

ANNUAL REPORT Fiscal Year 2016



STEPHANIE
RAWLINGS-BLAKE
MAYOR

BALTIMORE CITY

DPW

DEPARTMENT OF PUBLIC WORKS
RUDOLPH S. CHOW, P. E.
DIRECTOR

Baltimore City Department of Public Works



Our Mission:

We support the health, environment, and economy of our City and the region by providing customers with safe drinking water and keeping neighborhoods and waterways clean.

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MAYOR'S MESSAGE

As I reflect upon my years of service to Baltimore City, I take a great deal of satisfaction in knowing that Department Public Works (DPW) has made our city a stronger, safer, and healthier place to call home. During my administration we have made working for a cleaner city a top priority.

This annual report provides a snapshot of DPW's work during Fiscal Year 2016, especially with projects that ensure clean communities and waterways. It was a very productive 12 months!

We distributed durable Municipal Trash Cans to residences that receive City trash service in order to literally put a lid on litter and keep food away

from rodents. And we installed hundreds of storm inlet screens at key locations to keep trash from entering our drains, and ultimately our streams, harbor, and the Chesapeake Bay.

DPW continued its efforts to revitalize our aging water system, and water main breaks declined by almost 40 percent in FY 2016 compared to two years earlier, as we rehabilitated 19 miles of mains. While we celebrated the 100th anniversary of the Montebello Water Filtration Plant during FY 2016, we drew up plans for a new, state-of-the-art water treatment plant to help serve our customers over the next 100 years.

We made progress addressing our wastewater Consent

Decree goals. Most importantly, we will soon begin construction of a massive hydraulic project at the Back River Wastewater Treatment Plant, which will eliminate more than 80 percent of sewage overflows from our streams.

Keep up the good work, DPW!

Stephanie Rawlings-Blake
Mayor



DIRECTOR'S MESSAGE

Progress! Your Baltimore City Department of Public Works (DPW) has made tremendous strides forward for the citizens of Baltimore and the 1.8 million daily regional water consumers during Fiscal Year 2016. We have been working diligently to make sure that we have a clean and healthy city for years to come.

In FY 2016 we exceeded the projected pace for installations of the new water meters under the BaltiMeter upgrade. We are putting in place technology that allows customers to have online access to information about their water usage, and comfort in knowing that their water reads and bills are reliable and accurate. We set the stage for a new billing system which will be

easy to understand. A new rate structure will eliminate minimum usage charges and will be fair to customers who conserve water.

Our Enhanced Nutrient Removal facilities, now under construction at Patapsco and Back River wastewater treatment plants, will strengthen the health of the Chesapeake Bay. After years of planning, work started on the enclosure and subsequent beautification of the Guilford Reservoir. Along with the upcoming transformations of Druid Lake and Lake Ashburton, enclosing our finished-water reservoirs will better protect our water supply and enrich the surrounding communities.

DPW is also providing employment opportunities to our residents. We have stepped up outreach to local and minority contractors because it is just, and it is good, for Baltimore. We have also mentored young City residents, some of whom have joined the DPW family as permanent employees.

Fiscal Year 2016 was indeed a year of progress, and I look forward to much more.

Rudolph S. Chow, P.E.
Director

THE MUNICIPAL TRASH CAN DEBUT



It seems so simple. Trash goes into a durable can and is sealed with a tight-fitting lid. That keeps trash from getting out and blowing down the street or into neighbors' yards, and keeps rats and other unwanted pests out.

That reality proved elusive. Lids disappeared or were damaged. Older cans developed leaks. Sometimes it just seemed easier to skip the trash can entirely and just put out a bag of trash and hope it wasn't chewed, clawed, run over, or otherwise left to become a mess before the trash haulers arrived.

Finally, after seeing the positive results of a year-long pilot program in Belair Edison and Greater Mondawmin, Baltimore leaders decided that FY 2016 would be when every residence that had their household trash collected by the City would get a Municipal Trash Can.

- Cans with attached lids, so that damaged or lost lids would no longer be a concern
- Cans with wheels that could be more easily moved when filled with trash
- Cans with radio frequency identification tags embedded in them, so a City inspector could quickly

tell to which address a wayward trash can actually was assigned

- As a safety feature, the trash trucks were outfitted with special-lifting arms to help the crew members move the trash from can to truck with a minimum of strain.

