

City of Santa Rosa Utilities

Washing Machine Rebate Program

The City of Santa Rosa Utilities (CSRU) serves the City of Santa Rosa, north of San Francisco in Sonoma County, California. The 1999 median household income in the City of Santa Rosa was \$50,931, which was higher than the statewide median of \$47,493.¹

UTILITY DEMOGRAPHICS

As of December 2004, the City of Santa Rosa Utilities had 48,779 connections. Of these connections, 41,310 were single family residential, 3,046 were multifamily residential, 2,737 were commercial, 1,673 were irrigation, and 13 were recycled water connections. The City of Santa Rosa's total service area is 40.5 square miles. The population of this service area was 154,379 as of January 2004. The City of Santa Rosa's 2004 gross water use was 136 gallons per capita per day (gpcd) and the total residential water use was 99 gpcd.

WASHING MACHINE REBATE PROGRAM	
Type of Program:	Rebate
Eligible Customers:	SF
Customers Analyzed:	SF
Program Years:	1997 - present
Years Analyzed:	2002

UTILITY RATE STRUCTURE AND PRICES

The City of Santa Rosa uses a uniform rate structure. As of 2004, the monthly base rate for water service was \$4.65 for 5/8" meters, which includes zero gallons of water. Single family and multifamily residential usage charges are \$1.98 per hundred cubic feet (ccf) or \$2.65 per 1,000 gallons. The fixed charge for wastewater was \$10.79 for 5/8" meters, with a variable charge of \$4.94 per ccf (\$6.61 per 1,000 gallons).

CURRENT CAPACITY AND WATER SOURCES

The City of Santa Rosa has a storage capacity of 18.7 million gallons. The City of Santa Rosa purchases its water from the Sonoma County Water Agency (SCWA). This water, in turn, is from Lake Mendocino and Lake Sonoma, both located on tributaries of the Russian River.²

FUTURE PLANS TO MEET DEMAND

The population within the City of Santa Rosa's service area is growing at an annual rate of about 1.2%, making it one of the fastest growing cities in the state. The City of Santa Rosa plans to meet future demand by continuing the use of current water supply sources, continuing water conservation programs, water reuse, and possibly developing the use of the City's groundwater resources.

REBATE PROGRAM— DESCRIPTION

Since 1998, the City of Santa Rosa has offered a rebate to customers

¹ US Census Bureau.

² Sonoma County Water Agency. *Water Supply*.

that purchase qualifying water conserving washing machines. From 1998 to 2004, the city offered a \$75 rebate per washing machine.

In July 2004, the rebate amount increased to \$100–150 per qualifying washing machine depending on its efficiency, as determined by the Consortium for Energy Efficiency’s rating system for water and energy efficiency. For washing machines in Tiers 1, 2 and 3A, the rebate is \$100. For washing machines in Tier 3B, the rebate is \$150.

SCWA manages the washing machine rebate program and Electric and Gas Industries Association (EGIA) provides processing and administrative support. During the period of this analysis, customers were eligible for an additional rebate from Pacific Gas and Electric (PG&E).

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

OTHER CSRU CONSERVATION PROGRAMS

Public Education, 1992-present.
Commercial & Multifamily Washing Machine Rebates, April 2000-present
Low-Flow Device Giveaway and Rebates, 1992-2002
Efficient Irrigation Rebate Program, 2002-present
Irrigation customers earn \$1.53 for every 1,000 gallons they save below their Efficient Irrigation Goal for each calendar year.
Audit Program, 1998-present
Water Waste Ordinance, adopted 1999
Best Available Technologies Program, 1997-present
Reduces sewer demand fees for new laundromats and restaurants that install the most water efficient technologies.
Sustained Reduction Rebate Program, 1998-present
Rebates \$100 for every 1,000 gallons of water an ICI customer saves through means other than a toilet, showerhead, or aerator replacement.
Pre-Rinse Spray Nozzle Replacement Program, 2002-present

in the program during 2002. The findings refer to this year only, not to the ongoing program. The lifespan of the washing machines installed, which is used as the period of this analysis, was assumed to be twelve 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 5.17%. The CPI values that were used in this analysis were the 2004 value of 188.9 and the 2002 value of 179.9.

The population studied for this analysis was comprised of households that received a rebate during 2002. There were 174 usable participants out of a total of 456 households rebated during 2002. Two hundred forty, or 53%, of the participants were unusable because they

moved during the period of analysis. Thirty-seven, or 8%, of the participants were unusable because they had participated in more than one conservation program during the time period of analysis. Five participants (1%) were not included in the analysis because they had two or more consecutive months with no water usage. All City of Santa Rosa single-family residential customers that were not participants in the analysis were used as the control group. Participant pre-measure water consumption was 125,037 gallons while control group pre-measure water consumption was 105,482 gallons. The control group consisted of 38,348 households in 2000, 39,476 in 2001, 40,240 in 2002, 40,651 in 2003, and 41,136 in 2004.

