



MWU CREW WORKING IN SUBZERO TEMPERATURES DURING THE POLAR VORTEX. JANUARY 6, 2014

2013-2014 ANNUAL REPORT

MADISON WATER UTILITY

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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

Madison’s community water service began in 1880 with a petition to the City of Madison Common Council asking that a waterworks system be constructed. Madison’s population was 10,324. The Common Council directed its waterworks committee to establish the Madison Waterworks on September 5, 1881. Financing was obtained and contracts let in spring of 1882, and pumping commenced on December 7, 1882.

Early management was vested in the Common Council through its committee, and on March 2, 1884, general management was transferred to the Board of Water Commissioners. This Board of Water Commissioners arrangement continues today. The Madison Waterworks achieved department status in the early 1960s and became the Madison Water Utility (MWU) under a General Manager leadership. In common with other Wisconsin water utilities, the Public Service Commission of Wisconsin regulates the utility in matters of rates, rules and levels of service.

MWU has always been a groundwater system in spite of being surrounded by lakes. A deep, high-quality aquifer beneath the city is the source of our water supply. MWU currently has 22 active deep wells with a pumping capacity of over 65 million gallons per day, and now provides water service to over 66,000 accounts.

Water Utility Board Governance

The [Water Utility Board](#) is described by state statute and city ordinance. It is made up of seven voting members and the Director of Public Health (or his/her designee) as an ex officio member. The board is charged with authority for managing and operating MWU under the general direction of the Common Council. The Mayor appoints and the Common Council confirms board members for terms of five years for citizen members (with staggered appointment dates) and two years for alder members. The Director of Public Health's appointment is ongoing.

The purpose of the board, on behalf of the residents of Madison, is to ensure that MWU:

- provides consumers with an adequate quantity of high quality water for consumption and fire protection at a reasonable financial and environmental cost; and
- manages groundwater resources and the water delivery system to ensure present and future generations of city residents benefit from this excellent source of water.

The Water Utility Board has adopted a [Policy Book](#), which includes policies that 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.

The board generally meets on the fourth Tuesday of every month. The City of Madison's [Legislative Information Center](#) includes a list of meeting dates and archived agendas, minutes, and links to audio recordings of meetings.

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

- Lauren Cnare, District 3
- Anita Weier, District 18

PUBLIC HEALTH APPOINTMENT (EX OFFICIO MEMBER)

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

As of December 31, 2014 there were two vacancies on the Water Utility Board.

Water Utility Senior Leadership Team

- Tom Heikkinen, General Manager
- Al Larson, Principal Engineer
- Joe DeMorett, Water Supply Manager
- Joseph Grande, Water Quality Manager
- Dan Rodefled, Operations Manager
- Michael Krentz, Financial Manager
- Robin Piper, Customer Service Manager
- Amy Barrilleaux, Public Information Officer

