



TABLE OF CONTENTS

COMMISSIONER'S GREETING	1
WHO WE ARE	2
BY THE NUMBERS	6
EQUITY	10
EFFECTIVE GOV'T	14
SUSTAINABILITY	
DCAS FINANCIALS	40
EXECUTIVE STAFF	42

Cover photo: DCAS is headquartered in the David N. Dinkins Municipal Building, 1 Centre Street, NY, NY. Construction on the building began in 1907 and it received its first occupants in 1913. It is one of 55 City-owned buildings managed by DCAS. In the 2019 fiscal year, energy-saving LED bulbs were installed in place of the building's external lights. The change also made it possible to celebrate special occasions by lighting up the top of the Muni building in different colors, at no extra cost or electricity usage. Dear Fellow New Yorkers,

We are proud to present you with the FY19 DCAS Annual Report. It is filled with exciting photographs and stories about the work of our agency, which touches almost every aspect of City government and public life.

One of our most important goals is to collaborate well, both internally as a staff and externally with our partner City agencies. In the following pages you will learn about the many services we provide, including: how we ensure the quality of diesel fuel for the Staten Island ferries; the rigorous training received by our DCAS Police force (which maintains safety at 55 City-owned buildings); and our initiatives to keep the City on track to cut back its greenhouse gas (GHG) emissions 80% by 2050.



COMMISSIONER'S GREETING

All of this is part of our mission to provide equity, effective government, and to guarantee that New York City is sustainable into the future.

We see public service as an honor and it is our privilege to serve you while working for the greatest city in the world.

Lisette Camilo



Members of DCAS's facilities team monitor energy usage in real time.

DCAS is an agency of more than 2,400 employees who do jobs as diverse as design Civil Service examinations, lease City real estate to private sector tenants, oversee the purchase and operation of FDNY firetrucks and ambulances, and retrofit buildings with more energy-efficient equipment, among much else.

We also provide City employees from across the five boroughs with training and professional development in a wide range of classes including: defensive driving, sexual harassment prevention, emotional intelligence, and PowerPoint.

We think of ourselves as the agency that keeps the City running, so that departments on the front line can do the best possible job of serving the public. So far, we're making good on that promise, and we hope to continue it far into the future.

WHEN THERE'S AN EMERGENCY...

Whether it's a heat wave that means converting City buildings to cooling centers on short notice, or a gas pipe explosion that rips apart a residential neighborhood, DCAS employees are there. We do procurement, we handle personnel, we have our own police force, and we manage much of the City's real estate. If it touches New York, you can be sure DCAS is involved.

COPING WITH CLIMATE CHANGE

Since Mayor Bill de Blasio signed an executive order committing New York City to meet the goals of the Paris Climate Accord, DCAS has expanded its efforts to reduce GHG emissions. We invest in a variety of energy efficiency projects, including installing solar panels on public schools, putting more electric vehicles on the street, and cutting back the load on the area grid. DCAS is at the forefront of New York City's efforts to transform the way we inhabit the planet.



Sharing the Spotlight: from left to right, DCAS Deputy Commissioner for Facilities Jerry Torres, Assistant Commissioner for Construction and Technical Services Joe Wagner, Deputy Commissioner for Fleet Keith Kerman, and Deputy Commissioner for Fiscal and Business Management Rich Badillo.



DCAS's Office of Citywide Recruitment joined the Mayor's Office for People with Disabilities to host a career fair in Harlem. At left, a City agency recruiter discusses possibilities with a job candidate.



Eli Blachman, editor of The City Record since 1995. This DCAS daily paper records every City contract and purchase. [Photo courtesy of The New York Times.]



Women's Financial Roundtable.



Human Capital's Angeline Johnson (center, left) and Abigail Arevalo (center, right) listen intently to advice from Certified Financial Planner Crystal Huggins (right) at a

> DCAS Deputy Commissioner for Fleet Keith Kerman announces the purchase of 2,000 more electric City vehicles by 2025, which would double the current number to 4,000.

DCAS BY THE NUMBERS

Number of Electric Vehicle Chargers



Real Estate Re-Allocations



Each year, DCAS's real estate group takes City-owned properties and reallocates them to City agencies that can use them. This process increases government efficiency and saves taxpayer money. The chart above shows how many re-allocations DCAS has completed for the past five fiscal years and the accompanying map depicts where these transactions took place in FY19.

Number of FY19 **Re-Allocations by** Borough



\$2.5 million of costs avoided in FY19 by redesigning City-owned

space to accommodate additional staff.

Total Value of DCAS Contracts Awarded to Minority- and Women-owned Business Enterprises



*Based on OneNYC M/WBE Awards.





EQUITY

DCAS prides itself on being a key player in the campaign to make New York City one of the most equitable cities in the world. As the agency that oversees the City's Civil Service system, DCAS plays a critical role in giving New Yorkers access to good, middle class jobs. These come with the kind of health and retirement benefits fast disappearing in the private sector. Connecting these jobs to traditionally underserved communities is a significant way DCAS works to reduce income inequality across the five boroughs. Through a renewed focus on the 55-a program for people with disabilities, the debut of the Civil Service Pathways initiative, which introduces City University of New York graduates to municipal careers, and an expansion of our Computer-based Testing and Application Centers to the Bronx, DCAS makes real its commitment to equity every single day.