For communities beleaguered by loose trash, a Municipal Trash Can would be one more resource provided by the City to reduce litter and control rats. Proper trash disposal would be as easy as lifting the lid and putting the trash into the can. It would eliminate one more excuse for not using a trash can, and Baltimore would take a step

toward changing behaviors for the better.

After reviewing the pilot program and considering her options for next steps, Mayor Stephanie Rawlings-Blake announced in August 2015 that the Municipal Trash Can program would begin expanding across the City. Later, a vendor was selected, and on March 1, 2016, the Mayor helped deliver the first of more than 170,000 trash cans. The can delivery was substantially completed by the end of June 2016.

No resident had to pay extra for a trash can; the \$8.9 million cost of the program was covered in the City's spending plan.



Valentina Ukwuoma

For Valentina Ukwuoma, Head of DPW's Bureau of Solid Waste, the Municipal Trash Can program culminated years of effort to literally put trash control efforts into the hands of citizens. "People who have not been using cans now have cans," she said. "People who have thrown their household waste into trash receptacles in commercial areas have a better option. Litter is being better controlled, and communities have higher expectations for cleanliness."

In recent years, the bureau has expanded street sweeping to every neighborhood, introduced alley sweeping in selected areas, increased its rat abatement program, and worked with the City's Code Enforcement Unit to crack down on areas with the worst trash dumping problems. But Solid Waste leaders are also reaching into the community, looking to work with partners who share an interest in keeping communities clean.

"We can't clean our way out of our trash problem," said Ms. Ukwuoma. "But by working with people, by changing behaviors, we will be able to have cleaner communities."



CLEANING THE CITY TOGETHER



The Baltimore Clean Corps program builds on the strength that already lies within many of our communities: Its residents.

DPW is tasked with picking up the trash and recycling. We also clean the illegally dumped debris that can make a lot or alley unhealthy, and a neighborhood feel unsafe. Behavior that contributes to littered communities, and leaders in neighborhoods who feel that they are combatting trash and litter alone can be changed through Clean Corps.

Clean Corps encourages neighbors to work together for a cleaner, safer, healthier neighborhood. This program encourages residents to share information and resources with others in the community who are committed to having clean streets and alleys.

To affect change in a community, Clean Corps enlists captains from the area. After participating in training, these Clean Corps Captains receive kits filled with the equipment — trash grabbers, safety vests,

gloves, and paper bags — to support a neighborhood's cleaning efforts. In addition, Clean Corps helps communities engage in cleanups, art projects, and advocacy.

The program was launched during the Mayor's Fall 2015 Cleanup, and is targeting resources in more than 20 priority areas throughout the city.

While DPW is the key Clean Corps funder, the program also partners with the City's Environmental Control Board, and departments of Health and Recreation and Parks and Housing Code Enforcement and the Mayor's Office of Employment Development. In addition, the program works with the nonprofits Baltimore Green Works, Healthy Harbor Initiative, Baltimore Community Foundation, Trash Free Maryland, Blue Water Baltimore, Parks & People, and Baltimore Trash Talk.

Only by working together will all City neighborhoods be clean, safe, and healthy.

THE BALTIMORE CITY CLEAN GUIDE



The Baltimore City Clean Guide was “made by neighbors, for neighbors.” This 24-page booklet provides City residents with information needed to keep neighborhoods clean. It pulls together information about existing City services, and literally puts the information into the hands of our citizens. The information contained in this citywide guide is intended to empower residents to use an array of ideas and resources to keep streets, alleys, and backyards clean and healthy, and to share these tips with their neighbors.

This easy-to-use guide lets citizens know who to call when they need City services, how to effectively use 311 to request cleaning services, combat a rat population, and locate citizen drop-off centers. The guide will be available in Spanish in Fiscal Year 2017. Everyone can feel like an insider when they have a Clean Guide.

DPW’s Bureau of Solid Waste supported efforts to produce this resource, partnering with the Patterson Park Neighborhood Greening Partnership, Baltimore Greenworks, Chesapeake Bay Trust, the Baltimore Community Foundation, the Healthy Harbor Initiative, and the Environmental Control Board.

