Putting Rate Increases into Perspective

This document was produced by the Detroit Water and Sewerage Department (DWSD) Wholesale Customer Outreach Technical Advisory Committee to explain the different factors impacting water rates in the Detroit system, why rates rise if sales decline, and how DWSD is currently reducing operating and capital investment costs to keep rate increases in check.

January 2012

EXECUTIVE SUMMARY

Water sales in the Detroit Water and Sewerage Department (DWSD) system have declined 26% since 2003, mainly due to the Great Recession. As manufacturing and auto companies closed plants, water use plummeted. Residential water use also slid. People left the state searching for work, leaving their homes empty because they couldn't find buyers. The people who remained reduced on summer sprinkling to save money. Also, technical advances have increased water conservation and reduced water usage.

When water sales go down, utilities usually have to raise rates, and DWSD is no exception. Last year the average rate increase for a suburban community was 8.7%. More than 50 cents of every dollar received by DWSD is used to pay principal and interest on its debt. With gross revenue of $285 million in fiscal year 2010, this meant DWSD paid bondholders approximately $158 million. This debt is long term and totals more than $2 billion. Similar to a mortgage, DWSD has already refinanced the debt at the lowest interest rates currently available. When DWSD gets less revenue, it has to raise your rates to continue paying off the debt.

DWSD is certainly striving to reduce the impact of declining sales. DWSD leadership takes no pleasure in raising its rates, but recognizes their responsibility to maintain the system and provide high quality water. Water rates go up for suburban and city dwellers alike so a partnership of DWSD and suburban water professionals wrote "Putting Rate Increases into Perspective" to help elected officials and concerned citizens understand why rates are going up and what DWSD is doing about it.

A short video accompanies this document for viewing at elected official and/or committee meetings. Please contact Mary Alfonso, DWSD Public Affairs Manager, if you have any questions or comments.

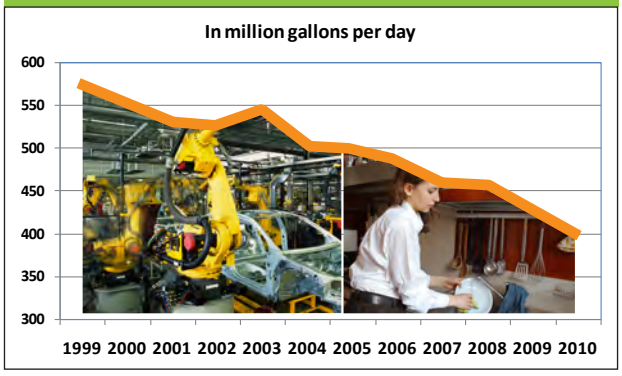
DECREASE IN WATER SALES, INCREASE IN RATES

Water Sales Down 26% Since 2003

Southeast Michigan has felt the sting of the economic downturn more deeply than other areas of the country. According to the Southeast Michigan Council of Governments (SEMCOG), our region has absorbed two blows since the peaks of the last decade. We have lost nearly 400,000 jobs, and our population has declined by 300,000. As manufacturing and automotive companies cut back on production, their water use has declined. At the same time, unemployed workers have left the area, lowering residential water use. 15 of Michigan's 20 largest cities lost population in the 2010 US Census. So it's no surprise that average water sales have dropped from the peak in 2003 from 540 to 400 million gallons per day.

Of course, advances in water conservation have also played a role in declining water sales. Low-flow appliances dominate the home improvement and home building marketplace. All other factors being equal, the American Water Works Association (AWWA) estimates that a typical residential home built in 2011 uses 35% less water than a home built before 1994. And finally, there is the weather. During hot summers, homeowners use more water to protect their lawns and their landscaping investments. Until the summer of 2011, which was the hottest in Michigan in 50 years according to the National Weather Service, we had a string of wet and cool summers, which only worsened the drop in sales. But even with this summer's heat, DWSD barely pumped a billion gallons on our maximum day in July. In 2007, there were 40 days that DWSD pumped a billion plus gallons of water.

Declining DWSD System Water Sales



Declining water use in the DWSD system is a result of lower population and less manufacturing as well as production efficiencies made by existing manufacturers. For example, the General Motors assembly plant in Lake Orion was streamlined to use 20% less water during production of its Sonic subcompact car.

