

# Helix Water District

## Washing Machine Program

Helix Water District (HWD) is a public water provider serving San Diego County communities, located in Southern California. As of August 2004, the population served by Helix Water District was 251,586 people. As of the 2000 census, San Diego County median household income was \$47,067, which is lower than the statewide value of \$47,493.<sup>1</sup>

### UTILITY DEMOGRAPHICS

Helix Water District supplies water to the San Diego County communities of La Mesa, El Cajon (and nearby unincorporated areas), Lakeside, Lemon Grove, and Spring Valley. As of August 2004, the district maintained 54,742 connections, 92.1% of which are residential. Of their total connections, 45,647 were single family residential, 4,778 were multifamily residential, 3,262 were commercial/industrial, 495 were government, 439 were irrigation, and 121 were other types of connections (i.e. construction, temporary). Helix Water District's total service area encompasses approximately 50 square miles. As of 2004, HWD's total water use, in gallons per capita per day (gpcd) was 142. Their metered water use was 39,956 AF.<sup>2</sup>

### WASHING MACHINE VOUCHER PROGRAM

<b>Voucher Amount:</b>	<b>\$125</b>
<b>Eligible Customers:</b>	<b>SF, MF, ICI</b>
<b>Customers Analyzed:</b>	<b>SF</b>
<b>Program Years:</b>	<b>2000-present</b>
<b>Year Analyzed:</b>	<b>FY 2002</b>

### UTILITY RATE STRUCTURE AND PRICES

Helix Water District has an increasing block rate structure. As of July 1, 2005, the monthly base rate for service to single family residences was \$27.80 for 5/8" meters. The monthly service charge includes zero gallons of water. The fee structure for water consumption is as follows:

Usage	Price
0 – 10 ccf (up to 7,480 gal.)	\$1.54 per ccf (\$2.06 per 1,000 gal.)
11 – 30 ccf (8,228 – 22,440 gal.)	\$1.95 per ccf (\$2.61 per 1,000 gal.)
≥ 31 ccf (23,188 gal.)	\$2.38 per ccf (\$3.18 per 1,000 gal.)

### CURRENT CAPACITY AND WATER SOURCES

Helix Water District has a current storage capacity of 63 million gallons, with the ability to treat up to 106 million gallons per day. Over 80% of their water is a blend of Colorado River water and northern California water from the State Water Project. Helix Water District purchases this water from the San Diego County Water Authority. The remaining water is supplied by runoff from winter rain and snow releases.

### FUTURE PLANS TO MEET DEMAND

The population within Helix Water District's service area is stable, with no significant population growth reported. HWD intends to meet future

<sup>1</sup> U.S. Census Bureau, QuickFacts.

<sup>2</sup> HWD at-a-glance, Helix Water District.

water demand by maintaining its current capacity and sources. Future water demand will also be met by continuing conservation and public education.

### **VOUCHER PROGRAM - DESCRIPTION**

Helix Water District's High Efficiency Washing Machine Voucher program was initiated in 2000. The district provides \$125 vouchers to single family residential, multifamily residential and commercial

customers who purchase high efficiency clothes washers. As of January 2005, 2,322 vouchers had been awarded.

Retailers regard the vouchers as coupons, so customers immediately receive the discount when they purchase the qualifying washing machine. Vouchers have to be presented at the time of purchase, as

#### **OTHER HELIX WATER DISTRICT CONSERVATION PROGRAMS**

**Toilet Vouchers, 1992 to present**

**Showerhead and Aerator Giveaway, 1996 to present**

**Water Budget Program, currently in development**

**Irrigation Controller Installation Incentive, January 2005 to present**

**Leak Detection Service, offered since Helix has been in existence**

**Indoor/Outdoor Audits, September 1994 to present**

**Outdoor Audits, August 1990 to present**

**ICI Program, May 1993 to present**

Vouchers available toward the purchase of ultra-low flow toilets, urinals and waterless urinals, cooling tower conductivity controllers, and coin-operated high efficiency clothes washers.

**Public Education, 1965 to present**

**Conservation Ordinances, various start dates**

rebates are not offered for previous washing machine purchases. Customers are informed of the program via billing statement inserts, newsletters and newspaper articles, television coverage, the utility website, brochures, and the utility's conservation hotline. On November 1, 2004, Helix Water District decreased the voucher amount from \$125 to \$100.

### **METHODOLOGY**

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

The analysis includes only single family residential customers who received vouchers during fiscal year (FY) 2002 (July 1, 2001 – June 30, 2002). The water savings were calculated and a cost benefit analysis was performed for FY 2002. The findings refer to this year only, no to the ongoing program. The lifespan of the high efficiency clothes washing machines, which is used as the period of analysis, was assumed to be 12 years.<sup>3</sup>

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 for this analysis was 5.17%. The CPI values used in this analysis

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

were the 2004 value of 188.9 and the 2002 value of 179.9.

