Madison Water Utility


# 2015-2016 ANNUAL REPORT

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DRAFT

# INTRODUCTION

## Purpose

Section 13.01(3) of the Madison General Ordinances establishes the duty of the Madison Water Utility Board to "issue an annual report that shall be made available to the Common Council."

## Mission Statement

We are entrusted by the people of Madison to supply high quality water for consumption and fire protection at a reasonable cost, while conserving and protecting our ground water resources for present and future generations.

## History of the Madison Water Utility

Founded as a public utility in 1882, Madison Water Utility (MWU) is proud to bring safe, high-quality water to more than 250,000 people across Madison, Shorewood Hills, Blooming Grove, Maple Bluff, parts of Fitchburg, the Town of Madison, and the Town of Burke. MWU has always been a groundwater system in spite of being surrounded by lakes. A deep, high-quality aquifer beneath Madison is the source of our water supply.

MWU has 22 active deep wells, 30 reservoirs, and 828 miles of water main. We are a public water system owned and operated by the City of Madison and governed by the Water Utility Board under General Manager leadership. Like other water utilities in the state, the Public Service Commission of Wisconsin regulates the utility in matters of rates, rules and levels of service. Our operations and infrastructure projects are funded by water rates, not property taxes.

## Water Utility Board Governance

The Water Utility Board is described by state statute and city ordinance. The board is charged with authority for managing and operating MWU under the general direction of the Common Council. It is made up of seven voting members appointed by the Mayor and confirmed by the Common council. The Director of Public Health (or his/her designee) is an ex officio member.

The Water Utility Board has adopted policies which define the benefits MWU provides to the residents of Madison, establish financial and ethical boundaries, and describe how the board carries out its own tasks. Board meetings are open to the public and generally held on the fourth Tuesday of every month.

## Madison Water Utility Board Members

OFFICERS

- *President*: Madeline Gotkowitz
  Hydrogeologist, Wisconsin Geological and Natural History Survey
- *Vice President*: Bruce Mayer
  Accountant, Wegner LLP
- *Secretary*: Patrick Delmore, Ph.D.
  Assistant Professor, Edgewood College School of Education

ALDER BOARD MEMBERS

- David Ahrens, District 15
- Arvina Martin, District 11

CITIZEN MEMBERS

- Lauren Cnare
  Communications Director, The Society of St. Vincent de Paul
- Eugene McLinn
  National Sediment Market Leader, Burns & McDonnell

PUBLIC HEALTH APPOINTMENT (EX OFFICIO MEMBER)

- Doug Voegeli
  Director of Environmental Health, Public Health of Madison and Dane County



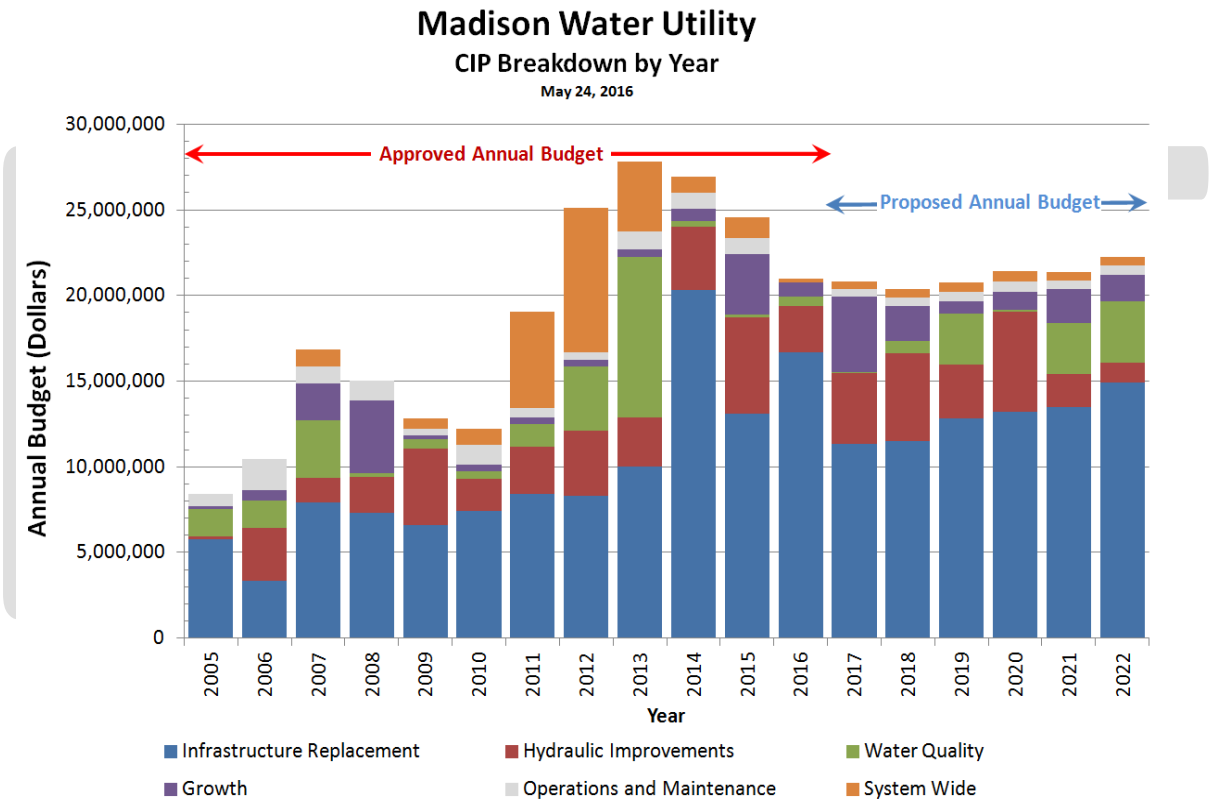
## Madison Water Utility Senior Leadership Team

- Tom Heikkinen, General Manager
- Al Larson, Principal Engineer
- Joe DeMorett, Water Supply Manager
- Joseph Grande, Water Quality Manager
- Dan Rodefeld, Operations Manager
- Robin Piper, Chief Administrative Officer
- Amy Barrilleaux, Public Information Officer

# PROJECTS

## Current and Upcoming Projects

Since 2005, MWU has been committed to renewal of its water mains and other aging infrastructure. Reflecting that effort, funding of our Capital Improvement Program has increased over the last decade to $20 million per year. This effort far exceeds other utilities across the State of Wisconsin and the majority of utilities in the country.




