

PREPARING FOR TOMORROW

MWS 2023 Annual Report



one water. one environment. one community.



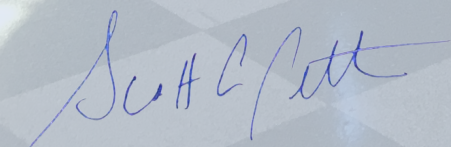
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Entering this year, Metro Water Services reevaluated our 2016 Strategic Plan, revisiting our values and realigning our priorities. At the center of this Plan, our mission remains the same: to supply, treat, and manage our resources in a sustainable manner for the benefit of all who live, work, and play in our community. However, as Nashville continues to grow, our approach to this mission must evolve to meet the needs of our growing community.

As a utility that provides essential services to our community, we must ensure that we never become stagnant. Whether analyzing for emerging contaminants at our research and analytical laboratory, implementing new technologies at our facilities, or improving processes through capital projects, it is our responsibility to constantly adapt to changes in regulations, workforce and the community while properly aligning resources and actions.

As we enter 2024, we will maintain our enthusiasm for the mission, continue to seek new challenges and set extraordinary goals. I encourage you stay informed of our programs and monitor our progress by liking and following **@NashvilleMWS** on Facebook, Instagram, Twitter, and LinkedIn.

2023 has been a year of **Preparing for Tomorrow** and we are excited to share that with you in this year's Annual Report.



Scott A. Potter, Director





1833

The city's Water Works was inaugurated, consisting of a reservoir and a steam driven pumping station

1889

8th Avenue Reservoir is completed at a cost of \$364,525

1889

The historic George Ryer Pumping Station is constructed

1929

Robert L. Lawrence Filtration Plant is completed

1958

Central Water Reclamation Facility is completed

1961

Dry Creek Reclamation Facility is completed

1963

Metropolitan Government of Nashville & Davidson County inaugurated and The Department of Water and Sewerage Services is created

1975

Whites Creek Reclamation Facility is completed

1978

K.R. Harrington Water Treatment Plant is completed



About Us

Nashville has had a public water system supplied by the Cumberland River since 1833. The water treatment and distribution facilities have grown gradually and have been expanded and upgraded to meet the needs of the community, as well as to comply with increasingly stringent water quality and public safety laws and regulations.

Metro Water Services (MWS) provides public water (treatment and distribution) and wastewater (collection and treatment) services to customers located in Nashville/Davidson County and portions of five surrounding counties: Robertson, Rutherford, Sumner, Williamson, and Wilson. We provide stormwater and waste services for customers located in Nashville/Davidson County (526 square miles). The public drinking water system is also a vital part of the fire protection in the community. Along with these responsibilities, MWS also manages the Metro Nashville District Energy System (NDES). NDES delivers heat, ventilation, and air conditioning (HVAC) to buildings in the downtown corridor through a series of closed-circuit pipe systems carrying chilled water and steam.

MWS Water, Sewer and Stormwater are Metro enterprise operations, meaning that they are funded through the revenues generated from services provided to customers, and that the agency does not receive general tax funds to support their capital or operating and maintenance budget. Waste Services is separately funded through USD property taxes. MWS and Waste Services funds are maintained separately. NDES activities are funded solely from fees/rates from the Customers of the system and revenues generated from the general government.

WATER

More than **3,000** miles of pressurized water mains, **35** reservoirs, **55** water pumping stations, and over **21,000** fire hydrants provide water supply and protection to approximately **216,000** customers (accounts). Finished drinking water is provided by **two** water treatment plants, R.L. Lawrence (Omohundro) and K.R. Harrington, each with rated capacities of **90 million** gallons per day (MGD).

STORM WATER

Stormwater services are provided for Nashville/Davidson County, covering **526** square miles. Nashville has the fourth largest municipal separate storm sewer system (MS4) in the nation with more than **50,000** inlets, **7,500** outfalls, and **882** miles of culverts.

WASTE WATER

Wastewater is collected by means of over **3,100** miles of sewer lines and **118** sewer pumping stations. Wastewater treatment is provided to approximately **220,000** customers (accounts) by **three** water reclamation facilities; Central, Dry Creek and Whites Creek. On average **177 million** gallons of sewage is treated per day.