The population studied for this analysis was comprised of all participants who received vouchers during FY 2002. During FY 2002, 268 single family residential customers participated in the program. Of those 268 participants, 261 were usable for this analysis. Seven, or 2.6%, of program participants were unusable because sufficient raw data was not available to perform the analysis.

The control group in this analysis was comprised of a random selection of 200 Helix Water District single family residential customers. The average participant pre-measure water use (260,307 gallons) was greater than that of the control group (165,620 gallons).

### ASSUMPTIONS

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

The price of water used in this calculation is the price for the category in which the average bi-monthly use of the participants falls (31+ ccf). The price at this category is 2.19 per ccf, or 2.93 per 1,000 gallons in 2003, and 2.28 per ccf, or 3.05 per 1,000 gallons in 2004 and beyond.

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.

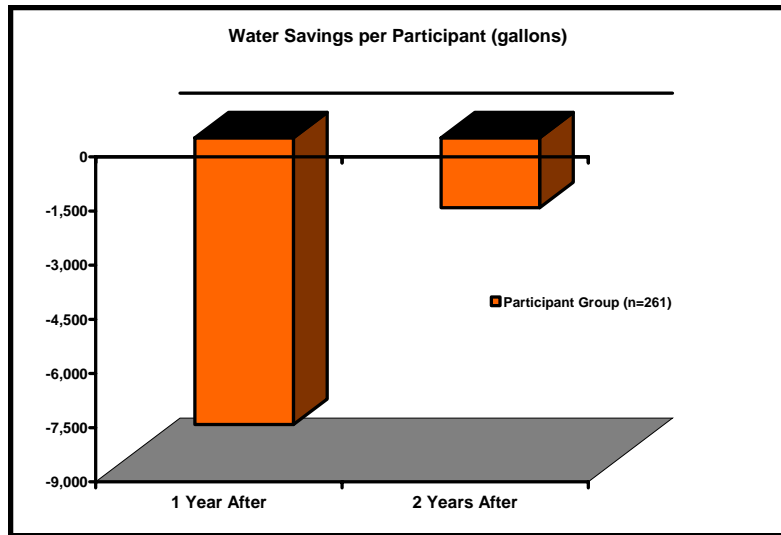
The discount rate used in this analysis was 5.17%.

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

### RESULTS - WATER SAVINGS

In the first year after receiving the washing machine vouchers, no water savings were documented. There was an increase in participant water use, relative to control group water use, of 2,072,662 gallons, or 7,941 gallons per participant per year<sup>4</sup> (gppy) (3.1% of pre-measure water use). The second year after

receiving the vouchers, no water savings were documented. There was an increase in participant water use, relative to control group water use, of 506,220 gallons, or 1,940 gppy (0.8% of pre-measure water use). On average, no water savings were documented; relative water use increased by 1,289,441 gallons, or 4,940 gppy (1.9% of pre-measure



<sup>4</sup> This value also represents the average water savings per voucher, as each participant only received one voucher.

water use). Over the twelve year assumed lifespan of the high efficiency washing machines, no water savings were documented; relative water use increased by 15,473,296 gallons (47.5 AF), or 59,285 gallons per participant.

During the two years before replacing the high water use washing machines with efficient washing machines, the participants' water use was 157.2% of the control group's use, on average. During the two years after replacing the washing machines, the participants' water use was 160.4% of the control group's use, on average. The participant group's water use decreased by 4.5% whereas the control group's water use decreased by 6.4% on average. **The resulting overall water savings attributed to this program was -1.9%.**

### RESULTS - COST BENEFIT ANALYSIS

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

Quantified Costs and Benefits							
Utility				Participants			
Costs		Benefits		Costs		Benefits	
HWD Incentive Payments	\$8,751	Not Quantified		Washing Machines	\$164,434	Incentive Payments	\$34,444
						Water Bill Savings	-\$36,122
<b>Total</b>	<b>\$8,751</b>			<b>Total</b>	<b>\$164,434</b>	<b>Total</b>	<b>-\$1,678</b>

- ◆ The quantified cost to the utility was \$8,751. This includes Helix Water District's contribution to the financial incentives. This is a cost of \$34 per participant.