PROJECTS

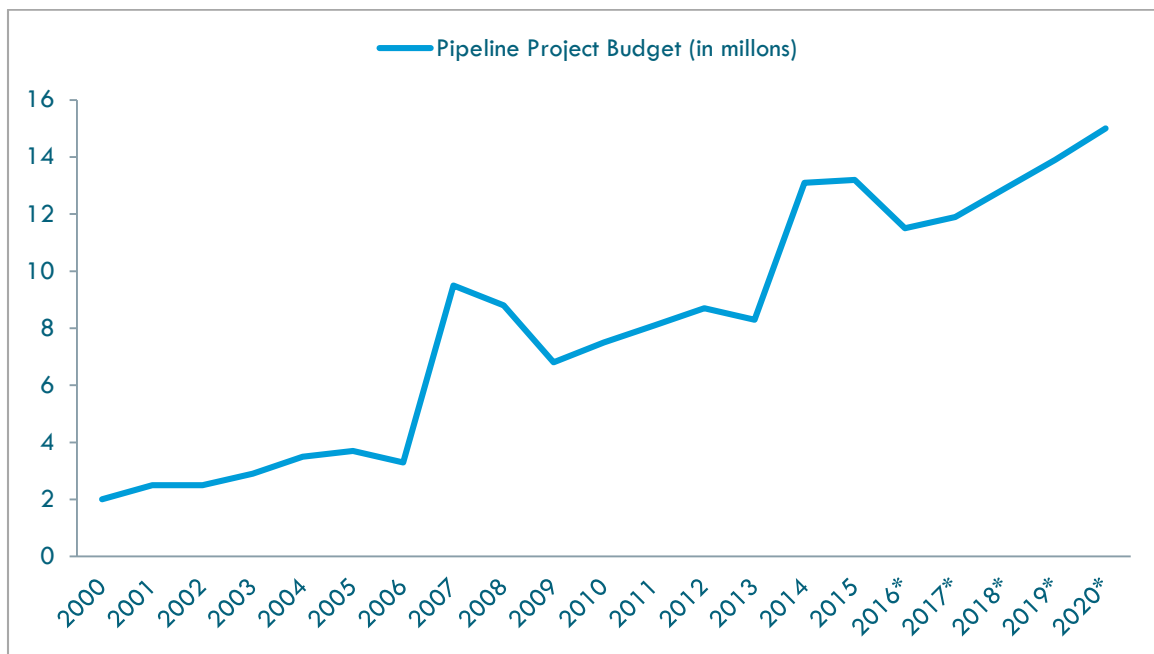
Current and Upcoming Projects

MWU invites citizens to become active in the development of Water Utility projects through 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.

Infrastructure Renewal



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. It will take 40 years of focused, deliberate planning and action to replace those 400 miles of deteriorating pipeline.



* Projected expense

In 2014, 7.8 miles of main were replaced and 4.9 miles of new main was added in newly developed areas. In addition, MWU used innovative pipe relining technology to rehabilitate 4000 feet of water mains in the Bunker Hill neighborhood.

Well 7 Iron and Manganese Mitigation

MWU is rebuilding [Well 7](#), which operates year-round and primarily serves the Village of Maple Bluff, Sherman Avenue neighborhoods south of Almo Avenue/Sheridan Street and west of Packers Avenue, and areas of the isthmus between Livingston Street and the Yahara River. The reconstructed well will have a larger reservoir, a second booster pump for added fire protection, and an iron and manganese filter to treat the water pumped from the well. Construction began in the spring of 2014 and will take about a year.



LEFT: WELL 7 UNDER CONSTRUCTION, DECEMBER 2014. RIGHT: ARCHITECTURAL RENDERING OF COMPLETED FACILITY.

Well 31

A [new well](#) is needed to improve fire fighting capacity and system reliability to the southeast part of the city. A site on Tradewinds Parkway has been selected, and the well was drilled at the end of 2013. The facility is currently under design and construction will begin in 2015.

Lakeview Reservoir Reconstruction

[Lake View Reservoir](#) provides water storage and fire protection to a large portion of the Lake View Hill Neighborhood. This reservoir is undersized and has reached the end of its useful life. MWU proposes to construct a larger reservoir, as well as utilize the site to improve water storage for the remainder of the city's north and east side.

Paterson Street Operations Center Reconstruction

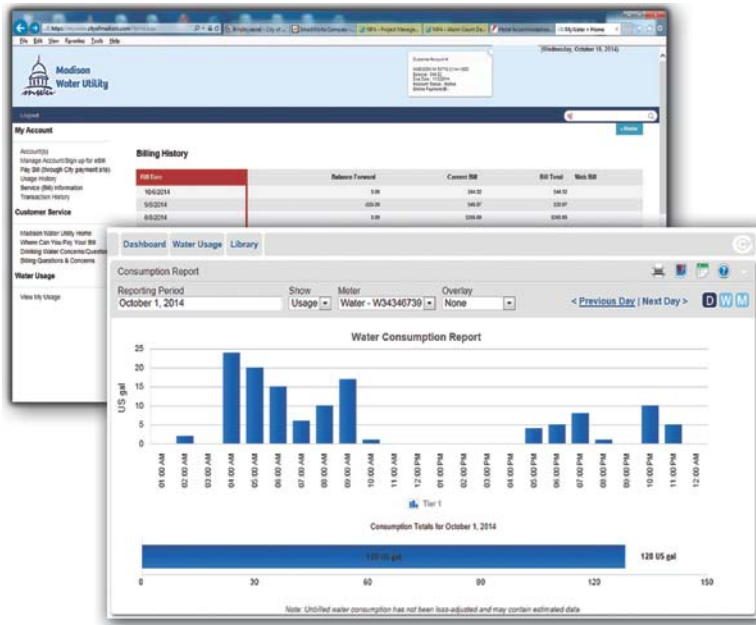
MWU currently operates out of two facilities: the Heim Building at 119 East Olin Avenue and the [Operations Center](#) at 110 S. Paterson St. The Operations Center dispatches service vehicles,

houses heavy equipment and spare parts, and provides workshop areas for maintenance of vehicles and equipment. The existing facility is undersized and does not meet work needs with regard to functionality, employee health and safety, and work flow. It is critical to address these deficiencies in order to increase efficiency and provide a safe working environment for all employees. Construction is planned to begin in late 2014 and will take approximately a year.

