year, schools were recognized at a virtual ceremony and will receive a plaque and banner in Fall 2021.

Certification Level Earned	School Name	Borough
Bronze	P.S. 108 Assemblyman Angelo Del Toro Educational Complex	Manhattan
Silver	P.S. 216 Arturo Toscanini	Brooklyn
Silver	World View High School	Bronx
Gold	Bronx H.S. of Science	Bronx
Gold	The Marathon School	Queens
Gold	Brighter Choice Community School	Brooklyn
Gold	The Marie Curie School for Medicine, Nursing, and Health Professions	Bronx
Gold	P.S. 129 John H. Finley	Manhattan
Gold	Scholars' Academy	Queens
Gold	The David Marquis School of the Arts	Staten Island
Gold	P.S. 020 Anna Silver	Manhattan
Gold	P.S. 333 Manhattan School for Children	Manhattan

Partner Organizations

We are proud to partner with numerous nonprofit organizations, institutions, and other agencies to broaden reach and impact. The hardships that Covid-19 created in our schools were also palpable amongst partner organizations. They had to adapt to new ways to conduct educational programs and outreach without entering classrooms or hosting field trips. Despite ongoing challenges, partner organizations impressively conducted over 3,500 trainings and events during FY21! We are grateful for their dedication, persistence, expertise, and technical and educational support as they helped many schools remain on track with sustainability efforts during a very difficult year. For more details and summaries from FY21, please see the Partner Page on our Resource Portal and a complete list of partners in the Appendix. Special thanks to the following partners who contributed to this report:

Energy & Climate

As the world experiences increasingly harmful effects of major weather events, wildfires, sea level rise, changing habitats for flora and fauna and more, it is imperative to have policies and solutions that address specific areas of improvement and include many interests beyond science. The DOE accounts for over 25% of total municipal energy consumption in a city where 80% of emissions come from buildings; as such, we are a key player in the City's overarching climate goals. The primary target is to achieve carbon neutrality by 2050 from a 2005 baseline set forth by *OneNYC 2050*. At the DOE, the Division of School Facilities works on energy management and efficiency through two core teams: the Energy Management Team (Maintenance & Optimization) and Office of Sustainability. We focus on emissions reductions through operations and maintenance, energy efficiency and conservation measures, clean energy projects, and education and training to target operational efficiencies, climate action planning, workforce development, and awareness.

Custodian Engineer Anthony Delrosso gives a tour of the boiler room at Boys & Girls High School, Brooklyn.

Greenhouse Gas Emissions

Most of the energy sources that power NYC buildings also emit greenhouse gases (GHG) that contribute to a changing climate. Emissions and total energy use in DOE buildings decreased 8.6% in FY21 *(see tables on next page)*, and total GHG emissions have reduced 22.3% since 2008. The DOE building portfolio continuously expands with new construction and additional leased sites. While the pandemic created very low building occupancy levels in Spring and Summer of 2020, there were variable levels of in-person attendance (staff + students) in the 2020–2021 school year. All sites, many of which served as emergency feeding sites for the community, operated with strict ventilation requirements (e.g., continuous running of equipment) to maintain high standards of indoor air quality. The pandemic created an anomaly in building usage that affected energy consumption patterns.

Emissions reductions to date reflect a multi-pronged approach and include the following efforts:

- Elimination of Fuel Oil #6 from City operations in FY16 due to high emissions factor
- Electrification for heating (over fuel oil or natural gas)
- Boiler conversions from fuel oil to natural gas (School Construction Authority)
- Introduction of cleaner fuel oil blends: B5 (5% of biodiesel) in FY13 and B10 (10% of biodiesel) in FY15
- Energy efficiency upgrades for mechanical systems/ equipment
- Increase in clean energy projects *(see NYC Solar Schools Program)*

DOE Greenhouse Gas Emissions (tCO_2e*)[1]

	FY19	FY20	FY21	Year Over Year Change	Change from 2008 Baseline
Electricity	304,176	273,070	260,591		
Natural Gas	197,397	176,122	213,158		
Municipal Steam	9,839	8,246	9,479		
Fuel Oil - All Types	227,986	179,830	208,715		
Total	**739,398**	**637,269**	**691,942**	**8.6%**	**-22.3%**

*Unit of measure is metric tons of carbon dioxide equivalent as used in GHG accounting

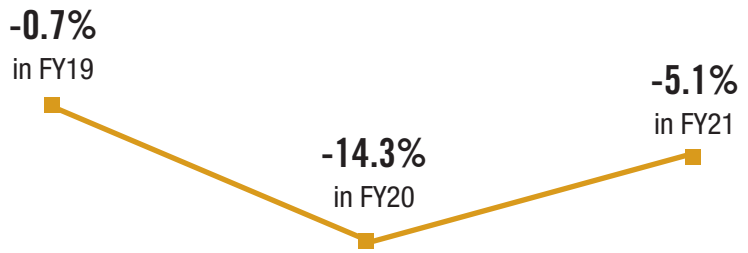
1 FY19 and FY20 data were updated from previous reporting years due to on-going utility billing adjustments.

Energy Efficiency & Management

As part of the DOE strategy to meet the greenhouse gas emissions reduction goals of 40% by 2025 and carbon neutrality by 2050, the Division of School Facilities' Energy Management Team (within the Maintenance & Optimization Unit) oversees energy audits, retro-commissioning per Local Law 87 compliance, energy retrofits, building upgrades, and maintenance/repairs to increase energy efficiency *(see City-Funded Efficiency Energy Programs)*. New projects are prioritized based on the existing Energy Use Intensity (EUI) of a building, an indicator of the annual total usage of all energy types divided by the gross square footage *(see Table on next page)*, as determined by the U.S. Environmental Protection Agency's Portfolio Manager tool.

Total non-renewable energy consumption in FY21 *(see table on next page)* increased 10.7% over the previous year, as compared to 2019–20 data that reflected the pandemic lockdown period (i.e., school closures) that resulted in uncharacteristically low building occupancy rates. Square footage of the organization has also increased over 10% since FY08; however, overall, energy consumption has decreased at DOE by 5.8% since FY08.

Overall Energy Consumption FY19–FY21



Total Energy Consumption by Source (MMBTUs*)[2]

Energy sources, FY19–FY21								
	FY19		FY20		FY21			
Fuel type	Use (MMBTU)	Percent of total	Use (MMBTU)	Percent of total	Use (MMBTU)	Percent of total	Year over year change	Change from FY08 baseline
#2 B10 fuel oil	847,013	7.85%	767,268	8.24%	977,115	9.47%		
#2 B5 fuel oil	294,667	2.73%	172,830	1.86%	231,152	2.24%		
#4 fuel oil (4 B5)	2,071,115	19.19%	1,599,416	17.17%	1,745,071	16.92%		
#6 B5 fuel oil (6 B5)	0	0.00%	0	0.00%	0	0.00%		
Gas	3,712,527	34.39%	3,312,388	35.56%	4,008,945	38.87%		
Electricity	3,590,980	33.27%	3,223,761	34.61%	3,076,431	29.83%		
Solar	23,448	0.22%	24,916	0.27%	29,849	0.29%		
Steam	254,201	2.36%	213,060	2.29%	244,900	2.37%		
Subtotal renewable energy	**23,448**	**0.22%**	**24,916**	**0.27%**	**29,849**	**0.29%**	**19.80%**	**386,757%**
Subtotal nonrenewable energy	**10,770,503**	**99.78%**	**9,288,723**	**99.73%**	**10,283,614**	**99.71%**	**10.71%**	**-5.35%**
Total consumption	**10,793,951**	**100.00%**	**9,313,639**	**100.00%**	**10,313,463**	**100.00%**	**10.74%**	**-5.08%**

*MMBTU = one million British thermal units of heat

2 FY19 and FY20 data were updated from previous reporting years due to on-going utility billing adjustments. Fuel oil data obtained through the Division of School Facilities' Fuel Unit.

Energy Use Intensity (EUI), measured as kBtu/square foot, also increased in FY21 by 9.9% as compared to the previous year, given stringent Covid-19 ventilation requirements. These demands increased equipment usage and run times, causing more energy usage and higher EUI. Since FY08, however, EUI has decreased 13.8% at DOE with a 14.7% less kBtu per square foot on average from FY19-FY21 than in FY08 *(see Appendix for further detail)*.