WASTE SERVICES

Curbside trash and recycling services are provided to more than **142,000** curbside customers. Residents without curbside recycling services are able to use one of our **10** recycling drop-offs and all Davidson County residents have access to dispose of excess residential trash, recyclables, compostables, and other waste items at one of our **4** convenience centers.

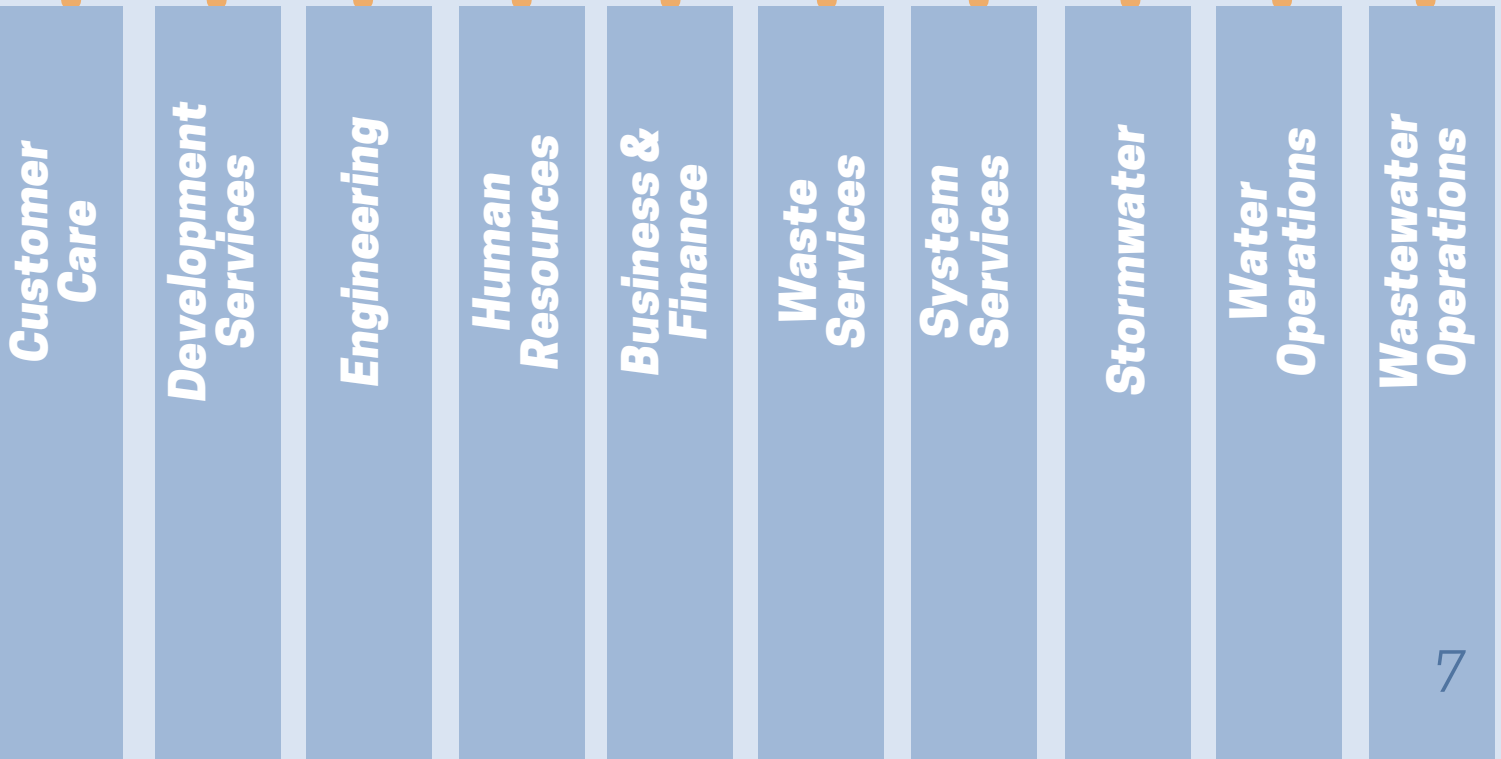
DES

At the Metro Nashville DES facility, natural gas and electricity are used to produce steam and chilled water. The steam and chilled water is then distributed through a approximately **97,400** feet of underground pipes to **21** customers across **42** locations in the downtown area.