MWU invites citizens to become active in the development of our projects though participation in our Citizen Advisory Process (CAP). Through this participatory process, citizens provide valuable input and feedback and help produce high quality projects that meet and exceed public expectations.

At the end of 2015, MWU hired an Asset Manager who is now coordinating the development and implementation of a program to assess and catalogue the condition of all of our assets, and then develop a long range process to maximize their value.

## Water Main Projects

Nearly half of our water mains—some 400 miles of pipe—are deteriorating and in need of replacement. At a cost of about $1 million per mile, replacing water mains is a significant and growing expense. However, a failure to take care of this infrastructure now would lead to increased main breaks, disruptions in service, and significant and costly roadway damage.

Projects in 2016 included over 7 miles of water main replacement and over $1 million in pipe lining work. Some of this was done as part of larger street replacement projects in coordination with the City of Madison Engineering Division.

## Lakeview Reservoir Reconstruction

Lake View Reservoir provides water storage and fire protection to a large portion of the Lake View Hill Neighborhood. Because the old reservoir was undersized and had reached the end of its useful life, MWU has constructed a larger reservoir and is using the site to improve water storage for the city's north side. Construction began in the summer of 2015. Work will begin in 2017 on three projects to upgrade water mains nearby and to restore and landscape the site.

**LAKEVIEW WATER RESERVOIR BEFORE AND AFTER**

## Paterson Street Operations Center Reconstruction

MWU currently operates out of two facilities: the Heim Building at 119 East Olin Avenue and the Operations Center at 110 S. Paterson St. The Operations Center dispatches service vehicles, houses heavy equipment and spare parts, and provides workshop areas for maintenance of vehicles and equipment. The old facility was undersized and did not meet work needs with regard to functionality, employee health and safety, and work flow. Construction on a new operations center began in 2015 and will be completed in 2017 with upgrades to the vehicle storage building across the street.


**CONSTRUCTION OF NEW PATERSON STREET OPERATIONS CENTER, OCTOBER 2016**

## Well 31

A new well is needed to improve firefighting capacity and system reliability to the southeast part of the city. A site on Tradewinds Parkway was selected, and the well was drilled in 2013. Construction of a ground storage reservoir began in 2015 and was completed in 2016. Construction of the well and filter building are scheduled to begin in the spring of 2017 and be completed in 2018.


**RESERVOIR CONSTRUCTION AT WELL 31 SITE, OCTOBER 2015**

**CONCEPT RENDERING OF WELL 31 FACILITY**

## Blackhawk Water Tower

A new water tower near the intersection of Pioneer and Old Sauk Road will improve emergency water supply, fire protection, and system reliability on Madison's far west side. It will be a composite-style water tower with a poured concrete base topped with a steel tank. Construction will begin in 2017 and be completed in 2018.

**(LEFT TO RIGHT): BLACKHAWK WATER TOWER SITE, AND A SAMPLE PHOTO OF A COMPOSITE WATER TOWER**

# WATER QUALITY

The Annual Water Quality Report was issued in May, 2016. Madison drinking water meets all primary (health-based) drinking water standards. We routinely collect more samples and run more tests than are actually required by the EPA and DNR. Our website allows customers to find out which wells serve their address and to receive detailed water quality information for their well(s).

### Disinfection

Chlorine is used in very small amounts (generally 0.3 milligrams per liter) to destroy harmful water-borne viruses, bacteria and microbes. The chlorine disinfects the water and a residual amount continues to offer protection from bacteria and viruses after water leaves our well facilities and travels through miles of pipeline to people's homes.



### Fluoride

MWU began adding fluoride to Madison's water in 1948 at the direction of the Common Council. The move was part of a city policy to reduce the risk of dental cavities, particularly for children with little access to routine dental care. Madison Water Utility currently follows the recommendation of Public Health Madison Dane County (PHMDC) with regard to fluoride levels added to drinking water.

### Water Main Flushing

To improve water quality and minimize discoloration, water mains are comprehensively flushed by a technique known as unidirectional flushing. The procedure is performed in warm-weather months and involves systematically opening hydrants and valves to force the water through at high velocity. This cleans the pipes by removing accumulated mineral sediment.

Flushing operations and disturbances like fire suppression, flow tests, and main breaks can cause temporary low pressure and discolored water. If discoloration occurs, customers should open the cold tap nearest the water meter—usually a basement sink—to full flow until the water runs clear. In some situations, this may take 5 to 10 minutes. If discoloration continues, customers should contact Water Quality at (608) 266-4654.

## Source Water Protection

Protecting our groundwater resources requires the combined efforts of many entities including MWU, regulatory agencies, and individual customers and businesses. Potential sources of groundwater contamination include:

- Hazardous chemical spills and leaks.

- Improper use and disposal of chemicals, including fertilizers and pesticides.
- Unused or improperly abandoned private wells.