Completed Projects

Project H₂O

MWU has completed [Project H₂O](#), the upgrade to a wireless technology network that reads and transmits water consumption on a daily basis. MWU transitioned to monthly billing in the fall of 2014, and customers can now track their monthly, daily, and even hourly water consumption information online. In addition, MWU has used the system to alert over 600 customers to major leaks.



MWU'S ONLINE WATER USE TRACKING TOOL

Booster Pump Station 106 Reconstruction

[Booster Pumping Station 106](#) (BPS-106) is an interzone transfer pumping station located on Madison's near west side in the sloped embankment of Reservoir Park. The primary function of BPS-106 is to transfer water from Madison's main pressure zone (PZ 6, central Madison) into the City's southwest pressure zone (PZ 7, west side, southwest side). This pumping facility has been operating since 1926; making it Madison Water Utility's oldest operating facility. The reconstruction addressed both condition/deterioration problems and increased reliability. Construction began in 2013 and was completed in September 2014.



RECONSTRUCTED FACILITY

WATER QUALITY

The [Annual Water Quality Report](#) was issued in May, 2014. Madison drinking water meets all primary (health-based) drinking water standards. The water utility website allows customers to find out [which wells serve their address](#) and to receive detailed water quality information for each well.

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 the systematic opening and closing of distribution system valves and hydrants, one section of main at a time, to force the water through the pipes at high velocity, removing accumulated mineral sediment until the water is clear.

In 2013, 409 miles of water main were flushed unidirectionally and 481 miles were flushed conventionally. In 2014, 437 miles of pipe were flushed unidirectionally and 230 miles of pipe were flushed conventionally.

Flushing operations may lead to temporary low pressure and discolored water, which can be drawn into nearby homes and businesses if the water is being used during or immediately following the flushing. Such events should affect customers for a few hours at most. The discoloration is caused by iron (red color) or manganese (black color) particles being dislodged from the water main. 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.

Madison Kipp Contamination and Well 8

Located in Olbrich Park on Madison's east side, Well 8 was drilled in 1945. Though it was initially operated year-round, it is now used only seasonally because it contains naturally occurring iron and manganese, which can cause discoloration. Still, supply provided by Well 8 can be crucial during the high-demand summer months. The well played a critical role in refilling East Side reservoirs during and after the Apollo Way fire in August of 2014. We estimate crews used 2 million gallons of water to fight the fire.

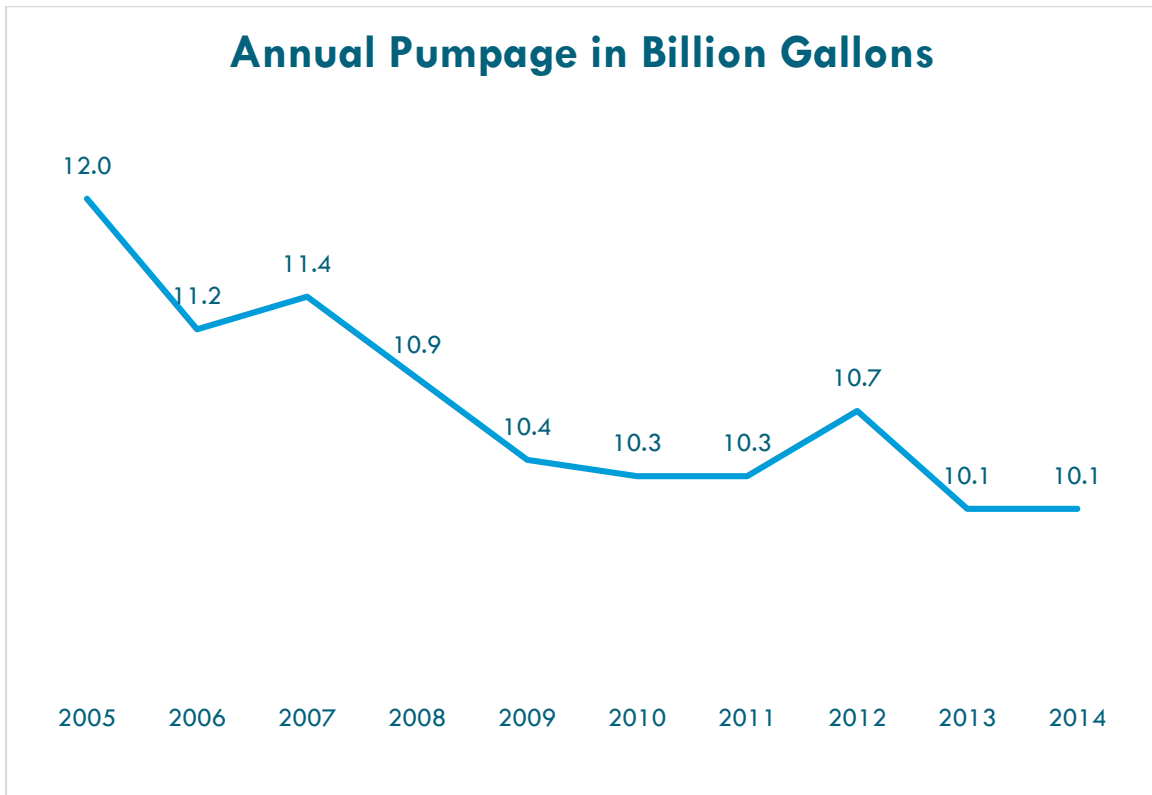
Well 8 became the focus of neighborhood concern after a chemical called PCE (tetrachloroethylene) was found in groundwater at nearby Madison Kipp Corporation property. MWU hired an independent consultant to review all available information, including a recent study commissioned by Madison Kipp which determined that the contamination plume was no longer moving toward Well 8. MWU expects to have this analysis in early 2015.

