

Oro Valley Water Utility

Device Giveaway Program

Oro Valley Water Utility (OVWU) serves the Town of Oro Valley, which is located in northern Pima County, six miles north of the Tucson city limits. Median household income in Oro Valley was \$67,562¹ as of the 2000 census, which was higher than the statewide average of \$40,558.

UTILITY DEMOGRAPHICS

OVWU provides service to an area of 31.5 square miles encompassing a population of approximately 32,000. As of November 2003, OVWU served 14,247 single family residential connections, 1,096 multifamily residential connections, 205 commercial, 292 industrial, 334 irrigation, and 55 other types of connections. As of 2004, the utility's total water use in gallons per capita per day (gpcd) was 200, and their residential use was 119 gpcd.

DEVICE GIVEAWAY PROGRAM	
Devices Distributed:	Showerheads, faucet aerators
Eligible Customers:	SF, MF
Customers Analyzed:	SF
Program Years:	2000 – present
Years Analyzed:	Jan – June 2002

UTILITY RATE STRUCTURE AND PRICES

OVWU employs a tiered rate structure. Effective November 2003, the base rate for 5/8" meters, most of the utility's connections, is \$12.30 and does not include any water. Single family residential usage charges are as follows:

Usage	Price
≤10,000 gallons per month	\$1.92 per 1,000 gallons
10,001-25,000 gallons per month	\$2.55 per 1,000 gallons
>25,000 gallons per month	\$3.25 per 1,000 gallons

CURRENT CAPACITY AND WATER SOURCES

The storage capacity was not reported, however, OVWU has a 100 year assured water supply as required by law.

FUTURE PLANS TO MEET DEMAND

The population within OVWU's service area grew 7.2% per year, on average, between 2000 and 2004.² The utility plans to meet future demand with current capacity and sources, as well as by implementing water conservation measures and using reclaimed water. A new groundwater preservation fee is also in place. Starting August 2005, OVWU started using reclaimed water for some turf and golf courses, with plans to move all golf courses to reclaimed water use.

¹ U.S. Census Bureau, CenStats Databases.

² *Population Change – 2000 Census to July 1, 2004 Estimate for Arizona, Counties, and Incorporated Places.* Arizona Department of Economic Security.

DEVICE GIVEAWAY PROGRAM - DESCRIPTION

In October 2000, OVWU began giving away free showerheads and aerators to residential customers both by request and at the Greater Oro Valley Arts Council Art & Jazz Festivals. The program is also mentioned occasionally in the OVWU newsletter.

METHODOLOGY

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

The analysis includes only single family households that received devices between January and June 2002. The water savings were calculated and a cost benefit analysis was performed for January to June 2002. Our findings refer to this time period only, not to the ongoing program. The lifespan of the devices, which is used as the period of analysis, was assumed to be five years.

All quantified costs and benefits have been discounted to the first year of the analysis (2002) and inflated to 2004 dollars. The discount rate used in this analysis was 4.5%. The CPI values that were used in this analysis were the 2004 value of 188.9 and the 2002 value of 179.9.

Since two complete years of pre- and post-measure water use could not be acquired for this analysis, water use data for the participants was acquired from 18 months before the program and 18 months after the

program for all households that were residing there for that full period. The pre-measure period includes July 2000 to December 2001, and the post-measure period includes July 2002 to December 2003.

The population studied for this analysis was comprised of all participants who received

the devices between January and June 2002. There were 37 usable participants out of an unknown total during the six month period under analysis.

All OVWU single family residential households that were not participants in this analysis were used as the control group. The number of households in the control group was 12,572 for July to December 2000, 13,140 for January to December 2001, 13,729 for July to December 2002, and 14,063 for January to December 2003. The average yearly pre-measure water use of the participants (111,362 gallons) was lower than that of the control group (116,842 gallons).

OTHER ORO VALLEY CONSERVATION PROGRAMS

Water Audits, March 2003-present

OVWU conducts single family outdoor water audits. The audits are free and the program is aimed at high-usage customers.

Conservation Ordinances, March 2003-present

The OVWU and its commission have also developed a Water Conservation and Use Restriction Ordinance.

ASSUMPTIONS

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

Assumed \$20 per year in labor and \$60 per year in advertising for this program.

The number of connections is an average of connections from throughout the year.

The control group is comprised of single family residential households other than those included in the study.

Quantified Costs and Benefits					
Utility			Participants		
Costs		Benefits	Costs		Benefits
Advertising	\$63	Not Quantified	Not Quantified	Water bill savings	\$938
Labor	\$10			Total	\$938
Total	\$275				

The discount rate used in this analysis was 4.5%.

