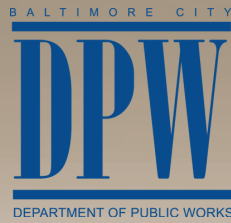




CATHERINE E. PUGH  
MAYOR



RUDOLPH S. CHOW P.E.  
DIRECTOR

# BALTIMORE CITY DEPARTMENT OF PUBLIC WORKS

# ANNUAL REPORT

# FY 2017

[publicworks.baltimorecity.gov](http://publicworks.baltimorecity.gov)





# 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

In my first year as Baltimore's mayor, I have been impressed by the dedication and innovation displayed by the employees of the Department of Public Works (DPW). Whether they are collecting trash and recycling in the rain, or performing emergency water main work in the heat of summer, DPW crews are up to the task. I've also seen DPW transform its business practices, even during my first few months in office, to be more responsive to the needs of our citizens and the challenges that we face as a city.

As you will read in the following pages of this Fiscal Year 2017 Annual Report, DPW has been hard at work serving the citizens of Baltimore City. DPW has reached out to help customers learn how to check their hourly water consumption. They have provided energy assistance grants that helped small businesses start or grow. DPW has expanded options for small commercial refuse haulers to dispose

of their loads, and were hard at work strengthening our water and sewer infrastructure. City residents also saw a citywide reduction in rat complaints, thanks to the municipal trash cans that were distributed to almost 200,000 households.

The work of DPW is never done, but I find it rewarding to see how the Department's dedicated workforce continues to rise to new challenges. I congratulate DPW on another successful year, and join my fellow Baltimore citizens in knowing that there is more great work to come!

Catherine E. Pugh  
Mayor



# DIRECTOR'S MESSAGE

We accomplished a lot during Fiscal Year 2017! Many of our ground-breaking accomplishments have set the Baltimore City Department of Public Works (DPW) on the path to becoming a regionally—and nationally—recognized leader.

We've found ways to do things better. Immediately after installing about 200,000 new water meters in the City, we rolled out a state-of-the-art water billing system. And we changed one of our core functions, trash collection, implementing a quadrant-based system to better clean and care for City neighborhoods. Also, we continued to roll out ambitious sewer and water construction projects. One project uses an alternative delivery model aimed at bringing contracts in on time and under budget.

DPW is providing growth opportunities to local minority and women-owned businesses through our Small Business Development Program.

Partnering with other City agencies, DPW has helped to introduce Baltimore City residents to careers in stormwater management and green infrastructure.

I've even challenged the Office of Sustainable Energy to make the massive Back River Wastewater Treatment Plant energy neutral, meaning it would generate as much energy as it consumes.

None of this is easy, but I believe in thinking big. I hope you get a sense in the pages that follow why I believe these are exciting times for DPW and for Baltimore!

Rudolph S. Chow, P.E.  
Director



# PUBLIC WORKS WEEK



During National Public Works Week (May 21-27) DPW honored the hard work and contributions of its employees with its annual Employee of the Year Ceremony.

At this May 25 ceremony, Alycia Jackson Wood, Administrative Analyst I in the Bureau of Water and Wastewater, was selected as DPW's 2016-2017 Employee of the Year. In its sixth year, this annual event recognizes the contributions of DPW workers to the City of Baltimore and to the metropolitan region.

Ms. Jackson Wood's contributions came as the agency was upgrading its water billing system, a critical time for DPW. She stepped in to manage customer requests when one of the Operations Officers in the Customer Support and Services Division was out due to illness.

She took it upon herself to learn the water billing system. Notably, she managed the returned mail process for the billing division, creating a strategy to reduce and eliminate unnecessary extra mailings.

Joining DPW for the Employee of the Year ceremony were American Public Works Association President William (Bo) Mills Jr., PWLF, and Kenneth M. Eyre, President, APWA Mid-Atlantic Chapter.

Since 1960, APWA has sponsored National Public Works Week across North America. Its 29,000 members in the United States and Canada use this week to energize and educate the public on the importance of public works to their daily lives: planning, building, managing and operating at the heart of their local communities to improve the everyday quality of life.