Director

Legislation

**Deputy Director
of Operations**



MWS' top value is **PUBLIC HEALTH**. We not only protect our community by creating a water, wastewater, stormwater, and solid waste environment that meets or exceeds state and federal regulations, we also maintain a proactive approach to this value.

Drinking water does not contain lead when it leaves the treatment plants but without proper treatment, tap water can accumulate trace amounts of lead through the corrosion of plumbing materials containing lead.

Since 1987, MWS has added a blended food-grade phosphate solution, safe for drinking water, to the finished water to prevent corrosion. This solution bonds to pipes, forming a protective barrier to prevent the water from picking up particles of lead that may be present in lead pipes or soldering.

Analysis for lead in drinking water is done, in accordance with Tennessee Department of Environment & Conservation (TDEC) guidelines, every three years from a minimum of 50 household taps and other locations throughout the distribution system where lead may be suspected based on system age. Sampling results confirm the success of our lead program. Compliance is determined by comparing the 90th percentile of results. MWS has not ever exceeded the the US Environmental Protection Agency (EPA) action level and our number continues to decline. In 2022 (our last sample period), the 90th percentile was 1.0 ppb. (equivalent to 1 second in approximately 32 years).

In January 2021, the EPA issued revisions to the Lead and Copper Rule. In response to the Lead and Copper Rule Revisions, we expanded our existing lead program and created the P.I.P.E. Program.

The P.I.P.E. Program will include a service line inventory to identify remaining public and private lead service lines in our service area, additional outreach and education, improved lead sampling protocols, sampling protocols for all public and private K-12 schools and childcare facilities built before 2014, and additional lead service line replacements.

Learn more about the P.I.P.E. Program by visiting www.nashville.gov/departments/water/water-quality/lead.

PIPE
PROGRAM

A person with a virus can shed viral RNA in feces even if that the person does not show symptoms of the virus.

MWS partners with the State Health Department as part of the National Wastewater Surveillance System (NWSS) to monitor the presence of the COVID-19 and Mpox viruses in wastewater. Wastewater surveillance provides crucial information about prevalence of viruses of concern such as COVID and Mpox in the community, allowing Health officials to develop and initiate public health mitigation strategies to prevent the spread of the viruses. Additionally, as self-testing and reporting continues to increase in Davidson County, our partnership allows us to remain vigilant in identifying new outbreaks and variants of COVID-19.

Wastewater is collected from two of Metro's three Wastewater treatment plants by MWS employees and sent to a third party State laboratory for analysis.

Results for Tennessee can be found here: **[covid.cdc.gov/covid-data-tracker/#wastewater-surveillance](https://www.covid.cdc.gov/covid-data-tracker/#wastewater-surveillance)**.

Wastewater Surveillance

Contaminants of Emerging Concern

We follow current research and developments on contaminants of emerging concern such as Per- and Polyfluoroalkyl substances (PFAS). On March 14, 2023, the EPA proposed the first national primary drinking water standards for six PFAS.

MWS began voluntarily testing for PFAS as early as 2015 and has tested every three years since. Tests on drinking water leaving our treatment plants conducted in 2015, 2019, and again in 2021 found no detectable levels or minute levels of PFAS, well below the EPA's 70 parts per trillion (ppt) advisory value released in 2016. 2023 drinking water testing for PFAS, done quarterly, also resulted in non-detectable levels. Results of these tests can be found here:

www.nashville.gov/departments/water/water-quality/pfas

There are currently no established standards for PFAS in biosolids; a safe, organic fertilizer made from the nutrients in wastewater. MWS produces Class A Exceptional Quality Biosolids which exceed all state and federal regulations. MWS voluntarily tested a fresh, unbagged representative sample of our product, using a third-party state-certified laboratory. In our analysis, only 5 of the 36 chemicals were at levels that could be accurately quantified; 17 of the 36 chemicals were undetected, and 14 were detected but below the instrument's ability to accurately quantify (LOQ).