Cleaning the City works best when it includes the efforts of each and every citizen. The Clean Guide makes those efforts easier.

PROTECTING OUR STORM DRAINS

It may seem like a pretty simple procedure for storm drains to carry water away from City streets. But consider that whatever can be carried along with the rain or the snowmelt, and into the storm drain inlets, will also be deposited in our waterways – streams, harbor, and the Chesapeake Bay.

To help protect our waterways, in the spring of 2016 DPW installed 414 inlet screens in five communities as part of a pilot program. Each installation consists of a screen which is placed at the front of the inlet to help block trash, and a netting inside the inlet to capture any debris which may make it past the screen. Street sweepers clean these roadways weekly and pick up debris that collects in front of the screens. Crews clean the baskets monthly or as needed.

The cost for these installations was \$574,000. The potential benefit to the environment is priceless.

DPW has taken numerous other steps to halt the influx of trash into the drains. Street sweeping picks up hundreds of tons of trash and other harmful pollutants each week. Anti-littering campaigns, storm drain painting, and community pitch-ins, have raised awareness and promoted solutions to the littering problem.



KEEPING THE RESERVOIRS SAFE



The Baltimore Environmental Police work hard to protect the region's water supply.

The Environmental Police are sworn police officers under DPW's jurisdiction. It is their responsibility to patrol and protect the 750 square miles of our water supply region. The force of nine officers also provide assistance to nearby jurisdictions and to Maryland State Police, as needed, just as those police forces assist our officers.

As with any police force, most of what they do is routine patrol. But Environmental Police officers take heroic actions to save lives in and around the water, comfort the injured, and locate the lost.

The City-owned reservoir lands provide a respite from the urban centers with a pastoral environment where people come to paint, picnic, jog, fish, and bike. Thousands of people visit the reservoirs each year, and our officers provide guidance and

information to the public. They also make sure that watershed rules are followed to ensure reservoir lands and infrastructure are not damaged or defaced. They prevent and stop reckless actions which can cause injury or death.

During Fiscal Year 2016, the force conducted itself admirably once again. They generated the following patrol statistics without receiving any complaints from the public concerning the professionalism of any Environmental Police Officer:

- Conducted 1,057 critical infrastructure patrols
- Made 38 arrests
- Issued 357 citations
- Issued 832 warnings
- Responded to 59 motor vehicle crashes

In addition, the Environmental Police developed and implemented geographic information system (GIS) patrol reporting, which is vital in the rugged wooded areas surrounding our reservoirs.

SEWER UPGRADES



In 2002, Baltimore became one of the first major U.S. cities to enter into a holistic wastewater system Consent Decree. This was an agreement to settle a Clean Water Act enforcement action by the U.S. Environmental Protection Agency (EPA) and the Maryland Department of the Environment (MDE). This Consent Decree required a massive amount of work to be done by January 1, 2016. Affordability continues to be a priority, as well as keeping our citizens informed of our progress, as we work to fulfill this mandate.

Among the challenges confronting DPW's engineers working on projects required under the agreement was the discovery of a misaligned pipe at the head of the City's Back River Wastewater Treatment Plant. This condition meant that about half of the massive pipe was unable to drain into the treatment plant, causing sewage to back up for miles. DPW's engineers developed a plan to fix the backup with a series of pumps and holding tanks. This single project is expected to reduce the

volume of sanitary sewer overflows by more than 80 percent. But this solution, known as the Headworks project, would take more time to complete than the original Consent Decree permitted.

The EPA, MDE, and the U.S. Department of Justice agreed with that assessment. On June 1, 2016, following several years of negotiations, state and federal regulators filed a modified Consent Decree that gave the City a better opportunity – albeit with additional requirements – to remake its sewer system, and make Baltimore more environmentally sound.

Under terms of the modified Consent Decree, Baltimore now has until 2021 to complete the fixes it began under the original agreement, including the Headworks project. It also has to increase the capacity of its sewer system in order to meet real-world conditions during a second phase that runs through year 2030.



Additionally, the City will have to inspect and, where necessary, clean every major sewer line at least once every seven years, with “hot spots” inspected and addressed more frequently. Pollution caused by sanitary discharges of unknown origin will also have to be resolved according to a plan approved by EPA and MDE, and public reporting requirements have been added – including an annual forum to discuss Consent Decree progress.

