

Community Water of Green Valley

Commercial Washing Machine Program

Community Water Company of Green Valley (CWCGV), a cooperative water utility, is one of five water utilities that serve the town of Green Valley located in the Santa Cruz Valley of Southern Arizona. As of 2003, the town's population was approximately 18,700.¹ The median household income as of the 2000 census was \$40,213.²

UTILITY DEMOGRAPHICS

As of 2003, CWCGV had approximately 9,800 connections, 49.8% of which were residential. Of their total connections, 4,866 were single family residential, 4,672 were multifamily residential, 233 were commercial, 16 were government, and 11 were construction. CWCGV provides service to a population of 15,500 and currently maintains 10,817 connections. CWCGV's total service area is eight square miles. As of 2004, CWCGV's customer water use for the utility as a whole was 142 gallons per capita per day (gpcd).

UTILITY RATE STRUCTURE AND PRICES

CWCGV has a uniform price structure. The minimum monthly charge for 5/8" meters, which accounts for the majority of the utility's connections, is \$12.50 and includes 2,000 gallons of water. Customers pay \$1.07 for every 1,000 gallons over 2,000 gallons. This rate structure has been in place since 1987, with no subsequent rate increases.

WASHING MACHINE REPLACEMENT

Eligible Customers:	Condominium Complex
Years Analyzed:	Installation: March 2003
	Water Use 2000 - 2004

CURRENT CAPACITY AND WATER SOURCES

CWCGV depends solely on groundwater and maintains and operates four wells. The company has a current storage capacity of five million gallons.

FUTURE PLANS TO MEET DEMAND

The population within CWCGV's service area is growing at 6% per year. CWCGV plans to meet future demand with current capacity and water sources, and by implementing water conservation measures. CWCGV, in conjunction with other utilities, is studying the possibility of using Central Arizona Project (CAP) water in Green Valley.

COMMERCIAL WASHING MACHINE REPLACEMENT PROGRAM - DESCRIPTION

In March 2003, six washing machines were replaced in one of the Villas West Condominiums' community laundromats. The Villas West Condominiums is a condominium complex built in 1964, with 672 units. It is an age restricted community (55+). There are four laundromats at the complex and the particular facility where these machines were

¹ Arizona Department of Commerce: Green Valley Community Profile.

² U.S. Census Bureau: Profile of General Demographic Characteristics 2000.

replaced is heavily used by residents. Top loading Speed Queen washing machines were replaced by front loading Maytag Neptune commercial high efficiency washing machines. The top loading Speed Queen machines use approximately 30 gallons per cycle. The Maytag Neptune machines use approximately 13 gallons per cycle.

Villas West Condominiums contracts with WEB Service Company for laundromat management. This contract entails the provision of washing machines, service, and maintenance. The company considers

OTHER CWCGV CONSERVATION PROGRAMS

Public Education, *ongoing.*

CWCGV has sponsored workshops on a variety of outdoor water conservation topics and publishes monthly water saving tips in the local newspaper.

Showerhead and Faucet Aerator Giveaway,

1992 – present

CWCGV distributes free conservation packets with two low-flow showerheads, two faucet aerators, and one low-flow faucet fixture.

the property's needs (e.g. the need for new machines, as well as the need to cut water and energy costs) in addition to the nature of the contract when making decisions regarding machine selection and/or replacement. WEB Service Company purchased the new washing machines for \$725 each. The approximate retail price for these machines is \$1,600 each. Community Water Company of Green Valley was not involved through

incentive or any other means in this washing machine replacement; however, it does provide water to the condominiums.

METHODOLOGY

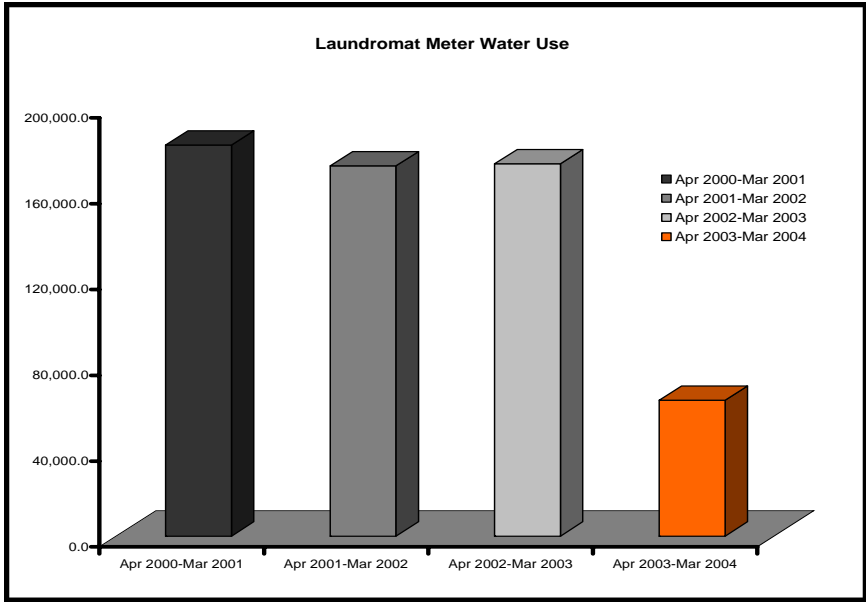
Please see the General Methodology for the specific procedures and techniques used for all ECoBA analyses.

