

**CALFED WATER USE EFFICIENCY
GRANT PROGRAM**

PUBLIC SCHOOL RETROFIT PROGRAM
Riverside County, California



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Program Summary

In 2008 the Public School Retrofit Program (PSR Program) was launched to save water in public schools, through the installation of water efficient devices. The program was jointly funded by Eastern Municipal Water District (Eastern), the United State Bureau of Reclamation (USBR), the CALFED Bay Delta Program (CALFED) and the Metropolitan Water District of Southern California (Metropolitan) with a budget of \$670,000. The program had three goals; (1) save water, (2) encourage water use efficiency, and (3) remove barriers limiting school participation in conservation programs.

The PSR Program provided the direct installation of water efficient devices at no cost to schools. Devices installed include: toilets, urinals, faucets, aerators, pre-rinse spray valves, irrigation controllers and sprinkler nozzles. The program enabled schools to participate in regional conservation programs by eliminating the need for up front funding and lengthy forms and applications.

Eastern staff met with school district facility planners to communicate the goals and objectives of the PSR Program. With input from school districts, eleven eligible schools were targeted and eight schools chose to participate. Each school received a site evaluation, resulting in a list of devices to be installed. Selecting devices for installation was based on evaluation results, savings assumptions, lifespan of devices and average cost per acre foot saved. Upon completion of the initial eight schools, the program was made available to all schools within Eastern's service area. Eastern's staff began education schools on the benefits of water efficient technology available, to encourage participation in the program. By the end of the program 48 schools participated, receiving varying combinations of high efficiency nozzles, ET controllers, and indoor water conservation devices.

This highly successful program was a visible demonstration of water use efficiency for both students and the community. Eastern's Board of Directors recognized participating schools and provided them with banners that displayed their participation in the program and identified them as Water-Wise Schools.

The PSR Program intended to retrofit eleven schools with water conserving devices, and have an estimated water savings of 79.63 acre feet per year (AFY). At the conclusion of the program, 48 schools received devices installed at no cost, with water savings estimated at 206 AFY. Eastern staff dedicated more than 300 hours to implementing the program. Staff performed landscape evaluations, shared



knowledge of irrigation technology, process paperwork and prepared reports for funding partners. Schools were not required to process paperwork associated with regional conservation programs. The final cost of the program amounted to \$682,000; of which USBR with CALFED contributed \$300,000 and Metropolitan rebates amounted to \$260,000.

Background

Eastern Municipal Water District

Eastern is a regional public water and wastewater agency that provides service for a population of approximately 755,400 (34% of Riverside County). Eastern was organized in 1950 and became a member agency of Metropolitan in 1951, for the purpose of importing water to augment local groundwater supplies. Today Eastern serves water to 139,400 retail customers, and seven local public water systems. Eastern's service area encompasses 555 square miles in a semi-arid region in southwest Riverside County along Interstate 215. It is bounded on the west by Western Municipal Water District and Elsinore Valley Municipal Water District, on the north by San Bernardino County Line, and on the south by the San Diego County Line and Rancho California Water District. A vicinity map is included in the appendix.

Eastern has four sources of water supply; imported water purchased from Metropolitan, local potable groundwater, local desalinated groundwater and recycled water. Total water supply for Eastern is made up of 65 percent imported water, 11 percent local potable groundwater, 3 percent desalted groundwater and 21 percent recycled water. Metropolitan delivers water from two sources; the State Water Project (SWP) and the Colorado River Aqueduct (CRA).

Eastern in a growing region and continues to build its supply portfolio to insure reliability into the future. As development occurs, Eastern will expand the use of imported water from SWP and CWA. Eastern will also look to increase supply reliability through water use efficiency. Eastern's water use efficiency goals include compliance with Senate Bill x7-7, requiring retail water agencies to reduce water demand by 20 percent by the year 2020.

The PSR Program meets Eastern's need to improve water efficiency and assists public schools in saving both water and



money. Water conserved through the PSR Program will reduce Eastern's reliance on water imported from the SWP and CWA. The program has the added benefit of educating the public about water efficiency and serving as an example to the community.