ASSUMPTIONS

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

The 2002 CPI value, 179.9, and the 2004 CPI value, 188.9, were used in this analysis.

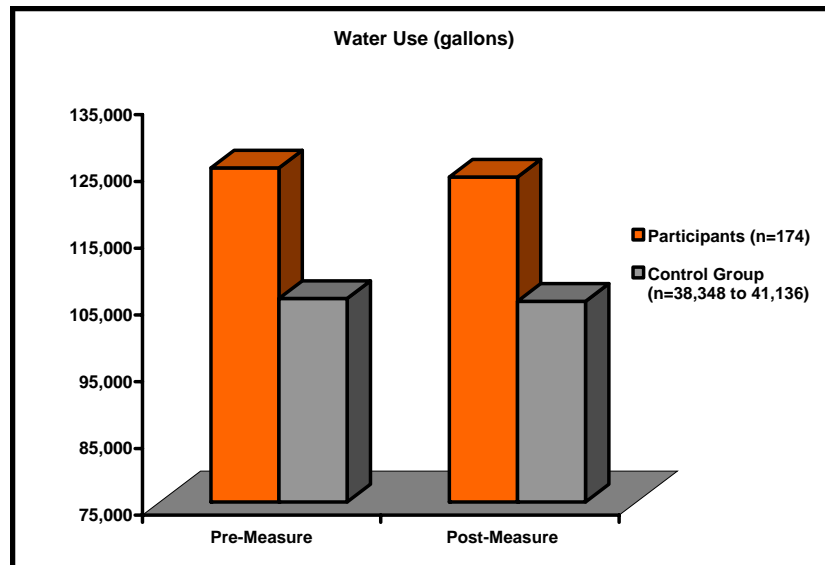
The estimated average cost of high efficiency washers was \$1000 each and high water use washers was \$400 each. The difference between the two costs (\$600) is used as the cost to the participant, as it is assumed that they would have purchased a high water use washer had they not received the rebate.

The average cost of installation of a washing machine was assumed to be \$0. This is because many appliance stores offer free installation with the purchase of a new washing machine.

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. \$2.43 per 1,000 gallons in 2002 and 2003, \$2.65 per 1,000 gallons in 2004 (and assumed to be \$2.65 for the rest of the lifespan).

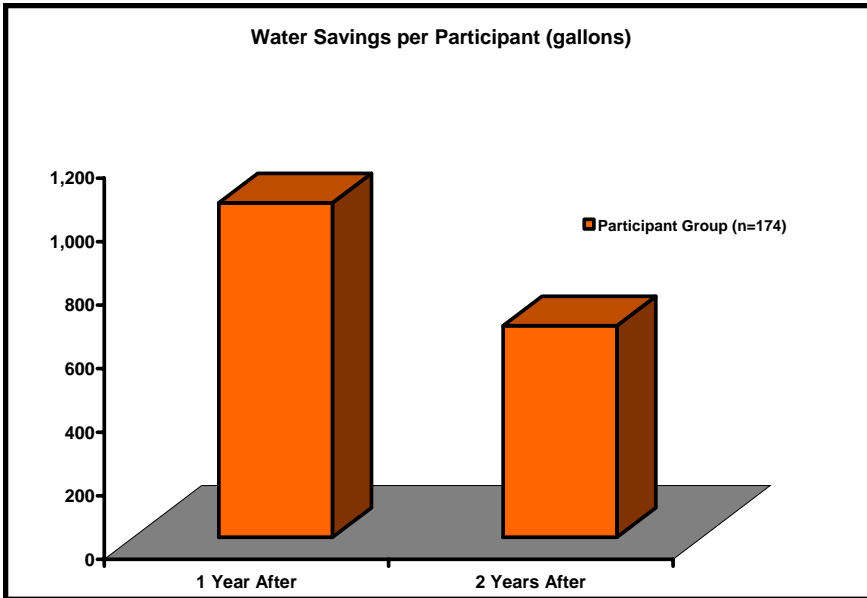
Participants who had two or more consecutive months of no water use were not included in the study.

Participants who participated in any other conservation program during the years 2000 through 2004 were not included in the study.