Long-term plans for Well 8 include rebuilding the aging facility and installing iron and manganese filters. Any rebuild of Well 8 will include piping and space that could accommodate a filter to remove PCE and other volatile organic compounds from the water if needed.

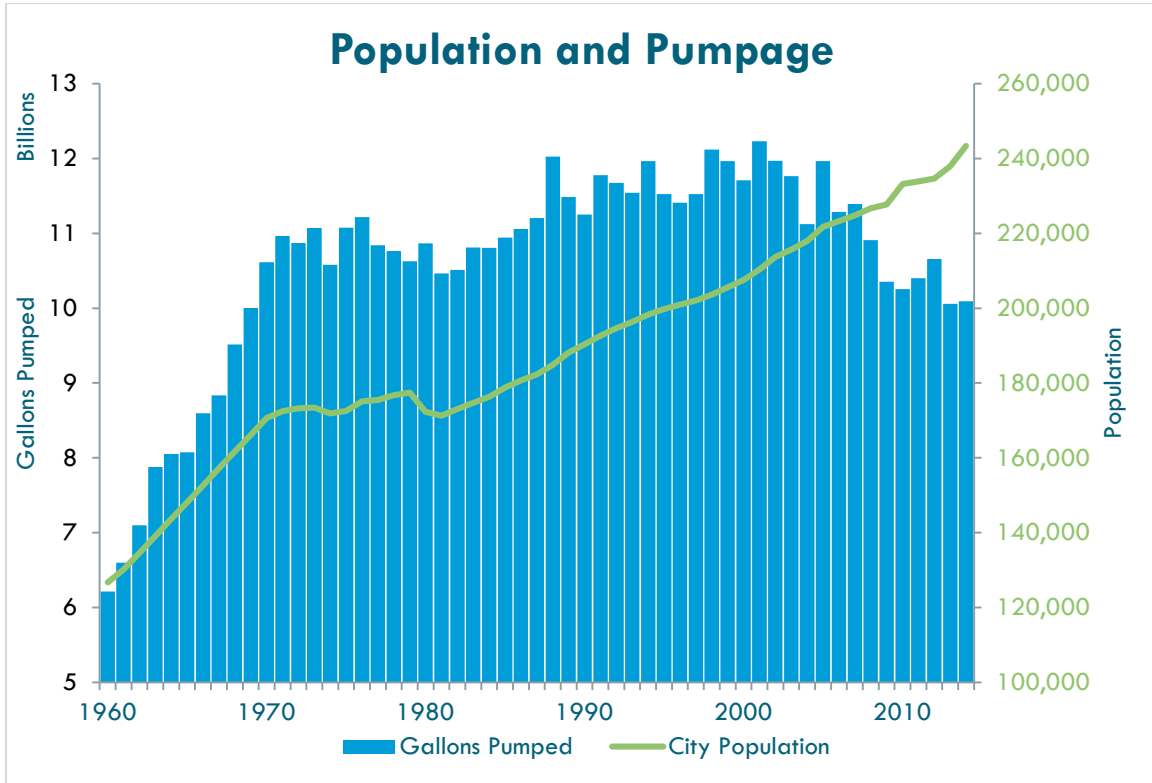
WATER SUPPLY & OPERATIONS

Pumpage

In 2014, MWU pumped 10.1 billion gallons, a slight increase over the previous year. Average daily pumpage was 28 million gallons and the maximum day was 38.6 million gallons (July 23).



As is illustrated in the graph below, pumpage has generally been declining over the last ten years even as the City of Madison’s population has grown. This is consistent with a national trend of net declines in water use per household. A variety of factors may contribute to declining use, including wetter weather, changes in household sizes and types, conservation efforts, and price increases. In Madison, the primary cause appears to be the proliferation of low-flow toilets, fixtures, and appliances in homes over the past 20 years.