Need for Retrofit Program:

Eastern's service area is made up of mostly single family residential homes with a small amount of commercial and industrial development. Without a large component of commercial and industrial demand, public schools are some of the largest single water users in the community. Eastern's service area has more than 100 public schools, with more than 60 schools built before 1992. Older schools average 30 AFY per school and account for over 1,700 AFY of demand. Overall, public schools in Eastern's service area use approximately 2,442 AFY.

Although public schools face economic challenges and budget constraints, participation in conservation programs is limited. Financial incentives for water conserving devices have been available to public schools since 1992 through Metropolitan's regional rebate program. From 2007 – 2009, Metropolitan implemented a special program focused on customers in the public sector, including public schools. The program provided incentives in advance and a limited amount of time to install devices. Only three schools in Eastern's service area participated in this program. When asked, schools communicated that limited resources and the cost of installing retrofit devices are barriers to participating in programs.

Program Goals and Objectives

The goals of the PSR Program were to save water, encourage water use efficiency and remove barriers limiting school participation on conservation programs.

Save Water:

The PSR Program anticipated water savings of 79.6 AFY for retrofitting eleven schools built before 1992. After completing the program, water savings is estimated at 206AFY for 48 schools.

Eleven schools were pre-selected, based on location and age, number of student and water use; eight schools chose to participate. Site evaluations were performed, by examining plumbing fixtures and irrigation devices to determine the need for water efficient retrofits. Selecting devices for installation was based on evaluation results, savings assumptions, lifespan of devices and average cost of acre foot saved. Retrofit devices include toilets, urinals, faucets, aerators, pre-rinse spray heads, irrigation

controllers and sprinkler nozzles. Initially the program estimated water savings for eleven schools receiving indoor and outdoor retrofits at 79.63 AFY with a lifetime savings of 1,050 AF.

After the initial schools were completed, funds were used to retrofit additional schools, primarily focusing on outdoor measures. Outdoor devices included irrigation controllers and high efficiency sprinkler nozzles. By the end of the program 48 schools received varying combinations of water conservation devices, with estimated water savings of 206 AFY and lifetime savings of 2,195 AF. A summary of actual devices installed is shown in Table 1.

Table 1. Actual Devices Installed

Device Type	Quantity	Est. Device Savings AFY	Device Lifespan Years	Water Savings AFY	Water Savings Lifetime AF
HETs	334	0.043	20	14.23	284.54
ULFT	5	0.037	20	0.18	3.70
ZWU	1	0.123	20	0.12	2.46
Faucets	143	0.005	10	0.66	6.62
Aerators	289	0.005	5	1.34	6.69
PRSH	3	0.153	5	0.46	2.30
WBIC (114)	3,359 Stn	.0129	10	43.33	433.31
HE Nozzles	36,396	0.004	10	145.58	1455.84
Totals				205.91	2,195.47

Encourage Water Use Efficiency:

The PSR Program is a visible demonstration of water use efficiency for students and the community. Participating schools received recognition from Eastern’s Board of Directors and banners advertising their participation in the program. As schools display the banners, they are distinguished as “Water-Wise Schools” and acknowledge their partnership with Eastern, USBR, CALFED and Metropolitan.

Banners displayed at participating schools are a highly visible way to encourage water use efficiency in the community. People are directed to Eastern’s website, where they can learn about conservation programs, incentives for water efficient devices and water saving guidelines.

Barriers Removed:

Public schools face economic challenges and budget constraints, hindering their participation in conservation programs. When asked, schools communicated that limited resources and the cost of installing devices are barriers to participation in conservation programs.

The PSR Program provided a solution to schools by removing these barriers. Schools received water saving devices installed at no cost, and no need to process paperwork for the program. Eastern staff dedicated more than 300 hours to implementing the program. Staff performed landscape evaluations, shared knowledge of irrigation technology, processed paperwork and prepared reports for funding partners.