DOE's energy consumption and greenhouse emissions reductions to date can be attributed to the growing number of programs, workstreams, and coordinated efforts across multiple teams and schools. Improvements in technical specifications and standards for school design, construction, and operations in addition to sustainability and maintenance programs, training, energy efficiency projects, and capital programs are of critical importance to make further reductions at facilities citywide.

Energy Benchmarking: Local Law 84

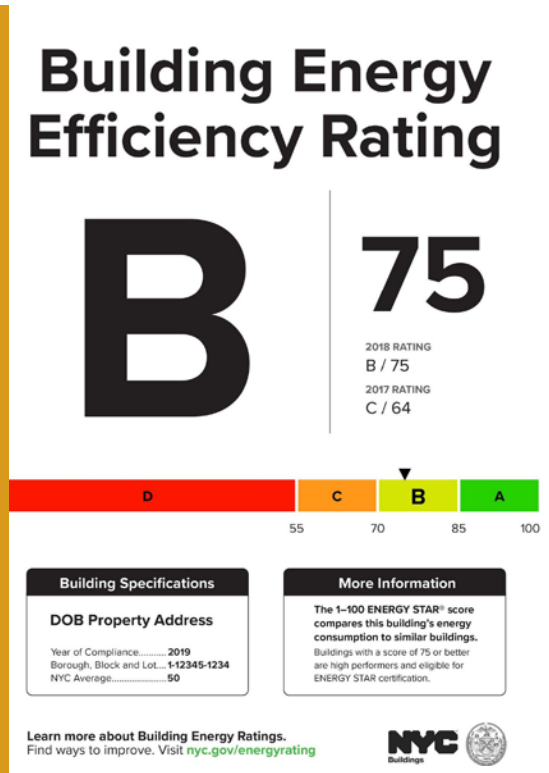
Local Law 84 requires the DOE to benchmark energy and water consumption at 1,449 DOE buildings on 1,249 Borough-Block-Lots as identified by the NYC Department of Finance (data per the City's Municipal Benchmarking Report for Calendar Year 2020) through use of the U.S. Environmental Protection Agency's Portfolio Manager tool. Portfolio Manager calculates building energy efficiency by evaluating over 100 metrics and assigning Energy Star Scores from 1 through 100 based on comparisons to facilities of similar size and function across the country. A score of 75 or higher indicates that a building is performing better than 75% of the same type of building nationwide. *(See Appendix for the full list of DOE Energy Benchmarking (LL84) Scores by Borough-Block-Lot.)*

The data for calendar year 2020 shows that the number of DOE buildings (858) on 717 City tax lots (Borough-Block-Lots, or "BBLs") with Energy Star Scores of 75 or higher has substantially increased compared to previous years (over 500 in 2019 and over 300 in 2018). This is another indicator of a positive trend in progress towards a more energy efficient building portfolio.

> "DOE's energy efficiency strategy is based on two main drivers: Building Energy Efficiency Ratings (Local Law 33/95) and the Climate Mobilization Action (Local Law 97) emission reduction targets. We are prioritizing buildings with both low ratings and high greenhouse gas emissions for energy reduction projects and outreach."
>
> ***—Joe Chavez, Senior Energy Manager & Strategist, Division of School Facilities, Queens***

Building Energy Efficiency Rating-Local Law 33/95

A new local law (LL33/95) came into effect in Fall 2020 that requires all NYC buildings over 25,000 square feet to post the assigned letter grade (A-F) and energy efficiency score (1–100) based on LL84 benchmarked data from the previous calendar year. Placards with these ratings must be visibly posted near all public main entrances to comply with this NYC Department of Buildings directive, giving visibility to the energy performance of buildings to raise public awareness of energy management and sustainability in NYC.

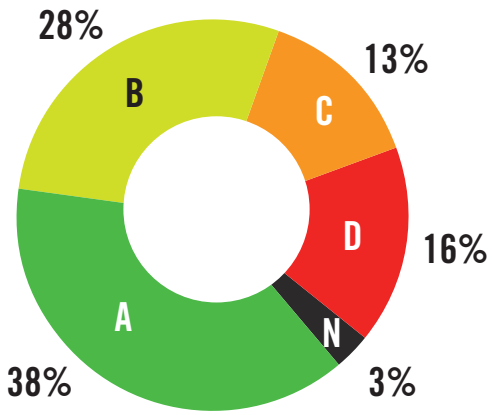


Local Law 33/95 Building Energy Efficiency Rating example

Energy Grade	Energy Star Score
A	85-100
B	56–84
C	55-69
D	1-54
F	Non-Compliant
N	Not Covered or Exempt

FY 21 Breakdown of DOE Building Energy Performance*

% of Buildings / Energy Efficient Rating



*Based on data reported in 2020 NYC Municipal Benchmarking Report

Demand Response Program: Natural Gas & Electricity

The DOE comprises nearly 70% of the total participation in the City's total Demand Response (DR) efforts. We now have two major categories of Demand Response programming at DOE: electricity (summer and winter) and natural gas (winter). The electricity DR programs help the electricity grid operators (Con Ed and New York Independent Systems Operator) to alleviate areas of significant stress that are vulnerable to blackouts and brownouts during periods of peak demand (e.g., heat waves due to cooling needs). In an effort to mitigate this stress on the grid, 329 DOE buildings participated in twenty-one different Demand Response events in Fiscal Year 2021 (July 2020–June 2021) when called by the grid operators. As part of an organized energy resilience and emergency management effort, these buildings activate their customized operational protocols to reduce electricity consumption so that the risk of grid failure is minimized.

In partnership with National Grid and the City, forty-five DOE buildings also participated in National Grid's Natural Gas Demand Response Program during the winter of 2020-2021. These buildings were identified by the utility provider based on vulnerable natural gas supply areas, specifically areas in Brooklyn and Queens, to help protect NYC residents on cold days (<10°F) with a reliable source of heat. These schools all have dual fuel boilers, enabling them to temporarily switch from natural gas to fuel oil for their heat source. Participating buildings are incentivized with rebates due to the benefit they provide National Grid.

The efforts of Custodian Engineers at participating schools, with support from Division of School Facilities staff and teams, helped the DOE earn over **$5 million in revenue** across all Demand Response Programs in FY21! This is the highest amount yet and follows the positive year-over-year progress of the program. Demand Response participation offers the DOE more means to provide impactful projects and resources to schools across facilities and education. On an ongoing basis, these reinvestments include awards for top performing Custodians through energy upgrades or energy efficiency supplies and funding for school projects and programs through our Annual Sustainability Project Grant. In Fall 2020, amidst the pandemic, we also allocated emergency funding to assist with purchasing essential Covid-related supplies for our schools. Please see the case study on the next page for more details and the Appendix for Demand Response Program performance data.

City-Funded Energy Efficiency Programs

The Department of Citywide Administrative Services (DCAS) provides two funding programs, Accelerated Conservation and Efficiency (ACE) and the Expenses for Conservation and Efficiency Leadership (ExCEL) programs, for the purpose of supporting energy efficiency projects on a fiscal year cycle. These programs provide a critical mechanism for the DOE to provide equipment upgrades, operational and maintenance improvements, and staff training.

The ACE Program prioritizes energy efficiency projects that provide high energy savings, emissions reductions, and cost savings. Top accomplishments in FY21 include completing wireless pneumatic thermostats in eighteen buildings, fan system upgrades in five buildings, and lighting upgrades in six buildings.

The DCAS ExCEL program enables City agencies to perform building retrofits that drive energy efficiency. Many EXCEL funded projects in FY20 were put on hold at the on-set of the pandemic but were completed in FY21. Lighting upgrades were completed at fourteen buildings in addition to upgrades in fan systems, Building Management Systems, and Demand-Controlled Ventilation (DCV) projects to support critical ventilation work to support alignment with Covid-19 health and safety procedures in DOE buildings. *See energy efficiency in Appendix for ACE and ExCEL project details.*

CASE STUDY:

DOE Demand Response funds support Covid-19 ventilation needs

When City budgets were diverted to essential needs for critical Covid-19 emergency response, the DOE was faced with new needs to meet the most stringent ventilation expectations and standards ever required across the entire building portfolio. One swift action taken was the upgrade to MERV-13 air filters for all applicable schools, an expense that had no budget allocation in place in the early days of the pandemic. There was an immediate and urgent need within the Division of School Facilities, so the Office of Sustainability allocated $1.75 million from the Demand Response Program to enable the purchase of these filters. The contribution would not be possible if not for the participation and performance of our Custodian Engineers and Facilities colleagues in Demand Response, highlighting the importance of the program and further placemaking its role in the resiliency and efficiency of DOE operations.