MWU's Wellhead Protection Program identifies land areas that contribute groundwater to our drinking water wells as well as potential contamination sources. City of Madison ordinances allow the restriction of future land uses within these zones in order to reduce the risk of water supply contamination.


**A SIGN ON UNIVERSITY AVE. SIGNALS THE WELLHEAD PROTECTION AREA FOR WELL 14.**

## Road salt

We rely on road salt to keep our roads, sidewalks, parking lots and driveways to maintain safe conditions during our Wisconsin winters. But oversalting leads to irreversible environmental damage, especially for our waterways. Road salt is contaminating local water bodies and the aquifer, our drinking water source. Salt infiltration has been observed at five of Madison's 22 drinking water wells. Well 14 on University Ave. has shown the most dramatic rise in chloride levels.

Treatment to remove salt, like reverse osmosis or ion exchange, is costly to install and even more expensive to operate. However, it is possible to dramatically lower road salt use while maintaining winter safety. The Madison Streets Department has already begun pre-treating some roads with a brine solution before winter storms hit, which can reduce salt use by up to 70 percent. The City of Madison is also planning to implement a Road Salt Certification Program for municipal and private salt applicators who have been trained on techniques to lower salt use.

Find out more about the road salt issue and how you can help make a difference on our website and at WiSaltWise.com .

## Well 27 Radium Study

In 2015, Madison Water Utility increased monitoring of Well 27 on North Randall Ave. after test results showed higher-than-expected radium levels. Radium has always occurred naturally in rock that makes up Madison's aquifer, and variations in test results are not uncommon. However, MWU takes these results very seriously and will continue to closely monitor the well.

In 2017, MWU will partner with staff and experts from the Wisconsin Geological and Natural History Survey in an effort to determine which rock layers below ground are contributing radium to Well 27's water. MWU plans to work with the Survey to drill a small, 6-inch diameter test well at Edward Klief Park, which is 900 feet from the well. Assuming that conditions at the park are similar to conditions at nearby Well 27, the test well should help utility staff pinpoint possible sources of radium.

## Well 8 Groundwater Study

Located in Olbrich Park on Madison's east side, Well 8 is a seasonal well that provides additional supply and fire flow protection during the high-demand summer months. Well 8 became the focus of neighborhood concern after a chemical called PCE (tetrachloroethylene) was found in groundwater at nearby Madison Kipp Corporation property. Though PCE has never been detected at the well, MWU has hired independent consultants to review all available information, analyze groundwater movement in the Well 8 area, and locate appropriate sites for additional monitoring wells that would identify groundwater contaminants before they reach the well.

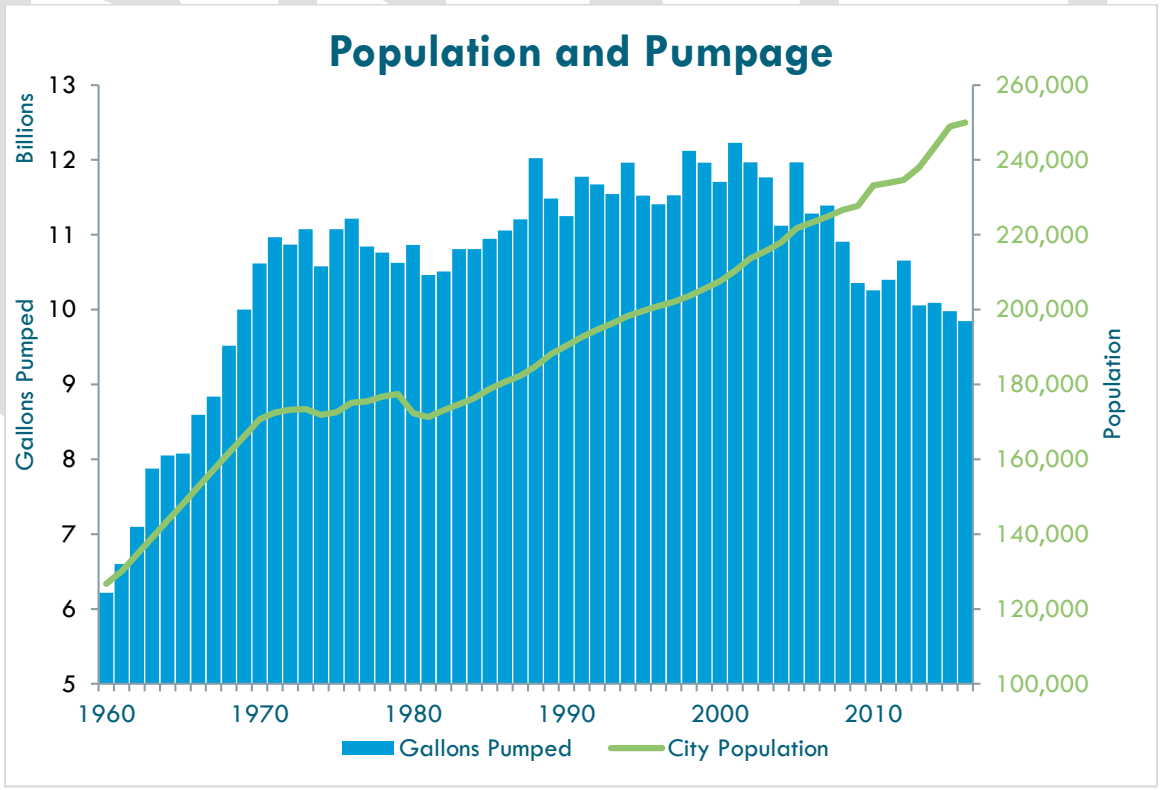
Long-term plans for Well 8 include rebuilding the aging facility and installing iron and manganese filters. Any rebuild of Well 8 would also be designed to allow the addition of a treatment system to remove PCE and other volatile organic compounds if it became necessary in the future.

