Waukesha Water Utility
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MEMORANDUM

Date: November 3, 2015

To: Eric Ebersberger, DNR Deputy Division Administrator
Shaili Pfeiffer, DNR Staff Specialist

From: Daniel S. Duchniak, General Manager
Donna N. Scholl, Administrative Service Manager

Re: Conservation Efficiency Measures

The City of Waukesha has diligently implemented the Water Conservation Plan ("the Plan") it adopted in 2012. That Plan replaced a previous 2006 conservation plan.

The Plan implements Conservation Efficiency Measures (CEMs) listed in NR 852.05 that are cost effective and environmentally sound and do not require retrofitting. The City estimates that implementing the Plan will result in a reduction in average day demand of 0.5 mgd by the year 2030 and 1.0 mgd by the year 2050.

Key elements of the Plan include:

- A goal to "[t]arget the highest potential savings;"
- A goal to "[p]ursue cost-effective" measures and to "leverage lessons learned from . . . its own experiences with implementation;" and
- The flexibility to "change which measures are implemented, the schedule and the balance between the measures from year to year.

The near-term implementation plan contains six Program Elements. Each of the elements is addressed.

Rebates and Incentives: Residential and Commercial
Conservation and Efficiency Measures (CEMs)

The initial program contained two elements devoted to achieving water savings through rebates and incentives. The CEMs in the original plan are listed in Table 1 (as shown on page 2).

During the implementation of the Plan in 2012 and 2013, the City found a focus on specific devices, such as toilets, was less effective at achieving water savings than a focus on specific customers with the potential of significant savings.

Given the Plan's goal to target the highest and most cost-effective potential savings, the City changed its focus in 2014 to Conservation and Efficiency Measures (CEMs) that – based on its implementation experience – would achieve greater conservation benefits for its budgeted resources. The City chose to employ these new CEMs rather than some of CEMs that were on the initial schedule. The new CEMs are also listed in Table 1.

That change in focus has been a success. The measures implemented in 2014 substantially exceeded the savings in gallons that the Plan had hoped to achieve. The new savings in 2014 were 5,985,717 gallons, or 63% more than the 3,663,062 gallons under the Plan. Table 1 shows the results of the City's conservation efforts before and after 2014's change in focus.

Ultimately, the City must compare the results of the implementation of the conservation program with its water savings goal of 1.0 mgd by 2050. In order to achieve the 2050 goal, the City assumed that it would need to save 182,500,000 gallons per year by the year 2030.