FINDING A WAY IN



Kerry Hayes, above, works in DCAS's Human Capital area helping veterans navigate the Civil Service process.

Kerry Hayes loves his job. With a master's degree in Urban Policy Analysis and Management from The New School and four years of military service under his belt, Hayes likes helping veterans navigate their way through the Civil Service process.

Eliza Cooper likes her job too. She grew up outside of Los Angeles and has a master's degree from Columbia Teacher's College in Social-Organizational Psychology. She interviews all kinds of City employees about their work and uses the information to help develop Civil Service exams.

Both arrived at DCAS courtesy of the 55-a program. Based on a section of the state Civil Service law, New York City's 55-a program, which DCAS manages throughout City government, makes it possible for qualified job candidates with a certified disability to be hired without taking a competitive exam. Depending on the type of disability, New York State's Vocational Rehabilitation (ACCES-VR) or the New York State Commission for the Blind (NYSCB) determines who is eligible for 55-a.

Although the process of finding the right City job, going through the interviewing process, and getting certified as having a disability can take time, both Hayes and Cooper say it was worth it.

"I was interviewing all over the place after I finished graduate school, but I was not making any headway. All my classmates were finding jobs way quicker than I did. Then I realized I was facing a lot of unconscious bias," says Cooper, who is legally blind and gets around DCAS with her seeing eye dog.

She, like anyone looking for a job, was networking like crazy. Eventually, someone introduced her to a staffer from the Mayor's Office for People with Disabilities. That contact told her about the 55-a program and Cooper was on her way.

Hayes' story was different. A native of Williamsburg who now lives in Bushwick, he received his high school equivalency degree before he started with the Army in 1981. He served in Munchweiler, Germany in several roles, including combat medic, small weapons repair, and as part of a special weapons unit where he was exposed to low levels of nerve gas.

After the Army, Hayes attended college on the G.I. bill and worked



desk while her seeing eye dog takes a snooze beneath it.

as an investigator in New York City's Administration for Children's Services. Looking around for new opportunities, he attended a NYC job fair for people with disabilities. That's where he found DCAS.

"The 55-a program is important for people like me who have difficulty with standardized test taking but still have skills," he says. "We are qualified, but the standardized tests can be an obstacle."

While 55-a does not guarantee anyone a position—candidates must meet the criteria called for in the job postings and be interviewed like everyone else—it has helped the City come closer to its goal of reflecting the diversity of the residents who live here. At any given time, New York City government can have as many as 700 people in its employ who come through the 55-a program.

"I love working at DCAS," Hayes says. "My supervisor and my team are very supportive."



Sonny Chen, part of the debut cohort of the Civil Service Pathways program, is very excited about working for the City he grew up in.

Sonny Chen has a long list of what's great about being a Civil Service Pathways fellow. It begins with the diverse group who came through the program with him, all graduates of the City University of New York and dedicated to making New York better.

There was the exposure to places he had never seen and people he hadn't met before. Despite being a New York native, the tour of City Hall was especially exciting. "I'd never been in there," he says, eyes widening.

Add the training and preparation the program provides, the networking opportunities, the mentoring he

received from the chief of staff at the Brooklyn Navy Yard and well, it's been an exceptional experience.

"People are really interested in helping you," he says.

Born and raised in Bensonhurst. Brooklyn, with not one but two degrees from Baruch College—Finance and Investments as well as Information Systems-Chen is now happily ensconced at the Mayor's Office of Contract Services (MOCS).

He is working on Passport, the City's recently introduced online procurement system, which provides him with

a perfect bridge between the two halves of his background: technology and business. Early in his fellowship, Chen worked with MOCS's Health and Human Services Procurement Accelerators team which he credits with helping him understand the City's purchasing process. Now, he reports to a supervisor in MOCS's Operations Efficiency area.

But it all began when Chen was still in school at Baruch. He found out about Civil Service Pathways from a career coordinator on campus and attended an information session at DCAS. That led eventually to an application, including an essay, and selecting the Procurement and Finance track from the three the program offers (the other two are Policy and Program Analysis and Data and Digital Services).

Perhaps the most challenging part of the process was the group interview, where Chen and seven other aspiring fellows were vetted by a panel of City agency leaders, all of whom had openings at their respective agencies.

Number of recruitment events and Civil Service 101 Information Sessions held by DCAS's Office of Citywide Recruitment in FY19, up nearly 10% from FY18.

The prospects were given a topic to work on together. For Chen's group, that was figuring out how to get more minorities and women to form their own businesses, become certified as minority- and women-owned business enterprises (M/WBEs), and then provide products or services as suppliers to the City.

The group brainstormed together before making their presentations, and some were selected to move on to individual interviews. Out of more than 300 applicants to the first round of the Pathways program, Chen was among the 18 selected to participate in the initial cohort.

From his perch at MOCS, Chen is contemplating his future. He is thinking about taking two different Civil Service exams as they become available: Contracts Specialist and Procurement Analyst.

