

Camrosa Water District

Toilet Distribution Program

Camrosa Water District (CWD) provides potable, non-potable, and reclaimed water for communities in the southern portion of Ventura County, CA. The population of CWD's service area is 31,000. As of the 2000 Census, the median household income in Ventura County was \$59,666, which is higher than the statewide median of \$47,493¹.

UTILITY DEMOGRAPHICS

As of 2004, the District maintained 11,507 connections, 83.5% of which were residential. Of their total connections, 9,065 were single family residential, 544 were multifamily residential, 1,280 were commercial, 133 were industrial, 298 were irrigation, 108 were agricultural irrigation, and 79 consisted of fire suppression, line flushing, construction meters, and temporary meters. Camrosa Water District's total service area is 31 square miles. The average per capita water use for the utility as a whole was 290 gallons per capita per day (gpcd) as of 2004.

UTILITY RATE STRUCTURE AND PRICES

Camrosa Water District employs an increasing block rate structure. As of February 2005, the monthly base rate for service is \$5.60 for ¾ inch meters (or \$0.19 per day), which includes zero gallons of water. Single family and multifamily residential usage charges are \$1.10 per HCF for the first 12 HCF of water and \$1.46 per HCF thereafter (\$1.47-\$1.95 per 1,000 gallons).

CURRENT CAPACITY AND WATER SOURCES

The current sources of supply for the customers and properties within CWD's service area comprise a mix of public and private sources including purchasing imported water from Calleguas Municipal Water District (CMWD), groundwater from three groundwater basins, surface water diverted from Conejo Creek, and recycled water from CWD's Water Reclamation Facility. The utility's total capacity from these sources is 46.0 million gallons per day (MGD).

TOILET DISTRIBUTION PROGRAM	
Eligible Customers:	SF
Customers Analyzed:	SF
Program Years:	February 1997-present
Years Analyzed:	1997

FUTURE PLANS TO MEET DEMAND

The population within CWD's service area is growing at a rate of 0.9% per year. Current sources, water conservation, water transfers, and water reuse are the main components of the District's future plans to meet demand.

TOILET DISTRIBUTION PROGRAM - DESCRIPTION

The program under analysis is an ultra low flush toilet distribution program. The program is partly funded by the Metropolitan Water District of Southern California (MWDSC) and Calleguas Municipal Water District.

¹ U.S. Census Bureau. QuickFacts.

The distribution was held at a local high school. The toilets were distributed on a first come first served basis at the high school on February 8, 1997. The customers provided their photo ID and water bill to prove that they were a CWD customer. They then picked up one or more ultra low flush toilets to replace their less efficient models. They were required to return their old toilets to the same location on February 22, 1997.

CWD and Calleguas Municipal Water District paid the high school \$15 for each old toilet returned for recycling. If the old toilets were not returned by February 22, 1997 the participants would be charged up to \$100 per toilet. However, there was a 100% return rate for the program. Since all 800 old toilets were returned, the high school earned \$12,000.

The toilets distributed were Niagara 2202 toilets. Calleguas Municipal Water District provided 400 toilets and CWD provided 400. There were about 20 students and high school staff, 5 CWD staff, and 1 Calleguas Municipal Water District staff present at the distribution.

CWD held three additional distribution events in 1998 and 1999, and provided the free toilets on request through phone inquiries.

OTHER CWD CONSERVATION PROGRAMS

Toilet Distribution, June 13, 1998, August 13, 1998, April 26, 1999

Ongoing Toilet Distribution, 1999-present

Free ULFTs were distributed on customer inquiry.

Washing Machine Rebate Program, March 25, 2003-June 2, 2003

\$300 rebate to replace inefficient washers with qualifying high efficiency washing machines.

Showerhead Giveaways, 1997-present

Home Water Survey (indoor/outdoor audits), 1994-present

Landscape Water Survey (outdoor audits), 1994-present

Protector del Agua, 1997-present

Classes and seminars for residents and landscape professionals coordinated through Camrosa Water District by the Irrigation Training and Research Center at California Polytechnic University in San Luis Obispo.