Water Sales Falling Across the Country

Southeastern Michigan is not alone. Cities throughout the country are dealing with declining demand for water. Cleveland, Ohio has watched consumption drop 42% since 1980 with half the loss occurring in the last six years. The Cleveland Water Department has raised rates every year since 1991. In 2011, an 82% increase was proposed for Cleveland City water customers and a 50% increase for Cleveland suburban customers over a 5-year period.

Consumption declines have also led to rate increases by the Philadelphia Water Department that will total 59% from 2002 through 2012 as the Department spreads its fixed costs over fewer customers. Other contributing factors have included escalating costs for fuel, chemicals, and employee benefits, and an increase in delinquent accounts.

Rates Go Up When Sales Go Down

In 2010, DWSD water sales were below sales projections by 17.3% for suburban wholesale customers and 8.7% for City of Detroit customers. On July 1, 2011, DWSD raised its water rates an average of 8.9% throughout its system of 85 suburban wholesale water customers. Some communities were below the average – Ferndale's rates went up 5.3% and Westland went up 5.7%. Others were over the average – St. Clair Shores went up 9.8% and Allen Park went up 9.7%. The City of Detroit saw a 9.3% increase.

Detroit Area Water Sales Decline 2006 - 2010

Detroit's largest suburban wholesale customers have experienced big declines in water sales since 2006.

UNDERSTANDING FACTORS THAT IMPACT WATER RATES

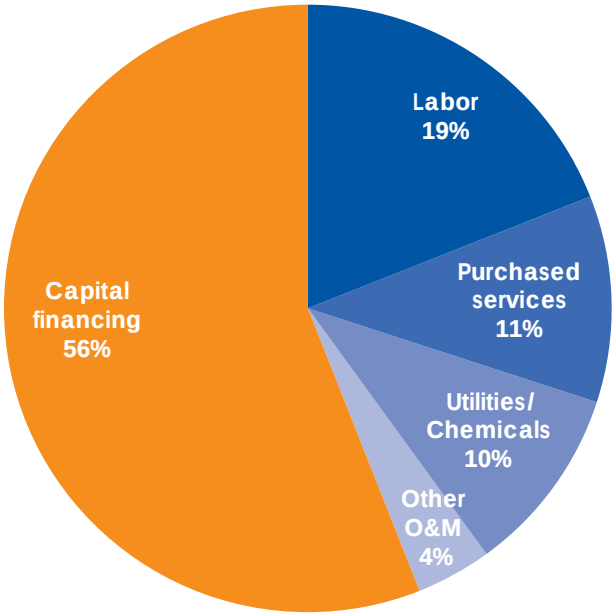
Setting Water Rates is a Balancing Act

Setting the price for a pair of running shoes is pretty straight forward. The cost must include the manufacturing facility, equipment, materials, labor, advertising, and distribution. Of course, profit is also incorporated into the price. Public water utilities operate under a non-profit model. Rates are based on the cost to produce the projected water demand for the coming year. The projected demands (sales targets) are provided by the suburban communities and are critical to effective rate making. If actual sales are lower than planned, as they were in 2010, rates have to increase the next year (2011) for a new lower projected volume. Rate makers are continually balancing the known (current costs) with the unknown (how much water will be sold next year). If they are too optimistic about the future and keep rates stable, they will find further shortfalls and the need to raise rates will occur year after year.

Balancing Public Water Utility Rates

Operating a public water utility requires rates that balance costs and sales. While a decline in sales may reduce expenses related to water production, the accrued costs of capital force rates to increase to maintain the balance.

Water Cost Breakdown in 2011-2012 DWSD Rates



The capital-intensive nature of rates can be a burden that raises unit costs for all users when water sales decline. Water systems are long-term investments that must be paid by system users. Costs include capital financing (orange) and a variety of water production expenses (blue).

Prior to 2008, DWSD carried $500 million in variable interest rate debt (bonds) for water projects. Variable rates reduced the interest rate by 0.5%, and DWSD saved approximately $40 million over a 5-year period. But like everyone else, DWSD is not immune from the Wall Street crisis. In February 2008, DWSD's bond insurance company was downgraded during the Bear Stearns meltdown. This caused the bond's interest rates to spike overnight from 4.8% to 9.2%. DWSD promptly renegotiated the debt to a fixed rate of 6.2%. However, interest rate costs still increased $5.5 million per year.