At City-As-School in Manhattan, custodial staff place air purifiers throughout the building.

Student Artwork Showcased on LinkNYC

Our annual Energy Conservation Artwork Contest for K-12 students, sponsored by DCAS ExCEL funding, typically concludes in May with an award ceremony. Due to the pandemic, we delayed announcing the finalist until September 2021, but with an exciting twist! During Climate Week NYC, we worked with LinkNYC to digitally display the fifteen finalist entries on their interactive kiosks around the City. This allowed us to save cost and emissions by not printing the artwork in a calendar (as in previous years), while also providing a much larger platform to showcase our students' artwork, amplifying the message of energy conservation.

Artwork by 11th Grader Ann of Brooklyn Tech High School appears on LinkNYC during Climate Week.

NYC Solar Schools Program

In FY21, amidst major delays in contracting and construction caused by Covid-19, the Office of Sustainability's NYC Solar Schools Program added solar photovoltaic (PV) arrays on 15 DOE building rooftops. These projects added three megawatts of solar power, bringing the DOE contribution to over 71% of municipal solar installed to-date towards the City's total 100-megawatt commitment. In FY22, DOE intends to bring over twenty more installations online.

Impact of New Solar PV Added in FY21

Greenhouse Gas (GHG) Equivalent (CO_2e):

Reduced emissions equal to 550 average cars driven for 1 year

550

304

Produced enough clean energy to run 304 average homes for a year

Solar Energy Produced by all School Installations During FY21

For the seventh, and most challenging year yet with the pivot to a fully remote world, the NYC Solar Schools Education Program continued to offer free professional learning workshops facilitated by Solar One, reaching 148 new educators, bringing the overall number of teachers trained to over 1,100. Solar One created a new format to adapt to changing teacher schedules, starting workshops at various times throughout the day, on different days of the week, and on weekends. To further connect solar education to students, we offered a new opportunity for schools to receive a Demonstration Solar Installation via our annual Sustainability Project Grant. Demonstration Solar Installations provided a tangible and working model to support the delivery of clean energy curriculum. A prerequisite to apply for the Demonstration Solar Installation grant included participation (or a commitment to participate) in the NYC Solar Schools Education Program.

The NYC Solar Career and Technical Education (CTE) Program also continued in FY21 despite significant challenges due to remote learning and school closures. In FY22, we intend to add two more schools, further expanding our partnership with Solar One and the DOE Office of Postsecondary Readiness, which makes this exciting program possible!

Students learning about solar power via their Demonstration Solar Installation (Table Design) at P.S. 299, Queens.

A Demonstration Solar Installation (Trellis Design) at Central Park East, Manhattan.

Waste & Recycling

The DOE Office of Sustainability develops and manages programs, processes, and resources to help schools make progress towards NYC's goal to send zero waste to landfills by 2030. Hybrid learning models, social distancing protocols and the suspension of the Department of Sanitation's (DSNY) Curbside Composting Program posed unique challenges for waste and recycling operations during the 2020-21 school year. Despite these challenges, DOE Sustainability continued to provide dedicated operational support to Division of School Facilities staff and programmatic support to school occupants. The pandemic year's unprecedented circumstances led to a 50% reduction in total school waste collected as compared to an FY19 baseline.

Custodial Staff at John Jay Campus, Brooklyn

Operational Check-Ins

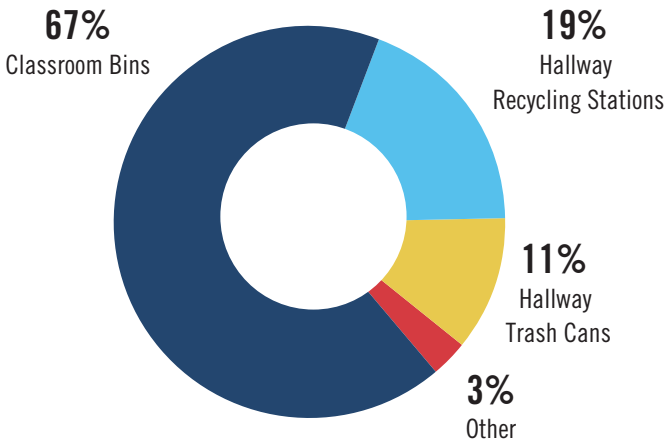
To launch the school year, the Office of Sustainability Outreach Team conducted operational check-ins with every Custodian Engineer from August–October 2020 to ensure building staff were properly informed and prepared for waste and recycling management given the dynamic Covid-19 operating circumstances. Outreach staff consulted with Custodian Engineers to plan and troubleshoot recycling station set-ups and material collection while providing reminders about waste protocols, collection, and set out compliance. We are committed to providing a high standard of customer service and support for our school stakeholders, aiming to make procedures and programs more relatable and aligned with actual roles and responsibilities. As such, this effort to directly engage with all Custodian Engineers amidst very challenging operational conditions represents some of the progress that DOE has made as an organization.

Outside the Cafeteria Eating Survey

Because of social distancing protocols, most cafeterias were not used for traditional meal service during the 2020-2021 school year. As a result, DOE Sustainability conducted an "Outside Cafeteria Eating Survey" to all Curbside Composting Program sites (550 buildings, 850 schools) to understand and better support food service operations and food waste disposal. Custodians were asked to report on meal distribution type (e.g., students collecting meals upon entrance to building, classroom meal delivery, and students traveling to lunchroom), number and position of recycling

stations, and primary disposal system for waste, recycling, and liquids. Over 220 respondents provided invaluable information on site-specific building operations and allowed DOE Sustainability to work with the Office of Food and Nutrition Services (OFNS) and DSF leadership on the development of outside classroom eating guidance and best practices. Some key findings indicated that most of the food waste was discarded in hallway recycling stations because of increased classroom eating. This data helped us better support Custodians with managing food service-related waste that is not generated in the cafeteria.

Waste/Recyclables Disposal

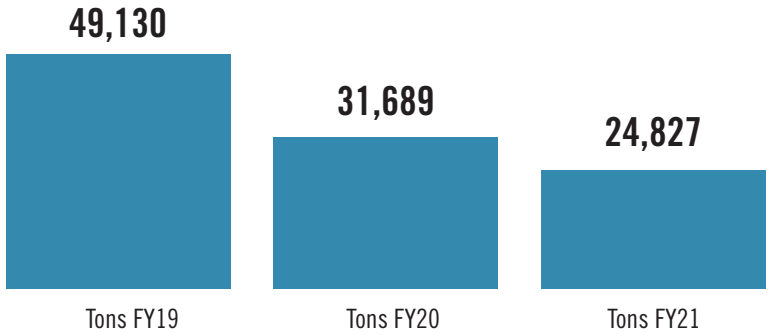


Mike Manigo, Office of Food & Nutrition Services Staff, in the cafeteria of P.S. 15, Brooklyn.

Waste Diversion

Every NYC school and DOE building must comply with Local Law 41 and the mandated Annual School Sustainability Plan to work towards the City's recycling and waste diversion goals. In FY21, learning options created by the pandemic included remote learning, attending a physical school building, or a hybrid model. At DOE, building occupancy overall was significantly reduced in FY21, which is reflected in the marked reduction in non-hazardous waste (i.e., general refuse) tonnage per the chart below.[1]

Total Nonhazardous Waste FY19–FY21



Due to complex challenges associated with Covid-19 constraints and safety protocols, DSNY had to suspend Curbside Composting Program services in FY21. This impact is highlighted in the dramatic reduction in school recycling tonnage in FY21 *(see chart on next page)* compared to previous years. During the 2020-21 school year, DSNY provided all DOE sites with traditional school truck service, including collection of trash and the two recycling streams of Paper/Cardboard and Metal/Glass/Plastic/Cartons.

1 Data does not represent all school waste; containerized service (dumpsters) for landfill and paper recycling are not included as are some landfill and paper curbside collections.