Table 1

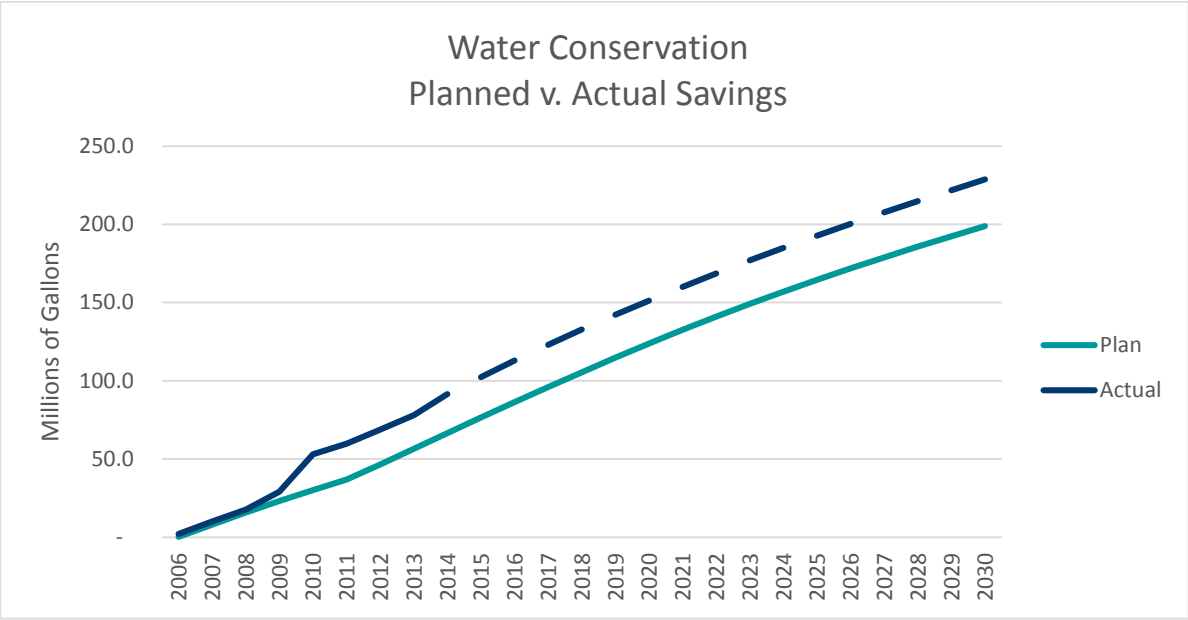
AWE CONSERVATION TRACKING TOOL: ENTER ANNUAL CONSERVATION ACTIVITY WORKSHEET

Enter Annual Conservation Activity

			2012				2013				2014			
			Plan		Actual		Plan		Actual		Plan		Actual	
Class	Activity Name	Activity Savings Per Unit	Units Replaced	New savings	Units Replaced	New savings	Units Replaced	New savings	Units Replaced	New savings	Units Replaced	New Savings	Units Replaced	New Savings
Residential	Residential HE Toilets, SF--25$ Rebate	10,391.00		-	11	114,301		-				-		-
Commercial	Residential HE Toilets, MF & Commercial--25$ Rebate	18,834.65		-				-				-		-
Residential	Residential HE Toilets, SF--$100 Rebate	9,263.30	50	463,165	52	481,692	100	926,330	132	1,222,756	100	926,330	81	750,327
Residential	Residential HE Toilets, MF--$100 Rebate	18,834.65	10	188,347			15	282,520		-	15	282,520		-
Commercial	CII HE Toilet -- $100 Rebate Commercial	39,520.00	7	276,640			7	276,640			10	395,200		-
Public	CII HE Toilet -- $100 Rebate Public	55,480.00	1	55,480			10	554,800			15	832,200		-
Industrial	CII HE Toilet -- $100 Rebate - Industrial	39,520.00	1	39,520			2	79,040			2	79,040		-
Residential	Residential LF Showerhead Rebate $20, SF	2,062.30	5	10,312			7	14,436			10	20,623	-	-
Residential	LF Showerhead $20 Rebate, MF	1,898.00		-			2	3,796			4	7,592	-	-
Commercial	LF Showerhead $20 Rebate, Commercial	2,062.25		-			1	2,062			2	4,125	-	-
Public	LF Showerhead $20 Rebate, Public	2,062.25		-				-			1	2,062	-	-
Industrial	LF Showerhead $20 Rebate, Industrial	2,062.25		-				-				-	-	-
Commercial	CII 1/2 Gallon Urinal $100 Rebate	6,206.00		-		-		-		-		-		-
Public	CII 1/2 Gallon Urinal $100 Rebate	6,206.00		-		-		-		-	1	6,206		-
Industrial	CII 1/2 Gallon Urinal $100 Rebate	6,206.00		-		-		-		-		-		-
Residential	Residential HE Washer Rebate $50, SF	7,043.00									3	21,129		-
Residential	HE Washer Rebate $100, MF	25,310.00									1	25,310		-
Public	City Hall Retrofit Demonstration Project	234,000.00	1	234,000	1	2,190,000						-		-
Commercial	CII Hotels/Healthcare laundries $100 Rebate	31,435.00		-								-		-
Spray Rinse Valves								1,060,725				1,060,725		
Commercial	2014 Tommorow's Choice PropLat Replaced to Ellim H20 Run	84,390.00											1	84,390
Commercial	La Casa Vill I 1.6 Toilets - 2013	2,431.00							40	97,240				
Public	Horeb Pool Leak Invenstigation and Fix - 2014	368,000.00											1	368,000
Public	Waukesha South Pool - Valve - 2014	330,000.00											1	330,000
Public	Waukesha School District Chiller/Condenser Units - 2014	570,000.00											1	570,000
Commercial	Carrol Natatorium (Van Male) Upgrades - 2014	783,000.00											1	783,000
Industrial	Eaton/Cooper - Recirculating Pump - 2014	3,100,000.00											1	3,100,000
				1,267,463		**2,785,993**		**3,200,349**		**1,320,160**		**3,663,062**		**5,985,717**
Cumulative Savings				1,267,463		2,785,993		4,467,812		4,106,152		8,130,874		10,091,870

Chart 1 shows the activities in the Plan actually exceed the 182 million gallon goal by 2030. Furthermore, the actual savings achieved by the City's implementation exceed those listed in the Plan. It is clear that the City is ahead of its goal, due to its change in focus.