# The Move to Monthly Billing

## BALTIMORE CITY OCTOBER 2016



publicworks.baltimorecity.gov



Baltimore's water billing system, unchanged for decades, stepped into the modern era on Oct. 11, 2016, when DPW switched on BaltiMeter Billing.

The new billing system followed a citywide water meter replacement program called BaltiMeter. This dramatic upgrade provided new, wireless meters that deliver hourly water usage updates. These new meters and an automated data collection system provide a more efficient, reliable, and accurate service for Baltimore City water customers.

DPW Director Rudolph S. Chow, P.E., knew that customers also needed a state-of-the-art billing service that would deliver a top-quality customer experience long into the future.

The first change customers noticed last fall was the monthly arrival of their water bills. The monthly billing system eliminated the "minimum model" that made all customers pay a minimum amount, regardless of how much (or little!) water they used.

Now Baltimore City water customers pay only for the water and sewer service they actually use.

Plus, the monthly bills are easier for customers to read and understand. Information is clearly displayed, showing how much water customers use and costs. Monthly bills also show charges for account management and infrastructure services. While these costs had been incorporated into the old quarterly bills, customers did not have a clear sense of how their dollars were being spent.

An online portal allows citizens to see how much water they consume each hour. With this information, customers can check unusual consumption which can indicate a leak. With the switch to the new bills came a renewed focus on customer service. Future improvements will include electronic billing. Already Baltimore is unique for the size and scope of the changes it has implemented, and the number of customers we have reached with these upgrades.



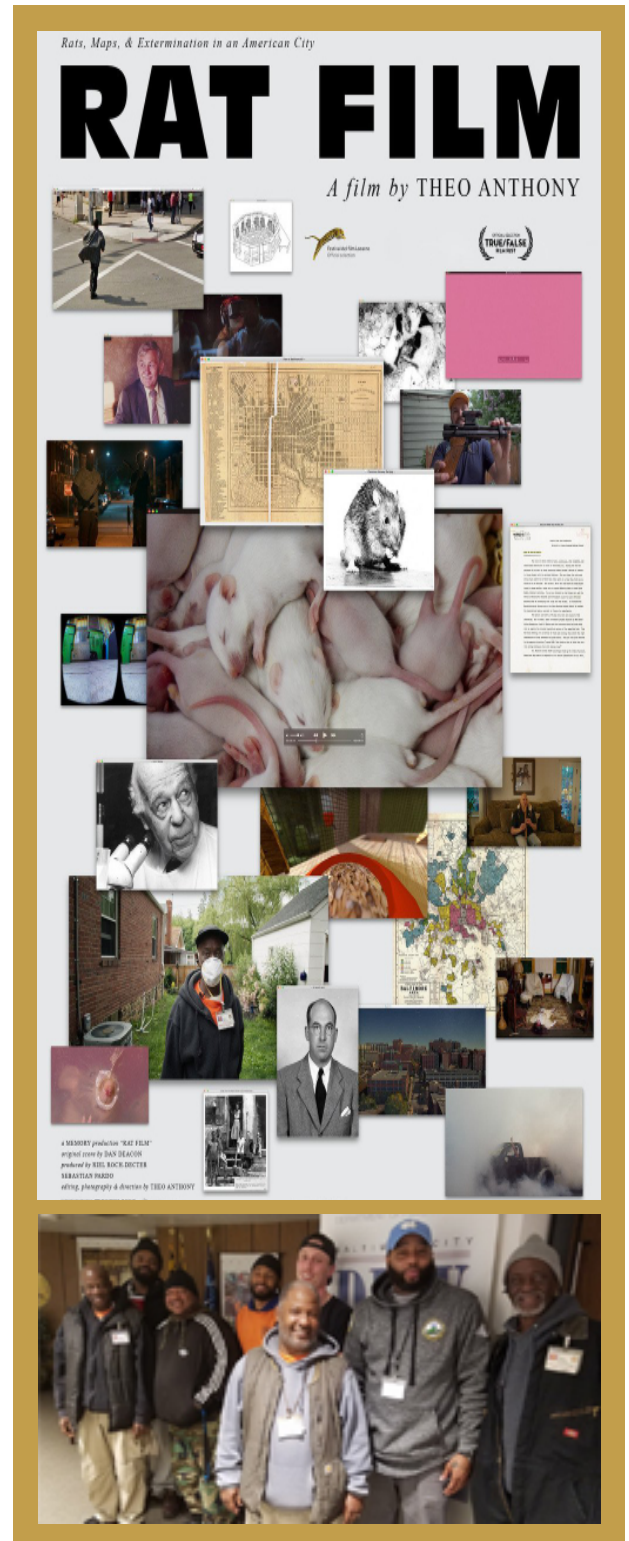
# RAT RUBOUT CREW ON THE SILVER SCREEN

“**Rat Film**” is a documentary movie that explores rats, people, race, housing policy, and the streets and alleys of Baltimore.