RESULTS—WATER SAVINGS

In the first year after the 2002 washing machine rebates, the water savings were 183,175 gallons, or 1,053 gallons per participant per year (gppy) (.84% of pre-measure water use). The second year after the



rebate program, water savings were 115,801 gallons or 666 gppy (0.53% of pre-measure water use). The average savings per year was 149,488 gallons (0.46 AF), or 859 gppy (0.69% of pre-measure water use). **The total savings over the twelve year assumed lifespan was 1,793,854 gallons (5.5 AF), or 10,310 gallons per participant.**

During the two years before participating in the washing machine rebate pro-

gram, participants' water use was 119% of the control group's use, on average. During the two years after participating in the program, their water use was 118% of the control group's use, on average. The participants' water use decreased by 1.1% from pre-measure to post-measure, whereas the control group's use decreased by 0.4%. **The resulting overall water savings attributed to this program was 0.7%.**

RESULTS—COST BENEFIT ANALYSIS

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

- ◆ The quantified cost to the utility was \$13,869, including the cost of financial incentive payments, \$13,703, and in-house administration costs, \$166. This is a cost of about \$80 per participant, composing of \$79 for financial incentive payments and \$1 for administration.
- ◆ The quantified benefit to the utility was \$0.
- ◆ The quantified cost to the participants was \$109,623. This exclusively includes the cost of equipment, \$109,623. This is a cost of \$630 per participant.
- ◆ The quantified benefit to the participants was \$17,319. This includes water bill savings, \$3,616; and financial incentives \$13,703. This is a benefit of \$100 per participant, including \$21 for water bill savings and \$79 for financial incentives.
- ◆ The quantified costs to OTHERS was \$3,996. This includes the cost to SCWA, \$2,457, and EGIA, \$1,539, to administer the program. This is a cost of \$23 per participant, including \$14 to SCWA and \$9 to EGIA.

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- The quantified benefits to OTHERS was \$0.

Quantified Costs and Benefits							
Utility				Participants			
Costs		Benefits		Costs		Benefits	
Financial Incentives	\$13,703	Not Quantified		Equip.	\$109,623	Water Bill Savings	\$3,616
Admin. Costs	\$166					Financial Incentives	\$13,703
Total	\$13,869					Total	\$17,319
Total				Total	\$109,623	Total	\$17,319

Quantified Costs and Benefits			
OTHERS (SWCA, EGIA)			
Costs		Benefits	
EGIA admin.	\$13,703	Not Quantified	
SCWA admin.	\$166		
Total	\$13,869		

UTILITY PERSPECTIVE

Results of the cost benefit analysis show a net benefit (net present value) of -\$13,869 from the utility perspective. This is a net benefit of -\$80 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 \$2,519.**

PARTICIPANT PERSPECTIVE

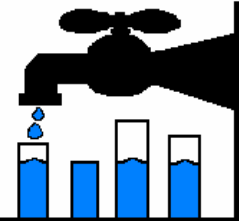
Results of the cost-benefit analysis show a net benefit (net present value) of -\$92,304 from the participant perspective. This is a net benefit of -\$530 per participant. The quantifiable costs to the participants were greater than the quantifiable benefits to the participants. **The cost per acre-foot of water saved from the participant perspective was \$19,913.**

OVERALL PERSPECTIVE

Results of cost-benefit analysis show a net benefit (net present value) of -\$110,169 from an overall perspective. This is a net benefit of -\$633 per participant. The quantifiable costs to the utility, the participants, and outside funders were greater than the quantifiable benefits to the utility, the participants, and outside funders. **The cost per acre-foot of water saved from an overall perspective was \$23,158.**

City of Santa Rosa Utilities

Washing Machine Rebate Program



Results of Cost Benefit Analysis-Lifespan (12 Years)

	UTILITY	PARTICIPANT	OVERALL
<i><u>Present Value Costs</u></i>			
Costs to Utility	13,869	NA	13,869
Costs to Participants	NA	109,623	109,623
Costs to Others (SWCA, EGIA)	NA	NA	3,996
Total Costs	\$13,869	\$109,623	\$127,488
<i><u>Present Value Benefits</u></i>			
Total Water Savings	5.51 AF	5.51 AF	5.51 AF
Benefits to Utility	0	NA	0
Benefits to Participants	NA	17,319	17,319
Benefits to Others	NA	NA	0
Total Benefits	\$0	\$17,319	\$17,319
<i><u>Cost Benefit Calculations</u></i>			
Net Present Value (NPV) (Total Benefits - Total Costs)	-\$13,869	-\$147,116	-\$164,981
Cost Effectiveness Analysis (CEA) (Total Costs ÷ Total Water Savings)	\$2,519 /AF	\$19,913 /AF	\$23,158 /AF

UNQUANTIFIED COSTS AND BENEFITS

Costs

- Customers' time spent installing new washing machines.
- Possible landfill disposal of old washing machines.

Benefits

- Savings on sewer bills.
- Avoided cost of acquisition and distribution of water saved.
- Some participants were eligible for an additional rebate from their energy company.
- Environmental benefits of reduced use of water.
- Increased public awareness about water conservation.
- Water saved for future municipal use.
- Program participants received new washing machines.
- Improved public relations for the utility.
- Potential income from sale of old washing machines.