"Working for the City is really a great privilege," he says.



EFFECTIVE GOVERNMENT

Much of what DCAS does is offstage, helping other City agencies do their jobs as efficiently as possible. But we also have our own support team—Strategic Operations, Legal Affairs, Administration, and Information Technology—that help ensure the processes in our divisions are the best they can possibly be. In the pages that follow you will read about how all our areas work together and with other agencies to make sure New York City operates at the highest level every day.

USING ARTIFICIAL INTELLIGENCE TO CATCH 100 ERRORS

DCAS's Energy Management division oversees the City's purchases of electricity, natural gas, and steam on behalf of City agencies. The total bill for that energy comes to more than \$700 million annually. As a result, the group keeps a close eye on what is being spent.

The agency receives more than 15,000 energy bills a month and puts them through a rigorous review both before and after payment. But even with this stringent once over, some bills can have irregular charges or undetected over-billing. "Utility bills are very hard to gauge. One August your bill is \$400 and the next August it could be \$100, and they can both be correct," says Mohammed Belarrem, DCAS IT's Director of Energy Business Support. In fact, every bill is run through mathematical models to validate charges. To provide additional help in detecting discrepancies, Energy Management enlisted their DCAS IT colleagues to come up with a way to make sure the City is accurately invoiced for the energy it uses. "We feel we can increase our savings. We just need to find the errors," says Lukman Olowu, DCAS's Director of Energy Billing Analytics.

DCAS IT went to work exploring tools to crack the problem. Very quickly, it became apparent that traditional programming methods would fall short because of the complexity involved in energy usage and cost fluctuations, as well as the fact that the previous process was half-manual, half-automated.

But the team had an "Aha" moment: Artificial Intelligence (AI). AI could be put to work to analyze the City's millions of billing records and make predictions about what an invoice for a specific account should be. Artificial Intelligence, for those unfamiliar with it, is a computer science discipline that uses huge datasets to "train" a computer model to make predictions on very specific topics. It is what Facebook uses to detect friends' faces on photos.

After experimenting with different models and datasets IT finally settled on a home-grown prototype. It uses historic billing records, weather data, time of year, building age, square footage, and usage types to understand energy trends for buildings and to make predictions about future energy use.

Total City Spend for Electricity, Gas, and Steam



The results were stunning. The model has been able to predict numerous bills with accuracy. For those that are a little more difficult, the model can set thresholds on actual bills versus predictions and investigate anything above a 10% difference. DCAS Energy has received a total of almost \$4 million in refunds from various utility companies over the last fiscal year, recovered by identifying more than 100 billing anomalies.

"This is just the tip of the iceberg when it comes to Artificial Intelligence," says Pavani Allam, Assistant Commissioner of IT Business Support. "DCAS has so many areas where we can use this kind of technology. This is exciting."

DELIVERING THE GOODS



On a recent early morning, the Port Chester, a 225-foot barge, pulled into the St. George Terminal on Staten Island. Waiting to greet it were DCAS **Procurement Supervisor Gary Sideris** and his colleague from the agency's Bureau of Quality Assurance, Jose Cajas. They were there to make sure its 600,600 gallon cargo of ultralow sulfur diesel, called 2DULS. met the specifications of the \$35.6 million contract between DCAS and its supplier. The fuel had traveled by pipeline from places as far afield as Louisiana and Venezuela, then by barge from New Jersey, and would soon be used to fuel the Staten Island Ferry. But first, it had to pass under the watchful eyes of the DCAS inspectors. "We don't often get bad fuel," Sideris says, "but it does happen from time to time."



Sideris (right) watches two DOT staffers as they hook up the fuel hose that delivers the diesel from the Port Chester to the DOT barge.

"It's important to follow the procedures exactly at every delivery. You can't get lax. That's the best way for impurities to sneak in," adds Cajas.

The two were on the barge working from five AM until the afternoon that day. "But it's beautiful to be out that early," Sideris says. "And it's important that we make sure the City's contracts are honored."



DCAS Associate Quality Assurance Specialist Jose Cajas (at left) takes fuel samples from one of the six tanks on the Port Chester with help from an independent inspector.

Value of new Citywide contract awards made in FY19 by DCAS's Procurement arm.

In this case, while the fuel went immediately to DOT, it also passed its lab tests two weeks later. This meant that DCAS didn't have to ask for a refund from the vendor, which it does when deliveries don't meet specifications covered by the contract.

"We're happy when our customer agencies are satisfied," says Cajas, "and when the taxpayers of New York get what they paid for."



THE PATCH ON YOUR SLEEVE ... SAYS DCAS



Gregory Thomas, the senior executive for law enforcement operations at the Kings County District Attorney's office, gives a lecture to cadets.

Cadets Olumide Adeyanju (at left) and Paul Cadet (center in blue) practice hands-on defensive tactics.

In January of 2019, the DCAS Police Criminal Justice Academy began offering its first basic training course for DCAS police recruits. Recognized by the New York State Division of Criminal Justice Services, the Academy is an approved training school for law enforcement. It employs 14 statecertified police instructors, including a director and two training coordinators.