The CPI values that were used in this analysis were the 2004 value of 188.9 and the 2002 value of 179.9

Quantified Costs and Benefits		
Water CASA		
Costs		Benefits
Conservation Devices	\$202	Not Quantified
Total	\$202	

The price of water used in determining the benefits to customers from reduced water bills is the variable portion of the utility's price of water at the level of consumption of the participants. Since the average monthly water use of the participants was below 10,000 gallons, the price of \$1.90 per 1,000 gallons was used for 2003 and \$1.92 per 1,000 gallons was used for 2004 and beyond.

Participants who had two or more consecutive months of no water use were not included in the study.

RESULTS - WATER SAVINGS

In the 18 months after receiving the devices, the water savings amounted to 159,396 gallons, or 4,308 gallons per participant³ (2.6% of pre-measure water use). The average savings per year was 106,264 gallons, or 1,436 gallons per participant per year (gppy) (2.6%). **The total savings over the five year assumed lifespan was 531,321 gallons (1.6 AF), or 14,360 gallons per participant.**

During the 18 months before participating in the device giveaway program, the participant group's water use was, on average, 95.3% of the control group's use. During the 18 months after, the participant group's water use was 93.0% of the control group's use, on average. The participant group's water use increased by 5.5%, whereas the

³ This value approximates the water savings per packet of devices, as each customer received only one packet.

control group's use increased by 8.1%. **The resulting overall water savings attributed to this program was 2.6%.**

RESULTS - COST BENEFIT ANALYSIS

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

- ◆ The quantified cost to the utility was \$74. This cost includes the cost of advertising, \$63, and labor (assembling the newsletter advertisement), \$11. This is a cost of \$2 per participant, including \$1.70 for advertising and \$0.30 for labor.
- ◆ The quantified cost to the participants was \$0.
- ◆ The quantified cost to others was \$202 (\$5 per participant). This was the cost to Water CASA for providing the devices.
- ◆ The quantified benefit to others was \$0.

UTILITY PERSPECTIVE

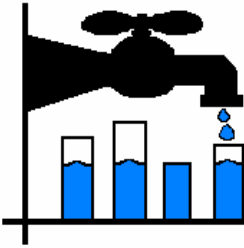
Results of the cost benefit analysis show a net benefit (net present value) of -\$73 from the utility perspective over the five year assumed lifespan of the devices. This is a net benefit of -\$2 per participant. The quantified costs to the utility were greater than the quantified benefits to the utility. **The cost per acre-foot of water saved from the utility perspective was \$45.**

PARTICIPANT PERSPECTIVE

Results of the cost benefit analysis show a net benefit (net present value) of \$938 from the perspective of the participant. This is a net benefit of \$25 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 the cost benefit analysis show a net benefit (net present value) of \$663 from an overall perspective. This is a net benefit of \$18 per participant. The quantified costs to the participants, utility, and others were less than the quantified benefits to the participants, utility, and others. **The cost per acre-foot of water saved from the overall perspective was \$169.**



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Results of Cost Benefit Analysis-Lifespan (5 Years)

	UTILITY	PARTICIPANT	OVERALL
<i><u>Present Value Costs</u></i>			
Costs to Utility	74	NA	74
Costs to Participants	NA	0	0
Costs to Others (Water CASA)	NA	NA	202
Total Costs	\$74	\$0	\$275
<i><u>Present Value Benefits</u></i>			
Total Water Savings	1.63 AF	1.63 AF	1.63 AF
Benefits to Utility	0	NA	0
Benefits to Participants	NA	938	938
Benefits to Others	NA	NA	0
Total Benefits	\$0	\$938	\$938
<i><u>Cost Benefit Calculations</u></i>			
Net Present Value (NPV) (Total Benefits - Total Costs)	-\$74	\$938	\$663
Cost Effectiveness Analysis (CEA) (Total Costs ÷ Total Water Savings)	\$45 /AF	\$0 /AF	\$169 /AF

UNQUANTIFIED COSTS AND BENEFITS

Costs

- Cost of installing new devices.
- Landfill disposal of old devices.

Benefits

- Financial savings on sewer bills for participants.
- Avoided cost of acquisition and distribution of water saved.
- Reduced energy bills for participants.
- Environmental benefits of reduced use of water.
- Increased public awareness about water conservation.
- Reinforces need to conserve water and desirability of conserving.
- Improved public relations for the utility.
- Participants received new water-saving devices.