The analysis includes one laundromat at Villas West Condominiums. This laundry facility is served by one meter for which water use data was acquired for three years before and one year following the washing machine replacement. The analysis findings refer only to the washing machine replacements at this particular laundromat during the specified time period only, and not to subsequent washing machine replacements. The lifespan of the washing machines was assumed to be two years because they were intended for commercial use.³ Given this assumption, water savings, costs, and benefits were extrapolated to March 2006.

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 for this analysis was 3.1%. The Consumer Price Index value used in this analysis was the 2004 value of 188.9 and the 2003 value of 184.0.

Water use data was acquired for three years before and one year after the washing machine replacement at Villas West Condominiums. Given the nature of this analysis, no control group was available.

³ Pekelney, D.M. et al. *Guidelines to Conduct Cost-Effectiveness Analysis of best Management Practices for Urban Water Conservation.* California, 1996.



ASSUMPTIONS

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

There was no control group for this analysis as only one facility's water use was being analyzed before and after the installation of water conserving appliances.

The discount rate used was 3.1%, for a 3-year lifespan (the minimum specified in OMB Circular A-94) from 2003.

The Consumer Price Index value used in this analysis was the 2004 value of 188.9 and the 2003 value of 184.0.

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. \$1.07 per 1,000 gallons was used throughout the analysis (including future years).

RESULTS - WATER SAVINGS

In the year after the installations, the water savings amounted to 112,767 gallons, or 0.35 AF (64% of pre-measure use). **The total savings over the two year assumed lifespan was 225,533 gallons, or 0.69 AF.**

During the year after the washing machine replacements, water use at the laundry facility was 36.0% of the average water use during the three years before the replacements. **The resulting overall water savings attributed to this program was 64%.**

RESULTS - COST BENEFIT ANALYSIS

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



Quantified Costs and Benefits					
Utility		Participant			
Costs	Benefits	Costs	Benefits		
Not Quantified		Washing Machines	\$4,466	Water Bill Savings	\$237
		Total	\$4,466	Total	\$237

- ◆ The quantified cost to the utility was \$0.
- ◆ The quantified benefit to the utility was \$0.
- ◆ The quantified cost to Villas West Condominiums was \$4,466. This includes the cost of six washing machines purchased in bulk through WEB Services at \$744 each.
- ◆ The quantified benefit to Villas West Condominiums was \$237. This includes water bill savings, \$237.

UTILITY PERSPECTIVE

Results of the cost benefit analysis show a net benefit (net present value) of \$0 from the utility perspective. The quantified costs to the utility were equal to the quantified benefits to the utility. **The cost per acre-foot of water saved from the utility perspective was \$0 as there was no quantified cost to the utility.**

PARTICIPANT PERSPECTIVE

Results of the cost benefit analysis show a net benefit (net present value) of -\$4,235 from Villas West Condominiums' perspective. The quantified costs to the condominium were greater than the quantified benefits to the condominium. **The cost per acre-foot of water saved from the participant perspective was \$6,452.**

OVERALL PERSPECTIVE

Results of cost benefit analysis show a net benefit (net present value) of -\$4,229 from an overall perspective. The quantified costs to the condominium and utility were greater than the quantified benefits to the condominium and utility. **The cost per acre-foot of water saved from an overall perspective was \$6,452.**

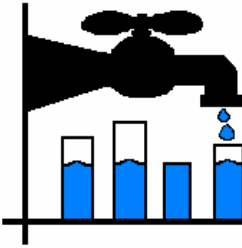
UNQUANTIFIED COSTS AND BENEFITS

Costs

- Disposal of old washing machines
- Laundry detergent specially designed for high efficiency washing machines

Benefits

- Financial savings on sewer bills for participants.
- Avoided cost of acquisition and distribution of water saved.
- Reduced energy bills
- Environmental benefits from reduced water use
- New washing machines
- Resident satisfaction with new laundry facility



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Results of Cost Benefit Analysis-Lifespan (2 Years)			
	UTILITY	PARTICIPANT	OVERALL
<u>Present Value Costs</u>			
Costs to Utility	0	0	0
Costs to Customers	NA	4,465	4,465
Costs to Others	NA	0	0
Total Costs	\$0	\$4,465	\$4,465
<u>Present Value Benefits</u>			
Total Water Savings	0.69 AF	0.69 AF	0.69 AF
Benefits to Utility	0	0	0
Benefits to Customers	NA	237	237
Benefits to Others	NA	NA	0
Total Benefits	\$0	\$237	\$237
<u>Cost Benefit Calculations</u>			
Net Present Value (NPV) (Total Benefits - Total Costs)	\$0	-\$4,229	-\$4,229
Cost Effectiveness Analysis (CEA) (Total Costs ÷ Total Water Savings)	\$0 /AF	\$6,452 /AF	\$6,452 /AF