It had its local debut in May at the Maryland Film Festival, playing to packed houses at the newly refurbished Parkway Theater. The unlikely star of the movie is Harold Edmond, a senior member of the Department of Public Works’ Rat Rubout crew.

In the movie he pleasantly interacts with Baltimore residents as he goes about his job, dispensing both rat poison and life lessons. “It ain’t never been a rat problem in Baltimore,” he says early in the movie, referring to the unsanitary (or sanitary) conditions that promote (or discourage) rat populations. “Always been a people problem.”

Theo Anthony, the director of “Rat Film” and also a Baltimore native, spent long days with numerous members of the Rat Rubout crew, and his respect for them and for the work they do is obvious on screen. Anthony arranged an after-work screening party for the Rat Rubout workers, as well as members of DPW’s leadership team, at headquarters in the Abel Wolman Building. The film maker called the screening and the discussion that followed “something that I will never forget.”







# OFFICE OF SUSTAINABLE ENERGY

## GRANTS AND LOANS

The primary job of DPW's Office of Sustainable Energy (OSE) is leading and managing the City of Baltimore's energy efficiency and energy production projects, buying electricity in the wholesale market and locking in fuel purchase contracts at best rates. But OSE is also using the Baltimore Energy Initiative Loan Program to help small businesses and non-profits close on deals to create new or expanded projects.

Recent deals include about \$4 million in low-interest loans and grants which were leveraged to create more than \$40 million in private investment in Baltimore. Recipients of the grants and loans include the Open Works maker space in Greenmount West, the Handlebar Café in Fells Point, and the MCVET veterans assistance program in Jonestown.

Not only do these grants and loans help the recipients reduce their energy and operating costs (allowing them to divert more money to fulfilling their mission), they frequently close the gap left by other funding sources.

Without the money these projects might not have come together. With energy assistance loans providing the "gap funding," DPW has developed another key economic development driver.

When Banner Neighborhoods, a community non-profit serving the residents of East and Southeast Baltimore, was looking to buy its building, "the energy loan we received actually is what put us over the top," said former executive director Jolyn Rademacher Tracy.

The energy retrofits made on the Banner Neighborhoods building with the OSE funding reduces the nonprofit's fixed costs, allowing it to spend more on its program needs.

The Office of Sustainable Energy also partners with other City agencies and programs, including Healthy Neighborhoods and The Reinvestment Fund, to provide energy efficiency services to schools, nonprofits, churches, and community development centers.



# STORMWATER FEES IN ACTION

Baltimore City has a brand-new stormwater project in West Baltimore's Harlem Park neighborhood. Built by DPW contractors, the stormwater bio-retention facility replaces what was once a hard (impermeable) surface that added to the pollution as runoff made its way to the City's streams and Harbor.

Today, it has been transformed into a green space that will be planted with grass and native flowers. The facility includes a series of filters made of rock and soil that help clean rainwater runoff as it moves from streets and lots to the existing stormwater system.

DPW utilizes revenue from the City's stormwater fee, which appears on the monthly water bills, to build stormwater bio-retention facilities, and to help fund the Civic Works' Stormwater Technician Training Program. This program, in partnership with the Mayor's Office of Employment Development, equips men and women from Baltimore with detailed technical training for jobs installing and maintaining stormwater projects.

Additional stormwater remediation projects are being built on lots and streets around Baltimore as part of the work to meet the terms of the City's federal stormwater permit.





