



**BUSINESS OF THE CITY COUNCIL
AGENDA STATEMENT**

Item No. 6h

For Meeting of 08.18.2016

ITEM TITLE: Receive & File Des Moines Water Works Cost of Service Study

CONTACT PERSON: Tim Hoskins, Public Works Director

SUMMARY EXPLANATION:

Each year Des Moines Water Works (DMWW) generates a "Cost of Service Study". Included with the agenda statement is a copy of the recently released study that has been generated by DMWW financial Department for presentation to the Board of Directors.

Area of interest is page 8, Trends and Highlights. This section discusses historical data with changes over time. You'll see where distribution of water outside of the City of Des Moines due to growth as well as affects due to weather influence.

Lastly on page 23 you'll find a summary of the data presented and its impact on future rates.

This information is provided for informational purposes only. At this point we don't use it for budget purposes.

DES MOINES WATER WORKS

COST OF SERVICE STUDY

FOR THE YEAR ENDING

DECEMBER 31, 2015



This report has been prepared by:

Donna Heckman, and members
of the Des Moines Water Works
Finance Staff

EXECUTIVE SUMMARY

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The Des Moines Water Works performs an annual cost of service study to determine the cost of providing clean, safe drinking water to a variety of service areas and customer classes. The study reviews costs for a one-year period in order to estimate the revenue required to fund future operating expenses and capital replacements. This analysis considers non-cash elements such as replacement cost depreciation and return on investment in addition to cash outlays. Des Moines Water Works uses the methodology developed in the American Water Works Association's "Principles of Water Rates, Fees, and Charges", commonly referred to as the M1 Manual. The base-extra capacity method and the commodity-demand method are two accepted approaches of analyzing the costs to serve various customer classes. Historically, the Des Moines Water Works has used the base-extra capacity method as the basis for setting rates. However, we also analyze costs using the commodity-demand method, which is more sensitive to the relationship between the peak and average demand characteristics of each customer class. Higher costs are assigned to the residential user by the commodity-demand method compared with the base-extra capacity method, demonstrating the extreme demand placed on our system by residential irrigation of lawns and gardens during the summer months. The focus of this Executive Summary is the base-extra capacity method; however, there is more information on the commodity-demand method in the full Cost of Service Report.

In the base-extra capacity method, costs of service are separated into four primary cost components: (1) base costs, (2) extra-capacity costs, (3) customer costs, and (4) direct fire-protection costs. Base costs are those that vary with the total quantity of water produced plus operation and maintenance expenses and capital costs associated with average demand characteristics. Extra-capacity costs are the operation and maintenance expenses and capital costs for system capacity beyond the average rate of use. Extra capacity costs are further divided between maximum-day demand and maximum-hour demand. Customer-related costs stem from services to customers, regardless of the

amount of water used or the demand on the system. They include meter reading, billing, and customer service activities. Finally, fire protection costs include the maintenance and replacement costs of public fire hydrants and the mains and valves that serve them. The allocation of replacement cost depreciation, within the above components, is based upon a combination of percent of total consumption, percent of total customer accounts and percent of total hydrants, respectively.

In addition to the Des Moines service area, the Des Moines Water Works provides water to unincorporated Polk County, Windsor Heights, Warren County, Pleasant Hill, Runnells, Cumming, Alleman, Polk County Rural Water District #1(PCRWD#1) and the Berwick Water District service areas. The Des Moines service area is further divided into Inside City, Outside City (accounts outside Des Moines' city limits but not in one of the other eight service areas) and Wholesale (accounts that buy water on a wholesale basis and resell it to their own customers). The base-extra capacity method distributes costs to each service area and to three progressive rate steps in service areas with significant commercial and industrial consumption. The first and second rate steps have consumption thresholds that result in a tiered or step-like rate structure - when a customer's consumption exceeds the first step threshold, the customer progresses to the second step and so on. It is presumed that most residential customers will remain in the first step. While commercial and industrial customers have consumption in the first step, many have consumption in the second and third steps.

Operating and maintenance costs increased 1.47% following 13.2% higher costs in 2014. Most operational areas saw a decrease in expenses during 2015. Water Production saw a 0.22% decrease in costs in 2015 over 2014. The Pipelines operational area had a cost decrease in 2015 with costs decreasing 12.83%. After an increase of 7.4% in 2014, Customer Service costs decreased 0.20% in 2015. General and Administrative costs saw the only increase in 2015 with costs increasing 16.43% over 2014 costs. There was an

increase of 0.8% in the Consumer Price Index for 2014. A chart on page 15 in the Trends and Highlights section shows cost detail for the years 2012 thru 2015.

Capital replacement costs increased 5.19% from 2014 to 2015. Two factors contribute to the continued increases: the addition of assets and the increase in the *Engineering News Record* Construction Cost Index (ENR CCI). The Construction Cost Index used to measure the relative change in cost increased 1.65% in 2015 after a 2.69% increase in 2014.

In the 2015 study, total costs (combined O&M and replacement cost depreciation) increased 2.56% over 2014.

For the second straight year, we saw a reduction in overall consumption. Consumption was 1.0% less than consumption in 2014. Des Moines Inside City consumption decreased by 1.93%. A more detailed analysis of trends in cost, revenue and consumption patterns over the past five years is presented in the following section.

The summary on page 5 compares the total costs for each service area and customer class. The results of the study show that after adjusting both cost and revenue for the effect of monthly availability charges, total costs exceeded revenue (from the rate structure) by 17.2% in 2015 compared to 2014 when costs exceeded revenue by 19.2% and 2013 when costs exceeded revenue by 4.3 %.

The calculation of cost per 1,000 gallons is impacted by costs and consumption. In 2015, overall costs increased and consumption decreased. The fact that these two components went in opposite directions had an adverse impact on the cost per 1,000 gallons.

Total Cost and Revenue Comparison
(Availability charge revenue and corresponding costs are excluded)
2013 Through 2015

