Medford Water Commission

Conservation Rates: Increasing Block

Medford Water Commission (MWC) provides retail water service to the City of Medford, Oregon, and provides retail water to unincorporated urban and suburban lands. MWC also provides wholesale water to the cities of Central Point, Eagle Point, Jacksonville, Phoenix, and Talent. MWC serves a retail population of approximately 82,000. As of the 2000 Census, the median household income in Medford was $36,481, which is lower than the statewide median of $40,916.[1]

UTILITY DEMOGRAPHICS

MWC's retail service area is 36.3 square miles. As of August 2005, MWC had 26,370 connections, 88.7% of which were residential. Of their total connections, 21,300 were single family residential, 2,100 were multifamily residential, 2,400 were commercial, 125 were industrial, 85 were municipal, and 360 were fire service connections. The average residential water use is approximately 155 gallons per capita per day (gpcd), and total utility water use is approximately 225 gpcd.

INCREASING BLOCK RATES

Affected Customers: Single Family Residential
Customers Analyzed: Single Family Residential
Effective Date: March 1, 2003

UTILITY RATE STRUCTURE AND PRICES

On March 1, 2003, MWC adopted an increasing block rate structure for single family residential customers. Other customer classes remained with a seasonal rate structure. Customers are currently charged a monthly service fee of $6.35 for 5/8" x 3/4" meters in addition to a variable charge. The variable charge for single family residential customers is as follows:

Usage	Price	
	Inside City	Outside City
≤ 15,000 gallons	$0.46/1,000g	$0.63/1,000g
> 15,000 gallons	$0.64/1,000g	$0.81/1,000g

CURRENT CAPACITY AND WATER SOURCES

MWC's primary source of water is from Big Butte Springs, with a secondary source of water from the Rogue River. MWC has a storage capacity of 36.5 million gallons.

FUTURE PLANS TO MEET DEMAND

The population of MWC's service area is growing at a rate of 4% per year. MWC plans to meet future demands through current sources, by purchasing additional water rights on the Rogue River, by expanding treatment and transport facilities, through continuing water conservation efforts, and possibly through reuse.

[1] US Census Bureau. FactFinder.

R-3

RATE STRUCTURE - DESCRIPTION

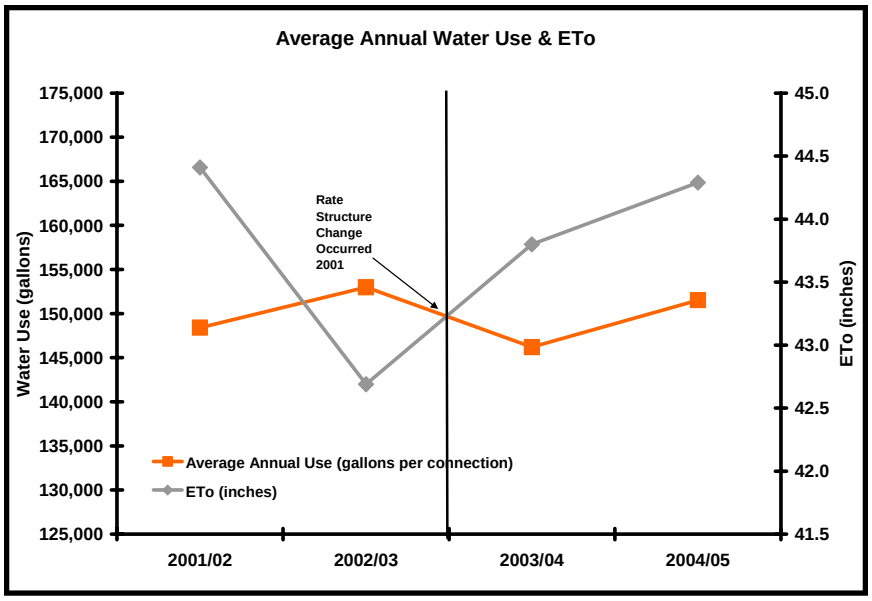
MWC adopted an increasing block rate structure for their single family residential customers on March 1, 2003. The rate change was viewed as a first step to charging those customers most responsible for peak costs for those peaks, recognizing that rates overall would still be quite low.