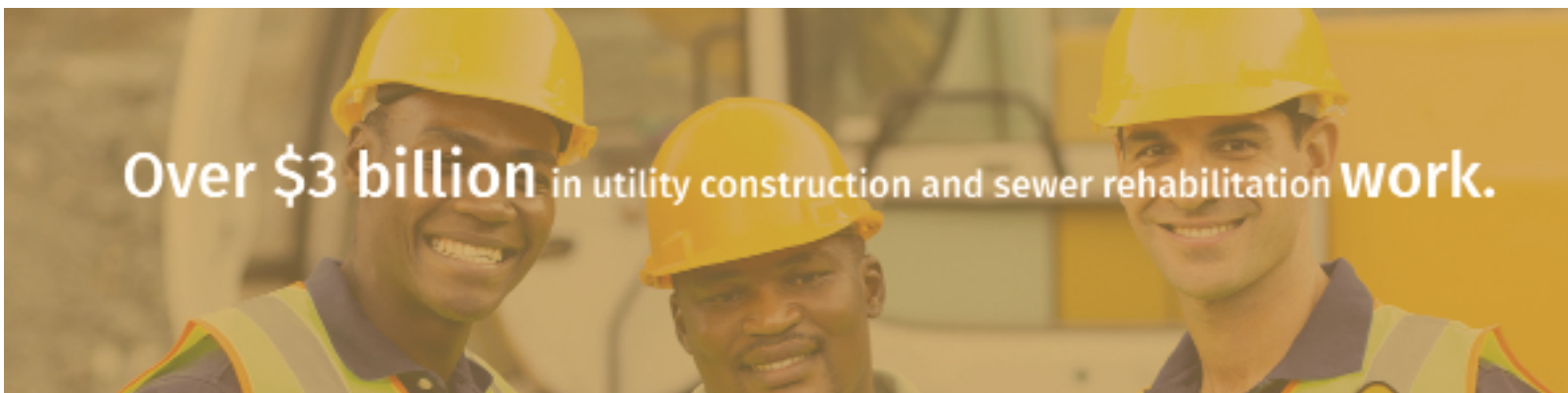
## HELPING SMALL BUSINESSES TO GROW

In February, the first participants to complete DPW's new Small Business Development Program gathered in City Hall with Mayor Catherine E. Pugh to celebrate their accomplishment. Impressed by the promise held by the small business owners who had completed the training, Mayor Pugh decided on the spot to challenge DPW to double the size of the program in Fiscal Year 2018.

The 10-week course is designed to make sure minority/women/and disadvantaged-owned business enterprises (MWDDBE) are contract-ready for more than \$3 billion in anticipated utility construction work, including Consent Decree sewer rehabilitation and replacement, and capital improvement projects for drinking water, stormwater, and wastewater.

Part of DPW's mission is to support economic and business development in Baltimore City and throughout the region, and the Small Business Development Training Program is but one way we're doing this.

Between September and November of 2016, 27 people representing 22 companies completed small business training. They learned about safety, contract administration, scheduling, estimating and bidding, conflict resolution, accounting and finance, and construction best practices. As FY 2017 drew to a close, recruitment was under way for the program's next class of small businesses.



Over \$3 billion in utility construction and sewer rehabilitation work.



# CLEANING BALTIMORE

To better serve City neighborhoods, DPW's Bureau of Solid Waste reorganized its management structure to align with the geography of the city – Northwest, Northeast, Southwest and Southeast.

The goal of this reorganization is to improve accountability and efficiency, and better support City neighborhoods. The new system allows quadrant managers and staff to get to know neighborhoods and the range of challenges within a community.

The Bureau's routine services like trash and recycling pickup and other services (vacant property boarding, rat abatement) are now included in each quadrant. Each Quadrant Division Chief and their staff are responsible for delivering a wide range of services to the assigned quadrant.

DPW's Bureau of Solid Waste provides curbside trash and recycling pickup including bulk items and seasonal waste for 640,000 residents in nearly 210,000 households citywide.





Fighting illegal dumping is a priority, and key to maintaining clean, stable neighborhoods in Baltimore. DPW has taken steps to make it easier for small commercial haulers to properly dispose of trash in order to improve their efficiency, reduce instances of illegal dumping, and help keep our City cleaner and healthier.