Program Implementation

In August 2008, USBR executed an agreement with Eastern to begin the PSR Program. The program was implemented over a period of three years, from August 2008 to August 2011. During this time 48 schools participated, receiving varying combinations of high efficiency nozzles, ET controllers, and indoor water conservation devices. This section will discuss project planning, school selection, vendor selection, and two phases of implementation.

Program Planning:

More than 100 schools, in eleven public school districts are located in Eastern's service area. Sixty of these schools were built before 1992 and Eastern staff identified them as potential candidates for the PSR Program.

In October 2008 Eastern staff met with school district facility planners to introduce the PSR Program. Goals and objectives of the program were communicated, including the types of devices that would be targeted for retrofit. The meetings stimulated interest in the program and provided Eastern staff with valuable information to move forward with implementation.

School Selection:

The initial phase of the program was limited to retrofitting one school per school district, for a total of eleven schools. Based on input from school districts, age of schools, number of students and historic water use, one school from each district was selected. Eastern staff made several attempts to contact each school and encourage participation. Of the eleven schools that were approached, eight schools responded and completed participation agreements.

Three school districts were not responsive to Eastern's initial efforts to encourage participation. After completing the first phase, two of these school districts chose to participate in the second phase of the program. One of these school districts had 100% participation from the schools in their district that are served by Eastern.

Vendor Selection:

Two separate competitive solicitations processes to obtain vendors for program implementation were needed. When moving into the second phase of the program the cost of installing high efficiency nozzles need to be reconsidered. It was necessary to solicit vendors to bid on this portion of the program as a separate component.

In October 2008 E.R. Block Plumbing, Inc. (E.R. Block) was selected to begin implementing the PSR Program. E.R. Block was responsible for the procurement and installation of plumbing devices and ET controllers. In December 2009 CTAI Pacific Greenscape, Inc. (CTAI) was selected to implement the nozzle portion of the program. CTAI was responsible for the procurement and installation of high efficiency nozzles.

Program Phase One:

E.R. Block communicated directly with each school and coordinated site evaluations. From April through August 2009, plumbing fixtures and irrigation controllers at each school were examined, to determine the need for water efficient upgrades. Comprehensive lists of devices were provided to Eastern to evaluate results.

During this time, a program database was developed by Eastern staff and populated with the result of each evaluation. Devices were selected for retrofit based on assumed water savings and average cost per acre foot savings. Approved devices included toilets, urinals, pre-rinse spray valves, faucets, aerators, ET controllers and high efficiency nozzles. With the exception of high efficiency nozzles, E.R. Block began retrofitting devices in December 2009 and completed the eight schools by May 2010.

Program Phase Two:

Phase two primarily focused on outdoor measures; Eastern continued to contact schools to encourage participation. Landscape evaluations and nozzle inventories for each school were completed by

Eastern's conservation specialist. Schools that received nozzles agreed to use the same type of nozzles for a minimum of ten years. A sample agreement is included as Attachment xx.

Eastern evaluated the costs of high efficiency nozzles and concluded that Toro precision nozzles were the most cost effective to retrofit. The PSR Program standardized on Toro precision nozzles, and installations began in April 2010. Some schools being familiar with other rotating nozzles were reluctant to have the Toro precision nozzles installed. Consideration was given on a case by case basis and one school did receive incentive for Rainbird MP rotating nozzles.



For the first few months in phase two, Metropolitan required high efficiency nozzles to include pressure regulating sprinkler bodies. This was a challenging requirement that caused limited participation in the program. Most schools require maintenance staff to be present when contractors are working on site. With increased time needed to install devices and limited staff available, some schools could not participate under these conditions. In July 2010 Metropolitan removed the requirement and more

schools were able to receive nozzle installations.

After exhausting opportunities for retrofits in elementary, middle and high schools; Eastern looked to community colleges. One community college district with two campuses qualified to participate in the program and received both indoor and outdoor devices. Eight schools served by two local water agencies also participated in the program, receiving outdoor devices.