The six-month course gives DCAS police cadets rigorous training in Defensive Tactics, Firearms, Constitutional Law, Active Shooter Response, Penal Law, Crisis Intervention for Mental Health Persons, as well as other topics required by the state.

In June 2019, the Academy successfully graduated 19 new officers, who went on to receive further training in their respective field assignments. The cadets join a force of 56 sworn officers and are posted in DCAS-managed buildings across the city to ensure the safety and security of staff, visitors, and property.

"The conduct of these graduates and the way they perform their jobs is a significant responsibility," says DCAS Commissioner Lisette Camilo. "They are often the first-and sometimes onlyinteraction that the citizens of New York City have with our agency."



before their graduation day in June 2019.





Instructor Christian Calderon observes the cadets putting on their moves in a defensive training class.

The first class to attend the DCAS Police Criminal Justice Academy pose for a photo



AT THE SCENE WHEN HELP IS NEEDED

The steam pipe explosion in the summer of 2018 released asbestos into the air and led to the evacuation of 49 buildings in Manhattan's Flatiron district. Water used to clean nearby residences and offices became contaminated and needed to be contained until it was safely disposed of.

As the 2019 fiscal year began last summer, a steam main exploded in Manhattan at West 21st Street and 5th Avenue. DCAS joined a host of other City agencies including Emergency Management, Fire, Police, Environmental Protection, Buildings, and Health and Mental Hygiene to respond.

DCAS employees were on site immediately, moving 4,000 sandbags to support the clean-up. These employees are part of DCAS's Procurement operation, which runs the Central Storehouse, a 500,000-sq. ft. facility

located in Middle Village, Queens. The Storehouse carries about 470 different items for use by City agencies, ranging from bottled water and toilet paper to garbage bags and canned food. But it also stockpiles emergency supplies, including sandbags, rock salt, meals ready to eat, raingear, and can act as a federally-designated point for vaccine distribution.

On the day of the explosion, DCAS staff staged and delivered 80 pallets (50 sandbags per pallet) to the site in four trucks.

DCAS warehouse staffers (from left to right) Randford "Jimmy" Gayle, Michael Maldonado, and Robert Gojani unloading sandbags that were used to create dams and dykes to contain asbestos-contaminated water.



one car length wide.



As Gayle moves pallets down the street. the FDNY was on hand to check for asbestos in the debris.



Gayle, Maldonado, and Gojani worked for hours at the site. City officials said the hole in the street caused by the rupture was about the length of one and a half cars, and



Some 4,000 sandbags ready and waiting for deployment as part of the asbestos abatement project.

The city has more than 100 miles of steam piping underneath it, delivering heating and cooling to nearly 2,000 buildings. Fortunately, no one was hurt in this incident.

DCAS CHAT

As DCAS is growing, so are its IT needs, especially its Help Desk, which assists users with all hardware and software matters, from broken keyboards to password resets and software installations. Every service call or email is logged into a ticket, assigned, and tracked through its lifetime.

Over the last fiscal year, the volume of Help Desk tickets has risen dramatically, straining technicians. To remedy the situation, IT management needed to come up with a quick but effective solution. Pavani Allam, Assistant Commissioner of IT Business Support, had an idea: "What about a chatbot? Can we build interactive chatbots that would help our users?"

Readers may be familiar with chatbots (a combination of "chatter" and "robot") from their internet shopping experiences. It is a computer program that conducts a conversation verbally or via text message. Chatbots are often used by retailers to solve problems for customers who run into difficulties while trying to shop online. They are best for common, frequently asked questions and questions with a clear, pre-defined answer. Such programs are often designed to convincingly simulate how a human would behave in a conversation.

Chatbots allow users to get resolutions to their issues quickly. At DCAS, it would mean those contacting the Help Desk would no longer have to open a ticket.

The Help Desk team began collaborating with several DCAS IT developers to

work on creating a chatbot that could tackle some of the easier requests coming in. These include things like: "How do I access my email from outside the office?" or "How can I restore a file I just deleted?" The teams built a knowledge base to host all the issues and resolutions the chatbot would need to do its job.

"Our goal is to eliminate 10% of the tickets we receive by using the chatbot," says Maria Frasca, IT Chief of Staff and Help Desk Director. "A tool like this can free up more of our time, so we can better support the rest of the agency," adds Nitin Patel, DCAS Deputy Commissioner for Information Technology.

DCAS's Information Technology division is preparing to launch a pilot chatbot in the coming months on DCAS Connect, the agency's internal website.



INSIDE THE FORT

The Fleet Office of Real Time Tracking (FORT), located in the David N. Dinkins Municipal Building, operates as a watchtower for City fleet operations. The FORT helps DCAS reduce and respond to crashes, improve safety, better track fuel economy, and study fleet use. It's also a pivotal tool helping our client agencies deliver direct services to the public and support New York City's capacity to address major emergencies.



Nathaniel Koszer, claims coordinator with Fleet's Collisions and Training unit, monitors activity in the Fleet Office of Real Time Tracking.