EPA Regional Administrator Shawn M. Garvin called Baltimore’s modified Consent Decree “the best path forward to eliminating sanitary sewer overflows, while also providing greater transparency.” And MDE Secretary Ben Grumbles said the “mandate for clean water and public accountability means less sewage in basements, streets, and waterways and more progress for the Chesapeake Bay.”

Virtually all the work mandated by the Consent Decree must be paid for by the City, which means

by those who pay the sewer charges as part of their DPW water bills. As Fiscal 2016 drew to a close, spending on the Consent Decree was around \$900 million; spending on remaining work on the modified Consent Decree may exceed another \$1.2 billion.

With spending on water projects also expected to reach into the billions, affordability is a huge concern for DPW. Pushing at least some of the work out several years will help keep water and sewer rates from rising any faster than absolutely necessary.

This work, coupled with the new Enhanced Nutrient Removal (ENR) facilities and other wastewater upgrades, represents the biggest environmental improvement in Baltimore in the last century.

CELEBRATING PUBLIC WORKS WEEK



In recognition of National Public Works Week 2016—celebrated May 15-21—American Public Works Association (APWA) President Brian Usher, and APWA Mid-Atlantic Chapter President Matthew F. Villareale, participated in DPW’s Employee of the Year ceremony. The 2016 National Public Works Week theme was “Public Works, Always There.”

During this week, DPW joins Public Works agencies across North America to energize and educate the public about the importance of public works to their daily lives: planning, building, managing, and operating the heart of

our local communities and improving the quality of life.

A highlight of the DPW’s Public Works week activities is the Employee of the Year Ceremony, which recognizes the best of the agency’s workforce. DPW established the Employee of the Month program in May 2011 to recognize and encourage high quality work and service to Baltimore City residents and customers by Public Works employees.



Phillip Chery

Phillip Chery is DPW’s 2016 Employee of the Year. He is a program compliance officer, who works to ensure that employees with disabilities have adequate accommodations to perform their job duties as prescribed by the Americans with Disabilities Act. Mr. Chery also serves as a workplace violence investigator for DPW.

Mr. Chery was the Loaned Executive for the 2015 Combined Charities Campaign (CCC). In this role, he made sure that each of the CCC coordinators met the agency’s contribution targets. And Mr. Chery has also been instrumental in coordinating DPW’s YouthWorks program, which places City youth in summer jobs at Public Works. “When I see those kids, I see myself in them,” he remarked.

“Mr. Chery is an exceptional DPW employee whose work and dedication is well-known and respected throughout the agency,” said DPW Director Rudolph S. Chow, P.E. “As an organization that operates 24 hours, seven days a week, DPW’s success is dependent on workers like Mr. Chery who are driven to serve the citizens of Baltimore.”

WATER MENTOR PROGRAM: BUILDING DPW'S WORKFORCE



DPW Director Rudy S. Chow, P.E., recognizes that when Public Works employees retire or leave the agency, they take important institutional knowledge with them. And often there are not enough young employees to learn the ropes from those veteran workers.

After attending a meeting with other water industry executives, Mr. Chow discussed this challenge over dinner. By the time dinner ended, he had decided to launch a mentoring program to introduce young Baltimore City residents to careers in the water industry.



The Baltimore City Water Industry Youth Mentoring Program came into being in January 2015. To maximize its success, DPW partnered with the Chesapeake Water Environment Association and the Mayor's Office of Employment Development.



The mentoring program provides basic job readiness training, plus:

- Water industry career exploration
- Worksite tours and job shadowing experiences
- Connection with a career coach/mentor
- A summer job at DPW
- Opportunities to interview for full-time, entry-level positions with DPW or private companies.

SUSTAINABILITY ACTIVITIES



The DPW Office of Sustainable Energy (OSE) consistently works to lower energy usage and costs. That benefits City government, our citizens, and many nonprofits located in Baltimore. Avoiding costly energy use means more resources can be devoted to goods and services for our citizens.

In addition to leveraging energy grants and funding, other management tools used by OSE include collaborative energy purchasing, as well as auditing and monitoring City utility bills. Baltimore City government participates in the utility demand response program: when the City cuts back its draw from the

electric grid during the hottest days of the year, we earn credits that equate to a savings on utility bills.