	2013				2014				2015			
	Consumption (1,000 gallons)	Base-Extra Cap. Costs	TOTAL REVENUE	% Variance	Consumption (1,000 gallons)	Base-Extra Cap. Costs	TOTAL REVENUE	% Variance	Consumption (1,000 gallons)	Base-Extra Cap. Costs	TOTAL REVENUE	% Variance
Inside City												
Step 1 (Residential)		\$15,669,454	\$14,614,914			\$17,401,338	\$14,266,150			\$18,077,578	\$14,745,635	
Step 2 (Commercial)		1,366,651	1,272,615			1,565,294	1,279,255			1,604,905	1,330,718	
Step 3 (Industrial)		1,932,052	1,849,080			2,053,716	1,674,098			2,075,848	1,738,146	
Subtotal	6,531,927	\$18,968,157	\$17,736,609	6.94%	6,194,045	\$21,020,348	\$17,219,503	22.07%	6,074,557	\$21,758,331	\$17,814,499	22.14%
Outside City												
Step 1 (Residential)		\$279,198	\$260,216			\$303,071	\$250,995			\$315,414	\$263,989	
Step 2 (Commercial)		17,855	17,641			17,154	14,680			24,000	21,320	
Step 3 (Industrial)		1,486	1,461			1,169	968			2,794	2,422	
Subtotal	87,065	\$298,539	\$279,318	6.88%	79,808	\$321,394	\$266,643	20.53%	81,674	\$342,208	\$287,731	18.93%
Wholesale												
Purchased Capacity		\$10,166,615	\$9,953,329			\$11,161,866	\$9,226,000			\$11,472,001	\$9,596,778	
With Storage		2,327,670	2,343,034			2,299,163	2,079,866			2,397,329	2,223,131	
Off Peak		126,989	125,401			81,834	68,618			132,767	113,336	
Subtotal	7,957,097	\$12,621,274	\$12,421,764	1.61%	7,080,854	\$13,542,863	\$11,374,484	19.06%	7,077,582	\$14,002,097	\$11,933,245	17.34%
Polk County												
Step 1 (Residential)		\$2,660,264	\$2,545,806			\$2,788,341	\$2,554,705			\$2,783,076	\$2,858,562	
Step 2 (Commercial)		136,841	163,726			152,068	164,279			150,459	167,703	
Step 3 (Industrial)		501,507	544,722			535,051	512,287			533,793	531,571	
Subtotal	693,540	\$3,298,612	\$3,254,254	1.36%	640,679	\$3,475,460	\$3,231,271	7.56%	629,931	\$3,467,328	\$3,557,836	-2.54%
Pleasant Hill												
Step 1 (Residential)		\$923,762	\$898,086			\$1,002,385	\$910,791			\$1,037,135	\$975,717	
Step 2 (Commercial)		510,236	490,231			466,731	400,686			432,854	385,692	
Subtotal	276,925	\$1,433,998	\$1,388,317	3.29%	242,041	\$1,469,116	\$1,311,477	12.02%	231,150	\$1,469,989	\$1,361,409	7.98%
Windsor Heights	124,607	\$421,172	\$388,890	8.30%	114,520	\$487,855	\$371,647	31.27%	113,912	\$437,422	\$398,635	9.73%
PCRWD#1	24,352	\$81,092	\$101,674	-20.24%	24,141	\$89,080	\$93,591	-4.82%	23,747	\$107,811	\$95,207	13.24%
Berwick					32,930	\$171,236	\$132,056	29.67%	32,698	\$122,291	\$130,060	-5.97%
Runnells												
Water		\$48,406	\$48,396			\$42,061	\$49,102			\$48,568	\$49,440	
Waste Water		48,499	49,298			38,631	49,268			57,579	50,246	
Subtotal	9,291	\$96,905	\$97,694	-0.81%	9,026	\$80,692	\$98,370	-17.97%	8,581	\$106,147	\$99,686	6.48%
Alleman	10,719	\$74,497	\$62,664	18.88%	9,108	\$80,241	\$55,839	43.70%	8,923	\$81,913	\$58,450	40.14%
Cumming	13,241	\$41,312	\$69,203	-40.30%	10,049	\$54,265	\$53,987	0.51%	9,782	\$52,138	\$56,531	-7.77%
Warren County												
Step 1 (Residential)		\$41,911	\$41,817			\$46,234	\$41,873			\$46,606	\$47,192	
Step 2 (Commercial)		14,064	12,195			11,071	8,664			13,096	11,615	
Subtotal	5,279	\$55,975	\$54,012	3.63%	4,624	\$57,305	\$50,537	13.39%	5,086	\$59,702	\$58,807	1.52%
TOTAL	15,734,043	\$37,391,533	\$35,854,399		14,441,825	\$40,849,855	\$34,259,405		14,297,623	\$42,007,377	\$35,852,096	

Costs were 4.3% > revenue in 2013

Costs were 19.2% > revenue in 2014

Costs were 17.2% > revenue in 2015

The table below shows the previous four years' costs compared with the 2015 cost per thousand gallons.

COSTS PER 1,000 GALLONS
Base-Extra Capacity Method

	Number of Accounts	2011	2012	2013	2014	2015	% Inc/(Dec) 14 to 15	Average Annual Increase	Current Rate
Des Moines Inside	66,743								
Residential (Step 1)		\$3.12	\$3.01	\$3.32	\$3.82	\$4.04	5.76%	7.37%	\$3.74
Commercial (Step 2)		2.04	1.92	2.18	2.58	2.71	5.04%	8.21%	2.51
Industrial (Step 3)		1.53	1.45	1.63	1.99	2.06	3.52%	8.66%	1.93
Des Moines Outside	1,253								
Residential (Step 1)		3.33	3.16	3.53	4.12	4.34	5.34%	7.58%	4.06
Commercial (Step 2)		2.32	2.22	2.50	3.00	3.09	3.00%	8.30%	3.05
Industrial (Step 3)		1.68	1.57	1.79	2.21	2.27	2.71%	8.78%	2.18
Wholesale	48								
Purchased Capacity		1.35	1.27	1.43	1.75	1.81	3.43%	8.52%	1.68
With Storage		2.94	2.82	3.03	3.48	3.56	2.30%	5.27%	3.66
Off Peak		1.52	1.43	1.60	1.95	2.01	3.08%	8.06%	1.89
Polk County	6,865								
Residential (Step 1)		5.70	5.11	5.85	6.58	6.64	0.91%	4.12%	7.36
Commercial (Step 2)		3.30	2.92	3.03	3.52	3.64	3.41%	2.58%	4.51
Industrial (Step 3)		2.61	2.35	2.59	3.08	3.15	2.27%	5.17%	3.52
Pleasant Hill	3,016								
Residential (Step 1)		5.47	4.66	5.40	6.33	6.61	4.42%	5.21%	6.85
Commercial (Step 2)		4.98	4.31	4.82	5.74	5.83	1.57%	4.27%	5.78
Windsor Heights	2,015	3.05	2.88	3.38	4.26	3.84	-9.86%	6.48%	3.81
PCRWD#1	465			3.33	3.69	4.54	23.04%	18.17%	4.00
Berwick	217				5.20	3.74	-28.08%	-28.08%	4.00
Runnells	185								
Water		4.35	4.25	5.21	4.66	5.66	21.46%	7.53%	6.50
Sewer		3.60	3.84	5.22	4.28	6.71	56.78%	21.60%	7.05
Alleman	155	5.23	4.35	6.95	8.81	9.18	4.20%	18.88%	7.25
Cumming	139	2.57	2.04	3.12	5.40	5.33	-1.30%	26.85%	6.39
Warren County	78								
Residential (Step 1)		13.20	10.96	11.07	12.80	12.21	-4.61%	-1.88%	13.79
Commercial (Step 2)		11.25	9.32	9.42	10.94	10.32	-5.67%	-2.07%	10.13

TRENDS AND HIGHLIGHTS

TRENDS AND HIGHLIGHTS

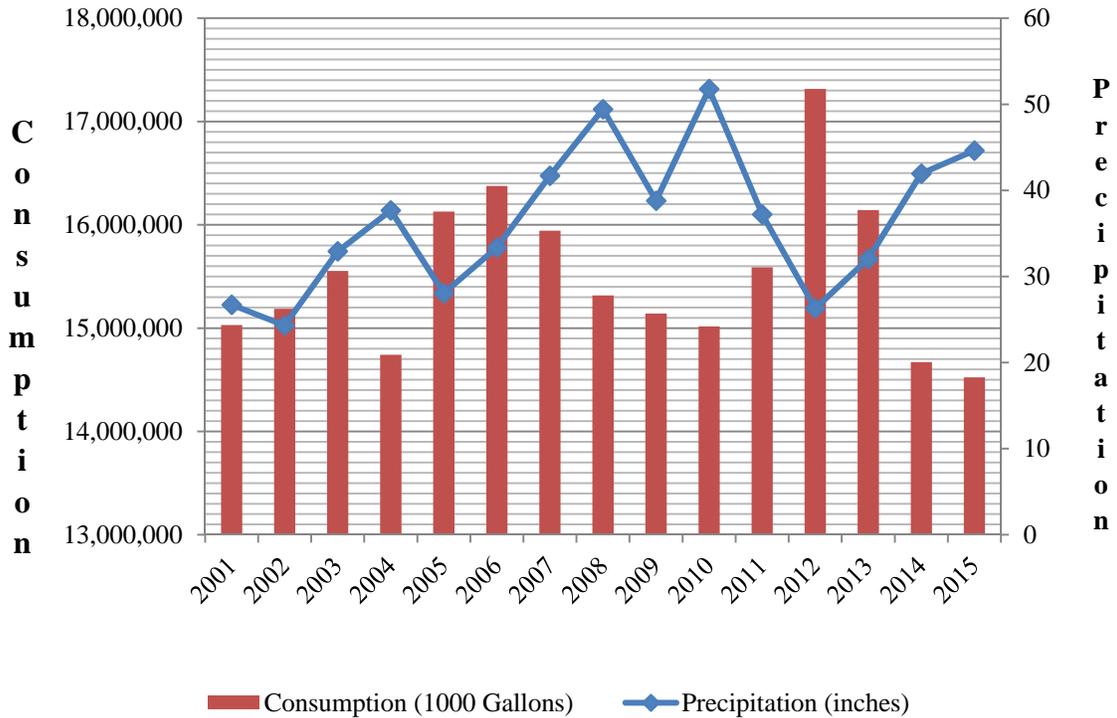
The two main components evaluated in Trends and Highlights are 1) consumption and 2) total costs. While consumption is important in evaluating a per thousand gallon cost, it is the total cost components that are our main focus in trending. Total costs are further broken down into 1) operating & maintenance and 2) replacement cost depreciation.