FORT offers the ability to re-invent fleet servicing and operations in every way. So far, tracking technology has been installed on 12,000 City-owned fleet vehicles from 53 different agencies and offices. In addition, vehicle location devices have been added to 4,700 school buses that transport children for the NYC Department of Education (DOE). This allows the monitoring of these buses in real-time. DOE and the school bus companies—40 in all—will receive maintenance, servicing, and collision alerts, as well as crash reports.



This is the City's newest Fire Department cable scrapper. The first was built and bought by the City in 2003.

This may look like a fire engine. But it's not. It's the FDNY cable scrapper. This gleaming new vehicle doesn't put out fires. It extracts from the ground old copper cable used in the City's emergency alarm response boxes, cuts the cable into manageable pieces, and loads them onto dump trucks to be brought to recycling centers. The cable scrapper is also able to install new fiber optic cable for the City's emergency response network.

Like any new vehicle or equipment that the City purchases, it must be inspected to ensure its quality. That's where DCAS comes in. For a highly-specialized and complicated vehicle like a cable scrapper, the inspection is particularly comprehensive and technical.

Once a manufacturer is selected to produce a scrapper, it builds what's

called a "Pilot Model," which is typically the first production unit completed under a contract. This scrapper was built by two companies. The cab and chassis came from Mack Trucks Inc., based in Allentown, PA, and the body was built by Timberland Equipment Limited in Ontario, Canada. Two other truck makers were involved: Gabrielli Truck Sales in Hicksville, NY, and Trius Inc., of Bohmeia, NY.

The most recent once-over, shown here, took place in Hicksville at Gabrielli's location. It was the final inspection before the scrapper was to be delivered to the Fire Department. The DCAS inspectors looked at the operational apparatus on the chassis and cab; scrutinized the scrapper's body, air pump, compressor, hydraulic and other components, and gave the layout of the generator a comprehensive review. In addition, they verified and confirmed modifications they'd requested on earlier inspections, and did an overall check for quality, workmanship, and conformance to contract specifications.

DCAS had given the scrapper three previous checkups, including one that took place on Bell Boulevard and 82nd Avenue in Queens. There, the scrapper pulled 250 feet of cable out of the ground. (The City can sell old cable to scrapyards for revenue.) In that inspection, the scrapper blew a circuit breaker, which had to be repaired.



Dell'Era inspects the scrapper's hydraulic lines.



In the final checkup, the DCAS team found a few minor issues with the truck, like a small hydraulic leak, which will be fixed. "We always find something," says Anthony Dell'Era, Supervisor of Mechanics and inspector for Procurement's Bureau of Quality Asssurance. "I'm not going to sign off on it unless it's 100% perfect."

Inspections are so thorough that even a few paint drips on the boom had to be cleaned up before the truck passed.

The scrapper cost the City just over one million dollars, but in the end, Dell'Era and his crew were satisfied. "The truck came out really well," he says.



DCAS's Bureau of Quality Assurance is very particular, especially with a high-cost, custommade vehicle like a cable scrapper. Here, Dell'Era takes a look at the truck's hydraulic components.

Fidelis Utulu, Deputy Director of Quality Assurance, ensures the Vision Zero side guards installed on the cable scrapper are the correct height to provide safety.

THE FUTURE OF CITY OFFICES

One of DCAS's most important tasks is to efficiently house New York City government agencies. That means finding and renovating space to accommodate some 30 departments and political offices for hundreds of City employees.

The best and least costly way to do this is by housing City offices and employees in City-owned buildings. But many of the City's buildings are at least 50 years old. Some, like DCAS's headquarters in the David N. Dinkins Municipal Building at 1 Centre Street in Manhattan, date back to the early 20th century. Others, such as Brooklyn Borough Hall, date to the late 1800s. Consequently, these buildings need constant upkeep and repair.

In order to accommodate additional headcount or new programs without having to acquire new leased space and to further contribute to important cost savings initiatives, DCAS is in the process of creating a "surge site" on the 25th floor of 1 Centre Street.

The new space will also provide a model for best practices in workspace design, such as maximizing natural light and outfitting meeting spaces with smart boards. Occupying a full 25,924

15 million of square feet maintained by DCAS Facilities, the equivalent of five Empire State Buildings.

square feet, the surge site will house the City's various short-term projects, provide temporary space for agencies with a need, or serve as swing space when a capital and/or expense-funded project lasts six to 12 months.

The surge site will include a variety of work spaces, such as quiet zones, phone booths, and unassigned desk seats, as well as formal and informal meeting rooms. It will be able to house as many as 200 City employees at once. In addition, all the finishes,



Current number



equipment, furniture, electrical, plumbing, and HVAC systems will be brand new.

"We are very excited about the surge site," says DCAS Deputy Commissioner for Real Estate Services Laura Ringelheim, whose division is teaming with DCAS's Construction and Technical Services group to execute the project. The surge site is currently in the design phase with construction scheduled to begin in fall 2020 with a completion date anticipated in December 2021.