School Waste Diversion: Recycling[2]

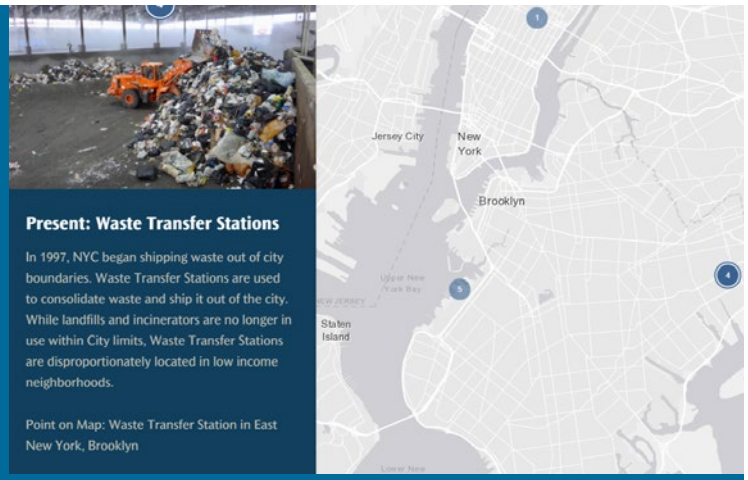
	FY19	FY20 (through March 2020)	FY21
Metal, Glass, Plastics and Cartons Recycling (Tons)	1,659	1,533	806
Paper Recycling (Tons)[3]	6,942	5,086	3954
Organics (Tons)	7,042	6,739[4]	Suspended[5]
Total Waste Diverted (Tons)	**15,643**	**13,358**	**4,706**

2 Data as reported by DSNY, Bureau of Recycling and Sustainability

3 Paper diversion is not inclusive of all schools due to DSNY limitations to separately measure school waste on all collection routes.

4 Organics Collection data is not representative of the entire year. Service was suspended in March 2020 due to Covid-19.

5 In FY21, due to COVID, all school truck routes were converted to traditional service. There was no organics service for DOE schools.



Our Waste Management Story Map tells the history of NYC's waste management, including current waste transfer stations.

NYC Department of Education: Waste Management Story Map

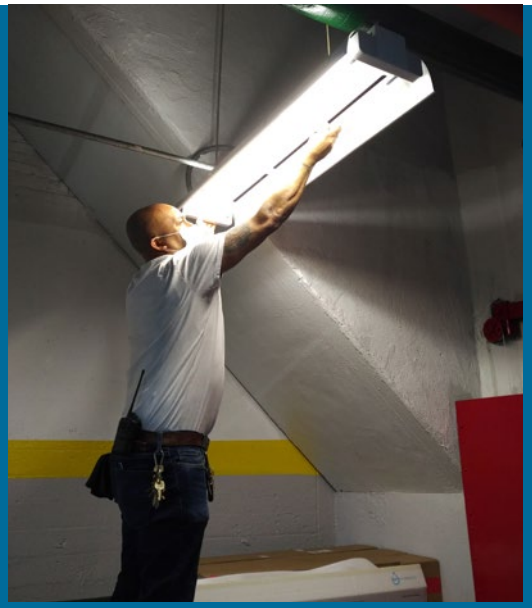
We developed an ARCGIS Story Map[6] to provide a comprehensive guide to the management of waste and recycling across each of DOE's more than 1,400 facilities. This Story Map provides a brief history of NYC's waste management, highlighting historic landfill sites and current waste transfer stations, and provides geospatial information for each DOE school. Users can determine their buildings DSNY Collection type, identify school participation in waste programming, and find contact information of other sustainability stakeholders at their site.

6 Best viewed in current versions of Safari, Chrome, Edge, or Firefox web browsers.

Custodial Supply Grant

We created a first-ever Custodial Supply Grant in FY21 to promote sustainability practices with our Custodian Engineers. This material opportunity featured a Local Law 33: Energy Conservation category and a Waste & Recycling Management category. Custodians could apply for up to $7,500 for energy supplies (e.g., lighting upgrades, boiler maintenance tools, air filters) and $5,000 of waste/recycling supplies (recycling bins, tilt trucks, and cafeteria recycling station components). In total, 155 buildings were awarded $615,603 worth of supplies. This opportunity not only allowed DOE Office of Sustainability to provide buildings valuable sustainability resources, but also empowered Custodians and Custodial staff to take direct action in outfitting and maintaining their sites.

> “As the grant supplies are being delivered to my schools I’ve been getting a lot of positive responses from my Custodian Engineers. Today I visited J.H.S. 187 (K486) and the team was thrilled to have received the boiler tube cleaning machine. They can’t wait to use it. Thank you again for everything!”
>
> *—Nicolas Delbianco, Deputy Director of Facilities, Brooklyn South*



The Fireman at The Christa McAuliffe School in Brooklyn installs a lighting upgrade.

Policy Update: Local Law 65-School Food Waste Prevention Plan

New York City Council passed new legislation in May 2021 that requires the NYC Department of Education to develop a plan to reduce food waste. In addition to continuing our partnership with DSNY on the Curbside Composting Program at over 850 schools, we are working with the DOE Office of Food and Nutrition Services (OFNS) to advance this effort throughout the organization. Stay tuned for updates as this local law is activated.

Gardens, Wellness, & Green Infrastructure

Schools play an integral role in meeting citywide green space and infrastructure goals. During the pandemic, outdoor space was even more crucial to provide students with a safe alternative to classroom instruction while also supporting connection to nature and overall wellness. In Fall 2020, the DOE adopted a new Outdoor Learning Initiative as part of coordinated efforts with the Department of Transportation (Open Streets Program) and Department of Parks and Recreation. This is the first time that a formal adoption of an outdoor learning policy was advanced within DOE in order provide institutional structure around practice and guidance. A toolkit for schools was put together by partner organizations (Outdoor Learning NYC: A Toolkit for Schools) and further efforts are underway to connect more ideas, resources, and support to schools for outdoor learning.

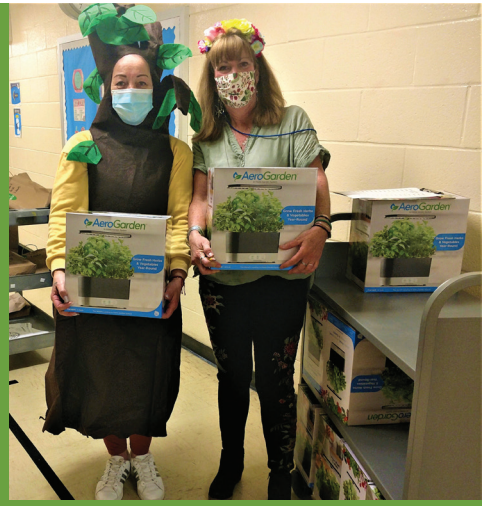
Occupational Therapist Ariella Bahat and Custodian Engineer Andrew Pezzella display a hydroponics tower at P.S. M721, the Manhattan Occupational Training Center.

Sustainability Coordinator and School Culture Coordinator Earl Gray, with colleagues in the garden of Harlem Renaissance High School in Manhattan.

Sustainability Project Grant Funds Gardens & Outdoor Learning

For the fifth year, our Sustainability Project Grant supported schools citywide with the creation, enhancement, and/or maintenance of gardens, and this option was specifically expanded to include outdoor learning projects in addition to sustainability education programming, energy efficiency resources, and recycling materials. To date, this program has invested $1.2 million in schools for sustainability programs of their choosing, half of which ($600,000) has been allocated to 142 gardens and outdoor learning projects citywide. For a complete list of 2020-21 grant recipients, please see Appendix. In FY22 we intend to invest even more in the Sustainability Project Grant as the interest in outdoor learning continues to grow!

Staff and students use outdoor learning space at Fannie Lou Hammer H.S., The Bronx



Sustainability Coordinator, Pat Bergstrom (right) with colleague Mary McGuiness, distribute AeroGardens to every classroom at P.S. 37, Staten Island

"Teens for Food Justice (TFFJ) received funding from three DOE schools who were awarded funding via the Sustainability Project Grant, which allowed us to engage 210 students in a hands-on way, at home, using hydroponic DIY grow kits during a time of virtual learning. Teachers shared that during those lessons, some of their students turned on their cameras for the first time all year. Students were exposed to the benefits of growing plants at home firsthand, as it provided them with a plant to care for and a way for them to continue their connections to their TFFJ farms while we were all spending more time at home."

—Matthew Horgan, STEM Programming & School Partnership Manager, Teens for Food Justice

CASE STUDY:

Sustainability Grant Grows Outdoor Learning Opportunities

Special education teacher at P.S. 811Q (located at P.S. 37 in Queens), Stephanie Georges, used the pandemic as an opportunity to create a new outdoor learning space to include raised beds, benches, and rain barrels. The school is part of the District 75 network (P.S. 811Q) that operates gardens at two other school locations, thanks to the support of colleague and STEM teacher, Abir Bousaid. Eager to replicate these efforts at the P.S. 37 location, Ms. George partnered with Ms. Bousaid to win a $5,000 Sustainability Project Grant for Outdoor Learning.