Energy performance contracts (EPCs) allow savings from reduced energy consumption to repay the cost of installing energy conservation measures. EPCs since 2006 have resulted in a net savings of more than \$35 million for the City.

As OSE continues to work to ensure the highest and best use of City energy, it also creates opportunities to reduce our carbon footprint and generate renewable energy for increased reliability and resilience. The City recently

took delivery of solar energy, using virtual net metering, for a \$14 million in savings over the life of the project. OSE is also on track to offset the carbon emissions of 25 percent of the City's fleet - the equivalent to planting 158,000 trees.

At the Back River Wastewater Treatment Plant a two megawatt co-generation plant uses methane gas, produced in the sewage treatment process, to provide power and heat to the facility. There is also a one megawatt solar field in use at Back River. The City will also be using a Maryland Department of the Environment grant to double the combined renewable heat and power at Back River.

BALTIMETER MOVES FORWARD



Baltimore needed new water metering, and a new billing system. The concerns expressed by frustrated customers, and highlighted in the media, made that clear.

During Fiscal Year 2016, DPW broke ground for upgrading the City's water metering and billing system, commonly known as BaltiMeter. DPW is nearing the completion of a two-year effort to replace over 400,000 meters in Baltimore City and Baltimore County with new metering technology that will wirelessly relay water usage data.

The installation of the new automated meters has paved the way for major improvements to the water billing system. Once BaltiMeter Billing is fully operational in October 2016, City water bills will have a new look and arrive on a monthly basis, instead of just four times per year. Everyone in Baltimore City

who receives a water and sewer bill will see these changes; customers in Baltimore County will be switched to the new system in 2017.

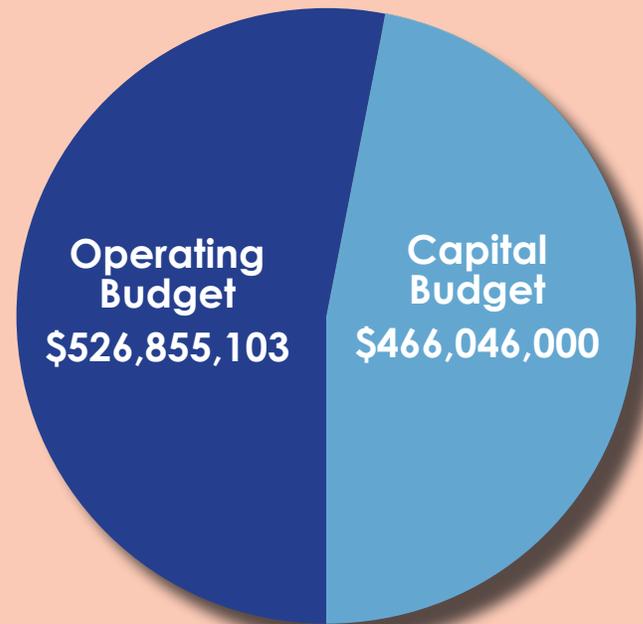
The new, easy-to-read monthly bills will make it simpler to manage household budgets, discover unusual water usage or leaks sooner, and allow customers to monitor how much water their household consumes. Customers will be able to adjust their usage accordingly and be able to spot and correct any potential water loss before it becomes a financial loss.

Baltimore City customers will be able to access their daily water consumption on their PCs, tablets, or smartphones. Customers will also have access to an online, password-protected web portal that will show daily water usage and other account information. Bills will be easier to read, easier to understand, and easier to pay.

FINANCIAL SU

DPW FISCAL YEAR BUDGET 2016

Cleaning the City is a very expensive business. In Fiscal Year 2016 we spent more than \$21 million to clean the public rights-of-way, doubled our outlay on cleaning and boarding abandoned properties, topped \$25 million on waste removal and recycling, and exceeded \$20 million on waste re-use and disposal. These expenses cover everything from twice-weekly pickup of trash and recyclables, to rat abatement, street sweeping, and graffiti removal. To keep our environment clean, and to protect the health of the public, we also spent more than \$123 million on wastewater management. It's expensive, but it's worth it.