Consumption

Consumption was nearly flat from 2014 to 2015, with only a 1% decrease. Because of their small relative size, statistics for the Warren County, Runnells, Cumming, Alleman, PCRWD#1 and Berwick Water District service areas are included with Outside City in these illustrations unless noted otherwise. Generally speaking, pumpage refers to the total amount of water that left the treatment plants; whereas, consumption refers to the amount of water billed to our customers. The difference between the two is often referred to as lost water.

The chart on page 9 shows the historical billed consumption versus the amount of precipitation recorded in the Des Moines Metro area. Total consumption in 2015 (14.5 billion gallons) was the lowest level since 2000. Wide availability of water efficient appliances has likely reduced per capita water used over time. However, it is still clear that we have a large volume of irrigation usage that is directly impacted by precipitation. While rain patterns can be different month to month in any given year, this chart shows a correlation between years with high precipitation patterns and low water consumption.

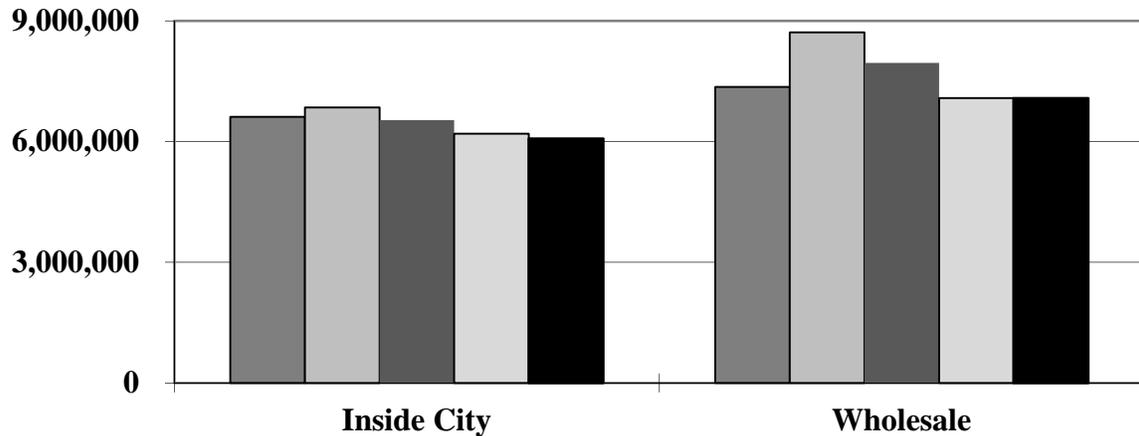
Historical Consumption vs. Precipitation

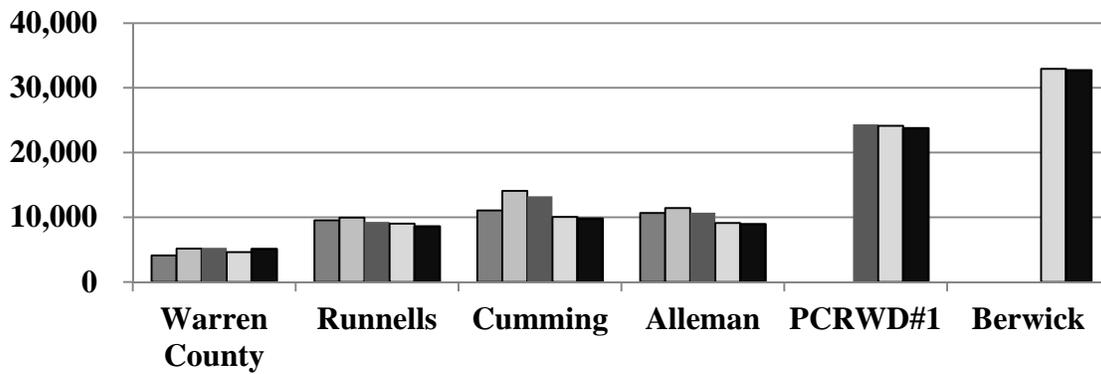
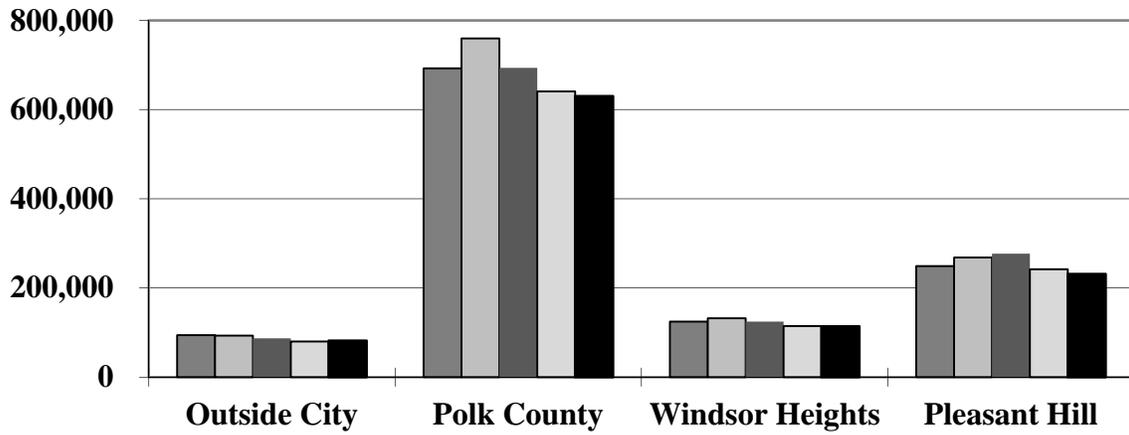


The charts below illustrate the consumption patterns from 2011 thru 2015 for the various service areas:

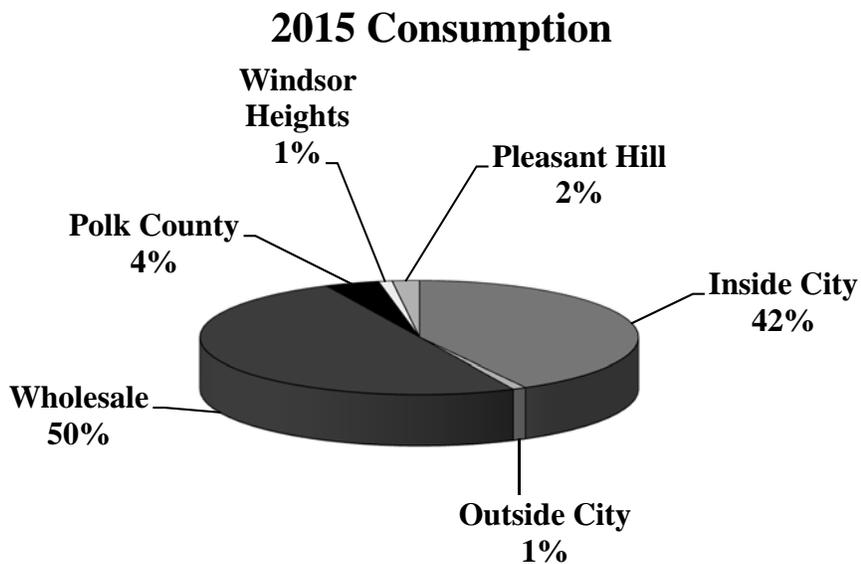
Service Area Consumption (in 1000 Gallons)