The dedicated teachers started the program indoors during cold weather, teaching students the science of plants and the resources needed to grow through the use of such materials as anchor charts, picture words, and hands-on instruction. In the spring, construction of an outdoor learning space was completed, and students were assigned jobs in the garden, building mobility, social and vocational skills, improving learning outcomes, and promoting independence and peer-to-peer engagement. The diverse learners were supported with visual aids (e.g., an AAC or alternative augmentative communication device for non-verbal students), modified tools, and levels of prompting and praise to complete a task. Classes were held outside as the weather got warmer, and the garden inspired the co-located school, P.S. 37, to take an interest in sustainability as well. Amidst a difficult year for teachers and students, the outdoor learning space became a sanctuary for the school community, culminating with a family picnic and a harvest event in the garden. This example illustrates that sustainability extends far beyond recycling or turning off lights; it can be a bridge that connects interests, abilities, and school priorities to improve the educational experience for students.

Gardening Photos from P.S. 811Q @ P.S. 37, Queens

Abir Bousaid (left) and Stephanie Georges (right) in banner photo outside of their newly created outdoor learning garden space at P.S 811Q @ P.S. 37, Queens.

Organizational Partnership to Promote School Wellness + Sustainability + Nutrition

Through internal partnerships with the DOE Office of School Wellness Programs and the DOE Office of Food and Nutrition Services (OFNS), we align to support healthy environments, communities, and people. As a result, several policies have been adopted over the years to bolster intersectional goals, with more strategic alignment underway:

Office of Food & Nutrition Services staff at Boys & Girls High School in Brooklyn

- Aligned sustainability and wellness goals via an updated DOE Wellness Policy and the Wellness Champion/Sustainability Coordinator roles
- Banned processed meats and reduced frequency of beef on school menus (OFNS)
- Increased plant-based menu options (OFNS)
- Training of OFNS staff and Sustainability Coordinators on Offer vs. Serve as part of food waste reduction efforts
- Piloted a Plastic Free Lunch Day with Cafeteria Culture
- Eliminated polystyrene lunch trays and plastic cutlery, replacing with compostable serviceware beginning in 2015
- Work with the NYC Department of Sanitation to expand and support school composting to divert food scraps from landfills
- Partner on Food Waste Prevention Plan

Green Infrastructure:

During major weather events, city infrastructure is increasingly vulnerable to stress. Examples of such hazards worldwide are becoming more frequent and devastating to property, buildings, and people. As such, sustainability and resiliency measures are essential to mitigate and adapt to climate change to better safeguard homes, schools, businesses, infrastructure, and the population.

In 2015, New York City received a State Pollutant Discharge Elimination System (SPDES) permit from the New York State Department of Environmental Conservation (NYSDEC) for the City's Municipal Separate Storm Sewer System (MS4). This permit requires that the DOE implement measures to reduce pollution in stormwater runoff. The Division of School Facilities works with all school sites covered by MS4 to ensure compliance and minimize water pollution. Sixty employees were trained in Pollution Prevention & Good Housekeeping for Municipal Operations in FY21. Additionally, the Office of Sustainability includes issues of stormwater mitigation and green infrastructure in trainings, workshops, and professional learning for DOE educators as part of MS4 public engagement efforts. *(See Appendix for Green Infrastructure projects.)*

In NYC, there are numerous and growing numbers of programs and coalitions to address local infrastructure, including wastewater treatment facilities as overseen by the Department of Environmental Protection (DEP). When major storms cause flooding, combined sewers get overwhelmed and this causes overflow into waterways. In 2019, the City passed Local Laws 92 and 94 to require that new buildings and roof replacements include solar installations and/or green roofs to reduce emissions and increase resilience. Accelerated efforts and coordination are expected as the city prepares short-, mid-, and long-term plans for carbon neutrality, clean energy, green infrastructure, and emergency management.

Appendix

2020-21 NYC DOE Climate Education Leadership Team

Name	School Name	Borough
Kristin Boccafola	Central Park East High School	Manhattan
Greg Borman	DOE Office of Curriculum, Instruction, and Professional Learning	Manhattan
Thaddeus Copeland	DOE Office of Sustainability	Queens
Jackie Davis	The Marie Curie School for Medicine, Nursing, and Health Professions	Bronx
Kerri Durante	School of Math, Science, and Healthy Living	Brooklyn
Michael Ensminger	The Math & Science Exploratory School	Brooklyn
Ahmed Elmaliki	Khalil Gibran International Academy	Brooklyn
Kailyn Fox	High School of Economics and Finance	Manhattan
Joshua Frost	Brooklyn Technical High School	Brooklyn
Cheryl Grau	The Math & Science Exploratory School	Brooklyn
Kerry Hynes	P.S. 176 Ovington	Brooklyn
Johnson Kima	P.S. 065	Brooklyn
Jazmin Jurado	P.S. Q177	Queens
Stephen Kos	New Explorations into Science, Technology and Math	Manhattan
Erin Laraway	P.S. K721 Brooklyn Occupational Training Center	Brooklyn
Dana Lawit	M.S. 839	Brooklyn
Andrew Margon	High School for Environmental Studies	Manhattan
Christina Martin	P.S. 90 Edna Cohen School	Brooklyn
Joshua Mateo	Queens South NYC DOE Borough Office	Queens
Katie McCarthy	Sunset Park High School	Brooklyn
Meredith McDermott	DOE Office of Sustainability	Queens
Sean McFadden	Eagle Academy for Young Men II	Brooklyn
Beth Mowry	Brooklyn Collaborative Studies	Brooklyn
Alanna O'Donnell	P.S. K721 Brooklyn Occupational Training Center	Brooklyn
Kristina Persaud	Bronx Leadership Academy High School	Bronx
Karen Phillip	J.H.S. 217 Robert A. Van Wyck	Queens
Shakira Provasoli	P.S. 333 Manhattan School for Children	Manhattan
Deborah Reich	World View High School	Bronx
Joy Rifkin	DOE Office of Sustainability	Queens
Avanel Riley	Kurt Hahn Expeditionary Learning School	Brooklyn
Marc Rolla	P.S. 90 Edna Cohen School	Brooklyn
Carley Ross	J.H.S. 054 Booker T. Washington	Manhattan
Jeanne Salchli	P.S. 376	Brooklyn
Matthew Sarker	The Bronx High School of Science	Bronx
Jonathan Schulman	P.S. 110 The Monitor	Brooklyn
Lynn Shon	J.H.S. 088 Peter Rouget	Brooklyn
Nancy Silva Ruelas	Young Women's Leadership School	Manhattan
Oi Ling Sin	Theatre Arts Production Company School	Bronx
Sarah Slack	J.H.S. 223 The Montauk	Brooklyn
Lynn Tiede	Columbia Secondary School	Manhattan
Shamika Watson	Dr. Jacqueline Peek-Davis School	Brooklyn
Adam Zaid	The Queens School of Inquiry	Queens
Colby Zentner	High School of Economics and Finance	Manhattan
Andrew Zimmermann	J.H.S. 088 Peter Rouget	Brooklyn

Office of Sustainability Partners

Action for the Climate Emergency (ACE)

American Museum of Natural History

Audubon New York – For the Birds!