SUSTAINABILITY

DCAS is one of the City agencies leading the effort to deliver on Mayor de Blasio's historic commitment to reduce GHG emissions 80% by 2050. It is a job that involves cutting back on fossil fuel use at New York government buildings and in the City's more than 30,000 owned and leased vehicles, the largest municipal fleet in the United States. To achieve this, DCAS is expanding the City's use of solar power, biodiesel, and car sharing, while also overseeing retrofits, and improving building and vehicle operation and maintenance. For every gain made in the attempt to go green, there is always much more to be done. DCAS is constantly on the job doing it.

It all started in the fall of 2016. DCAS Deputy Commissioner for Facilities Management Jerry Torres asked the seven units in his 1,200-person division to submit ideas for ways to invest money rebated for reduced energy use in City buildings. The two requirements: Employees should "think big" and the idea had to result in positive change.

That was enough for Danny Donovan, DCAS Director of Energy Management for Facilities Operations. He and his staff had been wanting to replace all the existing external lights on the buildings DCAS manages with LED bulbs. The change would save money and reduce the City's environmental impact.



The ability to colorfully light up the David N. Dinkins Municipal Building at 1 Center Street resulted from replacing existing inefficient lighting with energysaving LED bulbs. Above, the building's tower lit up in pink and turquoise at its first official LED lighting in July 2019. Nyron Ali (left), Steve Carlucci (center), and Leszek Beksinski, the lead electrician (right), all from the DCAS electrical shop, harness up to go on the building's ledge to install the tower's new light fixtures.

When Donovan and his team started to explore their proposal, they discovered a bonus: the bulbs could be lit up in different colors without using any additional energy or incurring greater costs. Donovan knew he had a winning idea on his hands, or at least in his head. He wanted to do for downtown what the Empire State Building did for 34th Street: light it up in different colors for every special occasion.

Fortunately, Torres liked the idea too and over the next three years work began to make it a reality, at least on one DCAS-managed building. Two private electrical firms were brought in to walk the roof and tower at the David N. Dinkins Municipal Building at 1 Centre Street in lower Manhattan and give quotes for necessary parts.



Joseph Jensen, from the DCAS plumbing shop, welds together light fixture parts.

DCAS electrical supervisor Steve Carlucci was consulted to see if DCAS electricians would be interested in helping. Carlucci gave a thumbs up.

At an event for minority and womenowned business enterprises (M/WBEs), Donovan met with Industries for the Blind, a vendor approved to sell LED light bulbs and fixtures.

Working closely with the DCAS shops through Assistant Commissioner David Dimitri, DCAS electricians began the installation in September 2018. Safety was a priority, so special safety bars were developed so that the electricians could connect their harnesses when installing the fixtures outside the building's columns. Joe Jensen, plumbing supervisor; Danny Rivera, sheet metal supervisor; Carlucci; and Lead Electrician Leszek Beksinski, all DCAS employees, designed and fabricated the equipment.

Work stopped over the winter months due to bad weather but picked up again in the Spring of 2019. Installation and programming for the light fixtures were completed by early July. Total costs, including the LED light bulbs, fixtures, engineering design, and programming came in under \$300,000. Running the lights costs a little over \$1,000 annually compared to more than \$4,000 with the old system. And the GHG reduction equals nearly seven metric tons, which is akin to eliminating 17,155 miles driven by a passenger vehicle or 7,653 lbs. of coal burned.

"We wanted to change the skyline of lower Manhattan, do something good for the environment, and save taxpayer money. We're a triple threat," Donovan says.



We wanted to change the skyline of lower Manhattan, do something good for the environment, and save taxpayer money. We're a triple threat.

> - Danny Donovan, DCAS Director of Energy Management for Facilities Operations.

DCAS Electrician Nyron Ali installs light fixtures on the ledge of the building.



DEM Project Manager Dylan Rolleri monitors the installation of new solar photo voltaic panels at the Adrien Block School I.S. 25 in Flushing, Queens.

From a 2014 starting point of 1 Megawatt to its current 10.5, New York City is committed to installing 100 MW of solar photovoltaic power (PV) on municipal buildings by 2025. DCAS's Clean Energy team leads this effort as it expands solar PV and other distributed energy resources across the City's buildings.

Included in distributed energy resources are Energy Storage Systems, or ESS, which offer multiple benefits like renewable energy, load reduction off the electrical grid, and the ability to provide back-up in a power outage.

ESS will play a critical role in the City's future energy strategy as the technology matures, says DCAS's Deputy Commissioner for Energy Management Anthony Fiore. Some of these technologies can pose certain safety risks, so DCAS works with the Mayor's Office, the Fire Department, and the Department of Buildings to shape rules and regulations for their use. DCAS collaborates closely with non-profit Solar 1—which fosters sustainability in urban environments—and the New York Governor's Office of Storm Recovery. Together they have laid the groundwork for Solar + Storage systems at four Brooklyn Public Library branches. DCAS's energy management group has also partnered with the New York Power Authority and the FDNY to advance these systems at six firehouses in Brooklyn and Queens.

DCAS Energy Management has been researching and installing innovative clean energy technologies, such as fuel cells, battery storage, integrated photovoltaics, wind, geothermal, and solar thermal. The group has 34 MW in the pipeline for installation over the next two years.