# WATER SUPPLY & OPERATIONS

## Pumpage

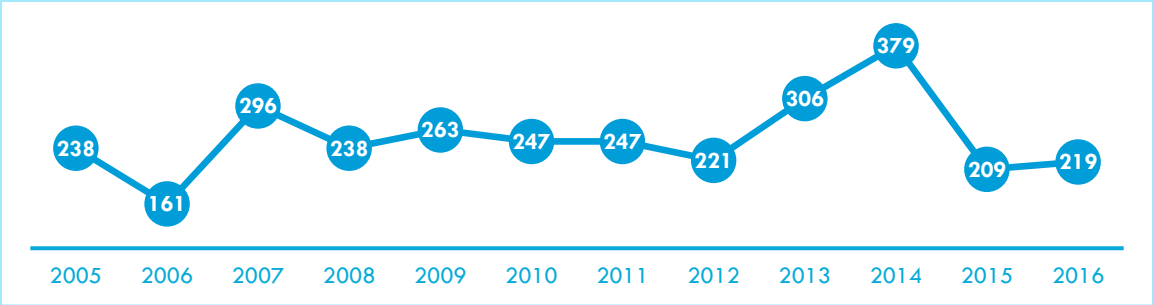
In 2016, MWU pumped 9.85 billion gallons, a 1.3% decrease from 2015. Some of the decreased use was due to a reduction in use by Madison's Oscar Mayer plant as it prepared to close. Oscar Mayer had been the biggest water user in the city. Madison also had an unusually wet year with about 45 inches of precipitation, which limited outdoor watering of lawns and gardens.

In 2015, MWU pumped 9.98 billion gallons. This was the first time in 47 years that water use was below 10 billion gallons, marking a major conservation milestone for Madison. Because of increased use of water-efficient appliances, toilets, plumbing fixtures and industrial equipment, along with more sustainable outdoor watering practices, water use in Madison has been on the decline since 2001, even as our population continues to increase.



## Water Main Breaks

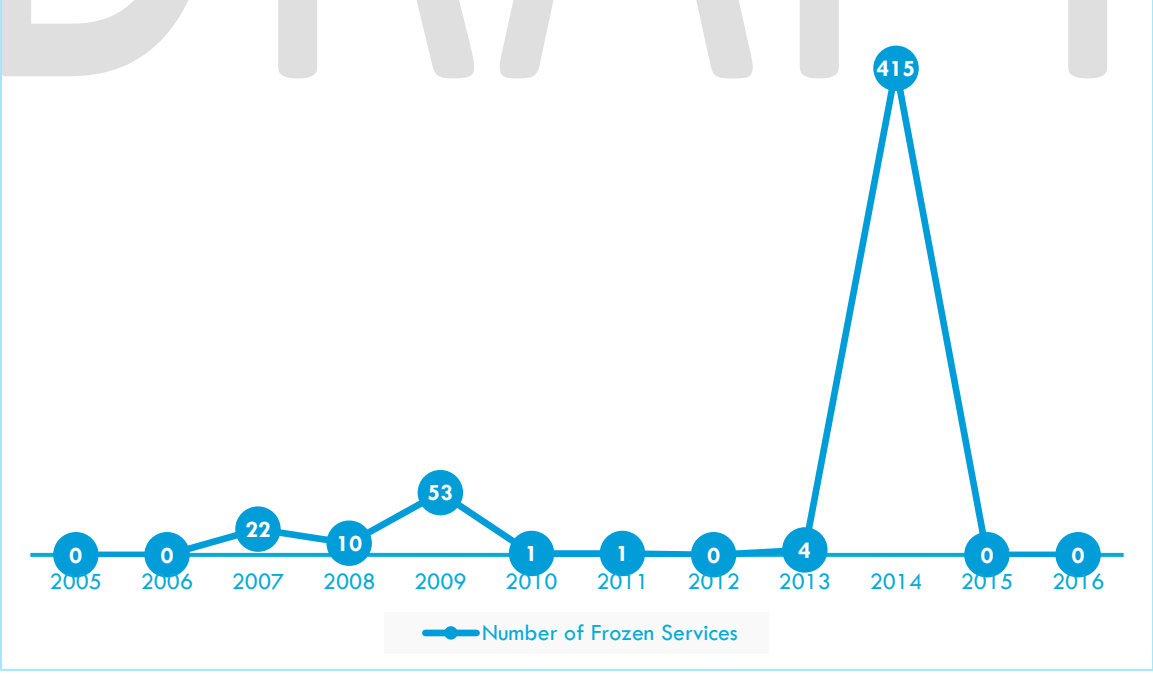
There were 219 main breaks in 2016. Main breaks are caused by a combination of winter weather and an aging piping system. In 2013 and 2014, extreme cold caused record numbers of water main breaks.