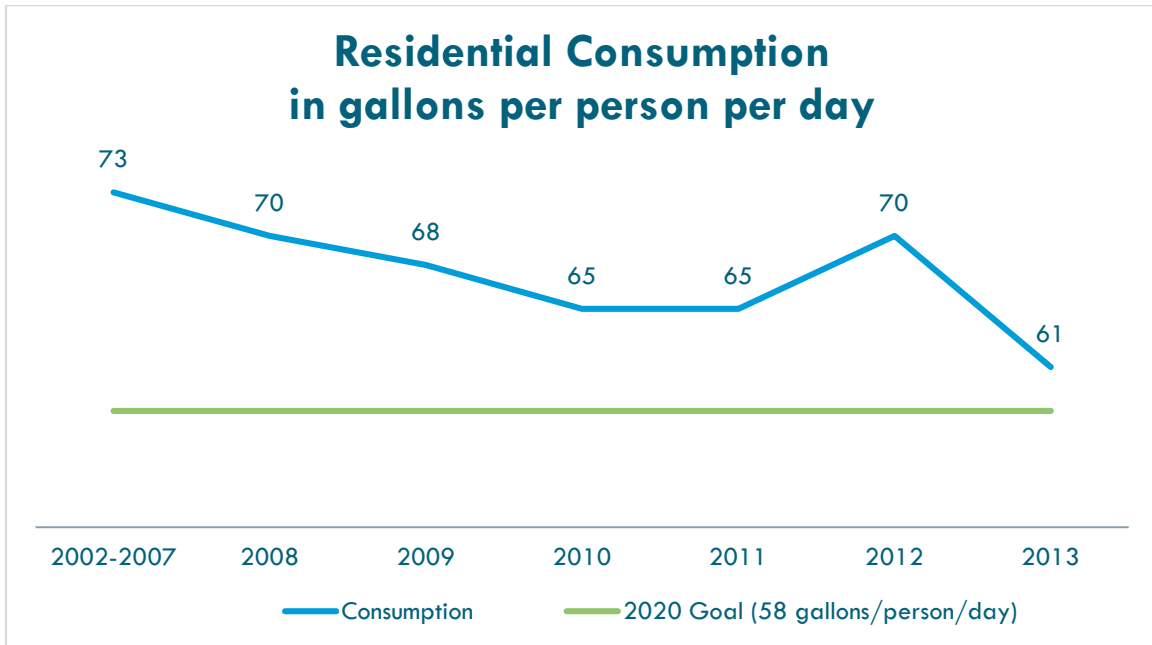
Conservation and Sustainability

It may seem counterintuitive for a utility that sells water to plan for conservation, but a sustainable rate of pumpage must be maintained to ensure clean and abundant water supplies for future customers. The Water Utility Board works closely with the General Manager on several fronts to ensure MWU’s financial viability while pursuing conservation goals.

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. However, a consequence of conservation can be a decrease in revenue if water rates remain steady and less water is sold. MWU plans to apply for a rate structure that will increase customers’ financial incentive to conserve.

Conservation and Sustainability Plan

In 2008, MWU developed the [Water Utility Water Conservation and Sustainability Plan](#) which established conservation goals and suggested actions that could be taken by MWU, the city, and its residents and businesses to reduce our impact on water resources. MWU's conservation goal is to maintain groundwater pumping at a sustainable level while reducing residential per capita water use by 20% before the year 2020.



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](#) which offers rebates of up to \$100 to residential customers who replace existing toilets with EPA WaterSense-rated models. The program was expanded in 2010 to include apartment buildings. Over 11,000 toilets have been replaced through this program, resulting in estimated water savings of over 1 billion gallons citywide since 2009.