Looking to the future, MWS plans to begin using Granular Activated Carbon (GAC) Post Filter Adsorbers by 2033, among other improvements, at both water treatment plants, K.R. Harrington, and Omohundro, to further address contaminants of emerging concern. Results from the two-year pilot plant project discussed in the 2020 Annual Report, determined that GAC Post Filter Adsorbers achieved the MWS water quality and process enhancements goals.

Additionally, GAC Post Filtration Adsorbers have proven effectiveness in addressing a wide range of emerging contaminants including, but not limited to, PFAS.

The lower the level, the lower the risk, and, again, public health is our highest priority. Therefore, MWS will continue to follow science and research to help us develop strategies to reduce levels of PFAS in drinking water and biosolids.

MWS released a new strategic plan that builds upon our 2016 strategic plan, provides direction for MWS' priorities for the next five years, and will align resources and actions with our long-term objectives.

Updating the strategic plan was a year-long process of examining our successes and challenges in executing the previous Strategic Plan, completed in 2016. The process included interviewing employee stakeholders, researching best practices of peer utilities nationally, and benchmarking our performance.

As part of the process, MWS re-committed to our existing...

Continue to be a leading utility that enhances our community's quality of life

Vision

Supply, treat, and manage our resources in a sustainable manner for the benefit of all who live, work, and play in our community

Mission

Public Health, Safety, Excellence, Integrity, and Inclusion. These five values are core to who MWS is and serve as our guiding principles.

Values

The 2022 Strategic Plan streamlines our priorities into six categories:

1 *Environment & Public Health*

2 *Customer Service & Stakeholder Support*

3 *Financial Stewardship*

4 *Employee & Leadership Development*

5 *Infrastructure Management*

6 *Operational Optimization*

These goals and strategies have been developed to support and advance initiatives from the last strategic plan; to incorporate the addition of Waste Services to the Department; to help adapt to changes in workforce, regulations, and the environment, and to naturally align with the organizational structure. Within each of these categories are goals and strategies to move MWS forward over the next five years.



The image to the left shows what happens when “flushable” wipes make it to our system. They don’t just disappear, there’s no magic fix—they have to be manually removed.

Think before you flush.
Please treat toilets properly and flush only your personal contributions and toilet paper!

This year, MWS hit significant milestones on or completed a number of projects vital to being a leading utility with a focus on enhancing our community's quality of life and we want to highlight a few.

The completion of phase one of the restoration and rehabilitation of the historic 8th Ave. Reservoir was one of those milestones. Utilizing a new cast-in-place concrete tank within the historic walls of the reservoir, 14.8 million gallons of water can now be stored while construction begins on phase two of the 3-phase project.

The Water Operations Department completed the construction of a new passive screen and airburst system over intake number 4 at the Omohundro Water Treatment Plant. The new passive screen will catch debris in the river and keep it from entering the plant. The airburst system will use forced air to blow the debris off the screen and keep it from getting congested. These two attributes will increase the operational efficiency and allow the treatment plant to continue to provide Nashville Davidson County with the highest quality of drinking water.

In February, MWS activated a new solar array at our Whites Creek Wastewater Treatment Plant. The solar array consists of 2,315 panels and is expected to generate over 1,360,000 kWh per year. Each panel is representative of MWS' commitment to growing in an innovative and sustainable manner that meets the needs of our current and future neighbors.

Completion of the Division Street 36" Water Main Replacement Project ensures greater reliability and strengthens Nashville's water infrastructure for the future. This replacement stretched from 8th Ave. South to Vine Street and utilized approximately 1,200 feet of pipe.

Ongoing Projects

“Lighting” the Way

Since 2012, MWS has been pursuing solar opportunities as a way to save money and reduce carbon emissions. The first implementation was in 2014, with the construction of our Route Services building and the 50kW solar system on its roof. Since then, we have made significant solar advancements, and in February 2023, our Whites Creek Wastewater Treatment Plant’s solar array went online. This is our largest solar array to date, with a 950kW system.