Benefits

The PSR Program provided a number of benefits to schools and the community. Eastern, along with funding partners USBR, CALFED and Metropolitan, were able to provide devices at no charge to schools. Devices installed in this program saved xxx AF of water imported from the SWP and CRA. This water savings would not have been achieved without the PSR Program, and will contribute to current and future water demands of the community. Additional benefits are building partnerships and educating the community.

Partnerships

Eastern has an established history of partnering with regional water agencies and federal funding agencies, and the PSR Program is no exception. Funding from multiple partners maximizes program resources, schools in this program benefitted by the direct installation of devices. Final program costs were \$682,000; USBR with CALFED contributed \$300,000 through grant funding and Metropolitan contributed \$260,000 through regional conservation programs. Eastern invested both monetary and in-kind services amounting to \$122,000.

Two local water agencies, City of Perris and Rancho California Water District (RCWD) also partnered with Eastern in the program. Partnering with local agencies enabled the program to extend beyond the boundary of Eastern's service area. Retrofit devices were installed in eight schools that are not directly served by Eastern.

Education

The program also serves as an example to students and the community. Eastern distributed banners to each participating school, recognizing participants as "Water Wise Schools". The banners are highly visible and encourage water use efficiency in the community. Banners also direct the community to Eastern's website, where they can learn about conservation programs and water saving guidelines. Landscape water efficiency and reduced runoff at schools also promotes the value of water and encourages the community to save water.

In addition to educating the community Eastern was able to educate school district staff about water efficient devices through this program. Educating schools about the increased efficiency of newer irrigation technology was a component of the PSR Program. Eastern's staff met with maintenance staff at each school to discuss the differences between conventional spray heads and high efficiency nozzles. Discussions also included the added benefits of using ET based controllers in conjunction with high efficiency nozzles.

At one school site a comparison of nozzles from two manufacturers was performed. Toro's precision nozzles and rotating nozzles were compared to Rain Bird's MP rotator 1000 and MP rotator 2000. A distribution uniformity test was done using each type of nozzle on the same plot of turf. The test concluded that Toro precision nozzles are most efficient for areas with a throw of less than 15 feet. Toro rotating nozzles are most efficient for an area greater than 15 feet.



School staff was shown how to properly program devices and make adjustments based on actual ET. They also received information on how adjusting for actual ET will enable them to stay within their monthly water budgets.

Water Savings Validation

Two approaches were taken to validate water savings in the PSR Program. First, accounts with devices installed for an entire year were evaluated. Second, water use from June 2011 to October 2011 was measured and evaluated for all accounts. In both approaches, accounts were grouped by meter type, landscape, mixed-use and indoor only. Although results varied by account type, it appears that actual savings are close to estimates for the entire project. For all evaluation accounts with significant meter adjustments and missing demand, data was not included.

Landscape Accounts

Valley View Elementary had two weather based irrigation controllers installed in April of 2010. The estimated savings from the 2 controllers is 1.24 AFY. Comparing one year of pre and post landscape demand, nearly 7 acre-feet of water was saved, despite an increase in ET of 7%. Comparing post installation data with a five year average demand shows even greater savings. Table 2 shows the result of the evaluation of annual savings.