But even the existing 10.5 MW of solar PV have a huge impact, Fiore points out. It is projected to result in annual GHG emission savings of 12,000 metric tons. That's like removing 2,500 passenger vehicles from the road annually.

WE'RE ELECTRIC!

This past Spring, DCAS surpassed a goal set by Mayor de Blasio six years ahead of schedule by creating the nation's largest electric fleet with more than 2,200 onroad plug-in vehicles.

In addition, fleet has recently added 208 hybrid pursuit-rated police cars for use by NYC law enforcement. DCAS is also in the process of acquiring hybrid utility police vehicles. Starting in FY20, NYPD and other City law enforcement units will be able to transition fully to hybrid response units.

An expanding electric fleet requires a growing electric charging network. DCAS and City agencies now operate 590 such chargers, the largest network in the state. This includes 71 mobile solar carports, the biggest such program in the world.

In May 2019, DCAS installed its first fast electric vehicle charger, located at Flushing Meadows Corona Park. Because of its speed, this charger will enable City staff to power up their vehicles quickly and get back on the job. DCAS plans to install up to 100 additional charging units in the next two years.

The benefits of electric plug-in vehicles are myriad. They eliminate the need for fossil fuels, improving air quality and reducing GHG emissions. All-electric vehicles also offer the promise of substantial reductions in maintenance and repair costs and service disruptions. For these vehicles, there is no need for oil changes, or spark plug and air filter replacement. There is no transmission to be serviced or muffler or catalytic converter repairs required.

Al Servicing costs for NYC's all-electric of vehicle models is dramatically less than with gas, hybrid, or hybrid plug-in models. In general, hybrid models also achieve some benefits over gas models, but the most dramatic results are with the all-electrics. "All early indicators are that we are achieving the fuel, emissions, and maintenance benefits of this exciting transition away from the internal combustion engine," says DCAS Deputy Commissioner for Fleet Keith Kerman. "We are hitting our targets."

Number of NYC Fleet **On-Road Electric Vehicles** 2,213 **FY19 FY18 FY17 FY16** 304 **FY15**

MOVING TOWARD ENERGY EFFICIENT CITY BUILDINGS

Today, energy used to heat and cool buildings accounts for more than two-thirds of New York City's GHG emissions. That's why DCAS's Energy Management group has been awarding funds to City agencies to install electric heat pumps and variable refrigerant flow (VRF) heating and cooling systems inside their buildings.

Electric heat pumps eliminate the need for fuel oil or natural gas to produce heat and hot water. VRF heating and cooling systems help limit air conditioning to meet demand, saving energy and money.

For the City to meet its goal of reducing GHG emissions 80% by 2050, building heating and hot water systems must be electrified, says DCAS Deputy Commissioner for Energy Management Anthony Fiore. "We really don't have a choice."

DCAS launched its ExCEL program (short for Expenses for Conservation and Efficiency Leadership) in 2013 to provide expense funding for energy projects that advance the

City's ambitious goals. Agencies can apply for funding to take on energy efficiency retrofit projects or to support operational improvements. The program offers funding for maintenance and repair projects; energy-related studies such as energy master plans; diagnostic tool and equipment purchases; specialized training for facility personnel; and outreach resources to promote energy behavioral change.

In FY19, DCAS awarded \$10.8 million in funding across 17 City agencies and cultural institutions, bringing total ExCEL award funding to \$64 million since the program began.

In FY19, funding awards included 62 energy efficiency retrofit projects, 25 operations and maintenance measures, 18 energy studies, and 20 additional awards for tools, outreach, and training.

These projects are expected to save the City a total of \$3.1 million in energy costs annually, while eliminating 8,176 metric tons of GHG emissions, the equivalent of removing 1,700 passenger cars from the road each year.



Chris Keddy, Controls Specialist for DCAS's Maintenance Collaborative Group, installs a Variable Frequency Drive (VFD) to 111 Centre Street's HVAC system. The VFD allows for greater control of air conditioning through the building so that heating and cooling only occurs when necessary.



Above, the New York City Department of Sanitation's Manhattan Community District 4 Garage at 650 W. 57th Street. DCAS's Energy Management group is using infrared investigation of the building's exterior walls (see below) to identify weak points.



One of the ways that DCAS's energy group is helping to reduce GHG emissions is by improving the "envelope"—or exterior walls—of City buildings. Infrared investigations are particularly useful for identifying weak points in building envelopes, where heat and cooling can leak through. Once DCAS knows where the cracks are, the City can then add insulation, improve air sealing, and upgrade windows.

Building envelope analysis is part of a set of deep energy retrofits that DCAS is implementing across the City's portfolio. These projects aim for a 50% or greater reduction in energy use by taking a whole-building approach that optimizes the relationship among multiple building energy systems.

Currently, the City has nine such retrofit projects in place with an additional 28 being studied and scoped. Retrofits are planned or already in progress at public schools, the Department of Sanitation garage (pictured here), the Brooklyn Museum, the New York City Police Department, and the Department of Homeless Services.