Year	Toilet Rebates
2009	1724
2010	2504
2011	2466
2012	1536
2013	2298
2014	1399

Water Main Breaks

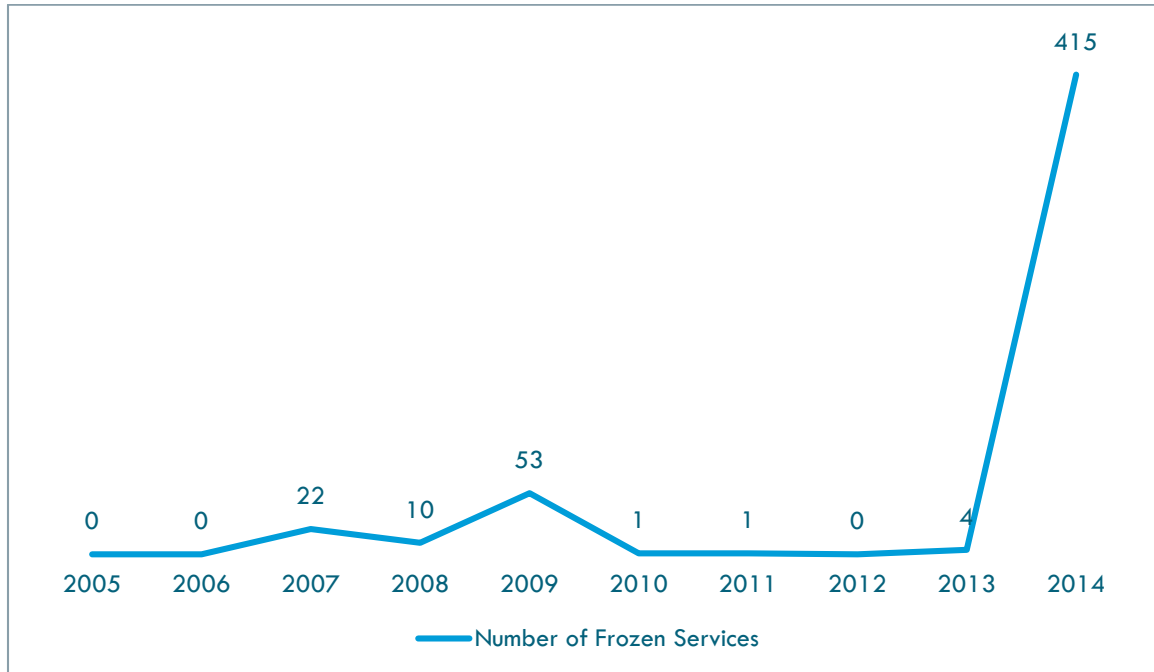
There were 379 main breaks in 2014, and 306 in 2013. Each of these years set records for the highest number of main breaks in a year since MWU began keeping records in 1980. The spike in 2013 and 2014 was likely due to a combination of extreme winter weather and an aging piping system.



Over the past ten years, MWU has experienced an average of 250 main breaks per year. This calculates to an average of 29 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.

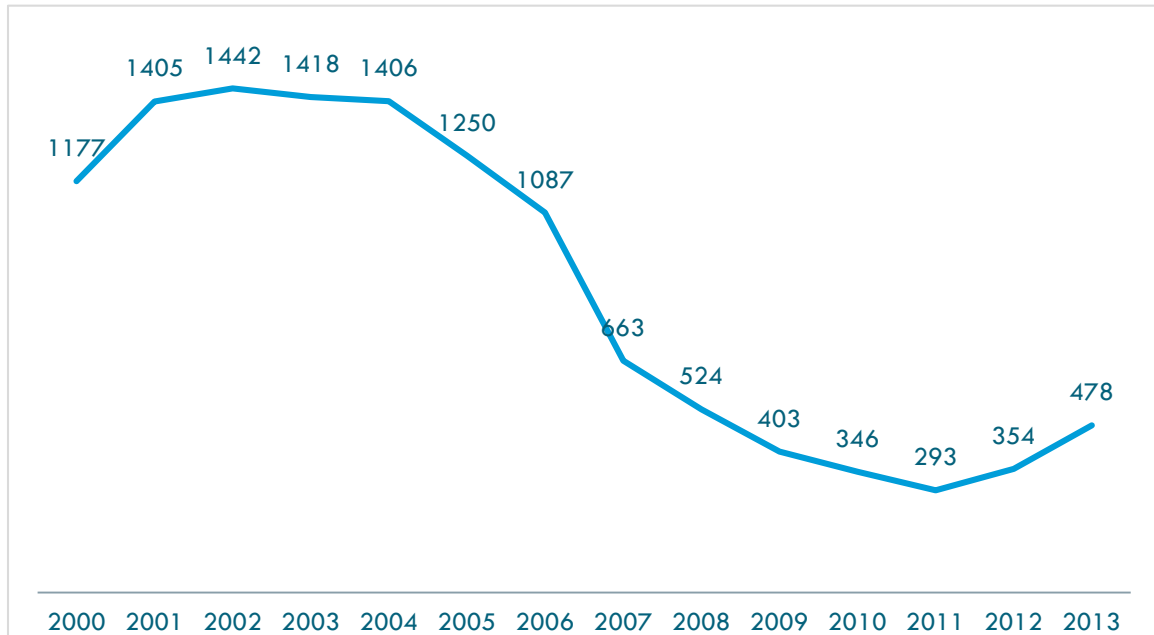
Frozen Services

Prolonged, extreme cold in early 2014 caused the frost line to plunge over six feet deep in parts of the city. This led to water outages as customer's service laterals (the pipe running from a water main to a home) froze. MWU crews thawed over 400 frozen service laterals between January and April of 2014; in a typical winter, crews thaw just a handful. From February to April February, MWU also directed over 650 customers in high risk areas to run a constant stream of water to help keep their service laterals from freezing. Customers who were directed to run water received a credit on their next bill for the excess water used and extra sewer charges.