■ 2011 ■ 2012 ■ 2013 ■ 2014 ■ 2015

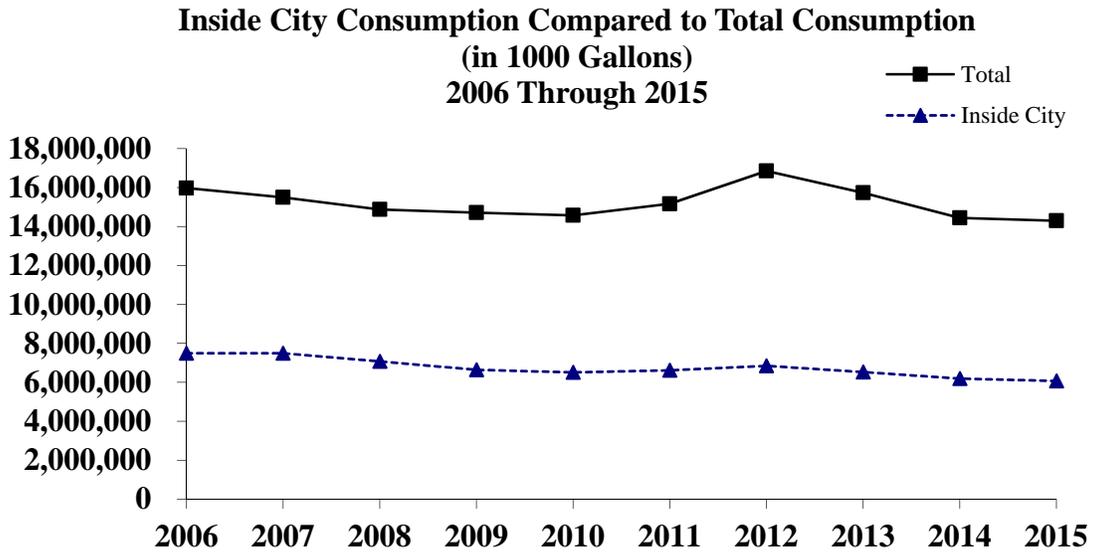




The percentage of water billed to Wholesale customers increased slightly to 50% of total water billed.

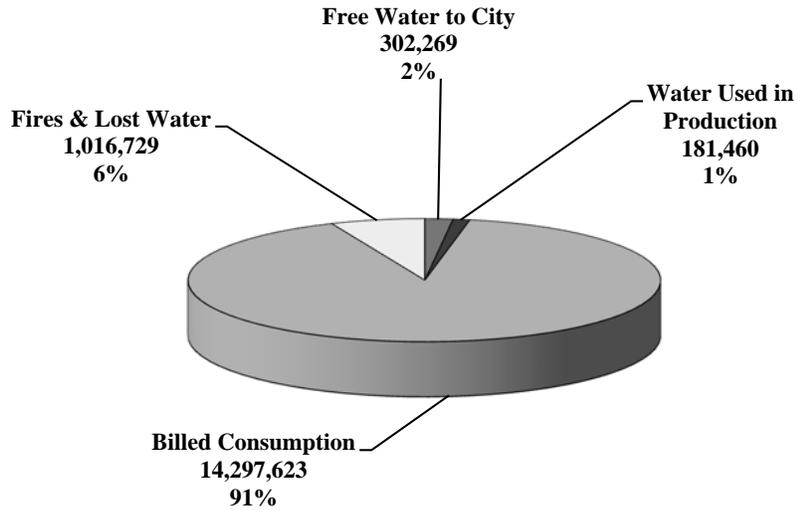


At 58%, sales to the aggregate of all areas outside Des Moines exceeded Inside City billed consumption which was 42% of the total. In comparison, 2014 consumption was comprised of 57% to Outside City and 43% of consumption was Des Moines Inside City. The chart below illustrates that Des Moines Inside City consumption is relatively flat, even in years of high pumpage.



The chart on the next page shows that a total of 91% of water produced and pumped from the three treatment plants was billed to customers. Free water supplied to the City of Des Moines was 2% of the total and water used in production was 1% of the total. The remaining unbilled water (6%) was used in fighting fires or lost to main breaks and other leakage. This percentage is kept to a minimum by leak detection efforts. The average annual fire/lost water percentage from 2011 thru 2015 has been 6% of the total pumpage.

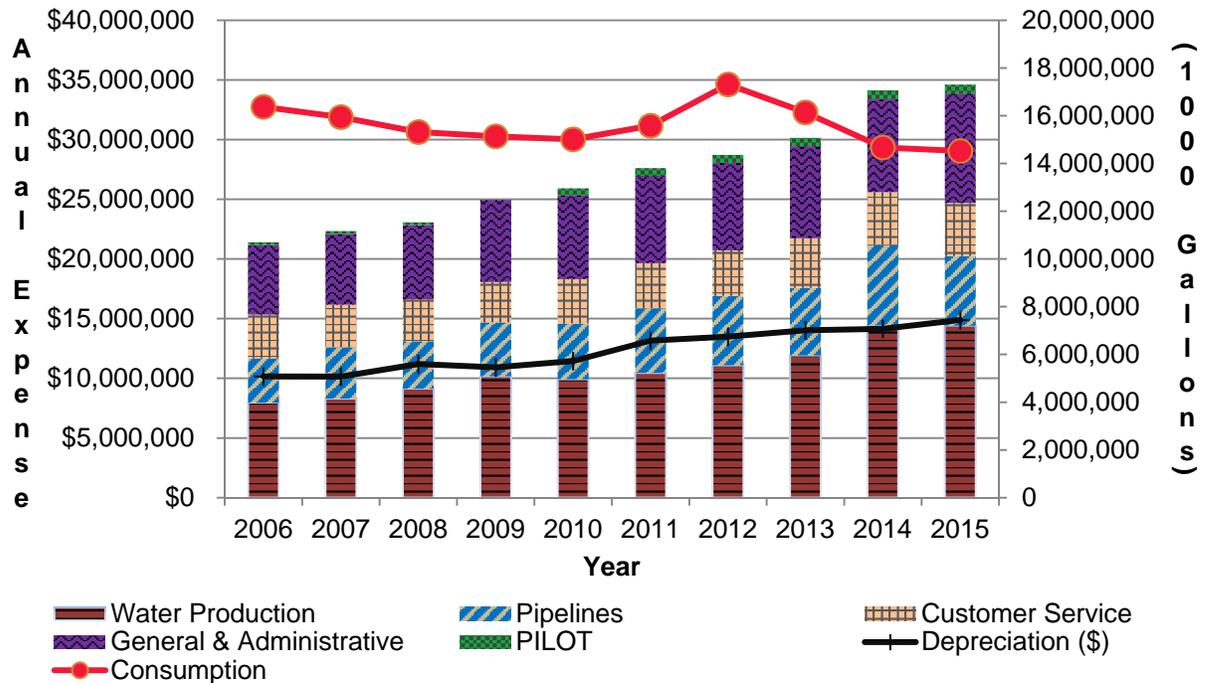
Distribution of Water Produced in 2015 (in 1000 Gallons)



Costs

There are two main types of costs in this study; operating & maintenance and replacement cost depreciation. The chart below illustrates how these costs increase yearly and how this increase is not correlated to consumption.