Bronx Green Machine

Bronx Health Reach

Bronx River Alliance

Brooklyn Bridge Park

Cafeteria Culture (CafCu)

Children's Environmental Literacy Foundation (CELF)

Citizens Committee of New York (CCNY)

City Growers

City Parks Foundation

Clean Green Music Machine

Climate Generation

Climate Museum

Coalition for Healthy School Food

Department of Sanitation New York City (DSNY)

Earth Day Initiative

EcoRise

Edible Schoolyard NYC

Everfi

FABSCRAP

Garden to Café

Garden Train

Gowanus Canal Conservancy

Green City Challenge

Green School Alliance

Greening Forward

GrowNYC School Gardens & Zero Waste Schools

Materials for the Arts (MFTA)

National Wildlife Federation Eco-Schools USA

Newtown Creek

NY Botanical Garden

NY Hall of Science

NY Sun Works

NY Restoration Project

NYC Compost Project hosted by BIG Reuse

NYC Department of Citywide Administrative Services (DCAS) – Energy Management

NYC Department of Environmental Protection (DEP)

NYC Department of Parks & Recreation

NYC DOE—Office of Curriculum, Instruction and Professional Learning

NYC DOE—Office of Emergency Management

NYC DOE—Office of School Wellness

NYC DOE—Office of Food and Nutrition Services

NYC Department of Health and Mental Hygiene (DOHMH)—Healthy Living By Design

NYC Department of Sanitation, Bureau of Recycling and Sustainability

NYC Mayor's Office of Recovery and Resiliency

NYC Mayor's Office of Sustainability

NYC School Construction Authority

NYS Department of Environmental Conservation (DEC)

NYU Wallerstein Collaborative for Urban Environmental Education

Power My Learning

Queens Botanical Garden

Resilient Schools Consortium Program (RISC)

SIMS Municipal Recycling

Solar One

STEMteachersNYC

Teachers College, Columbia University

Teens for Food Justice

The Horticultural Society of NY

United Federation of Teachers (UFT)

WE ACT for Environmental Justice

Wearable Collections

Wildlife Conservation Society

Energy Management

Demand Response Program (Electricity) Data Overview

Fiscal Year (FY)	Schools enrolled	Capacity enrolled (KW)	Event length (hours)	Total energy saved (kWh)	Total cost saved
FY19	305	37,265	25 HR	657,165.70	$118,289.83 @ $0.18/kWh
FY 20	325	47,020	42 HR	365,493.63	$65,788.86 @ $0.18/kWh
FY 21	329	37,045	79 HR	793,817.01	**$127,010.72 @ $0.16/kWh**

Energy Use Intensity (EUI)

	Total square footage	EUI (KBTU/sq. ft.)	EUI year over year change	EUI change from FY08 baseline
FY19	159,349,200	67.7	**-0.4%**	**-8.7%**
FY 20	160,161,600	58.2	**-14.2%**	**-21.6%**
FY 21	161,329,200	63.9	**9.9%**	**-13.8%**
Average	**160,280,000**	**63**	**-1.6%**	**-14.7%**

FY19 and FY20 data were updated from previous reporting years due to ongoing utility billing adjustments.

Energy Star Performance

	FY19 (CY18 Rpt)		FY20 (CY19 Rpt)		FY21 (CY20 Rpt)	
Score	Number of Properties*	Percentage of Properties	Number of Properties*	Percentage of Properties	Number of Properties*	Percentage of Properties
75 or higher	319	25%	535	41%	759	58%
50-74	491	38%	411	32%	315	24%
25-49	278	22%	218	17%	128	10%
24 or below	170	13%	96	7%	59	5%
No score available	31	2%	44	3%	48	4%
Total school buildings	**1,289**		**1,304**		**1,309**	

*Properties are counted by number of building profiles in Portfolio Manager.

The DOE shifted on reporting Energy Star Performance from number of properties to Borough-Block-Lot or BBLs as required by NYC Departments of Buildings and Finance to align with their naming convention. The Energy Star scores for FY21 (using CY20 data), under this new reporting criteria are to the right as reported in the NYC Municipal Benchmarking Report.

Energy Star Score	% of Borough-Block-Lot (BBLs)	% of School Buildings
A	38%	38%
B	26%	28%
C	15%	14%
D	18%	16%
N	4%	3%

ACE Energy Efficiency Projects in FY21

Borough	Building Code	Project Type	Energy Saved (MBTU)	GHG Emissions Prevented	Costs Saved
Brooklyn	K485	Fan System Upgrade	2102	151	$35,865.04
Brooklyn	K625	Fan System Upgrade	2164	493	$88,964.00
Brooklyn	M199	Fan System Upgrade	2157	162	$35,728.88
Brooklyn	R460	Fan System Upgrade	2562	175	$36,380.96
Brooklyn	X279	Fan System Upgrade	2148	279	$55,588.29
Brooklyn	K072	Lighting Upgrade	286	181	$37,814.53
Brooklyn	K214	Lighting Upgrade	158	13	$6,789.09
Brooklyn	K324	Lighting Upgrade	279	146	$31,853.94
Brooklyn	K376	Lighting Upgrade	278	198	$40,320.60
Brooklyn	K390	Lighting Upgrade	205	241	$52,179.75
Brooklyn	K398	Lighting Upgrade	313	344	$74,980.65
Brooklyn	K096	Wireless Pneumatic Thermostats	1483	85	$25,008.68
Brooklyn	K138	Wireless Pneumatic Thermostats	2313	192	$32,584.20
Brooklyn	K181	Wireless Pneumatic Thermostats	1614	149	$24,837.87
Manhattan	K222	Wireless Pneumatic Thermostats	1205	176	$29,017.63
Staten Island	K289	Wireless Pneumatic Thermostats	2145	87	$14,093.20
Staten Island	K316	Wireless Pneumatic Thermostats	1850	0	$0.00
Staten Island	R019	Wireless Pneumatic Thermostats	843	34	$5,852.94
Staten Island	R032	Wireless Pneumatic Thermostats	1779	24	$4,211.94
Bronx	R460	Wireless Pneumatic Thermostats	6190	0	-$23.88
Bronx	X074	Wireless Pneumatic Thermostats	1533	0	-$20.14
Bronx	X100	Wireless Pneumatic Thermostats	1843	0	-$15.41
Bronx	X125	Wireless Pneumatic Thermostats	3066	23	$4,562.16
Bronx	X132	Wireless Pneumatic Thermostats	2183	41	$7,995.95
Bronx	X141	Wireless Pneumatic Thermostats	1948	135	$24,091.90
Bronx	X150	Wireless Pneumatic Thermostats	1697	31	$5,956.28
Bronx	X166	Wireless Pneumatic Thermostats	2421	154	$25,134.05
Bronx	X445	Wireless Pneumatic Thermostats	3178	133	$21,670.39
Bronx	X450	Wireless Pneumatic Thermostats	4517	15	$2,830.82

ExCEL Energy Efficiency Projects completed in FY21

Borough	Building Code	Description of Measure	Energy Saved (MBTU)	GHG Emissions Prevented	Costs Saved
Brooklyn	K564	BMS Upgrades	1967	136	$24,141.22
Brooklyn	Q277	BMS Upgrades	1085	75	$13,439.38
Brooklyn	Q695	BMS Upgrades	1814	125	$22,242.23
Brooklyn	K505	Boiler Burner Conversion	3892	293	$32,449.73
Brooklyn	K515	Boiler Burner Conversion	6599	497	$55,015.19
Brooklyn	K525	Boiler Burner Conversion	3437	259	$28,655.30
Brooklyn	Q801	Boiler Operators Training for DOE			
Brooklyn	M101	Demand Controlled Ventilation	378	21	$4,359.00
Brooklyn	R029	Demand Controlled Ventilation	193	11	$3,250.00
Brooklyn	R049	Demand Controlled Ventilation	397	29	$4,952.23
Brooklyn	X144	Demand Controlled Ventilation	162	12	$2,514.95
Brooklyn	X156	Demand Controlled Ventilation	109	8	$2,286.00
Brooklyn	R445	Miscellaneous Energy Conservation Measure	341	24	$16,721.90
Brooklyn	K100	Heating Plant Upgrades	234	13	$2,250.00
Brooklyn	K226	HVAC Controls Upgrades	1252	69	$10,902.00
Manhattan	X156	HVAC Controls Upgrades	1589	111	$21,376.00
Manhattan	K405	Interior Lighting Upgrades	1376	96	$56,463.00
Manhattan	K525	Interior Lighting Upgrades	758	49	$47,094.05
Manhattan	M445	Interior Lighting Upgrades	1129	81	$82,545.50
Manhattan	K038	Lighting Upgrade	385	29	$17,701.00
Manhattan	K054	Lighting Upgrade	217	17	$11,721.00
Manhattan	K213	Lighting Upgrade	314	25	$14,715.00
Manhattan	K270	Lighting Upgrade	286	22	$14,761.00
Manhattan	M047	Lighting Upgrade	5	0	$286.99
Manhattan	M061	Lighting Upgrade	88	6	$3,988.39
Manhattan	M090	Lighting Upgrade	862	62	$42,977.51
Manhattan	M114	Lighting Upgrade	427	31	$20,360.00
Manhattan	M131	Lighting Upgrade	642	46	$39,134.36
Manhattan	M190	Lighting Upgrade	4	0	$184.93
Manhattan	M234	Lighting Upgrade	348	26	$20,572.85
Queens	M271	Lighting Upgrade	32	2	$1,932.29
Queens	M844	Lighting Upgrade	231	17	$13,287.08
Queens	M844	Lighting Upgrade	9	1	$390.23
Staten Island	K100	Pipe Insulation	191	10	$1,896.00
Staten Island	K525	Pipe Insulation	435	31	$6,139.65
Staten Island	K226	Pump and Motor Upgrades	20	1	$1,093.00
Bronx	M125	Pump and Motor Upgrades	33	2	$1,574.00
Bronx	X410	Pump and Motor Upgrades	7	1	$97.64
Bronx	M132	Steam Trap Replacement	572	30	$5,441.89
Bronx	M152	Steam Trap Replacement	456	32	$10,194.80