The Northwest Transfer Station, where many of the City's trash trucks dispose of loads rather than heading miles out of their way to the Wheelabrator incinerator, has started accepting truckloads of refuse from small haulers. This gives commercial haulers a convenient and efficient way to dispose of their loads without driving to the Quarantine Road Landfill, located at the southern tip of the City and the only other facility where commercial haulers can legally dispose of bulk trash.

Small haulers visiting the Northwest Transfer Station are also encouraged to apply for a permit for handling small loads of trash.

Baltimore's small commercial waste haulers are responding enthusiastically to the opportunity to dispose of refuse at the Northwest Transfer Station. Results from the first two months of operation show that, on average, more than 41 tons of waste is making its way each day to the facility, located at 5030 Reisterstown Road. Area residents, sometimes more than 100 of them in a day, continue to use Northwest Transfer Station to dispose of their own bulk trash. The facility is free for residents, and \$20 per load for small haulers with a valid permit. Residents may use any of the Citizens Convenience Centers throughout the City without charge to dispose of their own bulk trash.



Emmanuel Grant, a mechanical street sweeper driver, has celebrated 50 years as a DPW employee. He has spent the last 47 years driving a mechanical street sweeper and is DPW's longest-serving commercially licensed driver.

Mr. Grant says that he is proud that his job makes a positive impact on the environment. He doesn't drive the street sweeper just to rid city streets of litter, but "to save the Bay."

Topping off his five decades with DPW, Mr. Grant was among the six employees who were nominated for the 2016-2017 DPW Employee of the Year.

During his time with DPW, Mr. Grant has trained and mentored scores of other street sweepers, and even dispenses hard-earned wisdom to supervisors. His motto is "It's not personal, it's your job!"

In addition, Mr. Grant is a faithful supporter of DPW activities and events, especially those involving Baltimore's children. He shows off the sweeper at DPW Big Truck Day each May, and dresses as Santa Claus for the annual Mitten Tree Ceremony each December.



# PROTECTING OUR DRINKING WATER

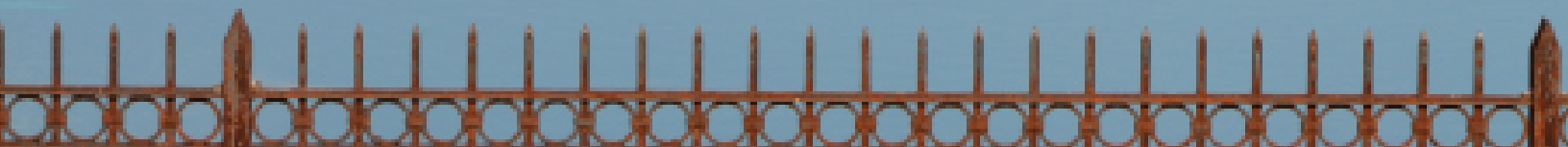
**DPW** has begun work to cover a considerable portion of the iconic Druid Lake reservoir and install two huge underground water tanks. The \$140 million project will be completed in March of 2022. Druid Lake holds filtered and treated water that is ready to be sent to consumers. To protect this drinking water supply from potential contamination, DPW is constructing two covered tanks to hold more than 54 million gallons of drinking water on the western end of the lake.

Federal regulations require that finished drinking water must be either covered or receive additional treatment.

Covered storage is preferred as a long-term solution for maintaining water quality since it physically protects the water and requires fewer chemicals to keep it clean.

The Druid Lake covered reservoir project was designed not only to support the City's water supply but to enhance the public's enjoyment of Druid Hill Park. Once the tank installation is finished, the Baltimore City Department of Recreation and Parks plans to build a new public gathering place on the property.

**DPW** has recently completed other covered r  
II and Pikesville. Work is proceeding on Guilford  
under cor





*Additional Druid Lake post-construction improvements will include:*

A new curvilinear shoreline to mimic the current shoreline.

New site lighting and a new, wider promenade.

An open, welcoming green space, creating an additional 14 acres of usable park space.