Historical Expenses vs. Consumption

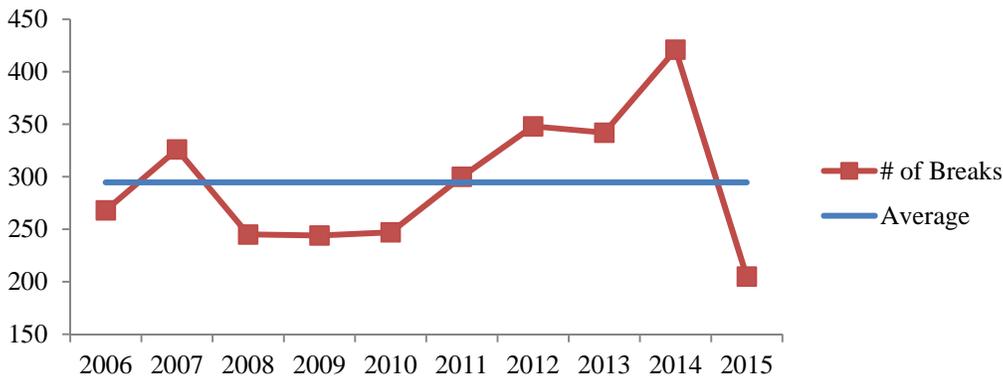


Operating and Maintenance Costs

Annual operating and maintenance costs increased 1.47% in 2015 compared with an increase of 13.2% seen in 2014. All operating and maintenance costs are allocated to operational areas of cost of service, including Water Production, Pipelines, Customer Service and Administrative.

Water Production costs decreased 0.22% in 2015. In 2015, we saw a reduction in the costs (\$1.6M) to remove residuals at the L.D. McMullen Water Treatment Plant compared to 2014. However, we also incurred significant costs in the operation of the Nitrate Removal Facility. We operated the Nitrate Removal Facility for 177 days in 2015 at a cost of approximately \$1.4M. While some overtime labor was incurred in dealing with nitrate concentration levels, labor hours were also diverted from other maintenance projects in order to facilitate the nitrate issue. DMWW also incurred over \$400K in legal fees associated with nitrate litigation. While legal fees represent increased operational costs in the short term, through this legal process intended to protect our source waters, DMWW hopes to reduce public health risks and unsustainable economic costs passed onto our customers in the future. Pipeline costs decreased 12.84% during 2015. This was primarily due to a reduction in main breaks from 421 breaks in 2014 to 205 in 2015. Below is a chart showing the historical number of main breaks compared to the average.

Historical # of Main Breaks



Customer Related costs also decreased 0.20% over 2014. Administrative costs was the only operational area to have an increase in costs with a 16.43% increase over 2014. Corporate Insurance increased \$733K from 2014 to 2015. This is primarily due to a large expense (\$517K) related to workers compensation. Another area of increase in Administrative costs were expenses related to late year flooding in the park (\$366K). The Consumer Price Index increased an average of 0.7% yearly over the same period. The table on the next page shows annual operating and maintenance costs by function from 2012 through 2015.

OPERATING & MAINTENANCE COST ALLOCATION

	2012	2013	2014	2015	% Increase 12 - 15	% Increase 14 - 15
Water Production						
Power	\$1,446,755	\$1,569,748	\$1,627,288	\$1,571,776	8.64%	-3.41%
Chemicals	4,073,656	4,006,073	4,257,573	4,680,707	14.90%	9.94%
Ops, Maint.	5,573,439	6,344,557	8,565,803	8,166,499	46.53%	-4.66%
Total	\$11,093,850	\$11,920,378	\$14,450,664	\$14,418,982	29.97%	-0.22%
Pipelines						
Des Moines	\$5,239,247	\$5,056,416	\$5,970,215	\$5,273,544	0.62%	-11.70%
Polk County	394,013	415,373	451,377	356,067	-9.63%	-21.12%
Windsor Heights	40,549	53,032	78,257	26,463	-34.74%	-66.18%
Pleasant Hill	88,915	75,982	71,759	85,596	-3.73%	19.28%
Runnells	40,845	49,300	39,394	51,449	25.96%	30.60%
Cumming	7,274	3,798	12,215	8,707	19.70%	-28.72%
Alleman	4,272	5,460	5,481	4,890	14.47%	-10.78%
PCRWD#1		14,489	12,474	17,746	22.48%	42.26%
Berwick			44,251	3,082	-89.93%	-89.93%
Total	\$5,815,115	\$5,673,850	\$6,685,423	\$5,827,544	0.21%	-12.84%
Customer Service						
Des Moines	\$3,215,620	\$3,481,866	\$3,777,838	\$3,786,920	17.77%	0.25%
Polk County	341,680	361,733	359,975	368,989	8.00%	2.51%
Windsor Heights	78,903	83,877	91,211	89,368	13.27%	-2.01%
Pleasant Hill	166,242	176,558	172,725	145,755	-12.32%	-15.61%
Runnells	6,788	8,431	7,759	7,703	13.49%	-0.71%
Cumming	4,890	6,497	5,941	6,237	27.55%	4.98%
Alleman	6,308	7,032	6,675	6,975	10.59%	4.48%
PCRWD#1		23,352	24,539	24,676	5.68%	0.57%
Berwick			9,921	10,968	10.56%	10.56%
Total	\$3,820,431	\$4,149,346	\$4,456,584	\$4,447,591	16.42%	-0.20%
General & Admin	\$7,325,816	\$7,715,901	\$7,774,791	\$9,176,481	24.13%	16.43%
PILOT	\$675,381	\$688,445	\$755,340	\$755,340	11.84%	0.00%
TOTAL	\$28,730,593	\$30,147,920	\$34,122,802	\$34,625,938	20.52%	1.47%

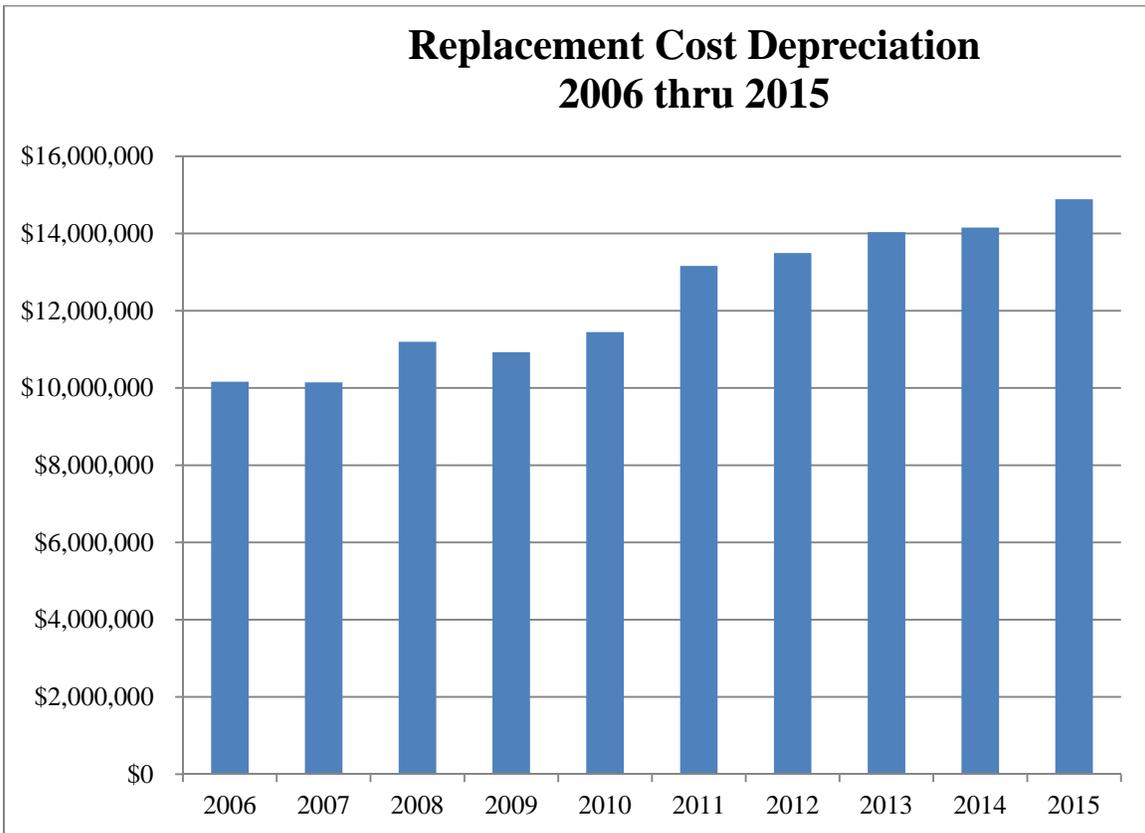
Total costs increased during the three-year period by \$5.8 million and, as stated above, were an average 6.9% higher annually. Water Production costs were \$3.3 million higher than at the beginning of the three-year period, a 10.0% average annual increase.