Public Education, on-going

METHODOLOGY

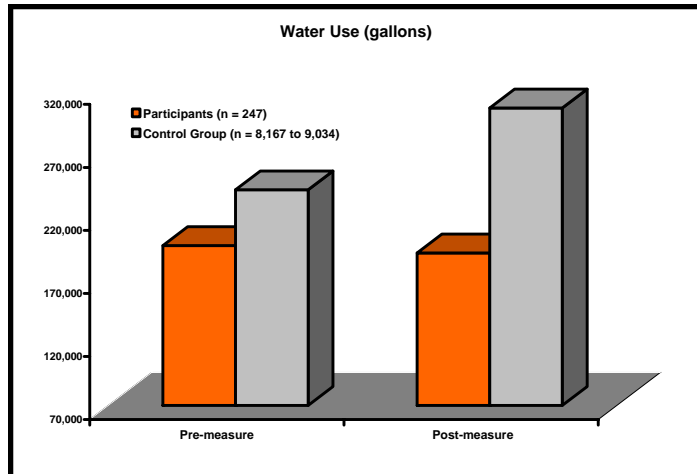
Please see the General Methodology for the specific procedures and techniques used for all ECoBA analyses.

The analysis includes only single family households that participated in the distribution occurring on February 8, 1997. The findings refer to this distribution only, not to the ongoing program. The lifespan of the toilets installed, which is used as the period of this analysis, was assumed to be twenty years.

All quantified costs and benefits have been discounted to the first year of the analysis (1997) and inflated to 2004 dollars. The discount rate

used in this analysis was 6.2%. The CPI values used in this analysis were the 2004 value of 188.9 and the 1997 value of 160.5.

The population studied for this analysis was comprised of participants who received a toilet during 1997. There were 247 usable participants out of a total of 415. One hundred sixty-eight, or 40%, of the participants were unusable because they moved during the period of analysis or there were periods of two or more months with no water use.



All Camrosa Water District residential customers that were not participants in this analysis were used as the control group. Participant pre-measure water consumption was 196,822 gallons per year while control group pre-measure water consumption was 241,020 gallons per year. For the 1997 toilet distribution program, the control group consisted of 8,167 households in 1995, 8,853 in 1996, 9,034 in 1997, 8,936 in 1998, and 9,004 in 1999.

ASSUMPTIONS

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

The 1997 CPI value, 160.5, and the 2004 CPI value, 188.9, were used in this analysis.

The price paid by Calleguas MWD and MWDSC for each toilet was assumed to be \$62.

Assumed that 20% of participants paid for professional installation of their toilet at \$100 per participant.

The price of water used in determining the benefits to customers from reduced water bills is the variable portion of the City's price of water. We used the price from the first tier (0-12 ccf of water use per month) which was \$1.01 per ccf in 1998 and 1999, \$1.03 per ccf 2000 through 2004, and \$1.10 per ccf thereafter (for 2005 and assumed for the rest of the lifespan).

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

RESULTS - WATER SAVINGS

In the first year after the 1997 distribution, the water savings amounted to 13,788,899 gallons, or 55,826 gallons per participant per year (gppy) (28.4% of pre-measure water use). The second year after, the water

savings amounted to 15,267,258 gallons or 61,811 gppy (31.4% of pre-measure water use). The average savings per year was 14,528,079 gallons, or 58,818 gppy (29.9% of pre-measure water use). **The total savings over the twenty year assumed lifespan was 290,561,570 gallons (891.7 AF), or 1,176,363 gallons per participant.**

Before the toilet distribution program, the participant group's water use was 81.7% of the control group's use, on average. After the program, their water use was 62.4% of the control group's use, on average. The participant group's water use decreased by 2.9% from pre-measure to post-measure, whereas the control group's use increased by 27.0%. **The resulting overall water savings attributed to this program was**

Quantified Costs and Benefits						
Utility			Participants			
Costs		Benefits	Costs		Benefits	
Cost of Toilets	\$18,352	Not Quantified	Installation Costs	\$11,840	Water Bill Savings	\$273,828
Materials	\$391			Total	\$11,840	Total
Advertising	\$330					
High School Payment	\$4,440					
Total	\$23,513					

Quantified Costs and Benefits			
CMWD, MWDSC, and High School			
Costs to CMWD & MWDSC		Benefits to High School	
Cost of Toilets	\$18,352	Receiving Incentive	\$8,880
Payment to High School	\$4,440		
Total	\$22,792	Total	\$8,880

29.9%.

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 \$23,513 (\$95 per participant). This includes the cost of the toilets, \$18,352 (\$74 per participant) materials, \$391 (\$2 per participant), advertising, \$330 (\$1 per participant), and payment to the high school, \$4,440 (\$18 per participant).
- The quantified benefit to the utility was \$0.
- The quantified cost to the participants was \$11,840 (\$48 per participant) in installation costs.
- The quantified benefit to the participants was \$273,828 (\$1,109 per participant), which is the total amount that they saved on their water bills during the twenty year lifespan of the toilets.
- The total cost to others was \$22,792 (\$92 per participant). This includes the cost to CMWD and MWDSC of the toilets, \$18,352 (\$74 per participant) and incentive payment to the high school, \$4,440 (\$18 per participant).
- The total benefit to others was \$8,880. This includes the benefit to the high school of receiving incentive payments, \$8,880 (\$36 per participant).