OTHER MEDFORD CONSERVATION PROGRAMS

Outdoor Audits, *2001-present*
Public Education, *1992-present*
Newsletter articles, a demonstration garden, an ET phone line, high use notifications, and water conservation website.
Seasonal Rate Structure, *start date unknown*
All customer classes except single family residential.

Prior to the change, all customers were subject to a seasonal rate structure, with summer rates $0.05 per 1,000 gallons higher than winter rates. At the time of the change, the rates inside the city were $0.40 per 1,000 gallons during the winter, and $0.45 per 1,000 gallons during the summer.

The new rate structure includes two tiers, with water use in the second tier charged at $0.18 more per 1,000 gallons than water use in the first tier. The second tier starts at 15,000 gallons of water use per month. The average monthly water use of a single family residential customer in the City of Medford is between 12,000 and 13,000 gallons per month.



Water rates are also evaluated for possible increases on March 1 of each year. At the time of the rate change, the price was $0.40 per 1,000 gallons in the first tier, and $0.58 per 1,000 gallons in the second tier.

A comparison of average annual water use with reference evapotranspiration (ETo) is inconclusive. Water use would be expected to go up with increasing ETo, which is the case only between 2003/04 and 2004/05.

METHODOLOGY

Please see the General Methodology for the specific procedures and techniques used for all ECoBA analyses.

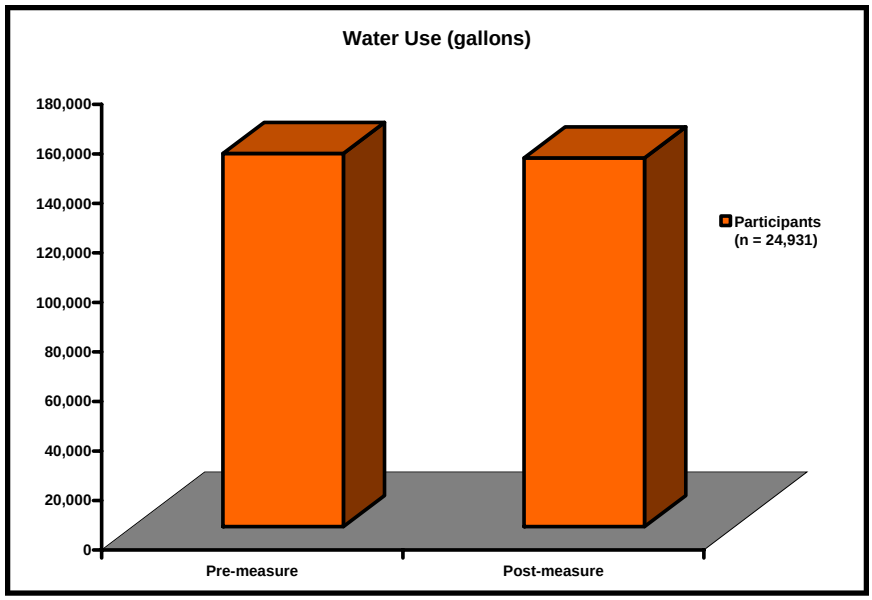
The methodology for this analysis is different from most of the cases in the study because no control group was available for comparison. This

R-3

is because the rate structure change affected all single family residential customers. Instead of using a control group, the water savings were calculated solely from the difference in pre- and post-measure water use of inside-city and outside-city single family residential water use. The pre-measure and post-measure time periods were two years each, March 2001 through February 2003 and March 2003 through February 2005. The average yearly water savings from the two years after the rate change was extrapolated for twenty years, the assumed lifespan of the rate change.

The customer classes analyzed were single family residential, both inside the City of Medford and outside the city. The water savings were calculated for each and the total of the two categories. The cost benefit analysis was performed on the total of the two categories. MWC's other customer classes were not included in the analysis because their rate structure did not change.