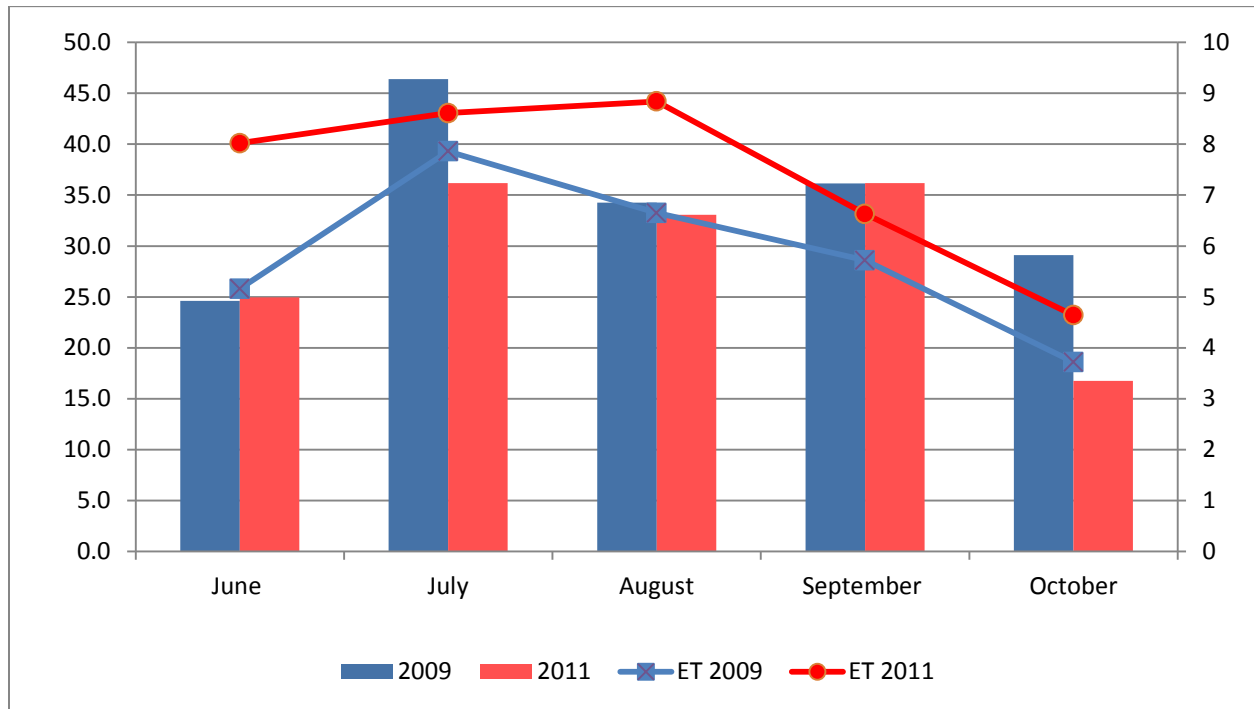
Table 2. Water Use and ET for Valley View Elementary Landscape Meter

Water Use (AF)	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2003-2008 Average	0.5	0.5	1.0	4.7	2.5	3.1	2.9	3.8	2.7	2.8	1.2	1.3	27.1
1 Yr. Pre installation	0.4	0.3	0.0	0.8	2.0	2.1	2.9	3.8	2.5	1.8	2.4	1.5	20.5
1 Yr. post installation	0.0	0.8	0.5	0.4	1.9	1.9	2.4	2.3	2.4	2.5	1.2	0.7	17.0
ET (in)	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2003-2008 Average	2.2	2.4	4.1	4.7	6.3	7.0	7.7	7.5	6.1	4.2	2.5	2.0	56.8
1 Yr. Pre installation	1.7	2.8	3.9	4.8	6.4	5.2	7.9	6.7	5.7	3.7	2.9	2.4	53.9
1 Yr. post installation	2.5	2.8	4.4	5.6	6.2	6.9	7.6	7.9	6.0	3.4	2.8	1.8	57.8

After reviewing accounts with one full year of post installation data, ten additional landscape accounts were reviewed. Demand for June 2011 through October 2011 was less than average demand for the same months in 2009. Actual savings totaled 23.4 AF compared to an estimated 27.9 AF. Although savings are less than estimated for the time period, several factors may impact demand including higher ET in 2011. Savings from some landscape devices have also been shown to be greater in off peak months

that were not included in this analysis. Landscape demand and ET for 2009 and 2011 for participating accounts are shown in Figure 1.

Figure 1. Demand and ET for 2009 and 2011 for Participating Landscape Accounts



Using both sets of data it is anticipated that savings estimates will be met or exceeded in the future for landscape devices installed.