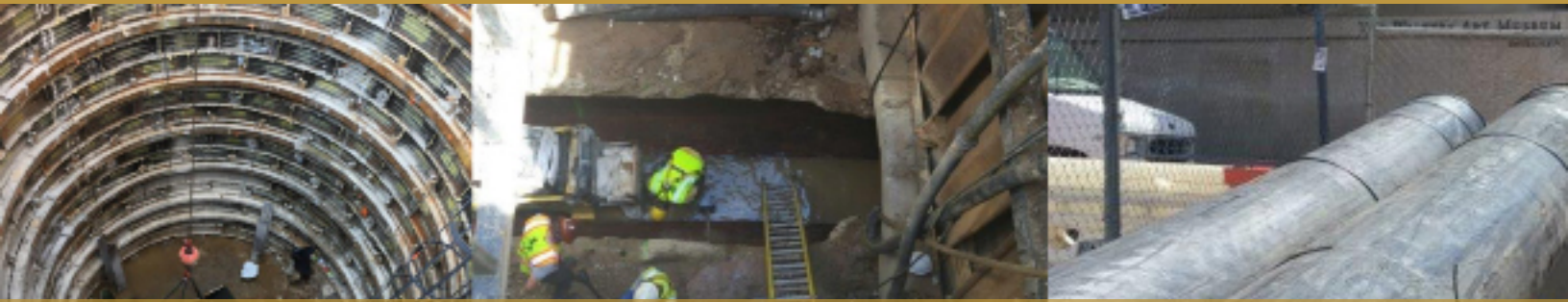
New pedestrian and cycling path around the lake.

Landscaping to complement the park and manage stormwater.

Maintenance of lake level and water aeration system to assure water quality.

Reservoir projects including Towson, Montebello II Reservoir, and Lake Ashburton will soon also be under construction.





# INFRASTRUCTURE PROTECTION

## Cathedral Street Sewer Repairs

The soft spot in the road one morning last October on Cathedral Street, near the intersection of Monument Street, wasn't much to see. Yet DPW inspectors knew that this was the third time a spot on the same huge sewer line had collapsed within a stretch of about 1.2 miles.

Crews would find themselves working all winter and spring before reopening the damaged section of Cathedral Street. Fittingly, the road opened just before the annual Flower Mart event in Mount Vernon, a true Baltimore rite of spring.

Unlike massive collapses on West Mulberry Street on July 4, 2016, or on West Centre Street that April, the scope of the problems under Cathedral Street were not obvious. Since sewer mains are installed below other buried infrastructure, just getting to the failed main was a construction challenge that included detouring traffic, pumping sewage through bypass lines at street level, and rerouting other utilities (notably, water mains) during the construction period.

Rather than just fix each hole and move on, DPW insisted on cleaning, inspecting, and relining the pipe, which is more than 6.5 feet in diameter.

When the contractors finished, about 1.2 miles of sewer main had been renewed. For this fix, crews built a new pipe inside of the old pipe.

All three road collapses – Centre, Mulberry, and Cathedral – were caused by separate failures along the same sewer main. These infrastructure crises yielded opportunity. From end to end the project cost more than \$20 million, and is designed to provide stable sewer service long into the future. Other utilities, including water and gas, were also rebuilt in the areas of the street collapses.





## Proactive Repairs in Southwest Baltimore

The best way to fix a problem is to prevent the problem. In May, by utilizing its Asset Management strategy, DPW was able to avoid what could have been catastrophic trouble in a section of a crucial water transmission main.

“I created DPW’s Office of Asset Management precisely to collect and utilize data that can help us stop problems before they happen,” said DPW Director Rudolph S. Chow, P.E. “Our team, including partners from neighboring counties and private industry, moved quickly to prevent what could have been a disastrous and very expensive water main break.”

The 54-inch Southwest Transmission Main (SWTM) is the primary conduit for water to that portion of the City, Baltimore County, and portions of Howard County and Anne Arundel County. The concrete pipe, installed in 1970, uses tightly wound wires running through its circumference to lend strength. If too many of these wires snap, the pipe could suddenly rupture.

DPW conducted inspections of the pipe beginning in 2006, and a monitoring system was installed in August 2007 that notified engineers anytime a wire snapped. Beginning in late May, the monitoring system reported an alarming 15 wire breaks over a two-week period in one 16-foot-long segment of the pipe. The affected section of the pipe is under Desoto Road, where it runs under the Interstate 95 South exit ramp towards Caton Avenue.

Engineers determined that the best option for repairing the pipe segment would be to utilize high-strength, post-tensioning tendon cables to restore its full strength. This process involved excavating around the distressed section of pipe and installing cables that are anchored directly around the pipe’s circumference.