- Administration - DPW - Solid Waste
- Public Right-of-Way Cleaning
- Vacant/ Abandoned Property Cleaning
- Waste Removal and Recycling
- Water Re-Use and Disposal
- Administration- DPW- Water & Wastewater
- Water Management
- Water and Wastewater Consumer Services
- Wastewater Management
- Surface Water Management
- Engineering and Construction Manangement
- Administration DPW
- Office of Sustainable Energy

STAINABILITY

Operating Budget	
Administration - DPW - Solid Waste	1,409,939
Public Right-of-Way Cleaning	21,622,107
Vacant/Abandoned Property Cleaning and Boarding	8,319,141
Waste Removal and Recycling	25,167,904
Waste Re-Use and Disposal	20,305,715
Administration - DPW - Water & Wastewater	39,241,950
Water Management	82,311,419
Water and Wastewater Consumer Services	21,356,236
Wastewater Management	123,568,957
Surface Water Management	17,824,861
Engineering and Construction Management - Water and Wastewater	152,012,158
Administration - DPW	2,306,448
Office of Sustainable Energy	11,408,268
Total Operating Budget	\$526,855,103
Capital Budget	
Solid Waste	2,500,000
Water	311,419,000
Wastewater	145,657,000
Stormwater	6,470,000
Total Capital Budget	\$466,046,000
TOTAL AGENCY BUDGET	
\$992,901,103	

DPW IN THE COMMUNITY



DPW's work touches the life of every Baltimore City resident.

We build relationships with community organizations, institutions, and schools. Our team of community liaisons and public information officers work with neighborhoods to keep them abreast of agency initiatives, such as the new Municipal Trash Can Program, community clean-ups, stormwater credits, infrastructure renewal projects, and BaltiMeter. When our staff is in the community, we hear directly from our citizens.

Throughout FY2016, DPW staff attended more than 400 community meetings to discuss major agency initiatives.

In addition, we worked to encourage community engagement, especially on our efforts to keep the City neighborhoods clean. DPW is the key sponsor and organizer of the Mayor's Fall and Spring Cleanups. More than 5,700 citizen volunteers representing 256 neighborhoods across Baltimore City participated in the Mayor's 2016 Spring Cleanup.





Education is a key part of the agency's community involvement. DPW's Community Liaisons held a special kick-off program to mark the start of the 2015-2016 school year at the Robert W. Coleman Elementary School, where they reached scores of students. During the first semester of the school year the liaisons completed 37 presentations, reaching 1,506 students throughout the City. These encompassed a myriad of topics including recycling, rat prevention, proper trash disposal, and how our water system operates.

Other outreach efforts this past year included welcoming numerous foreign dignitaries, a public presentation at Back River to the City and County Historical Societies on the history of our wastewater system, and numerous facility tours for schools, visitors and the general public.



STRIVING FOR EXCELLENCE



During FY 2016, DPW continued to be recognized as one of the premier Public Works Departments in the country. We are proud of our progress, and pleased that our industry colleagues are noting our contributions. Throughout FY 2016, DPW received special recognitions honoring our engineers and the projects that they lead; outstanding water quality; and our contribution to making Baltimore a safer city.

UTILITY MANAGER OF THE YEAR (LARGE UTILITY)

Rudolph S. Chow, P.E., Director
Chesapeake Water Environment Association

2016 YOUNG ENGINEER OF THE YEAR

Nathaniel Krause, Engineer
Maryland Section of the American
Society of Civil Engineers

DRINKING WATER TASTE-TEST WINNER

Montebello Filtration Plants
Chesapeake Section of the American Water Works Association

TOP 10 FRIENDLIEST CITIES FOR ELECTRIC VEHICLES

The Smart Grid Consumer Collaborative



INNOVATIVE EXCELLENCE IN ENGINEERING DESIGN

Rehabilitation of the Southwest Diversion Pressure/Gravity Sewer, Phase III
Rehabilitation of the Towson Finished Water Reservoir
Rehabilitation of Montebello Plant 2 Finished Water Reservoir

American Council of Engineering Companies
 (ACEC), Maryland Chapter

BALTIMORE CITY RANKED NUMBER THREE IN PLUG-IN VEHICLE READINESS

Electricity Journal

**CITY OF BALTIMORE'S FIRE PROTECTION CAPABILITIES WERE RATED
AMONG THE BEST IN THE NATION BY ISO-VERISK**



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