Mixed-Use Meter Accounts

Nan Sanders Elementary had 42 faucets, 49 toilets, 1 urinal, 301 nozzles and 3 weather based irrigation controllers installed in March and April of 2010. The estimated water savings from these devices is 4.32 AFY. Comparing one year of pre and post mixed-use demand, more than 7 acre-feet of water was saved, despite an increase in ET of 7%. Comparing post installation data with a five year average demand shows even greater savings. Table 3 shows the result of evaluation of annual savings.

Table 3. Water Use and ET for Nan Sanders Elementary Mixed-Use Meter

Water Use (AF)	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2003-2008 Average	0.9	0.8	0.8	1.0	1.6	2.3	2.6	2.3	2.8	2.1	1.6	1.4	20.1
1 Yr. Pre installation	1.7	0.1	1.5	1.2	0.7	0.9	3.1	1.7	2.2	2.6	0.9	1.0	17.6
1 Yr. post installation	0.7	0.2	0.1	0.2	0.7	1.4	0.9	0.8	2.1	1.3	0.8	0.7	10.1
ET (in)	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total

2003-2008 Average	2.2	2.4	4.1	4.7	6.3	7.0	7.7	7.5	6.1	4.2	2.5	2.0	56.8
1 Yr. Pre installation	1.7	2.8	3.9	4.8	6.4	5.2	7.9	6.7	5.7	3.7	2.9	2.4	53.9
1 Yr. post installation	2.5	2.8	4.4	5.6	6.2	6.9	7.6	7.9	6.0	3.4	2.8	1.8	57.8

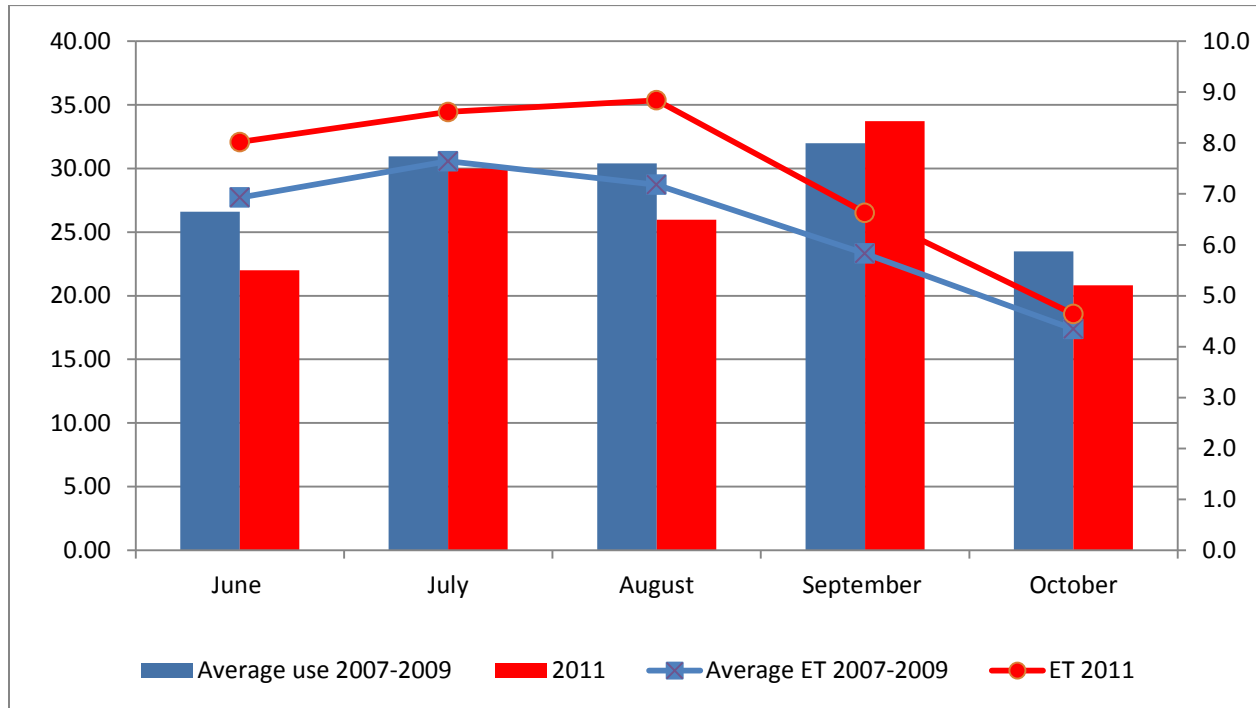
Fruitvale Elementary had 2 aerators, 58 faucets, 11 toilets, and 2 weather based irrigation controllers installed in April and May of 2010. The estimated water savings from these devices is 1.42 AFY. Comparing one year of pre and post mixed-use demand, more than 4 acre-feet of water were saved, despite an increase in ET of 7%. Comparing post installation data with a five year average demand shows even greater savings. Table 4 shows the result of evaluation of annual savings.