In total, we have completed six solar projects with two more currently in the design or construction process. The completed projects consist of 4,109 solar panels, total 1.7MW of power and, to date, have produced 1.6GW/hour of electricity to offset our electrical costs. Once we complete the remaining two planned projects, our total solar panel count will be over 10,000.

Each panel represents a part of MWS’ commitment to renewable energy and helping to meet Metro’s 100% renewable standard. In recognition of our commitment to renewable energy, MWS received the TN Solar Energy Industry Association’s (TenneSEIA) “Solar Champion Award” for 2022. The solar champion award recognizes individuals and organizations who undertake innovative projects that encourage the adoption of solar in the Tennessee Valley.

This award recognizes a series of our energy saving projects to include:

- First of its kind (in TN) 3rd Party, behind-the-meter lease.
- 4MW of solar are currently under construction with an additional 6MW planned.
- Nashville’s first Net Zero Energy Building.

This Solar Champion award is recognition of MWS’ commitment to deliver safe, clean, and reliable water and waste services in a sustainable manner.

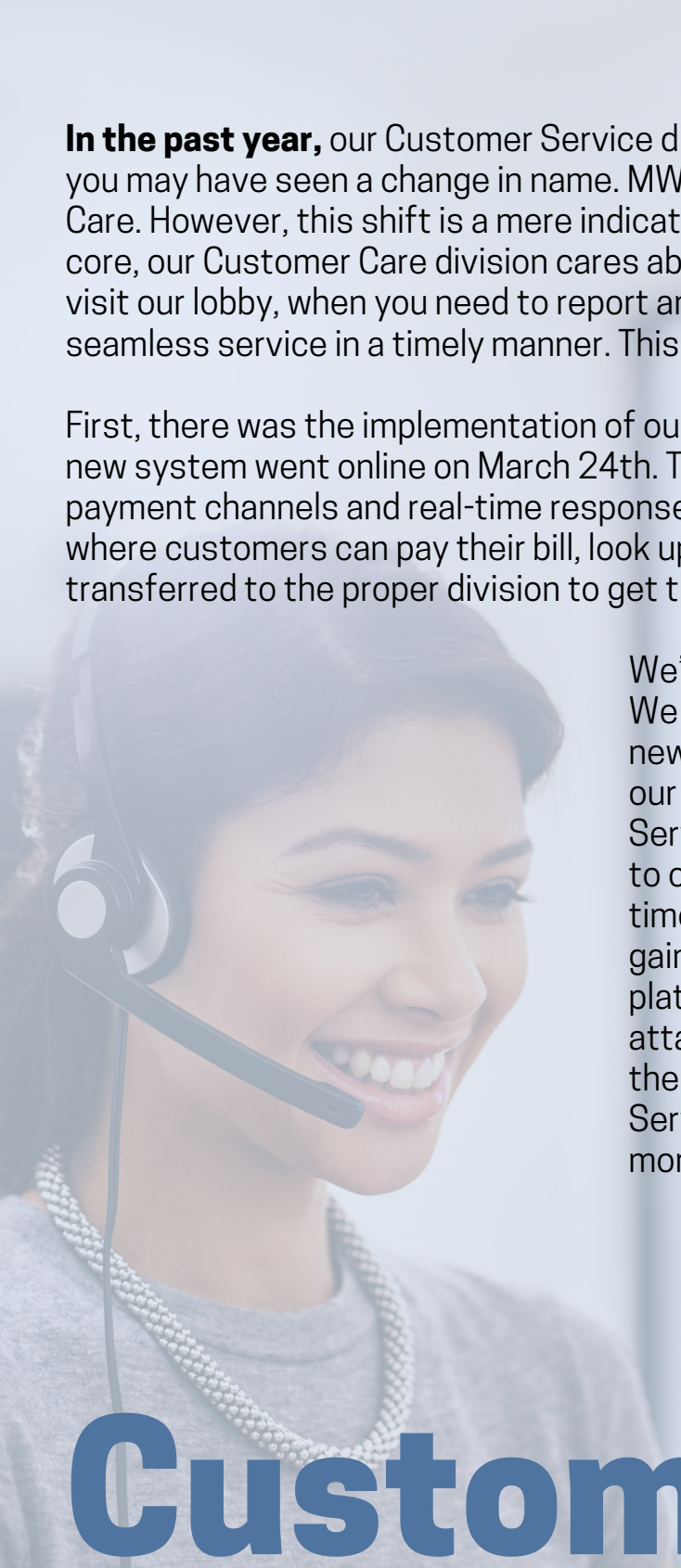


Our solar advancements are not the only way we are keeping things “light.” Since 1958, our water reclamation facilities have used gaseous chlorine and sulfur dioxide to disinfect and neutralize the effluent being returned to the Cumberland River. However, in a commitment to the safety of our employees and the community, we have pursued a chemical-free process. As of October 4th, all MWS water reclamation facilities treat wastewater without the use of chemicals. Instead, we now use ultraviolet (UV) light. Rather than burning the pathogens, as Chlorine does, UV safely and effectively sterilizes pathogens found in the effluent.

We began this conversion in 2016 with our Whites Creek facility and recently completed the process at our largest facility, the Central Water Reclamation Facility. This installation is the largest secondary treatment of UV in the continental US. The Central UV building consists of 6 channels with two UV banks per channel, housing a total of 11,052 bulbs, each 1000W. The system will automatically adjust the bulbs’ intensity based on Ultra Violet Transmittance (UVT) and bring channels and banks on as needed, to effectively disinfect flows.

This system, while raising our overall electrical bill, is safer and will save money in the long run with saved costs in chemical acquisition and storage. This transition also eliminates the requirement for a Risk Management Plan, required by the EPA when chemicals are used in a process. Overall, this shift to a chemical-free process allows us to continue to effectively treat Nashville’s wastewater and return it clean to the Cumberland while lowering costs and prioritizing safety.