All quantified costs and benefits have been discounted to the first year of the analysis (2003) and inflated to 2004 dollars. The discount rate used in this analysis was 4.8%. The CPI values that were used in this analysis were the 2004 value of 188.9 and the 2003 value of 184.0.



It was not possible to follow the individual customers that were present at the time of implementation of the rate change. Instead, the number of single family residential connections was used as a proxy. The number of connections varied by month. There was an average of 17,338 inside-city single family residential connections, and 1,572 outside-city single family residential connections, for an average of 18,910 connections total.

ASSUMPTIONS

Please see the General Assumptions for the specific conditions and rules underlying all ECoBA analyses.

In calculating the average number of connections over the twenty year period of analysis, it was assumed that the annual growth in connections was equal to the average annual growth between 1999 and 2005.

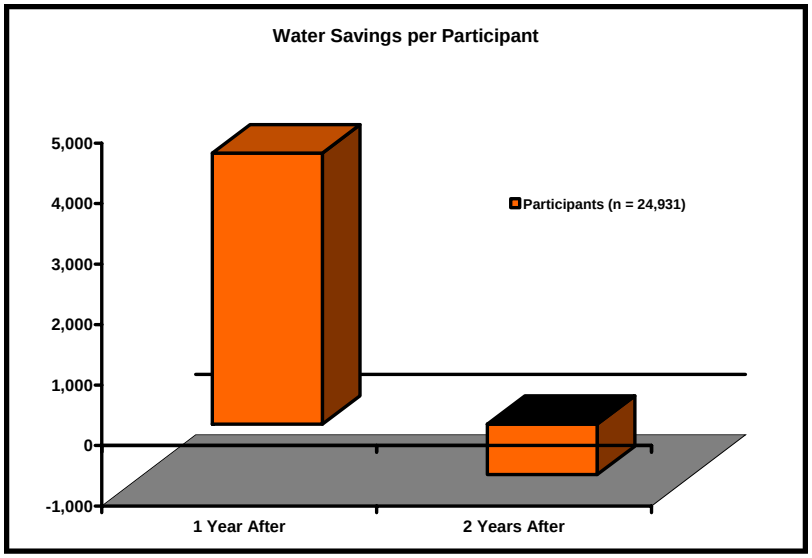
The price of water used in calculating the benefits from water savings was the residential rate at the tier where the average customer's water use fell (tier 1), $0.42 in 2004/05 and $0.46 in 2005/06 and beyond.

R-3

The discount rate used in this analysis was 4.8%.

The CPI values that were used in this analysis were the 2004 value of 188.9 and the 2003 value of 184.0.

The calculation of water savings and any benefits derived from water savings started the date of the rate structure change, March 1, 2003.



The cost to the utility was $2,000 in staff time preparing for the rate change.

RESULTS - WATER SAVINGS

For inside-city single family residential customers, during the first year after the rate change, water savings amounted to 103,687,119 gallons, or 4,546 gppy (3.1% of pre-measure water use). The second year after, no water savings were documented. Relative water use increased 23,106,630 gallons, or 1,013 gppy (0.7% of pre-measure water use). The average savings per year was 40,290,245 gallons (123.6 AF), or 1,767 gppy (1.2% of pre-measure water use). **The total water savings over the twenty year assumed lifespan of the rates was 805,804,898 gallons (2,472.9 AF), or 35,332 gallons per participant.**

For outside-city single family residential customers, during the first year after the rate change, water savings amounted to 8,726,862 gallons, or 3,908 gppy (2.4% of pre-measure water use). The second year after, water savings amounted to 1,026,698 gallons, or 460 gppy (0.3% of pre-measure water use). The average savings per year was 4,876,780 gallons (15.0 AF), or 2,184 gppy (1.3% of pre-measure water use). The total water savings over the twenty year assumed lifespan of the rates was 97,535,600 gallons (299.3 AF), or 43,674 gallons per participant.