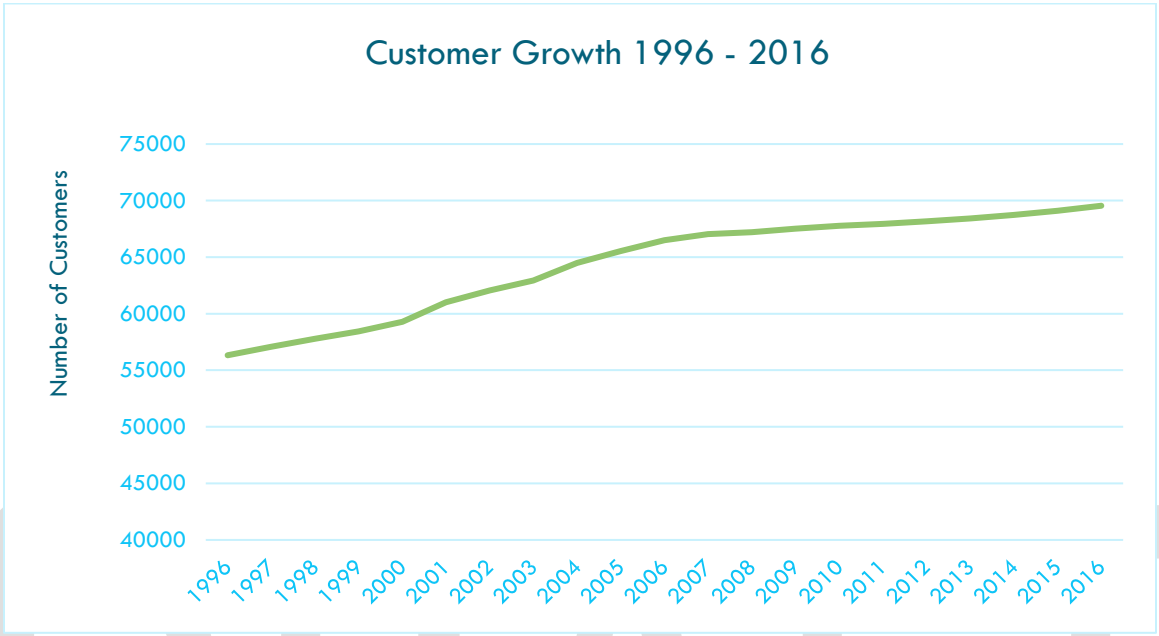

Over the past ten years, MWU has experienced an average of 262 main breaks per year, or 27 breaks per year per 100 miles of distribution system pipe. MWU is undertaking the aggressive goal of replacing or relining more than half our water mains as part of our infrastructure renewal program. As pipe is replaced, the risk of main breaks is reduced.

## Frozen Service Laterals

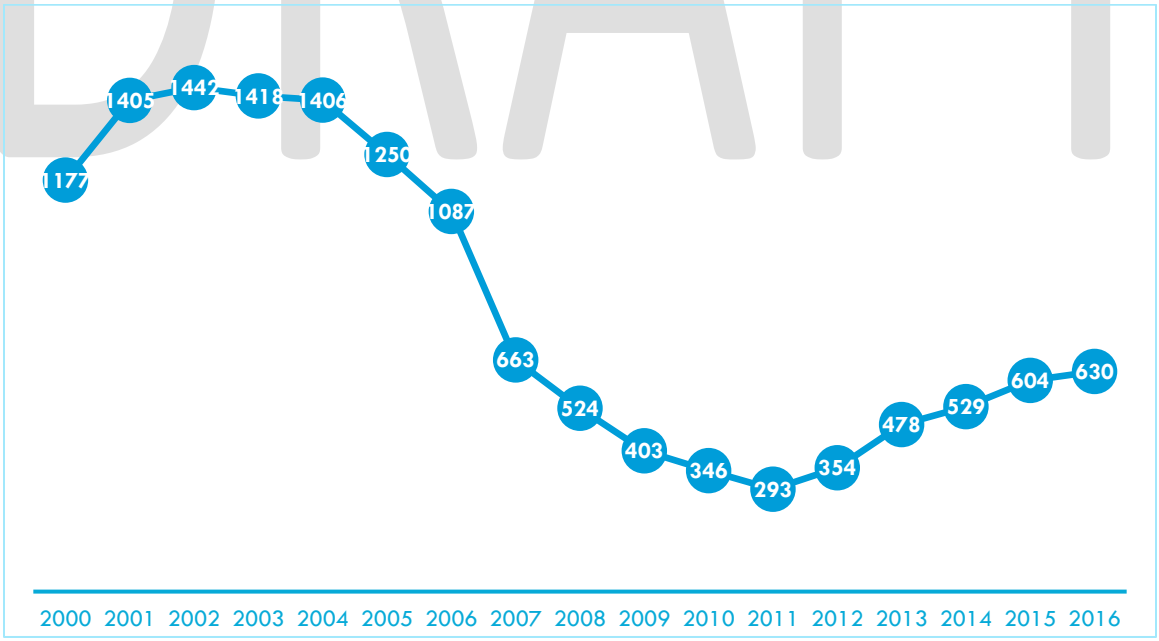
There were no frozen service laterals (the pipe running from a water main to a home) thawed by MWU in 2015 or 2016. In early 2014, prolonged, extreme cold caused the frost line to plunge over six feet deep in parts of the city, causing water outages as service laterals froze.



## Customer Growth




In 2016, the utility received 630 new applications for service, compared with 604, 529 and 478 new applications received in 2015, 2014 and 2013, respectively. A record number of new applications (1,442) was received in 2002.



# EDUCATION & OUTREACH

MWU continues its focus on community outreach and education to raise awareness, broaden public understanding, and increase community engagement.

## Key Outreach Initiatives

### Know Your H2O Survey

In the summer of 2016, Madison Water Utility launched its most comprehensive survey campaign to date, "Know Your $H_2O$". Over a thousand people took the 14-question survey aimed at gathering feedback, raising awareness, and educating customers on critical water issues like infrastructure, safety, sustainability and cost.



According to the results,

- 83 percent of survey respondents listed quality and safety as their top concern when it comes to their water.
- More than 70 percent of Madisonians are actively working to conserve water,
- Only 35 percent of Madisonians know exactly where their water comes from. Ten percent admit they turn on the tap without ever stopping to think about the source of their water.
- Respondents who know exactly where their water comes from are twice as likely to conserve as those who don't really think about the source of their water.