In the past year, our Customer Service division has seen a lot of change. Most noticeably, you may have seen a change in name. MWS Customer Service is now officially Customer Care. However, this shift is a mere indicator of the changes made below the surface. At its core, our Customer Care division cares about the customer. When you pay your bill, when you visit our lobby, when you need to report an issue, it's Customer Care. Our priority is to offer seamless service in a timely manner. This year saw large strides toward this mission.

First, there was the implementation of our new IVR (Interactive Voice Response) system. The new system went online on March 24th. Through the updated IVR, we are able to offer multi-payment channels and real-time responses. We are also emphasizing customer self-service; where customers can pay their bill, look up their account information, report an issue, and get transferred to the proper division to get the assistance they need.

We've also instituted a new mobile dispatch system. We partnered with our CIS vendor to implement the new mobile solution, "ServiceLink." ServiceLink allows our field crews from across various divisions (System Services, Development Services, and Customer Care) to complete work orders and sends information in real-time to the proper work order system. We have also gained the ability through ServiceLink to use a tablet platform instead of a laptop. This will also allow us to attach pictures to work orders that would be stored in the ServiceLink database for easy access. With ServiceLink, we are able to complete work orders in a more streamlined and reliable manner.

Customer Care

Because We Care

1,565 trees planted



956 trees maintained



2,120 stormwater requests



12 homes removed from flood risk areas



1,309 work orders completed



12,045 inspections

Fleet



623 vehicles

Stormwater



2,699,146 customer bills generated



9 wholesale customers



757,715 calls taken



265 pieces of legislation filed

Customer Care & Admin

By the Numbers

Approximately **2,645**
people reached



Over **100** tours given



66 events attended



Outreach

Laboratory



Average of **67** daily
samples



24,523 total samples
taken



21,873 public fire
hydrants in service



512 water main breaks



17 water main breaks
per 100 miles of pipe

System Services

The data presented here reflects the initiatives and hard work delivered by MWS to maintain a high quality water program.



Financials

This summary is intended to serve as an introduction to MWS basic financial statements. The basic financial statements consist of the Statements of Net Position, the Statements of Revenue, Expenses, and Changes in Net Position and the Statements of Cash Flows.

MWS collects its primary revenues from charges for water and sewerage services provided to customers. Activities are funded entirely from revenues generated from its operations, with no tax revenues from the Government. All revenues are required to be used for the benefit of the ratepayers.