Quantified Costs and Benefits					
Utility			Participants		
Costs		Benefits	Costs	Benefits	
Labor	$2,053	Not Quantified	Not Quantified	Water Bill Savings	$269,229
Total	$2,053			Total	$269,229

For all customers analyzed, during the first year after the rate change, water savings amounted to 111,753,307 gallons, or 4,482 gppy (3.0% of pre-measure water use). The second year after, no water savings were documented. Relative water use increased 20,800,016 gallons, or 834 gppy (0.6% of pre-measure water use). The average savings per

R-3

year was 45,476,646 gallons (139.6 AF), or 1,824 gppy (1.2% of pre-measure water use). The total water savings over the twenty year assumed lifespan of the rates was 909,532,911 gallons (2,791.3 AF), or 36,482 gallons per participant.

RESULTS - COST BENEFIT ANALYSIS

Costs and benefits listed below represent the entire lifespan of the program (twenty years).

- The quantified cost to the utility was $2,053 ($0.08 per participant). This includes labor costs, $2,053.
- The quantified benefit to the utility was $0.
- The quantified cost to the participants was $0.
- The quantified benefit to participants was $269,229 ($11 per participant). This includes water bill savings, $269,229.

UTILITY PERSPECTIVE

Results of cost benefit analysis show a net benefit (net present value) of -$2,053 from the utility perspective. This is a net benefit of -$0.08 per participant. The quantified costs to the utility were greater than the quantified benefits to the utility. **The cost per acre-foot of water saved from the utility perspective was $1.**

PARTICIPANT PERSPECTIVE

Results of cost benefit analysis show a net benefit (net present value) of $269,229 from the participant perspective. This is a net benefit of $11 per participant. The quantified costs to the participants were less than the quantified benefits to the participants. **The cost per acre-foot of water saved from the participant perspective was $0.**

OVERALL PERSPECTIVE

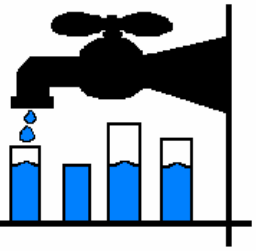
Results of cost benefit analysis show a net benefit (net present value) of $267,176 from an overall perspective. This is a net benefit of $11 per participant. The quantified costs to the participants and utility were less than the quantified benefits to the participants and utility. **The cost per acre-foot of water saved from an overall perspective was $1.**

Results of this analysis show a net loss of revenue to the utility resulting from the rate change, however, this may not be the case depending on how much water was used in higher tiers.

R-3

Medford Water Commission

Conservation Rates: Increasing Block



Results of Cost Benefit Analysis-Lifespan (20 Years)

	UTILITY	PARTICIPANT	OVERALL
Present Value Costs			
Costs to Utility	2,053	NA	2,053
Costs to Participants	NA	0	0
Costs to Others	NA	NA	0
Total Costs	$2,053	$0	$2,053
Present Value Benefits			
Total Water Savings	2,791.25 AF	2,791.25 AF	2,791.25 AF
Benefits to Utility	0	NA	0
Benefits to Participants	NA	269,229	269,229
Benefits to Others	NA	NA	0
Total Benefits	$0	$269,229	$269,229
Cost Benefit Calculations			
Net Present Value (NPV) (Total Benefits - Total Costs)	-$2,053	$269,229	$267,176
Cost Effectiveness Analysis (CEA) (Total Costs ÷ Total Water Savings)	$1 /AF	$0 /AF	$1 /AF

UNQUANTIFIED COSTS AND BENEFITS

Costs

- **n/a**

Benefits

- **Savings on sewer bills.**
- **Avoided cost of acquisition and distribution of water saved.**
- **Environmental benefits of reduced use of water.**
- **Increased public awareness about water conservation.**
- **Reinforces need to conserve water and desirability of conserving.**
- **Delays capital improvement projects.**
- **Water saved for future municipal use.**

R-3