### Madison Water Utility: Building on History Video

In 2015, Madison Water Utility released a 9-minute documentary on Madison Water Utility's unique history. It was filmed and directed by Madison City Channel and produced by MWU's Public Information Officer Amy Barrilleaux. *Madison Water Utility: Building on History* won an Excellence award in the annual Wisconsin Community Media Best of the Midwest Media Fest. In addition, it won Best in Show in the Professionally-Produced Government Programming category.

## Got Water Initiative

In 2015, MWU partnered with the Healthy Kids Collaborative of Dane County to launch the "Got Water" project in Madison schools. Three Madison elementary schools were selected by the Collaborative to receive water bottle refilling stations for students and staff, which were funded by Madison Water Utility and installed by the Madison Metropolitan School District. The Collaborative and its community partners also provided new water bottles to every child and staff member at each school.


**LINDBERGH STUDENTS USING BOTTLE FILLING STATION THAT WAS FUNDED BY MADISON WATER UTILITY**

The program was renewed in 2016, and three more schools received water bottle refilling stations and new bottles. Each school also hosted celebrations with students, staff, and community partners that featured MWU's Water Wagon. The program will continue in 2017.

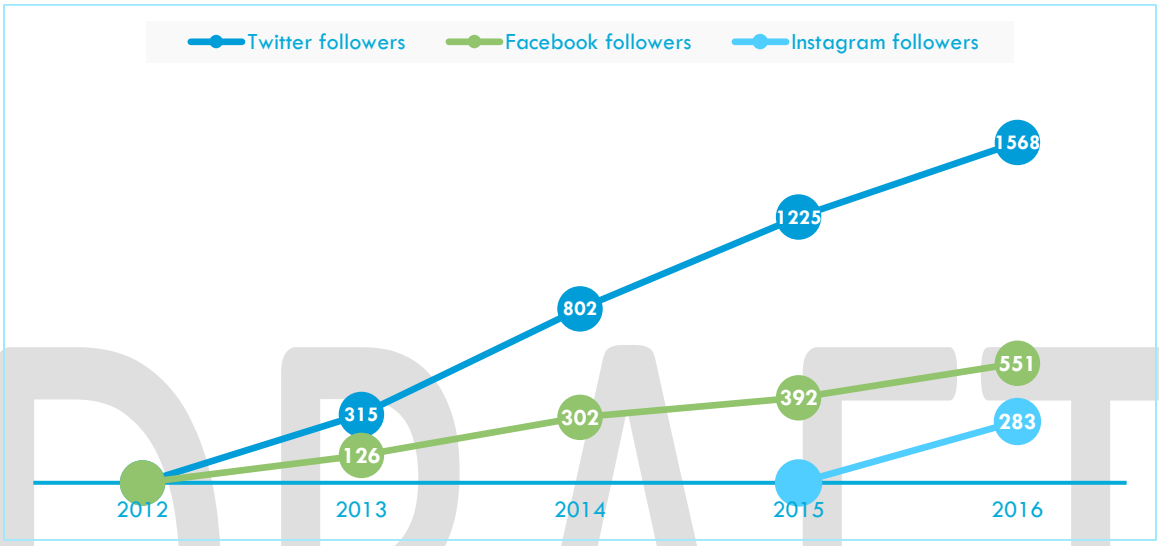
## Water Wagon

MWU's Water Wagon continues to be a popular outreach tool. There were 40 Water Wagon events in 2015, and 37 events in 2016. One-third of those events were at local schools. Other events included the Wednesday Farmers Markets, REAP's Family Food Fest, Ride the Drive, Juneteenth, and National Night Out.


**WATER WAGON AT THE NATIONAL UNICYCLING CHAMPIONSHIPS, JULY 2015**

### Social Media and other Communication Tools

Madison Water Utility continues to see exponential growth in social media followers since its first tweet in 2012. MWU's 2016 launch on Instagram was very successful, contributing to a 50% increase in total social media followers that year.



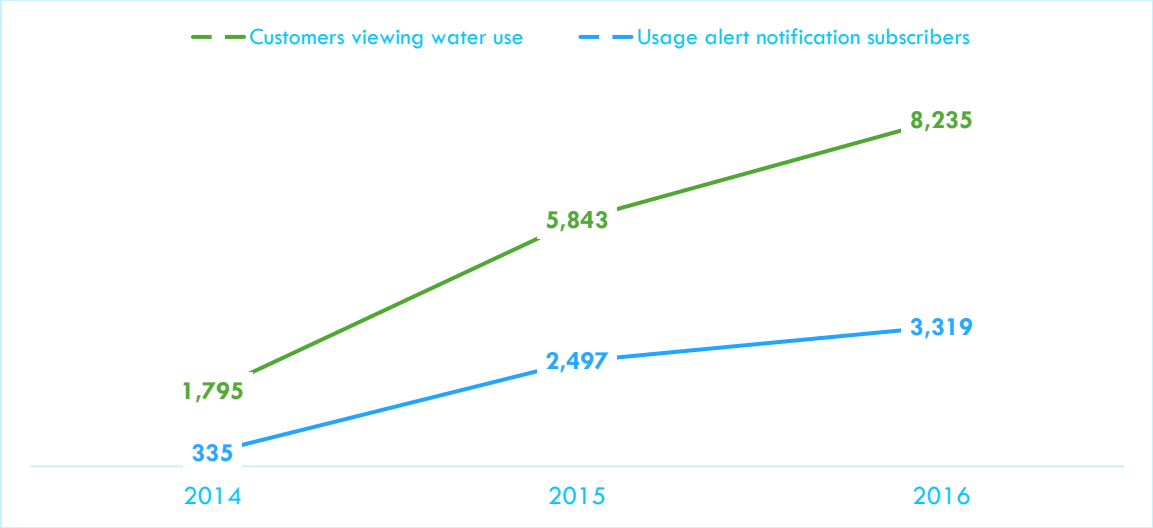

The utility's web article series, Inside MWU, continues to be popular with over 8,000 views in 2016 and many articles picked up by external media.