Administrative costs, including finance, insurance, information services, human resources, engineering and executive management averaged 8.4% higher, an increase of \$1.9 million from 2012 to 2015. Pipelines costs remained flat, averaging a 0.1% increase annually. Customer Service costs were \$0.6 million higher over the period, increasing at an average rate of 5.5% annually.

Replacement Cost Depreciation

Historically the largest component of the costs to provide water to our customers has been replacement cost depreciation. In 2015, replacement cost depreciation is 30.07% of our total overall costs. DMWW includes replacement cost depreciation in our rate structure to collect funds on an ongoing basis to replace assets as opposed to borrowing money to pay for asset replacement.

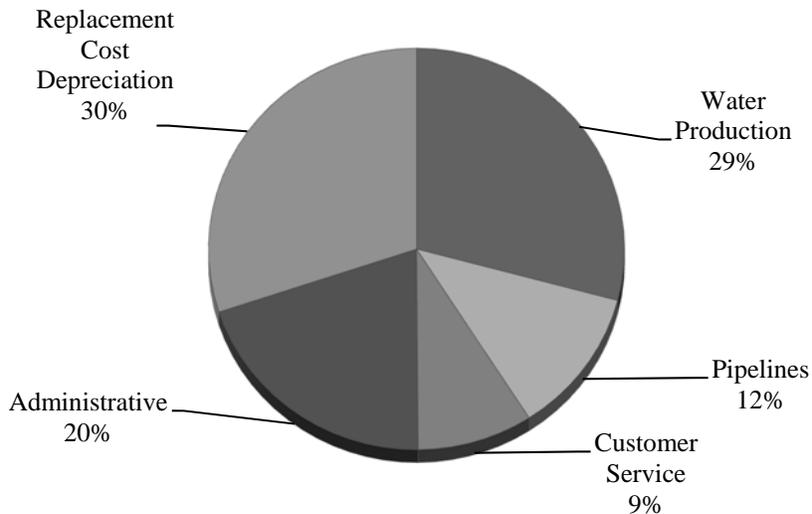
The chart on the following page shows replacement cost depreciation for the years 2006 through 2015. Over this period, replacement cost depreciation has grown from \$10.2 million to approximately \$14.9 million and it will likely continue to grow as new assets are capitalized and construction costs rise (as measured by the *Engineering News Record* Construction Cost Index). Over the last 10 years, we have capitalized over \$175 million in asset additions. The water industry relies heavily on infrastructure and keeping the infrastructure in good condition requires ongoing reinvestment.



Overall Cost Analysis

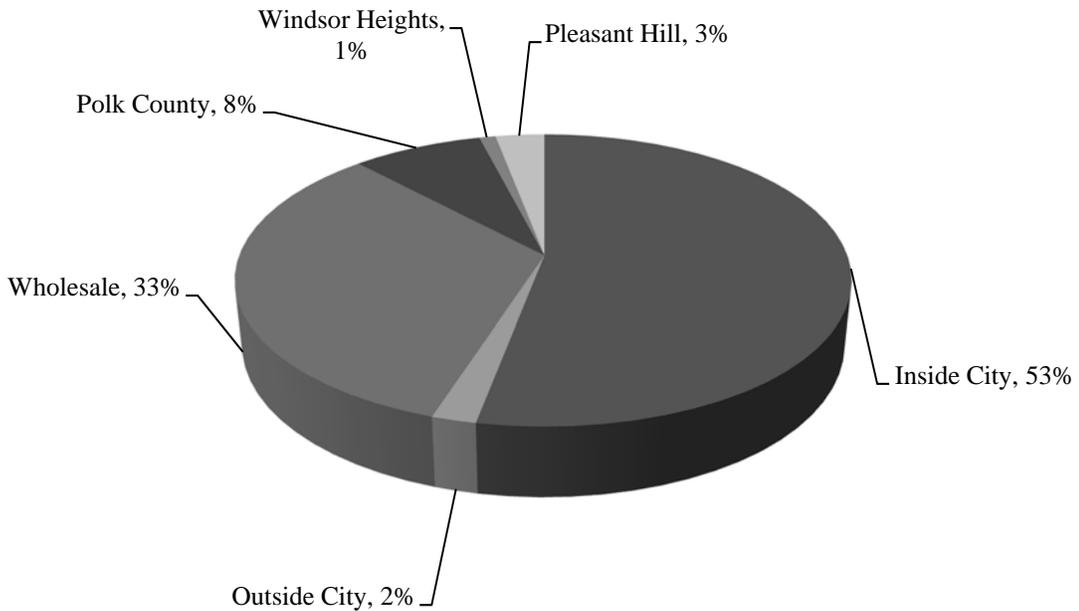
The total distribution of costs in 2015 changed slightly, with a decrease in production costs down 1% to 29% of total. Pipeline costs went down 2% to 12% of total costs. Customer Service remained flat for 2015, while Administrative increased 2% to 20% of total costs. Replacement Cost Depreciation went up 1% to 30% of the total.

2015 Total Costs



The following chart shows the 2015 Total Costs allocated to the various service areas. This chart is similar to the 2015 Revenue chart on page 21. This is to be expected as rates are established based on costs.