After consulting with the City’s partners in Baltimore and Howard counties, contractors went to work on June 5 excavating the pipe and installing the post-tensioning tendon cables. They completed the installation, backfilled the excavation and put the water main back in service – without any customers losing water.



# DPW IN THE COMMUNITY

To educate Baltimore City water customers throughout Fiscal Year 2017 staff from DPW's Division of Communications and Community Affairs contacted nearly every active neighborhood association in the City to explain the new billing procedures and to answer questions from residents.

Following the October 2016 launch of the new billing system, DPW organized monthly training sessions to help customers learn to use the new self-service water billing portal. At branches of the Enoch Pratt Free Library throughout the City, DPW conducted personal trainings to help customers better understand how to use the online Customer Self Service water bill information portal. DPW's web-based portal allows citizens to view their water usage in daily or hourly increments. Knowing how to fully utilize the web portal enables customers to make better decisions when it comes to conserving water, and saving money.





In addition, DPW executed a citywide advertising campaign as well as print, broadcast and social media outreach to inform customers about the new billing system. Customers also called, walked in, and emailed to learn more about the charges on their bills. DPW's Division of Customer Support and Services added and retrained staff.

The Communications and Community Affairs team works to keep the public informed about DPW's initiatives, projects, and programs. The staff attends community meetings, operates the DPW website and social media pages, and oversees media relations.





# BY THE NUMBERS

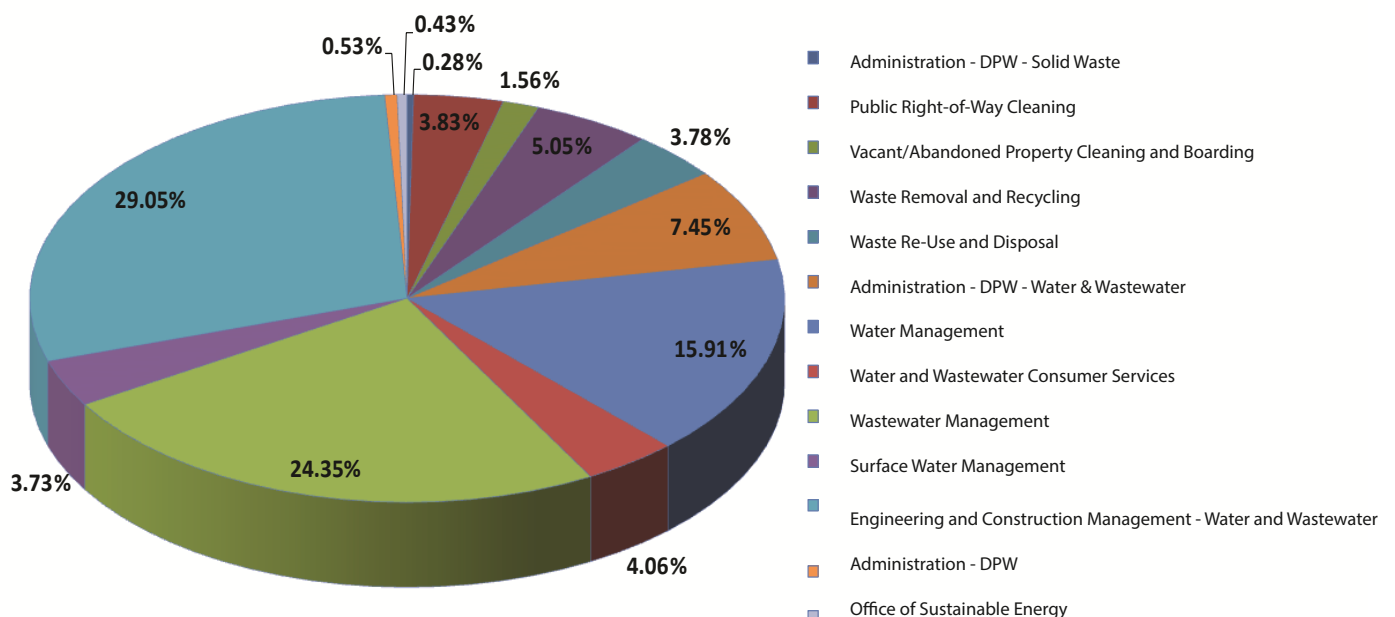
The Fiscal Year 2017 operating budget reflects DPW's commitment to protecting the environment. The largest portion of DPW's \$532 million operating budget went toward improving the City's aging sewer system: \$154.6 million for engineering/construction management, and \$129.6 million for wastewater management.