## Conservation & Sustainability

It may seem counterintuitive for a utility that sells water to plan for conservation, but a sustainable rate of pumpage is necessary to ensure clean and abundant water supplies for future customers. Additional benefits of water conservation include improved water quality, a reduced burden on surface water quality as less wastewater is generated, and reduced greenhouse gas emissions as less energy is spent pumping water.

### Online conservation tool

In 2014, Madison Water Utility unveiled Wisconsin's first online conservation tool, which allows customers to view their monthly, daily, and even hourly water use online. It also allows customers to set up water use alerts—they choose the number of gallons they want to use on a daily, weekly, or monthly basis, and if they go over that number they receive an email alert.





**PROMOTION OF THE CONSERVATION TOOL HAS INCLUDED THIS VEHICLE WRAP, BUS ADVERTISEMENTS, AND IPAD GIVEAWAYS.**

## Toilet Rebate Program

Toilets account for nearly 30 percent of residential indoor water consumption, and older toilets are a major source of wasted water due to leaks and inefficiency. In 2009, MWU established a toilet rebate program for residential customers which offers bill credits of up to $100 to customers who replace existing toilets with EPA WaterSense-rated models. In 2010, the program was expanded to include apartment buildings, and in 2016 it was further expanded to include all other customers (businesses, nonprofits, etc.). Over 14,000 toilets have been replaced through this program, resulting in estimated water savings of over half a billion gallons citywide since 2009.

| Year | Toilet Rebates |
|---|---|
| **2009** | 1724 |
| **2010** | 2504 |
| **2011** | 2466 |
| **2012** | 1536 |
| **2013** | 2298 |
| **2014** | 1399 |
| **2015** | 1292 |
| **2016** | 1485 |

## Project Home Partnership

In 2016, Project Home and Madison Water Utility launched the first water conservation program in Wisconsin aimed at helping low-to-moderate income homeowners reduce water waste, increase efficiency and save money on their water bills.

This program is focused on:

- Installing high-efficiency toilets (1.28 Gallons Per Flush or less)
- Fixing plumbing leaks (in the U.S., a trillion gallons of drinking water are lost every year because of plumbing leaks)
- Installing water saving devices (faucet aerators and low-flow shower heads can save thousands of gallons of water a year)

In its first year, Madison Water Utility's partnership with Project Home assisted more than 85 low-to-mid income community members with projects and repairs focused on saving water,

including the installation of 39 high-efficiency toilets. Funding was renewed for the program in 2017. Madison Water Utility customers can contact Project Home to determine if they are eligible for this program.

### Showerhead Giveaway

At the end of 2016, Madison Water Utility launched its first showerhead giveaway. Hundreds of high-efficiency, WaterSense showerheads were given to customers at the Warner Park Community Recreation Center and at MWU's Olin Ave offices. By switching to WaterSense showerheads, the average family could save 2,900 gallons of water every year, and save the energy it would have taken to heat all that water. MWU plans to do additional giveaways in the future.

# FINANCES

## Billing and Rates

In addition to water, Madison's Municipal Services Bill includes sewer, stormwater, landfill and urban forestry charges, which are levied by other city agencies. MWU's charges represent about 35 percent of the total average Madison Municipal Services bill.

The average Madison residential customer uses 3,871 gallons of water a month and pays $19.09 in water and fire protection charges. In 2015, a new conservation rate went into effect for residential (single family homes and duplex) customers. MWU is the largest utility in Wisconsin to offer a conservation rate for its residential customers.