To aid in this effort. DCAS works with retrofitting experts to teach relevant New York City employees about how to run a high-performance building. "It's a hands-on experience," says DCAS Deputy Commissioner for Energy Management Anthony Fiore, "and the staff really enjoys it." -



At the Police Academy, DCAS and the NYPD used real-time meter electricity data to more efficiently manage overnight and weekend energy usage.

One of DCAS's most successful efforts at reducing the City's carbon footprint is its Load Management program, spearheaded by the agency's energy group. Through this initiative, DCAS works with building operators at agencies across City government to analyze facility operations, occupancy patterns, and equipment usage. DCAS's energy group uses a network of realtime meters that the City has installed across a targeted group of municipal buildings to help agencies come up with facility-specific load optimization strategies.

A case in point is the New York City Police Academy, located on a 32-acre

campus in College Point, Queens. The 750,000-square-foot facility opened its doors in 2014, and features modern classrooms, a gymnasium, an indoor track, and a tactical village that emphasizes hands-on, scenario-based training. Mock-environment training rooms include a precinct station house, multi-family residence, grocery store, restaurant, park, court room, bank, and a subway car and platform. At the Police Academy, DCAS and the NYPD used real-time meter electricity data to more efficiently manage overnight and weekend energy usage. The relatively steep drop-offs in energy usage reduced utility costs and emissions.

KEEPING IT COOL (AND WARM) AT SCHOOL

The De Soto School, also known as M130/PS 130, at 143 Baxter Street in Lower Manhattan, is nearly 100 years old. It was having trouble keeping its students and teachers warm in the winter and cool in late Spring because its heating and air conditioning systems were in disrepair.

DCAS's energy group came to the rescue. It conducted an energy audit that determined the equipment distributing air flow throughout the school was in jeopardy of breaking down due to rust build up.

In an energy efficiency retrofit, the school bought new equipment that decreases water buildup. The apparatus also improves the distribution of air flow throughout the building. This has led to better operation of the school's air compressor making the entire building more energy efficient. Air flow is now evenly distributed throughout the school creating better conditions for students to learn and teachers to teach.



Pointing to the repaired air handling unit, Deng Lin, Deputy Director of the Technical Services Team in DCAS's Division of Energy Management, explains its new sequence of operations.

Over the last five years, the City has stepped up its energy efficiency retrofit projects like this one, with an emphasis on scaling high-value interventions. Through DCAS's Retrocommissioning program, heat pumps, air handlers, radiator controls, and insulation are installed as energy saving meaures. Across the City, extensive data analytics are used to guide project identification and scoping. With the trained staff in DCAS's energy group and in agencies across the City, New York is now able to realize the greatest possible operational efficiencies and implement ground-level best practices.

DCAS's energy group completed 409 energy efficiency retrofits in FY19 which are expected to reduce GHG emissions by 45,105 metric tons per year and yield annual estimated energy savings of \$15.9 million. This comes on top of its FY18 achievement of 44,739 metric tons in expected GHG reductions and \$15.6 million in savings from completed projects.



Lin reviews the replaced Float and Thermostatic steam trap to make sure the contractor installed the correct size.

DCAS FINANCIALS

Agencywide FY19 Expense, **Revenue, and Capital Budget** (Budget Modified as of June 2019)

(All Funds, in \$000)

FY 19 Expense Budget:		
Agencywide	Headcount	\$
Personal Services (PS)	2,466	\$205,518
Other Than Personal Services (OTPS)		\$1,078,261
Total DCAS w/o BSA*	2,466	\$1,283,779
Major highlights of DCAS Budget:		
Citywide Heat, Light, & Power		\$739,054
OTPS Lease (Various Agencies)		\$122,118
Court Facilities Payment (Reimbursement)		\$54,025
OTPS Storehouse Accounts (Various agencies)		\$26,302
OTPS Vehicle Fuel (Various Agencies)		\$11,281
Total Major Highlights		\$952,779
*BSA stands for Board of Standards and Appeals		

FY 19 Capital Budget:	
Lines of Service	\$
DCAS Facilities - Capital Construction	\$72,352
Real Estate - Improvement to Leased Locations	\$114,581
Energy Management	\$112,676
IT	\$10,177
Fleet	\$3,783
Security/Admin	\$1,301
Total DCAS	\$314,870

FY 19 Revenue Budget:

Lines of Service

Real Estate

Citywide Commercial Rents

Other

Total - Real Estate

Fleet

Sale of Automotive Vehicles

Affirmative Claims

Total - Fleet

Human Capital

Civil Service Exam Fees

Other

Total - Human Capital

Office of Citywide Procurement

Sales of Salvage Equipment/Other

Procurement Card Rebates

Total - Office of Citywide Procureme

Administration

City Store Sales

Total - Administration

Energy Management

Heat, Light, & Power Reimbursement

Total - Energy Management

Total DCAS w/o BSA*

*BSA stands for Board of Standards and Appeals

	\$
	\$55,601
	\$1,310
	\$56,911
	\$9,692
	\$735
	\$10,427
	\$4,760
	\$30
	\$4,790
	\$2,201
	\$470
nt	\$2,671
	\$743
	\$743
	\$3,800
	\$3,800
	\$79,341

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