Service Applications

In 2013, 478 service applications were received. 2014 numbers have not yet been finalized.



EDUCATION & OUTREACH

In 2014, MWU continued its focus on community outreach and education, hosting students and educators at more than a dozen separate facility tours and bringing the Water Wagon to 36 community events across the city. The utility also partnered with local organizations and businesses to hold a successful Open House and Coffee/Chocolate Tasting fundraiser for the group Wisconsin Water for the World.



STUDENTS FROM BADGER ROCK MIDDLE SCHOOL TOUR WELL 30, OCTOBER 2014

The beginning of 2014 brought a brutal stretch of extreme cold; crews repaired 92 main breaks in January alone and thawed dozens of frozen services. But it also brought increased attention to the vital work Madison Water Utility crews carry out every day. In 2014, the utility gained 663 new Twitter and Facebook followers and was the focus of 122 media stories. The utility's popular web article series, "Inside MWU," was picked up by external media more than a dozen times.

2014 also saw the launch of a new Madison Water Utility website, including revamped project pages and project-specific email distribution lists. The pages play a crucial role in the utility's new Citizen Advisory Process, allowing citizens who may not be able to attend in-person public meetings to be involved and engaged in major public works projects. The new site also allows

customers to track their weekly, daily, even hourly water use online, from any computer or smart phone. Madison Water Utility is the first in the state to allow customers such detailed access to their water usage data.

FINANCES

2013 Financial Highlights

- **Operating revenues decreased by \$1 million** or 3.3% from 2012, which had higher revenues due to increased water consumption during heat and drought conditions that summer.
- **Income before capital contributions and transfers decreased \$5.8 million** or 77.3% from the prior year. The decrease was due to the following:
 - MWU recorded a \$1.9 million loss on the early retirement of plant in service as meters and other equipment was replaced during the implementation of an Advanced Metering Infrastructure.
 - Interest and amortization expense increased \$1.7 million, including a total of \$1.4 million in current and unamortized prior year debt issuance costs expensed under the utility's required enactment of Government Accounting Standards Board (GASB) Statement No. 65 - *Items Previously Reported as Assets and Liabilities*
 - The \$1 million decrease in operating revenue mentioned above
 - Higher depreciation, operation and maintenance expense.
- **Payment in lieu of taxes (PILOT) by MWU to the City of Madison increased \$564,000** (11.3%) to \$5.6 million in 2013. This was due primarily to MWU's ongoing investment in water system infrastructure.