Sustainability Project Grant Winners

Category: Gardening & Outdoor Learning

School Name	Borough
Fannie Lou Hamer Freedom High School	Bronx
Catherine & Count Basie Middle School 72	Queens
P.S. 007 Samuel Stern	Manhattan
P.S. 216 Arturo Toscanini	Brooklyn
P.S. 66	Brooklyn
Hunters Point Community Middle School	Queens
Williamsburg High School for Architecture and Design	Brooklyn
The Urban Assembly School for Green Careers	Manhattan
P.S. 048 P.O. Michael J. Buczek	Manhattan
P.S. 032 Belmont	Bronx
P.S. 085 Great Expectations	Bronx
M.S. 582	Brooklyn
Ebbets Field Middle School	Brooklyn
Van Siclen Community Middle School	Brooklyn
Rachel Carson High School for Coastal Studies	Brooklyn
P.S. 094 David D. Porter	Queens
Richmond Hill High School	Queens
P.S. 008 Isaac Varian	Bronx
P.S. 067 Mohegan School	Bronx
DeWitt Clinton High School	Bronx

School Name	Borough
The Urban Assembly Unison School	Brooklyn
Brownsville Collaborative Middle School	Brooklyn
James Weldon Johnson	Manhattan
East Side Community School	Manhattan
Life Sciences Secondary School	Manhattan
P.S. 084 Lillian Weber	Manhattan
Harlem Renaissance High School	Manhattan
The School for Inquiry and Social Justice	Bronx
Bronx Theatre High School	Bronx
P.S. 066 School of Higher Expectations	Bronx
Samara Community School	Bronx
P.S. 595	Bronx
P.S. 034 Oliver H. Perry	Brooklyn
Young Women's Leadership School of Brooklyn	Brooklyn
The Brooklyn New School, P.S. 146	Brooklyn
P.S. 005 Dr. Ronald McNair	Brooklyn
P.S. 081 Thaddeus Stevens	Brooklyn
Boys and Girls High School	Brooklyn
P.S. 306 Ethan Allen	Brooklyn
Legacy School of the Arts	Brooklyn
J.H.S. 223 The Montauk	Brooklyn

School Name	Borough
J.H.S. 259 William McKinley	Brooklyn
P.S. 178 Saint Clair Mckelway	Brooklyn
P.S. 199 Maurice A. Fitzgerald	Queens
International High School for Health Sciences	Queens
P.S. 063 Old South	Queens
Waterside Children's Studio School	Queens
The Queens School for Leadership and Excellence	Queens
P.S. 136 Roy Wilkins	Queens
Long Island City High School	Queens
P.S. 001 Tottenville	Staten Island
P.S. 016 John J. Driscoll	Staten Island
P.S. 78	Staten Island
Port Richmond High School	Staten Island
P.S. 376	Brooklyn
P.S. K369 - Coy L. Cox School	Brooklyn
P.S. K396	Brooklyn
P.S. Q177	Queens
John F. Kennedy Jr. School	Queens
P.S. Q811	Queens
The David Marquis School of the Arts	Staten Island

Sustainability Project Grant Winners

Category: Environmental Education

School Name	Borough
Central Park East II	Manhattan
Queens School of Inquiry, The	Queens
P.S. 241 Emma L. Johnston	Brooklyn
East New York Middle School of Excellence	Brooklyn
P.S. 022 Graniteville	Staten Island
Port Richmond School for Visionary Learning	Staten Island
Urban Assembly New York Harbor School	Manhattan
P.S. 134 George F. Bristow	Bronx
P.S. 094 The Henry Longfellow	Brooklyn
Sunset Park Avenues Elementary School	Brooklyn
School of Math, Science, and Healthy Living	Brooklyn
Beacon High School	Manhattan
P.S. 166 Henry Gradstein	Queens
P.S. 002 Alfred Zimberg	Queens
Sunset Park High School	Brooklyn
P.S. 249 The Caton	Brooklyn
P.S. 092 Harry T. Stewart Sr.	Queens
Staten Island School of Civic Leadership	Staten Island
High School for Environmental Studies	Manhattan

Category: Waste & Recycling

School Name	Borough
The High School For Language and Diplomacy	Manhattan
Landmark High School	Manhattan
P.S. 161 Juan Ponce De Leon School	Bronx
P.S. 277	Bronx
P.S. 938	Brooklyn
I.S. 093 Ridgewood	Queens
Jamaica Children's School	Queens
P.S. 131 Abigail Adams	Queens
Preparatory Academy for Writers: A College Board School	Queens
Queens Transition Center	Queens

Category: Energy Conservation

School Name	Borough
P.S. 166 The Richard Rodgers School of The Arts and Technology	Manhattan
Mount Eden Children's Academy	Bronx
P.S. K771	Brooklyn

Category: Demonstration Solar Installation

School Name	Borough
Central Park East High School	Manhattan
P.S. 287 Bailey K. Ashford	Brooklyn
The Science And Medicine Middle School	Brooklyn
P.S. 90 Edna Cohen School	Brooklyn
P.S. 229 Emanuel Kaplan	Queens

FY21 Green Infrastructure Projects:

Active DEP funded Green Infrastructure Projects:

- P.S. 9, Brooklyn
  Subsurface water retention system
- P.S. 183, Brooklyn
  Subsurface water retention system
- P.S. 72, Brooklyn
  Subsurface water retention system

Policies and Regulations

DOE POLICY

- **Chancellor's Regulation A-850:** Outlines the roles of the CEO of Division of School Facilities (DSF), Director of Sustainability, Deputy Director of Recycling, Deputy Director of Energy, Principals, Custodian Engineers, and Sustainability Coordinators. All school building requests from the principal that would increase the energy consumption of the building must be submitted to the CEO of DSF, including equipment specific energy load information and how it complies with the energy conservation and reduction portion of the Sustainability Plan. Personal appliances that would unnecessarily increase school plug load, such as personal refrigerators and microwaves, are banned from DOE offices and classrooms.

ENERGY

- **Local Law 33/95:** Requires that all buildings covered by Local Law 84 (Energy Benchmarking) post the building's Energy Efficiency Rating (A-D) and score (1–100) near all public main entrances to increase transparency on energy performance. Grade and score are determined by the EPA ENERGY STAR data established by LL84 from the previous calendar year to be posted annually by October 31.
- **Local Law 24:** Outlines DOE contribution to solar readiness assessment for NYC municipal buildings.
- **Local Law 45:** Requires the Department of Citywide Administrative Services (DCAS) to report on electricity and fossil fuel usage, real-time metering, and assessments of or improvements made to the envelopes of covered facilities.
- **Local Law 84:** Requires owners of large buildings to measure (benchmark) energy consumption and submit the data to the city.
- **Local Law 85:** Requires building renovation and alteration projects to meet New York City Energy Conservation Code (NYCECC).
- **Local Law 86:** City-funded capital projects with construction costs of $2 million or more must be designed to LEED Silver or higher ratings; projects with costs of $12 million or more must reduce energy costs by 20-30% below ASHRAE standards.
- **Local Law 87:** Buildings over 50,000 square feet or larger must undergo audits and retro-commissioning every ten years to determine energy consumption.
- **Local Law 88:** Large non-residential buildings are required to upgrade lighting fixtures to NYCECC code and electrical sub-meters must be installed.
- **Local Law 92/94:** Both new construction and properties that are undergoing replacement of the entire roof deck or roof assembly are required to install a sustainable roofing zone.
- **Local Law 97—Climate Mobilization Act:** Requires a reduction in emissions by a minimum of 40% by 2025 and 50% by 2030, with One City Built to Last requiring a 63% reduction in building emissions by 2050.
- **Executive Order 26:** New York City's commitment to Principles and Goals of Paris Climate Agreement.