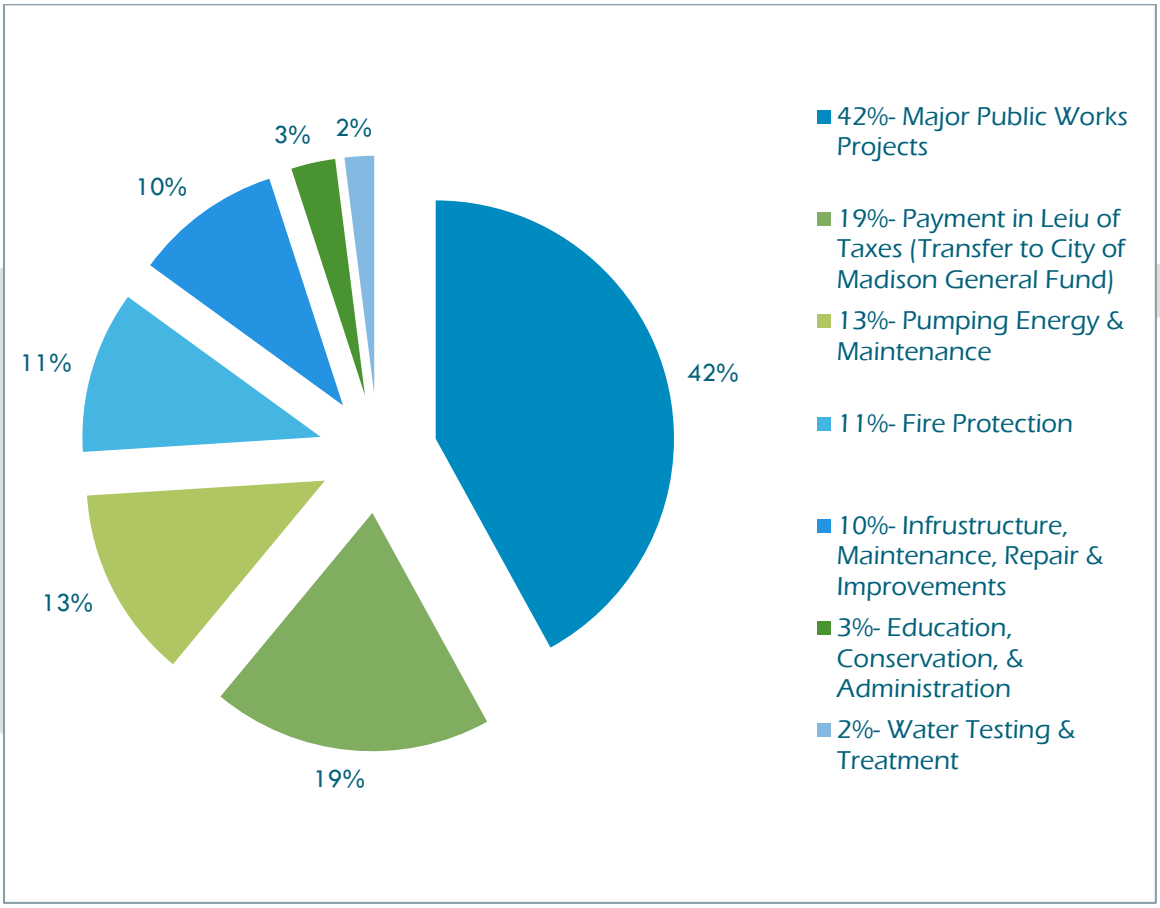
| Usage per billing month | Cost per 1,000 gallons |
|---|---|
| First 3,000 gallons | $2.84 |
| Next 3,000 gallons | $3.26 |
| Next 3,000 gallons | $3.60 |
| Next 5,000 gallons | $4.5 |
| Over 14,000 gallons | $5.07 |

The base charges for most residential customers are a $5.70 meter charge and $2.03 fire protection charge.

Water rates are set by the Public Service Commission of Wisconsin. MWU last filed for a rate increase in 2014 and plans to file its next rate increase application in 2017.

### Where your Water Dollar Goes

The average family living in a house in Madison pays just over $19 a month for water. (Other charges like sewer, stormwater, landfill and urban forestry also appear on the Municipal Services Bill, but those charges are not levied by Madison Water Utility.) The chart below provides a breakdown of how that money is spent. We also have additional information about each category on our website.




## 2016 Financial Highlights

- Total revenues increased $6 million or 20.5% from 2015 to 2016, while pumpage decreased 1.2%. In September 2015, the utility implemented a rate increase which increased revenue.
- Income before capital contributions and transfers increased $4.8 million or 139.6% from the prior year. The increase was due to the $6 million increase in revenue and higher depreciation, nonoperating expense and operation and maintenance expense.

## Long-Term Debt

The vast majority of MWU's facility and infrastructure projects are funded through the sale of revenue bonds. The utility borrowed $38.4 million in 2016. This borrowing included $23.8 million to fund 2016 and 2017 capital projects and $14.6 million to advance refund 2007 revenue bonds. For the last eleven years, MWU has been going to the markets almost annually. MWU plans a sale of revenue bonds in late 2017 to fund its 2017 & 2018 capital budget.

| Date | Purpose | Final Maturity | Interest Rates | Original Amount | 12/31/16 Amount Outstanding |
|---|---|---|---|---|---|
| REVENUE BONDS | | | | | |
| **12/01/07** | Refunding debt and system improvements | 1/01/28 | 4.-4.75% | $27,185,000 | $ - |
| **12/09/09** | Refunding debt and system improvements | 1/01/30 | 2-5% | $48,540,000 | $39,515,000 |
| **11/10/10** | System improvements | 1/01/31 | 0.90-5.25% | $13,250,000 | $10,480,000 |
| **12/22/11** | System improvements | 1/01/32 | 2- 4% | $19,370,000 | $16,360,000 |
| **12/19/12** | System improvements | 1/01/33 | 2- 4% | $21,095,000 | $18,535,000 |
| **12/18/13** | System improvements | 1/01/34 | 3-5% | $24,335,000 | $22,580,000 |
| **12/17/15** | System improvements | 1/01/36 | 2.85-5% | $41,610,000 | $41,610,000 |
| **12/28/16** | Refunding debt and system improvements | 1/01/37 | 1.24-3.82% | $38,420,000 | $38,420,000 |
| | Totals | | | $195,385,000 | $187,500,000 |
| ADVANCE FROM MUNICIPALITY | | | | | |
| **10/19/10** | Payoff unfunded pension liability | 10/01/24 | 3.41% | $1,404,052 | $1,004,966 |
| **01/01/08** | Advance from City, Burke Utility District #1 | n/a | 0.83% | $393,762 | $442,578 |
| LOAN FROM MUNICIPALITY | | | | | |
| **08/04/05** | Advance from City of Madison[1] | n/a | *See note below.* | $4,573,000 | $2,295,000 |

[1] In 2005, the Common Council approved a loan from the City of Madison to MWU to be used as financing with interest charged monthly at 0.25% higher than the monthly rate earned through the city's investment pool. MWU is making payments of $765,000 a year plus interest.

# ADDITIONAL RESOURCES

- Annual Drinking Water Quality Report
- Inside MWU
- Project News
- 2016 Annual Report to the Public Service Commission of Wisconsin (pdf)
- 2016 Madison Water Utility Financial Statements (pdf)