2015 Total Costs by Service Area

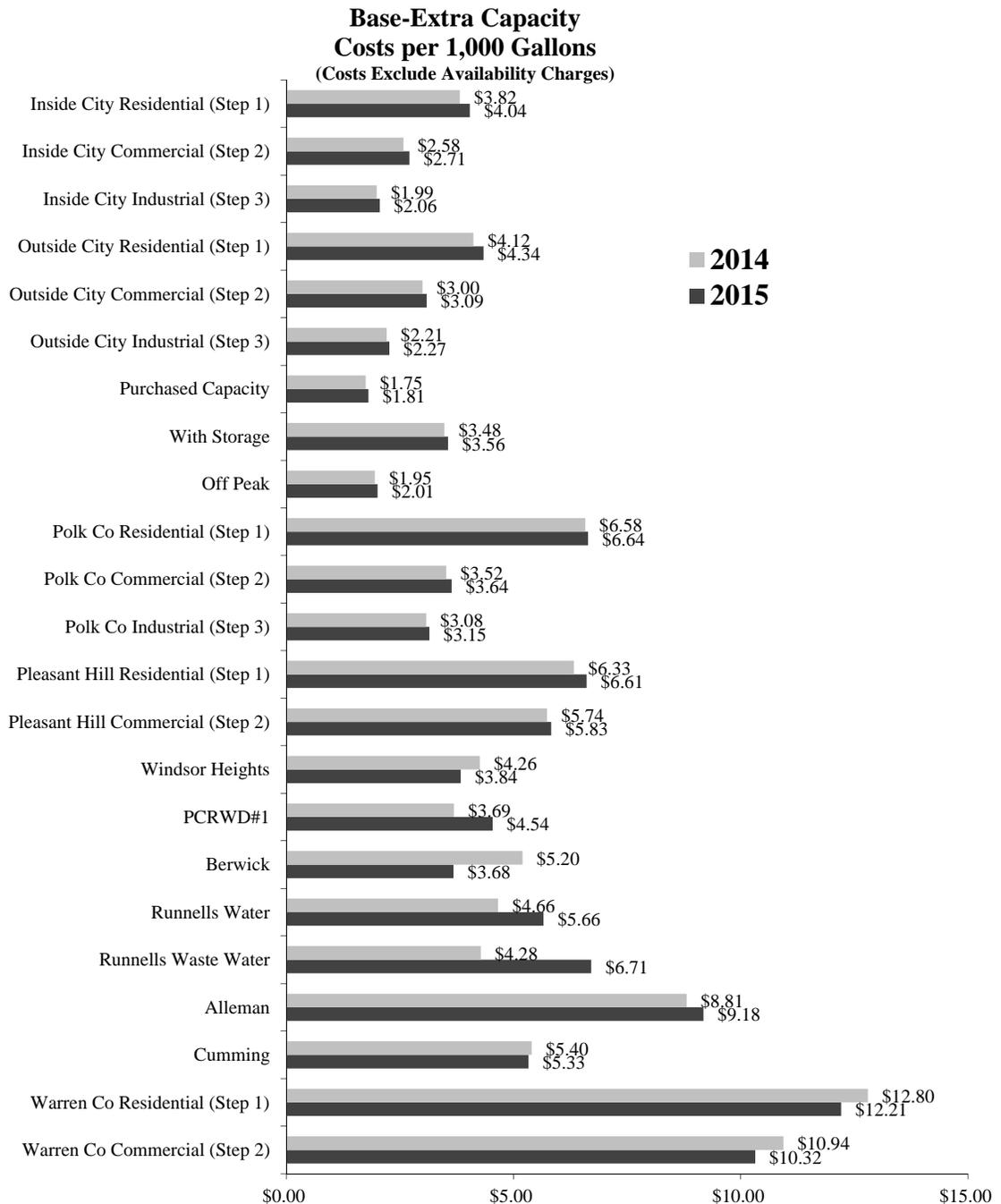


Costs per 1,000 Gallons

Total costs, including operating and maintenance and capital replacement, increased 2.56%. The Construction Cost Index used to measure the relative change in capital replacement costs increased 1.65% in 2015. The rate of return on original assets in this study is calculated at 5.00%.

The chart (on page 19) of costs per 1,000 gallons compares the complete results of the base extra capacity allocation method from the 2015 Study with the corresponding results from the 2014 Study. As previously stated, costs per 1,000 gallons were higher across the board because of decreased consumption and increased costs.

Costs in the Residential rate class ranged from 28.1% lower for Berwick to 21.5% higher for Runnells. Costs in the Commercial rate class per 1,000 gallons saw ranges from a 5.7% decrease for Warren County to Des Moines Inside City having 5.0% higher costs. The Industrial rate class showed increases as well with Des Moines Inside City up 3.5%. Wholesale costs per 1,000 gallons were higher by 3.4% for Purchased Capacity, 3.1% for Off Peak and 2.3% for With Storage.



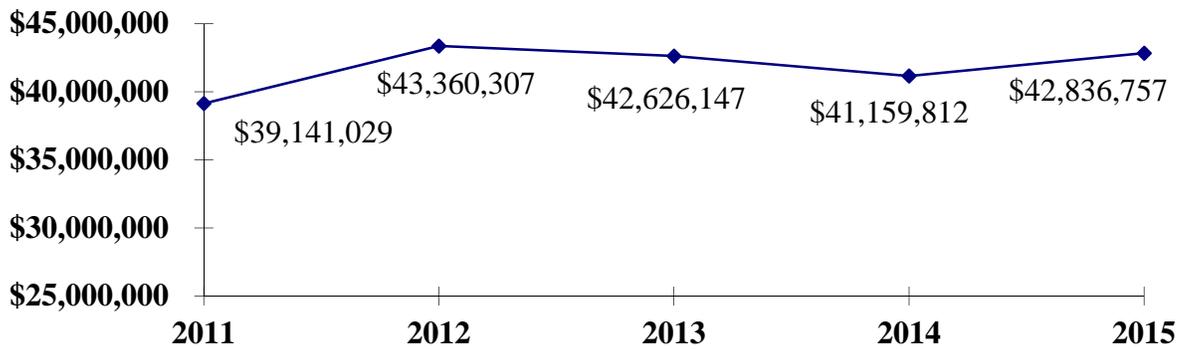
Revenue

Despite a 1% decrease in consumption, overall revenue increased in 2015 due to across the board rate increases.

Total Water Sales Revenue

(Includes Water Availability)

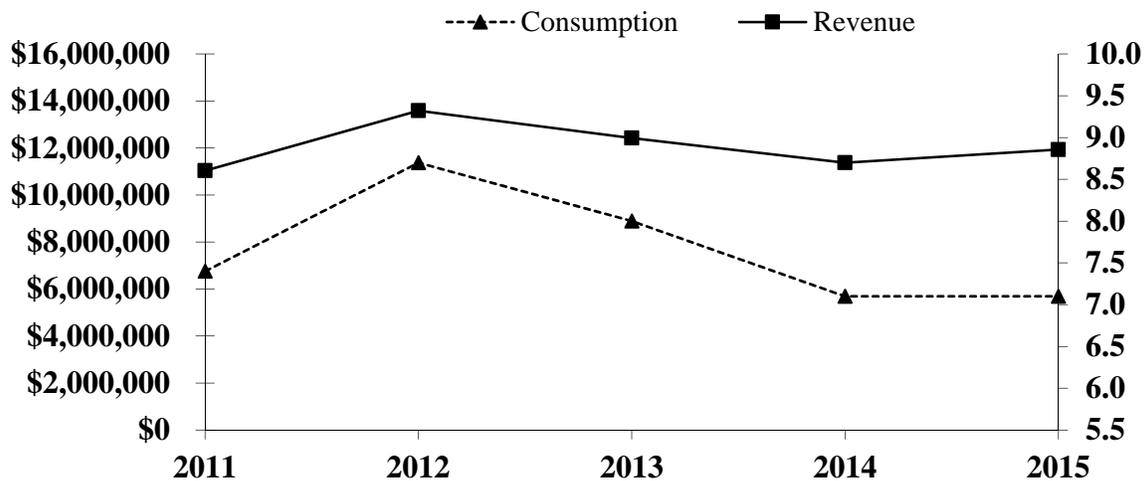
2011 Through 2015



Revenue patterns generally follow consumption, deviating only due to changes in rates and in the relative mix of sales to each service area and rate class.

Wholesale Revenue and Consumption (billion gallons)

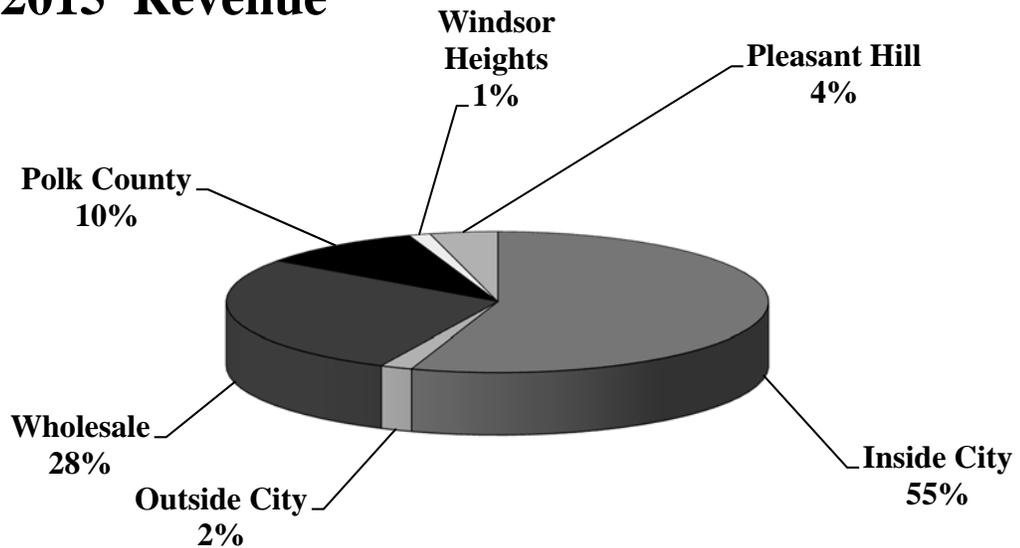
2011 Through 2015



Inside City revenue, at 55%, still dominated the revenue picture in 2015. Although volume is higher outside the city (primarily in Wholesale), revenue is higher Inside City. For customers inside the City of Des Moines, as well as our other full service customers, the revenue collected is intended to cover expenses related to providing all services to

these areas. This includes water production, customer service, distribution services, and administrative services. Political Subdivisions are charged a wholesale rate that includes an appropriate allocation of costs based upon the lesser level of service we provide to them. For example, we do not maintain the distribution system inside the city limits of wholesale customers and we do not provide direct customer service (such as reading meters and billing) to their customers.