Quantified Costs and Benefits			
MWDSC and SDCWA			
Costs		Benefits	
Incentive Payments	\$25,693	Not Quantified	
<b>Total</b>	<b>\$25,693</b>		

- ◆ The quantified benefit to the utility was \$0.
- ◆ The quantified cost to the participants was \$164,434. This cost reflects the estimated cost of new high efficiency washing machines. This is a cost of \$630 per participant.
- ◆ The quantified benefit to the participants was -\$1,678. This value includes the amount that participants received in financial incentives, -\$34,444 and water bill savings, -\$36,122. This is a benefit of -\$6 per participant, including \$132 per participant in financial incentives, and -\$138 in water bill savings.
- ◆ The quantified cost to others was \$25,693. This includes contributions to the financial incentives by Metropolitan Water district of Southern California (MWDSC) and San Diego County Water Authority (SDCWA). This is a cost of \$98 per participant.
- ◆ The quantified benefit to others was \$0.

### UTILITY PERSPECTIVE

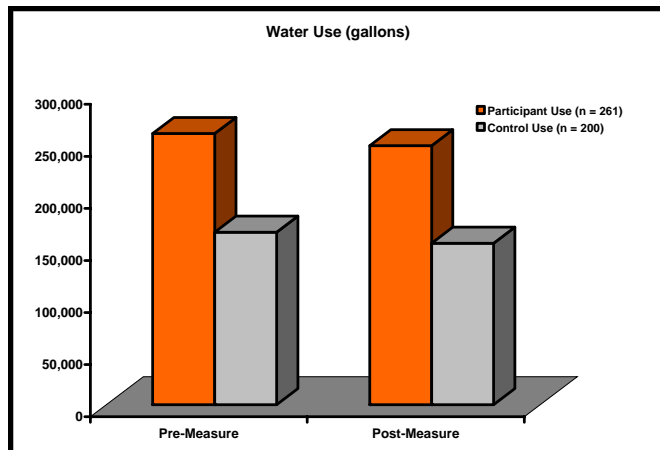
Results of cost benefit analysis show a net benefit (net present value) of -\$8,751 from the utility perspective. This is a net benefit of -\$34 per participant. The quantified costs to the utility were greater than the quantified benefits to the utility. **The cost per acre-foot of water saved from the utility perspective was -\$184.**

### PARTICIPANT PERSPECTIVE

Results of cost benefit analysis show a net benefit (net present value) of -\$164,434 from the participant perspective. This is a net benefit of -\$630 per participant. The quantified costs to participants were greater than the quantified benefits to participants. **The cost per acre foot of water saved from the participant perspective was -\$3,463.**

### OVERALL PERSPECTIVE

Results of cost benefit analysis show a net benefit (net present value) of -\$200,556 from an overall perspective. This is a net benefit of -\$768 per participant. The quantified costs to the utility, participants, and others were greater than the quantified benefits to the utility participants, and others. **The cost per acre-foot of water saved from an overall perspective was -\$4,188.**



### UNQUANTIFIED COSTS AND BENEFITS

#### Costs

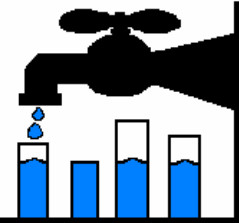
- Advertising costs.
- Cost of processing vouchers.
- Increased surface water use.
- Laundry detergent specially designed for high efficiency machines.
- Removal/disposal of old washing machines.

#### Benefits

- Increased public awareness about water conservation.
- Avoided cost of acquisition and distribution of water saved.
- Potential income from the sale of old washing machines.
- Need for reduced quantities of detergent.
- Increased customer satisfaction with the utility.
- Reinforcement of the desirability of water conservation.
- Participant satisfaction with the new washing machines.

# Helix Water District

## Washing Machine Program



### Results of Cost Benefit Analysis-Lifespan (12 Years)

	UTILITY	PARTICIPANT	OVERALL
<i><u>Present Value Costs</u></i>			
Costs to Utility	8,751	NA	8,751
Costs to Participants	NA	164,434	164,434
Costs to Others (MWDSC & SDCWA)	NA	NA	25,693
<b>Total Costs</b>	<b>\$8,751</b>	<b>\$164,434</b>	<b>\$198,878</b>
<i><u>Present Value Benefits</u></i>			
Total Water Savings	-47.49 AF	-47.49 AF	-47.49 AF
Benefits to Utility	0	NA	0
Benefits to Participants	NA	-1,678	-1,678
Benefits to Others (MWDSC & SDCWA)	NA	NA	0
<b>Total Benefits</b>	<b>\$0</b>	<b>-\$1,678</b>	<b>-\$1,678</b>
<i><u>Cost Benefit Calculations</u></i>			
Net Present Value (NPV) (Total Benefits - Total Costs)	-\$8,751	-\$166,112	-\$200,556
Cost Effectiveness Analysis (CEA) (Total Costs ÷ Total Water Savings)	-\$184 /AF	-\$3,463 /AF	-\$4,188 /AF