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UTILITY PERSPECTIVE

Results of the cost benefit analysis show a net benefit (net present

value) from the utility perspective of -\$23,513, or -\$95 per participant. The quantified benefits to the utility were less than the quantified costs to the utility. **The cost per acre-foot of water saved from the utility perspective was \$26.**

PARTICIPANT PERSPECTIVE

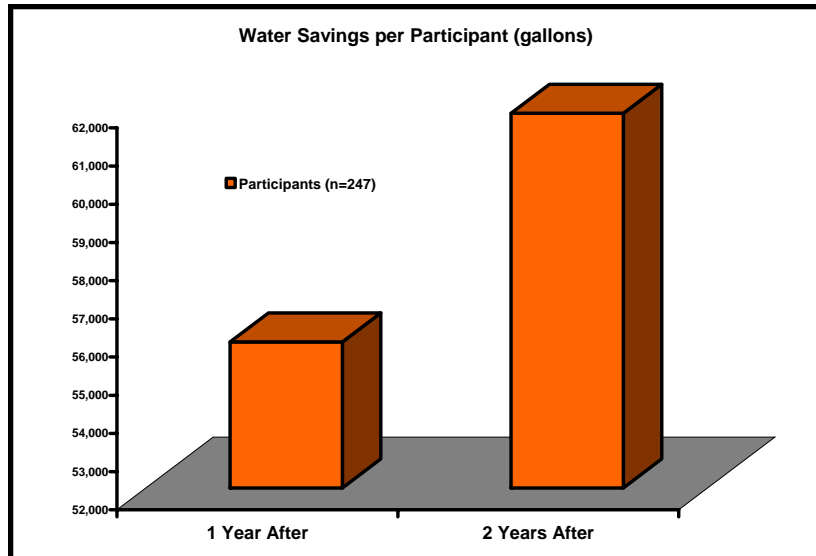
Results of the cost benefit analysis show a net benefit (net present value) of \$261,988 from the participant perspective, or \$1,061 per participant.

The quantified benefits to the participant were greater than the quantified costs to the participant. **The cost per acre-foot of water saved from the participant perspective was \$13.**

OVERALL PERSPECTIVE

Results of the cost benefit analysis show a net benefit (net present value) from an overall perspective of \$224,564, or \$909 per participant. The quantified benefits to the utility, participant, and others were greater

than the quantified costs to the utility, participant, and others. **The cost per acre-foot of water saved from an overall perspective was \$65.**



UNQUANTIFIED COSTS AND BENEFITS

Costs

- The customers' time spent during the pick-up and drop-off events.
- Customers' time spent installing toilets.

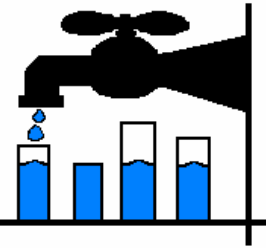
Benefits

- Financial savings on sewer bills for participants.
- Avoided cost of acquisition and distribution of water saved.
- Environmental benefits of reduced use of water.
- Increased public awareness about water conservation.
- Increased customer satisfaction.
- Reinforces need to conserve water and desirability of conserving.
- Water saved for future municipal use.
- Customers received new fixtures.

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Camrosa Water District

Toilet Distribution Program



Results of Cost Benefit Analysis-Lifespan (20 Years)

	UTILITY	PARTICIPANT	OVERALL
<u>Present Value Costs</u>			
Costs to Utility	23,513	NA	23,513
Costs to Participants	NA	11,840	11,840
Costs to Others (CMWD, MWDSC)	NA	NA	22,792
Total Costs	\$23,523	\$11,840	\$58,144
<u>Present Value Benefits</u>			
Total Water Savings	911.20 AF	911.20 AF	911.20 AF
Benefits to Utility	0	NA	0
Benefits to Participants	NA	273,828	273,828
Benefits to Others (High School)	NA	NA	8,880
Total Benefits	\$0	\$273,828	\$282,709
<u>Cost-Benefit Calculations</u>			
Net Present Value (NPV) (Total Benefits - Total Costs)	-\$23,513	\$261,988	\$224,564
Cost Effectiveness Analysis (CEA) (Total Costs ÷ Total Water Savings)	\$26.37 /AF	\$13.28 /AF	\$65.21 /AF