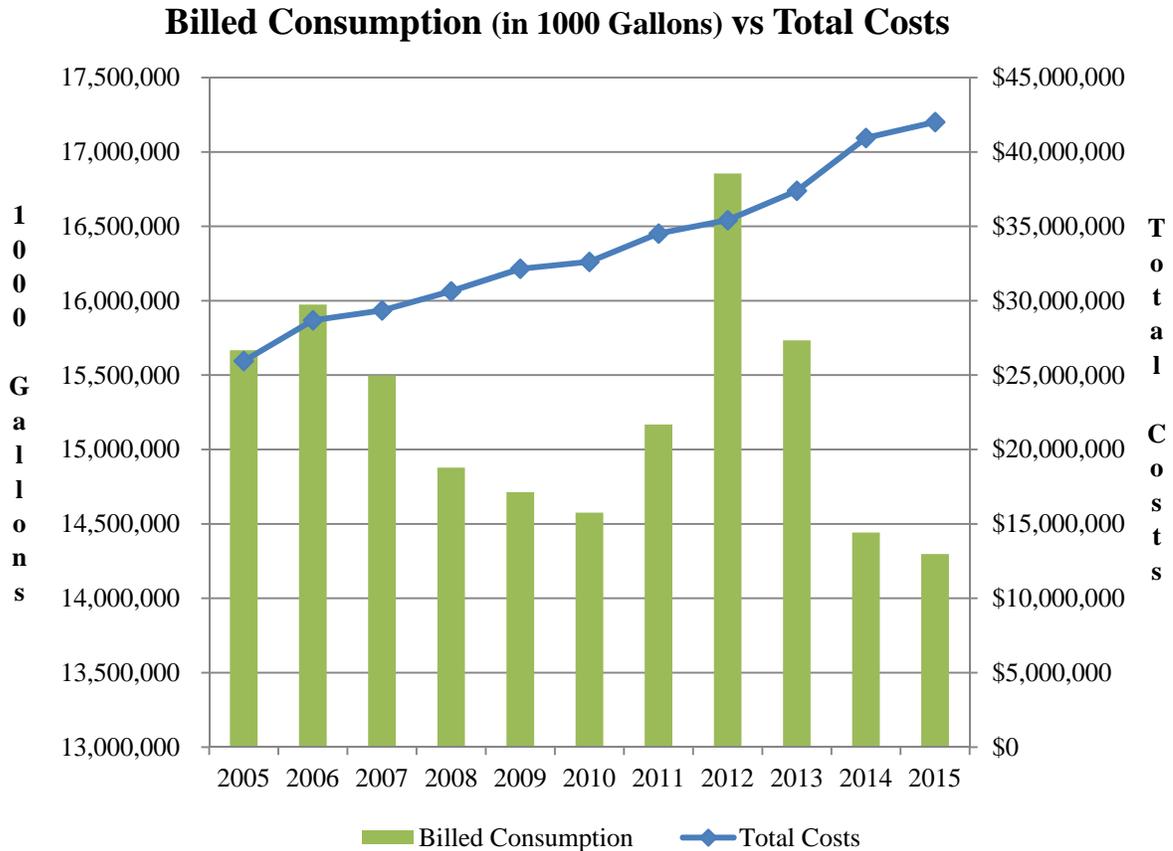
2015 Revenue



FUTURE CONSIDERATIONS

FUTURE CONSIDERATIONS

The calculation of cost per 1,000 gallons is impacted by costs and consumption. In 2015, costs increased slightly and consumption decreased slightly. The chart below illustrates that regardless of the amount of billed consumption, costs are continuing to rise.



To look ahead at estimated 2016 cost of service, we took the 2015 numbers and multiplied them by the average yearly increase over the last 5 years. This is simply an estimate based on recent history. The chart on the following page shows the comparison of estimated 2016 costs with the 2016 rates.

	Number of Accounts	2015 COS	Estimated 2016 COS	2016 Rate
Des Moines Inside	66,724			
Residential (Step 1)		\$4.04	\$4.31	\$3.74
Commercial (Step 2)		2.71	2.90	2.51
Industrial (Step 3)		2.06	2.21	1.93
Des Moines Outside	1,258			
Residential (Step 1)		4.34	4.62	4.06
Commercial (Step 2)		3.09	3.29	3.05
Industrial (Step 3)		2.27	2.44	2.18
Wholesale	39			
Purchased Capacity		1.81	1.94	1.68
With Storage		3.56	3.73	3.66
Off Peak		2.01	2.14	1.89
Polk County	6,765			
Residential (Step 1)		6.64	6.90	7.36
Commercial (Step 2)		3.64	3.71	4.51
Industrial (Step 3)		3.15	3.31	3.52
Capital Improvement Fee				1.50
Pleasant Hill	2,960			
Residential (Step 1)		6.61	6.92	6.85
Commercial (Step 2)		5.83	6.02	5.78
Windsor Heights	2,002			
Capital Improvement Fee				2.00
PCRWD#1	467	4.54	4.85	4.00
Berwick	218	3.74	3.95	4.00
Runnells	182			
Water		5.66	5.90	6.50
Sewer		6.71	7.40	7.05
Alleman	150	9.18	10.27	7.25
Cumming	140	5.33	6.53	6.39
Warren County	77			
Residential (Step 1)		12.21	12.88	13.79
Commercial (Step 2)		10.32	10.89	10.13

Another component to anticipated costs is the availability costs and their associated charges to customers. The chart below illustrates the variances between the Availability Charges and Availability Costs for 5/8" meters. The difference between the charge and cost are allocated in the per thousand gallon rate to the individual service areas.

**Comparison of Availability Charges to
Availability Costs
5/8" Meters**

Service Area	Current Availability Charge*	2015 Availability Cost
Des Moines Inside City	\$6.00	\$10.07
Des Moines Outside City	8.00	15.55
Polk County	7.00	14.57
Windsor Heights	6.00	8.51
Warren County	8.00	12.07
Pleasant Hill	10.00	7.91
Runnells	6.00	16.36
Cumming	9.00	16.64
Alleman	6.00	15.40
PCRWD#1	4.00	7.38
Berwick	3.00	4.97

*Last increased 4/1/2011

Conclusion

A cost of service study is an analysis of costs at a fixed point in time. Many factors impact the results of the study, some of them significantly. Because of this, the results of any one year should not be weighed too heavily. The true value of the data is the highlighting of trends revealed in comparing multiple years of data.

Costs continue to increase, both O & M costs and capital replacement costs. Historically, DMWW has continuously explored efficiencies to keep our operational costs in check. However, a water utility is a labor intensive business. That labor need does not vary in

proportion to the amount of water produced. We will not engage in cost cutting that will negatively impact our ability to produce clean, safe drinking water and our ability to react to ever-changing factors such as raw water quality. Costs of goods and services such as chemicals and energy also continue to increase. As noted in this report, in 2015, we faced increased costs for nitrate removal, workers compensation insurance and to combat flooding.

Several factors make rate setting a challenge. As previously noted, rate increases are implemented more than a year after a cost of service study. Consumption is volatile, with no way to predict in advance what it will be. It is primarily driven by precipitation due to irrigation. And finally, our costs are primarily fixed; they do not vary proportionally with consumption. Increases in costs point us toward rate increases. Rate increases are never eagerly anticipated. However, in order to provide clean, safe drinking water, we must keep pace with our increasing costs. While we have a long history of investing in our asset infrastructure, we feel we need to increase our level of capital investment in order to improve the overall condition of our assets, particularly the distribution system.