At June 30, 2023 the Utility served approximately 223,000 water accounts and 225,000 sewer accounts. In January of 2023, water and sewer rates were increased for the fourth consecutive year. Ordinance BL2019-045, which was adopted by the Metropolitan Nashville Davidson County Council on December 10, 2019, outlines the rate structure and four annual rate increases followed by increases based on the annual consumer price index. Rates were increased by 3% in January and rates payers can expect another 3% increase in January of 2024.

Assets and deferred outflows of the Department were \$3.3 billion and exceeded liabilities and deferred inflows by \$1.7 billion (total net position). In 2023, the rate increase and continued economic development positively impacted operating revenues of \$365 million, an increase of \$29.6 million as compared to 2022. Operating expenses for 2023 were \$262 million, an increase of \$24.8 million from 2022 mainly driven by three factors: increases in contractual services, increases in personnel costs, and finally increases in depreciation expense. Contractual Services increased by \$10.4 million due to current economic conditions, new contracts, and increased utility costs. The \$8.7 million increase in personnel services was due to a recognized decrease in expense related to net pension liability and increases in employee salaries realized beginning July 1, 2022. Finally, the Department capitalized \$73 million in assets during fiscal year 2022, the depreciation from which greatly contributed to increased annual expense of \$3.5 million to \$102.4 million in fiscal year 2023. The Department ended 2023 \$2.7 million under its operating budget of \$162 million.

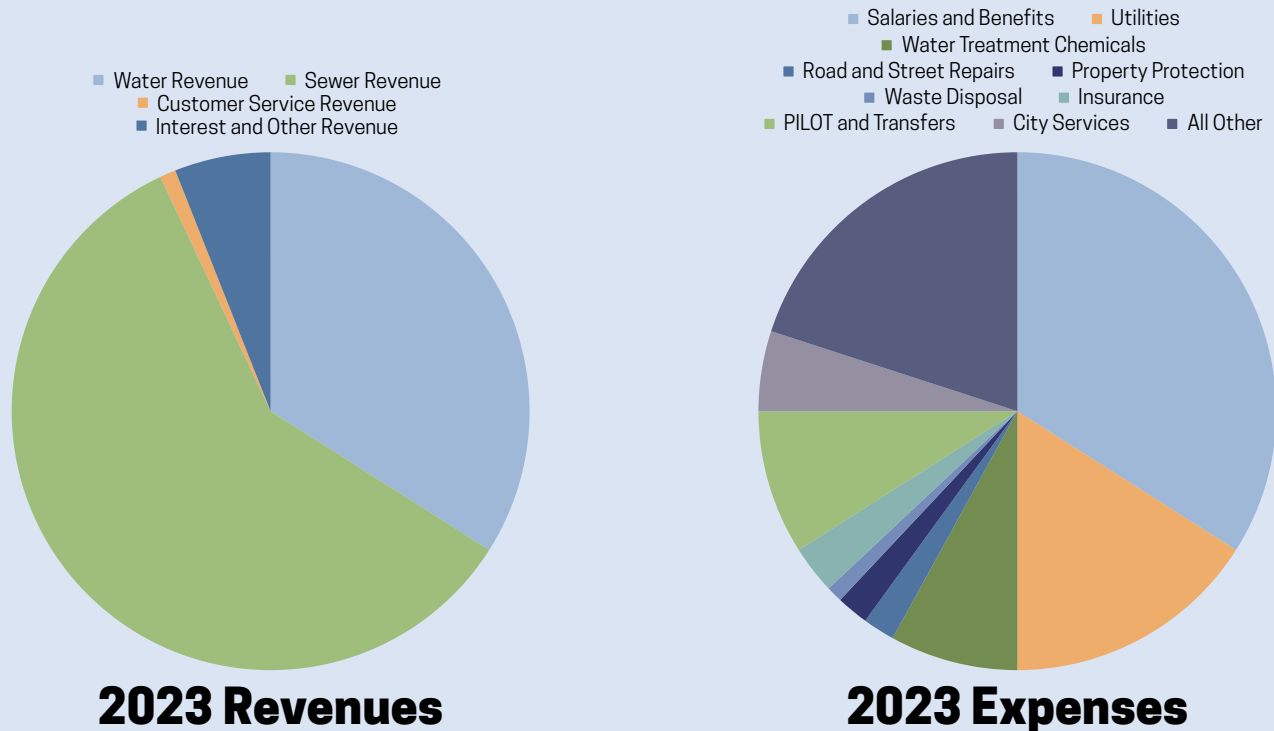
In 2023, unrestricted cash and cash equivalents decreased by approximately \$7.3 million to \$116.3 million, and restricted cash/cash equivalents decreased by approximately \$70.5 million. These decreases are caused in part by expending bond proceeds from the 2021 Bond issue for Consent Decree related capital projects.