Chart 1



In addition, the City has been able to exceed its conservation goal by spending less of the ratepayers' funds than it originally anticipated.

Table 2

Costs—Water Conservation Program								
Activity Name	**2012**		**2013**		**2014**		**Total**	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
Toilet rebates	$ 5,500	$ 5,596	$ 20,800	$ 12,815	$ 24,900	$ 7,976	$ 51,200	$ 26,387
Showerhead rebates			500	-	-		500	-
Indoor water use audits	-		13,100		14,400		27,500	-
Outdoor water use audits	-		-		600		600	-
Urinal rebates	-		-		-		-	-
Spray-rinse valve rebates	-		2,200		1,300		3,500	-
Leak detection, mains, and hydrants	7,000		10,000		10,000		27,000	-
Pilot project or tailored incentives	-		-		5,000	29,626	5,000	29,626
Subtotal	12,500	5,596	46,600	12,815	56,200	37,602	115,300	56,013
Public education and outreach	10,500	24,117	10,500	13,865	10,500	15,681	31,500	53,663
Program management, auditing, reporting, customer service, sprinkler ordinance	34,800	73,205	38,000	41,919	45,000	13,660	117,800	128,784
Estimated Program Cost Total	$ 57,800	$ 102,918	$ 95,100	$ 68,599	$ 111,700	$ 66,943	$ 264,600	$238,460
Gallons Saved (millions)	1.27	2.79	3.20	1.32	3.66	5.99	8.13	10.09
Cost per Million Gallons	$ 45,603	$ 36,941	$ 29,716	$ 51,969	$ 30,494	$ 11,184	$ 32,546	$ 23,633

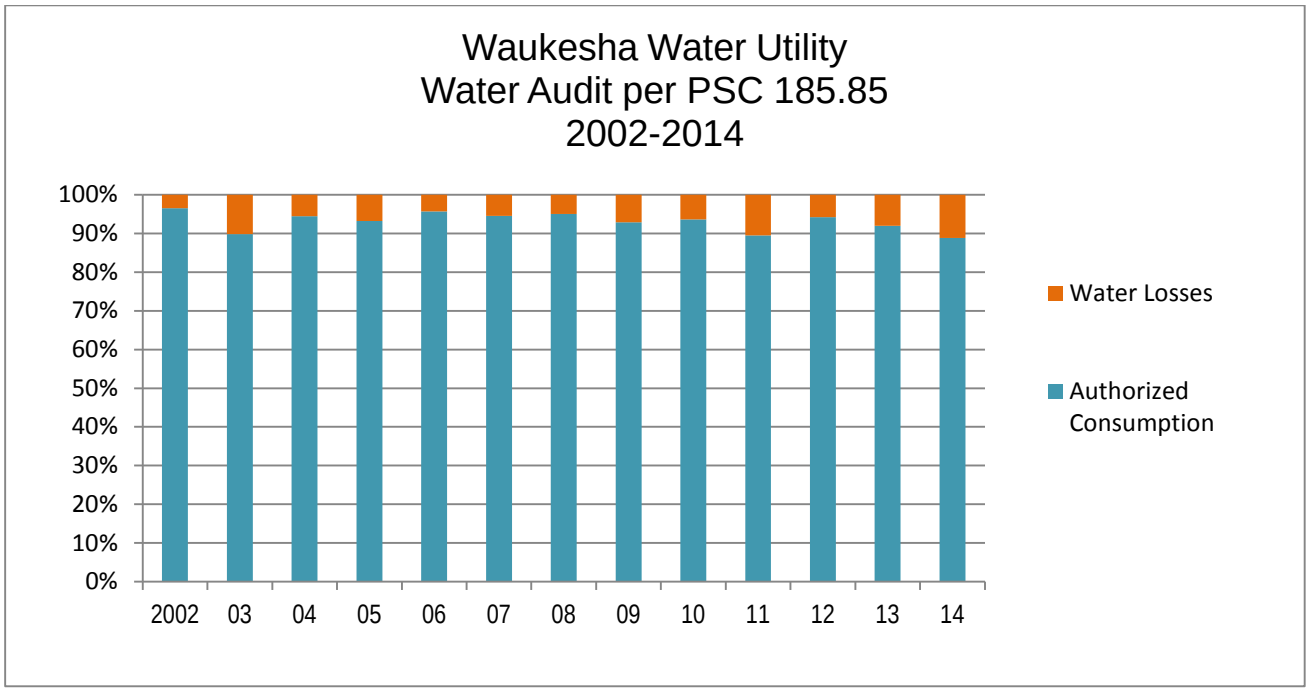
Instead of spending the planned $32,546 per million gallons saved, it spent just $23,633 per million gallons saved.