WASTE

- **Local Law 36:** Every New York City agency, including the DOE, must submit a waste prevention, reuse, and recycling plan, designate a lead recycling or sustainability coordinator and each agency building must be designated to one assistant sustainability coordinator.
- **Local Law 41:** Outlines the recycling requirements for the Department of Education, including:
  - All buildings owned and leased by the NYC Department of Education, including schools and administrative buildings are to recycle all recyclable materials.
  - The chancellor must appoint a Director of Sustainability to oversee the recycling program, outline goals and policies to

promote waste prevention, reuse, and recycling programs in all DOE Schools, charter schools, and other facilities and offices under their jurisdiction.

- All school principals must appoint a sustainability coordinator from the school staff. The sustainability coordinator cannot be the principal or the custodian engineer.
- All schools and administrative offices must prepare and submit a viable recycling plan, which at a minimum requires that every class have separate and appropriately labeled bins for trash and recyclable paper, and for school buildings to have recycling bins for metal, glass, and plastic materials as close to the school exit as possible without violating safety codes.
- The school principal or sustainability coordinator must participate in an annual survey conducted by the DOE Director of Sustainability; which helps review each school's and the City's progress on recycling activities. The Director of Sustainability must submit an annual recycling report to the NYC Department of Sanitation.
- All primary and secondary schools that are not under the jurisdiction of the DOE, but receive department collection services must also appoint a Sustainability Coordinator and implement a waste prevention and recycling plan.

- **Local Law 65:** Requires the NYC Department of Education to develop a plan to reduce food waste.
- **Local Law 77:** Requires the NYC Department of Sanitation to establish a voluntary residential organic waste curbside collection pilot program and school organic waste collection pilot program.
- **Executive Order 42:** City agencies must stop purchasing single-use plastic foodware and replace it with compostable or recyclable alternatives by year's end; a small supply of plastic items must be available upon request for people who need them.

GREEN PROCUREMENT

- **Local Law 118 (2005):** Mandated the creation of a Director of Citywide Environmental Purchasing to institute new purchasing standards as according to environmental guidelines. The Director must also update environmental legislative standards and submit an annual report on the City's purchasing of environmentally sound products.
- **Local Law 119 (2005):** Reviews current usage of energy efficient merchandise and set the water and energy efficiency minimum standards for products purchased by the City.
- **Local Law 120 (2005):** The law formed the standards for acquiring products comprising of hazardous materials, while also developing regulations on reducing the volume of hazardous materials produced from the goods purchased by the City. In addition to the hazardous materials policy, the law also mandates that the City set up a plan to reuse and recycle electronic goods.
- **Local Law 121 (2005):** The law revised printer default settings for City offices to print double-sided, while also establishing the minimum recycled content standards for a number of goods set by the Federal Comprehensive Procurement Guideline.
- **Local Law 123 (2005):** The law established that the City of New York develop a program to evaluate the practicability of green cleaning and implement a citywide green cleaning program by 2009.
- **New York State Green Cleaning Law:** Enacted as Chapter 584 of the Laws of 2005, the State Green Cleaning Law requires elementary and secondary schools to obtain and utilize environmentally delicate cleaning and maintenance products. The New York State Office of General Services updated the law in 2010 to include state agencies and public authorities.

WATER

- **MS4 (Municipal Separate Storm Sewer System) Permit:** This permit is required under the Clean Water Act, issued by New York State Department of Environmental Conservation (DEC), and coordinated by the NYC Department of Environmental Protection (DEP). The intent is for the City to implement measures to reduce pollution in stormwater runoff.

Methodology

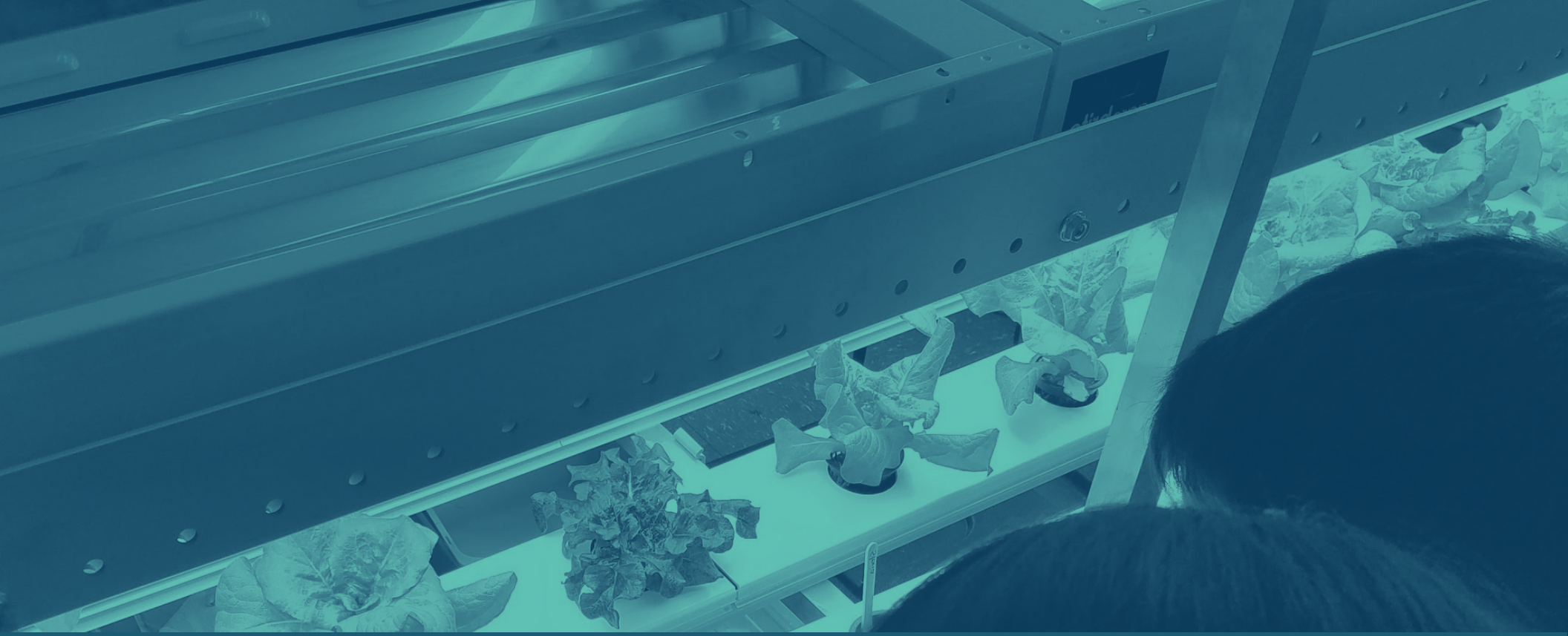
ENERGY & CLIMATE

To calculate greenhouse gas emissions, we examined energy bills received by the DOE. Electricity, natural gas and steam bills were obtained through the Department of Citywide Administrative Services (DCAS)'s online portal, EC3, under the assumption that all metered buildings were accurately reported and billed. Fuel oil and biodiesel was based on summary of data from fuel oil delivery payments as tracked through the Department of School Facilities' financial operations, accounts payable, under the assumption that the amount of fuel ordered accurately reflects fuel usage during the year.

Greenhouse gases included in these calculations are carbon dioxide (CO2), methane (NH4) and nitrous oxide (N2O) were normalized into metric tons of carbon dioxide equivalent (CO2e), using emission factors and conversion units established by the 2019 NYC City Government Greenhouse Gas Inventory and United States Environmental Protection Agency utilizing Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories. Emissions factors for various fuel oil and biodiesel blends were derived as proportional estimate for respective fuel oil type, based on the percentage share of biodiesel at each facility.

The greenhouse gas profiles described in the Energy and Climate section refer to emissions from all buildings under DOE's operational control, meaning those under the supervision of a DOE Custodian Engineer and the Division of School Facilities.

For energy efficiency projects, estimated energy, emissions, and cost savings were obtained through grant applications for ACE and ExCEL funding, as these calculations are the foundation for funding requests. Solar data was calculated based on capacity information and online dates provided by the DCAS Clean Energy and Innovative Technologies office. Demand Response data comes from the program provider, NuEnergen.



NYC DOE OFFICE OF SUSTAINABILITY

Annual Report

2020–21

OFFICE OF SUSTAINABILITY NYC Department of Education