Fixed Costs are the Major Challenge for Rate-Makers

The fact that water rates increase when sales go down may seem backwards. However, about 80% of the costs of running a major utility, such as the DWSD water system or any large system in the country, are fixed. These costs include capital financing, which comprises 56% of DWSD's overall expenses, and most operational and maintenance costs, such as reading water meters, repairing water main breaks and inspecting/repairing fire hydrants. Fixed costs are difficult to reduce without sacrificing the mission of providing safe, potable water. For example, DWSD can't decide to inadequately treat its water, to shut down a water plant three days a week, to close off water mains or to refuse to pay principal and interest on its debts. **This large proportion of fixed costs means that DWSD has to raise its rates 4% for every 5% reduction in water sales.**

Local Communities Face Same Challenge

Local communities also face a fixed cost challenge because they have distribution systems that must be maintained and debts that have to be repaid. They have implemented efficiency programs and cut staff, but they have had to raise rates to compensate for declining revenues. Often, these rate increases may show up as fee increases for services like disconnection charges, after hour calls, hydrant relocations, etc.

Utilities are Fixed Cost Intensive Businesses

Water and sewer utilities are capital-intensive, that is, "fixed cost" businesses. Why? Because of the water treatment and transmission infrastructure. Water infrastructure costs more than the infrastructure for electric, gas or telecommunications industries. The National Association of Water Companies has estimated that it takes nearly $3.40 in infrastructure investment to earn $1.00 in revenue. Replacing and rehabilitating aging water mains, pumps, reservoirs and treatment facilities requires large capital investments. Like electrical utilities, water utilities must maintain equipment and staff to meet peak demands in the summer, during a water main break, or an electrical outage. This constant readiness requires continued investment.

DWSD's water system infrastructure is massive, and it is aging, much of it exceeding an estimated useful life of 60 years. It includes 5 treatment plants, 3 raw water intakes, 20 booster pumping stations, 34 reservoirs, 770 miles of transmission main and 2,600 miles of distribution main. DWSD finances capital improvements with 30-year bonds so costs are covered over multiple years rather than immediately through rates in a single year. Repayment of the principal and interest on this debt, or debt service, is the largest single expense for the water system, costing approximately $158 million in 2010. Looking down the road to final payoff of the existing debt through 2040, the entire financial obligation will total $4.1 billion in principal and interest payments.

DWSD is Cutting Labor and Operations Costs

In this tight economic time, many water utilities have cut staffing costs by not replacing retirees and implementing furlough days to reduce labor expenses. DWSD is no different. It has been reducing staff through attrition – the water staff has been reduced by almost one third since 2002. Furlough days were implemented for all personnel except those positions that are required full time to maintain water quality and safety. Although these measures have actually decreased labor costs by 4% since 2005, the decrease has not been enough to make up for the lost water sales. Overall, operating costs have not increased for the past 10 years. DWSD continues to employ cost-saving measures that focus on streamlining operations to make them more efficient.

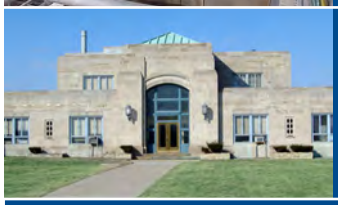
Water utilities are further challenged by an aging workforce and not enough qualified staff entering the field. Required skills are also rising as treatment processes become more sophisticated and technology-driven. Thus, the shortage of workers and higher knowledge skills could impact future labor costs. The AWWA estimates that nearly half of water utility workers could retire in the next ten years.

A 2009 EPA study estimated that $335 billion is needed to maintain the nation's water systems in the coming decades.

Recent DWSD Water Capital Improvement Projects Financed with Bonds

New Water Works Park Plant - $275 million

New Clearwells & Washwater Facilities at Lake Huron WTP - $65 million

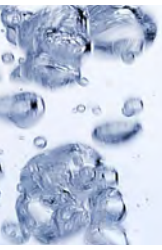


Springwells Filter/Low Voltage Rehabilitation - $60 million

Reservoir Inspection & Repair Program - $45 million
Haggerty Road Booster Pumping Station - $32 million
Suburban Master Water Meters Automation & Replacement - $27 million

DWSD Cost Saving Measures to Reduce Water Production Expenses

- Overtime management
- Limiting outsourcing of work to contractors
- Seeking better-priced chemical contractors
- Overall reduction of fleet vehicles



Water production expenses are being aggressively managed by DWSD. They offer opportunities for cost savings to help offset rising unit cost created by decreased sales.

Pumping is a significant water production expense, particularly to deliver water to communities that are farthest from the treatment plants or at higher elevations. Electrical usage also increases during higher demand days in the summer.