Additional Program Elements

It is important to note that the Plan includes four elements in addition to the CEMs listed above. Those additional Program Elements are addressed below.

Municipal Infrastructure
The City monitors its water loss statistics using information that is reported annually to the Wisconsin Public Service Commission. These statistics are consistently lower than the level that would require a state imposed action plan to address system water loss.

Chart 2



That said, since the inception of the plan, the City engaged in additional activities designed to limit water losses. It has:

- purchased a leak correlator, trained its staff, and conducted leak detection surveys of its hydrants;
- worked with a municipal pool to curtail water loss; and
- conducted unidirectional flushing.

Public and School Education
Waukesha's water education program began in the 1990's. Because of that long-standing presence in the community, it was uniquely positioned to promote the City's conservation message. Since the adoption of the City's first conservation plan in 2006, the City has organized conservation challenges, annually taught 5th grade water education classes, presented at toilet replacement clinics, and distributed conservation materials and rebate applications at numerous conferences, community events, and farmer's markets, and initiated its "My Brown Lawn is Green" campaign to discourage lawn irrigation . A complete accounting of the City's activities can be found in its annual reports filed with the Wisconsin Public Service Commission since 2012.

Policies, Regulations, and Enforcement

The City was the first in the state to pass a **Sprinkling Ordinance**. It continues to actively publicize and enforce Ordinance, 13.1. It bans daytime sprinkling and requires owners who sprinkle at other times to limit it to two days per week. The program is described in detail in its annual reports filed with the Wisconsin Public Service Commission since 2012.

In 2007, the City was the first in Wisconsin to implement **inclining rate blocks**. Residential customers are incented to conserve water because they are charged higher prices if their consumption exceeds 10,000 gallons per quarter (single family).

Customers who are concerned about overuse can log on to the **City's website to compare their consumption** to the average in their neighborhood.

In 2015, the City introduced an ordinance that regulates the design, installation, and maintenance of underground sprinkling systems. In addition to conservation-minded landscape design, the ordinance mandates the use of a WaterSense-labeled controller. The City's water utility is a WaterSense partner and as such relied on the research WaterSense had already done. The **Irrigation System Ordinance** is expected to go into effect in 2016.

The City will also require **agreements to follow Waukesha conservation ordinances and regulations for owners of property outside of the City** that want new water service installed. The owners will generally be required to sign a recordable contract binding them and their successors to follow City conservation ordinances and regulations related to water service, including conservation. This requirement was recently included in a draft Intergovernmental Cooperation Agreement between the City and the Town of Waukesha for a water main on E. Broadway Avenue.

Reporting, Monitoring, and Plan Updates

Per NR 852.04 and PSC 185, the Utility performs and documents water use audits on a monthly basis. The specified water balance was used to produce the data in Chart 2.

The City monitors conservation activities using the Alliance for Water Efficiency (AWE) Water Conservation Tracking Tool. The tool is updated annually and produces the reports on planned versus actual savings that are reported to the WPSC.

As stated previously, when the results from the AWE tool were reported internally, the City chose to update the CEMs it chose to employ.

Conclusion

As stated previously, each of the six program elements has been addressed. The data as presented overwhelming supports the assertion that the City of Waukesha has implemented its water conservation plan. Not only has it implemented the plan, but the City has improved upon it as conditions changed, based on its implementation experience.