Rates

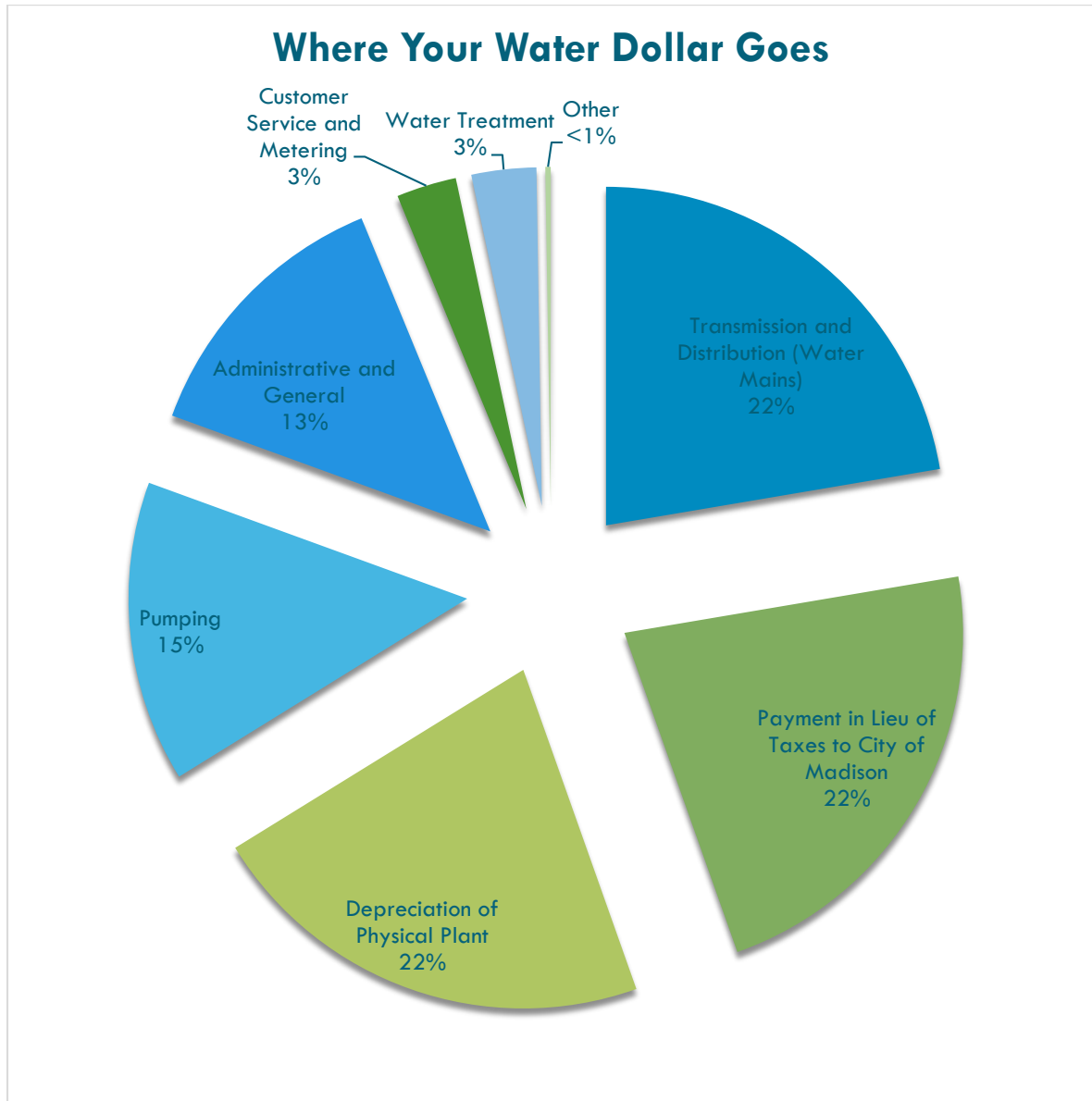
In the fall of 2014, MWU submitted a rate application with the Public Service Commission of Wisconsin (PSC) seeking an overall 30% revenue increase as well as [a new conservation-oriented residential rate structure](#). If approved, the new rate structure will likely go into effect in Spring of 2015, and MWU will be the largest water utility in Wisconsin to offer a conservation rate for its residential customers.

MWU last increased rates on May 3, 2011, when a 9% rate increase was granted by the Public Service Commission of Wisconsin (PSC). Due to the sixth-month billing cycle at that time, the rate increase was not fully realized until January 1, 2012.

Residential customers currently pay 28 cents per 100 gallons of water, with a monthly base charge for most customers of \$4.50 and a public fire protection charge of \$1.50. MWU's rates are below the median for utilities of a similar size (classified as AB, over 4,000 customers) in Wisconsin.

Cost of Service and Debt

Cost of Service



Long-Term Debt

Date	Purpose	Final Maturity	Interest Rates	Original Amount	12/31/13 Amount Outstanding
REVENUE BONDS					
12/01/07	Refunding debt and system improvements	1/01/28	4.-4.75%	\$27,185,000	\$21,495,000
12/09/09	Refunding debt and system improvements	1/01/30	2-5%	\$48,540,000	\$44,100,000
11/10/10	System improvements	1/01/31	0.95.25%	\$13,250,000	\$12,190,000
12/22/11	System improvements	1/01/32	2- 4%	\$19,370,000	\$18,655,000
12/19/12	System improvements	1/01/33	2- 4%	\$21,095,000	\$21,095,000
12/18/13	System Improvements	1/01/34	3-5%	\$24,335,000	\$24,335,000
	Totals			\$153,775,000	\$141,870,000
ADVANCE FROM MUNICIPALITY					
10/19/10	Payoff unfunded pension liability	10/01/24	3.41%	\$1,404,052	\$1,228,872
01/01/08	Advance from City, Burke Utility District #1	n/a	0.82%	\$393,762	\$432,008
LOAN FROM MUNICIPALITY					
08/04/05	Advance from City of Madison ¹	n/a	1.10%	\$4,573,000	\$4,590,000

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. No formal schedule for repayment has been established, but MWU is making payments of \$765,000 a year plus interest.

ADDITIONAL RESOURCES

- [Annual Drinking Water Quality Report](#)
- [Inside MWU](#)
- [Project News](#)
- [2013 Annual Report to the Public Service Commission of Wisconsin](#)
- [2013 Madison Water Utility Financial Statements](#)