Many of these improvements fall under the terms of the Sanitary Sewer Consent Decree agreement negotiated with federal and state regulators.

This legal agreement requires DPW to improve the City's sewer system. Nearly all of the sewer system improvements required by the Consent Decree must be paid for with the sewer charges that City water customers pay.

DPW's water and wastewater budget is entirely supported by the ratepayers, and receives no support from general City funds. DPW continues to work to balance affordability with the costs of water and wastewater projects.

## Fiscal Year 2017 - Operating Budget by Services (%)





## Operating Budget

Administration - DPW - Solid Waste	1,476,356	0.28%
Public Right-of-Way Cleaning	20,379,772	3.83%
Vacant/Abandoned Property Cleaning and Boarding	8,325,900	1.56%
Waste Removal and Recycling	26,886,421	5.05%
Waste Re-Use and Disposal	20,119,005	3.78%
Administration - DPW - Water & Wastewater	39,650,241	7.45%
Water Management	84,659,542	15.91%
Water and Wastewater Consumer Services	21,609,626	4.06%
Wastewater Management	129,579,836	24.35%
Surface Water Management	19,849,530	3.73%
Engineering and Construction Management - Water and Wastewater	154,572,108	29.05%
Administration - DPW	2,803,833	0.53%
Office of Sustainable Energy	2,262,163	0.43%
<b>Operating Budget Total</b>	<b>532,174,333</b>	<b>100%</b>

## Capital Budget

Solid Waste	1,524,000	0.56%
Water	58,698,000	21.72%
Wastewater	193,589,000	71.63%
Stormwater	16,452,000	6.09%
<b>Capital Budget Total</b>	<b>270,263,000</b>	<b>100%</b>

# AGENCY TOTAL BUDGET

# 802,437,333



**2017 Project of the Year**

DPW Municipal Trash Can Program  
American Public Works Association  
Mid-Atlantic Chapter

**Civil Engineer of the Year**

Rudolph S. Chow, P.E., DPW Director  
American Society of Civil Engineers (ASCE),  
Maryland Section

**Utility Manager of the Year  
(Large Utility)**

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

**Young Engineer of the Year**

Nathaniel Krause  
Engineering Society of Baltimore  
(Mr. Krause is pictured in the photo on  
page 23, receiving a proclamation from  
Mayor Pugh.)

**Circle of Excellence Award**

Outstanding Utility Agency  
Chesapeake Water Environment Association

**Utility of the Future Today**

A joint recognition program of public and  
private wastewater utilities

**Top Project Winner for Enhanced  
Nutrient Removal**

Back River Wastewater Treatment Plant  
Water and Wastes Digest and the Industrial  
Water and Waste Digest magazines

**Drinking Water Taste-Test Winner**

Ashburton Water Filtration Plant  
Chesapeake Section of the American Water  
Works Association



# AWARDS



Public Works Hero Award  
 Alfonso Jenkins and Greg Schmidt  
 American Public Works Association  
 Mid-Atlantic Chapter

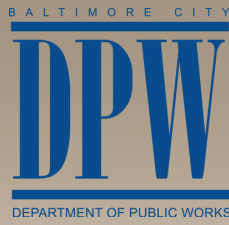
(This is for a heroic life-saving act at DPW's Patapsco Wastewater Treatment Plant, where all three gentlemen work. The co-worker survived thanks in part to the efforts of these two gentlemen.)

Arthur Sidney Bedell Award  
 Rudolph S. Chow, P.E., DPW Director  
 Water Environment Federation

Carl J. Lauter Award  
 Bureau of Water and Wastewater Acting Head  
 James Price, American Water Works Association



CATHERINE E. PUGH  
MAYOR



RUDOLPH S. CHOW P.E.  
DIRECTOR

# BALTIMORE CITY DEPARTMENT OF PUBLIC WORKS

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