Statements of Net Position
Condensed Financial Information as of
June 30, 2023

	2023	2022
Total current assets	\$ 270,719,626	\$ 186,117,621
Total capital and other non current assets	3,010,634,879	2,974,731,163
Total assets	<u>3,281,354,505</u>	<u>3,160,848,784</u>
Deferred charge on refunding	17,630,947	19,732,262
Pensions	14,236,872	12,317,147
Total deferred outflows of resources	<u>31,867,819</u>	<u>32,049,409</u>
Total current liabilities	254,984,163	229,700,774
Total noncurrent liabilities	1,344,543,282	1,364,180,038
Total Liabilities	1,599,527,445	1,593,880,812
Pensions	2,013,359	21,404,169
Total deferred inflows of resources	2,013,359	21,404,169
Total net Position	<u>\$ 1,711,681,520</u>	<u>\$ 1,577,613,212</u>

Statement of Revenue, Expense, and Changes in Net Position
June 30, 2023

	2023	2022
Operating revenues	\$ 365,119,079	\$ 335,440,141
Depreciation (expense)	(102,429,938)	(98,881,450)
Other operating (expenses)	(159,494,600)	(138,150,123)
Operating income	103,194,541	98,408,568
Investment income	19,668,842	2,402
Interest expense	(38,567,737)	(20,364,579)
Other	493,681	(2,718,536)
Capital grants and contributions	52,051,546	52,787,622
Transfers to other funds of the Metropolitan Government, net	(2,786,621)	(10,475,446)
Change in net Position	134,068,308	117,682,129
Net Position, beginning of year	1,577,613,212	1,459,931,083
Net Position, end of year	<u>\$ 1,711,681,520</u>	<u>\$ 1,577,613,212</u>



In 2009, the Metropolitan Government established a Stormwater Division of the Department as a stand-alone enterprise fund with its own set of service fees, which are now an itemized part of the water bill. Stormwater operations is funded solely through stormwater fees and any associated bonds supported by those fees. This financial statement does not include stormwater.

On July 1, 2020, the Department assumed management of the Metropolitan Government of Nashville Davidson County District Energy System (DES). DES delivers heat, ventilation, and air condition (HVAC) to buildings in the downtown corridor through a series of closed-circuit pipe systems carrying cooled and heated water. DES activities are funded solely from fees/rates from the Customers of the system and revenues generated from the general government.

On July 1, 2021 the Department assumed management of the Metropolitan Government of Nashville Davidson County Waste Services activities which includes resident recycling and waste collection in the Urban Services District, commercial trash collection in the downtown corridors, county-wide refuse collection convenience centers and drop off points, and oversight of the county’s closed landfills. Waste Services activities are funded solely from Solid Waste fees and revenues generated from the general government.

Please note that information is a summary and does not contain all of the information available in the full Comprehensive Financial Annual Report (CAFR) at www.nashville.gov/departments/finance/division-accounts/comprehensive-financial-reports



MWS' Urban Forestry department funded and coordinated the planting of 363 trees on Metro Nashville Public Schools property. Eight schools from all around the county received these trees, which will aid in stormwater mitigation by improving infiltration, capturing rainwater, and reducing erosion.

Tree plantings at schools also provide a myriad of health-related benefits to school children, including improved mood and focus.

Water, Sewer, & Stormwater

615.862.4600

mws.dispatchers@nashville.gov

1700 3rd Ave N | 8a-5p T & Th

Waste Services

615.862.5000 | 311

hub.nashville.gov

Public Records Requests

www.nashville.gov/departments/

metro-clerk/public-records-request

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