Fluorosilicic Acid Price Per Ton

$132 in 2002
$637 in 2011

4,500 tons (or $2.8 million) were budgeted in 2011

Price increases for fluorosilicic acid have outpaced all other chemicals used by DWSD in the treatment process. Through aggressively seeking new suppliers, DWSD has been able to gain lower unit costs on some chemicals to help offset dramatic increases for other chemicals.

Working to Control Utility and Chemical Costs

Water production and distribution are energy-intensive services due to the amount of pumping required to move water across the region. Low lift pumping is used to bring raw water into treatment plants and high lift pumping is used to maintain water pressure in the distribution system. When peak water use coincides with peak electrical use, it means higher energy costs. Electrical usage cost DWSD $29 million in 2010, or about 18% of its water production costs. DWSD is constantly working with DTE Energy to limit electrical rate increases. After signing new contracts, many wholesale customer communities have implemented outdoor irrigation ordinances or constructed water storage tanks to reduce water usage during peak periods which reduces overall electrical usage.

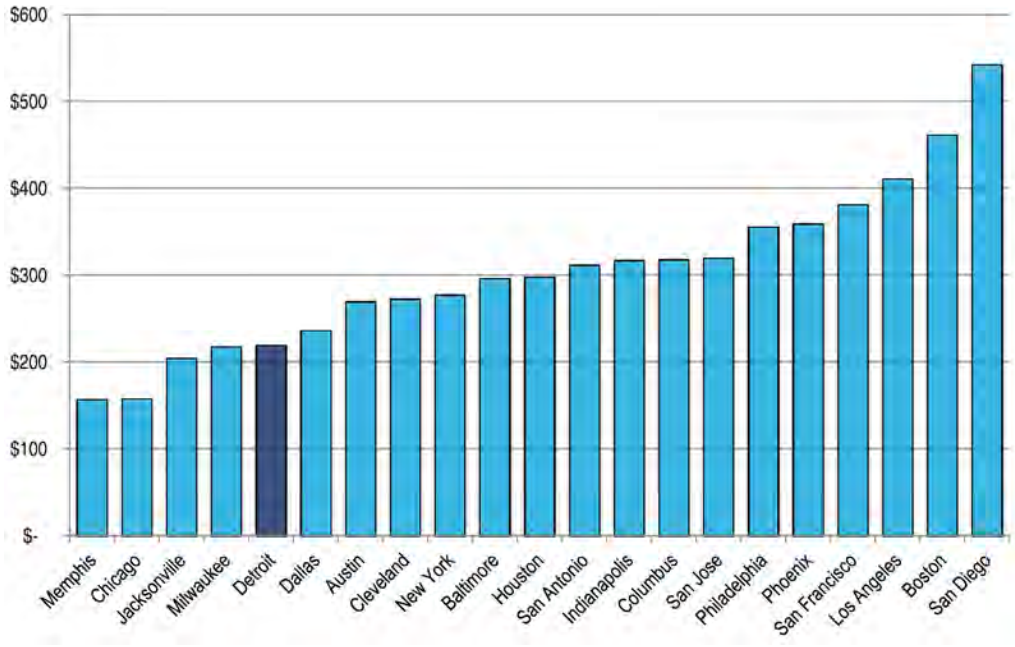
DWSD uses a range of chemicals in the treatment process. With the exception of chlorine, all of these chemicals have become significantly more expensive over the last ten years. The most widely used chemicals at DWSD's five treatment plants are aluminum sulfate, chlorine, fluorosilicic acid (dental protection) and phosphoric acid (corrosion control for lead and copper pipe protection). DWSD has aggressively sought out new suppliers to secure better prices.

DWSD Rates Still Among the Lowest

While Detroit is facing continued declining sales, it still provides water at one of the lowest rates in the country as shown in the chart on page 7. A water system that never increased expenses or rates would not have the money to maintain and upgrade its infrastructure or to build improvements to meet federal regulations. It couldn't implement new cost savings technology. It would not be able to purchase enough chemicals to properly treat and deliver water that is safe to drink. Even more starkly, the utility would not be able to replace the deteriorated water main that was installed at $1 per foot in 1950, but costs $40 to $100 a foot to replace today.

Rate increases are frequently viewed as negative when in reality they can indicate a utility is reinvesting in essential infrastructure to provide adequate water supply. Remember that federal grants are no longer available to offset this investment so we, the residents of Southeast Michigan, have to bear the cost. Yes, Great Lakes water is free, but a tremendous infrastructure has to be maintained to treat the water and make it available where and when customers need it. This infrastructure must be operated and maintained by competent professionals. So, DWSD's water rates will likely continue to increase – particularly since demand is not likely to return to previous levels any time soon. But even so, water rates are still the lowest monthly utility expense for most residents.

Detroit's Retail Rates are Competitive with its Peers



A comparison of 2009/2010 retail water bills for typical residents in the largest US cities shows Detroit's retail rates are among the lowest in the country. (Source: Black & Veatch)

RESPONDING TO CHANGING DEMAND

Planning for a Future with Less Water Consumption

DWSD is taking a hard look at the future. It is rethinking operational strategies and finding ways to improve operations and maintenance efficiency. Much of this "rethinking" appears in the Capital Improvement Plan (CIP). In July 2011, the Board of Water Commissioners approved a $556 million CIP through 2016. This is $1.2 billion less than 2003 projections in the 50-year Water Master Plan. The reductions were achieved by eliminating projects related to system expansion and delaying rehabilitation projects until DWSD has decided how to configure its plants for the so-called "New Normal." DWSD has also scheduled an update of its Water Master Plan. This plan guides the long-term management of the water system and is the source document for the 5-year CIP. It was last published in 2003 and projected 2% growth for each of the 50 years. The reality has been 3% contraction for the last 4 years!

Given the changing times, DWSD is monitoring changing demand in the service area more closely. New water model contracts introduced in 2007 and now adopted by 85% of DWSD's suburban customers, allow suburbs to set their own demand volumes.

Monthly Utility Expenses for Three Households in Detroit Metropolitan Area

Utility	2-person household	3-person household	4-person household
Total utility expense	$504.21	$606.38	$618.03
Phone	30%	27%	28%
Cable/Internet	24%	27%	20%
Electric	10%	15%	22%
Gas	18%	19%	16%
Water/Sewer	15%	9%	12%
Trash	3%	2%	2%

Communities can change these volumes (peak and max day) when renewing their contracts. DWSD uses contractual data to make short and long term infrastructure decisions. For example, it recently cancelled a transmission loop through northern Oakland and Macomb Counties that would have cost almost $400 million. This cancellation was driven by customer input through the contracts and through the Technical Advisory Committee.

DWSD is reevaluating its Capital Improvement Plan based on current conditions to better determine what future investments are needed.

Partnership between DWSD and Suburbs = Collaboration!

The new economic, social, and political environment is changing the landscape for our regional water system. Containment of increasing costs requires a new paradigm of cooperation between DWSD and local customer communities. This new paradigm begins with the recognition that the state of our community water systems depends upon the state of the entire regional water system. The regional water supply is for all of us: the City of Detroit, the Suburban Communities, and the Counties.

Our new paradigm assumes that "what's good" for Oakland County communities should be "what's good" for the City of Detroit, Macomb County, Wayne County, etc. It also includes the assumption that we will create opportunities for collaboration in regional and local projects, as well as new technologies in energy savings, metering, and communication. The shifting paradigm will move us to help each other find cost savings for local communities by sharing resources, expanding mutual aid agreements, and exploring other ways of reducing costs throughout the region.

The bottom line is that we cannot prevent rate increases. But, we can work together to keep rates as affordable as possible to continue to deliver the high quality water that is expected in this region.

SOURCES OF INFORMATION AND RECOMMENDED READING

"Driving Them to Drink", Stephen Ursery, American City & County, October 1, 2011

"The Business of Water: It Is Time to Embrace a New Model for Water Services", G. Tracy Mehan III, Bureau of National Affairs, Inc., 2011

"Declining Residential Water Use Presents Challenges, Opportunities", Margaret Hunger, Kelly Donmoyer, Jim Chelius and Gary Naumick, AWWA Opflow, May 2011

"Residential Water Use Trends in North America", Thomas D. Rockaway, Paul A. Coomes, Joshua Rivard, and Barry Kornstein, Journal AWWA, February 2011

Water Primer for the Great Lakes Region, Institute of Public Utilities, Michigan State University, December 2010

DWSD Water Supply System Capital Improvement Program, 2011-2015, July 2010

City of Detroit Water Fund, Basic Financial Statements, June 30, 2010

"The Conservation Conundrum: How Declining Demand Affects Water Utilities", Janice A. Beecher, Journal AWWA, February 2010

Supply of Critical Drinking Water and Wastewater Treatment Chemicals – A White Paper for Understanding Recent Chemical Price Increases and Shortages, Water Research Foundation, 2009

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