Table 4. Water Use and ET for Fruitvale Elementary Mixed-Use Meter

Water Use (AF)	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2003-2008 Average	0.4	0.6	0.5	1.3	1.6	2.4	3.1	3.2	3.3	2.2	2.0	1.3	21.9
1 Yr. Pre installation	0.2	0.2	0.1	1.2	2.2	2.4	2.3	2.9	2.8	2.4	1.8	1.2	19.6
1 Yr. post installation	0.1	0.4	0.4	0.2	1.0	1.8	2.5	2.1	2.2	2.4	101	1.2	15.4
ET (in)	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2003-2008 Average	2.2	2.4	4.1	4.7	6.3	7.0	7.7	7.5	6.1	4.2	2.5	2.0	56.8
1 Yr. Pre installation	1.7	2.8	3.9	4.8	6.4	5.2	7.9	6.7	5.7	3.7	2.9	2.4	53.9
1 Yr. post installation	2.5	2.8	4.4	5.6	6.2	6.9	7.6	7.9	6.0	3.4	2.8	1.8	57.8

After reviewing accounts with one full year of post installation data, 27 additional mixed-use accounts were reviewed. Demand for June 2011 through October 2011 was less than average demand for the same months in 2007 through 2010. Actual savings totaled 10.9 AF compared to an estimated 15.6 AF. Savings may be reduced because school was not in session during a portion of the analysis period. There may also be a reduction in savings due to the higher ET in 2011. Eastern will continue to monitor savings to determine if actual savings meets or exceed actual savings seen in the detailed studies. Mixed use demand and ET for 2007-2009 and 2011 for participating accounts are shown in Figure 2.

Figure 2. Demand and ET for 2009-2009 and 2009 for Participating Mixed Use Accounts



Indoor Only Accounts

Valley View Elementary had 20 aerators and 31 toilets installed in April of 2010. The estimated water savings from these devices is 1.41 AFY. The estimated savings exceeds the total demand for the school in some years, so it is unlikely the estimated savings can be achieved. Table 5 shows the result of evaluation of annual savings.

Table 5. Water Use Valley View Elementary Indoor Meter

Water Use (AF)	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1999-2008 Average	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.0	0.1	0.2	0.1	0.2	1.4
1 Yr. Pre installation	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.1	1.2
1 Yr. post installation	0.1	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.2	0.2	0.1	1.5

Menifee Valley Middle had 23 aerators, 21 faucets, and 66 toilets installed in April of 2010. The estimated water savings from these devices is 3.01 AFY. Again, estimated savings exceed the total demand for the school in some years, so it is unlikely the estimated savings can be achieved at this site. Comparing one year of pre and post indoor demand did result in a savings of 0.24 acre-feet, but the number of students enrolled at the school decreased. Table 6 shows the result of evaluation of annual savings.

Table 6. Water Use for Menifee Valley Middle Indoor Meter

Water Use (AF)	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1999-2008 Average	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.2	3.1
1 Yr. Pre installation	0.1	0.2	0.2	0.2	0.3	0.3	0.1	0.1	0.2	0.3	0.3	0.2	2.7
1 Yr. post installation	0.1	0.2	0.2	0.3	0.1	0.1	0.0	0.1	0.3	0.1	0.5	0.1	2.4

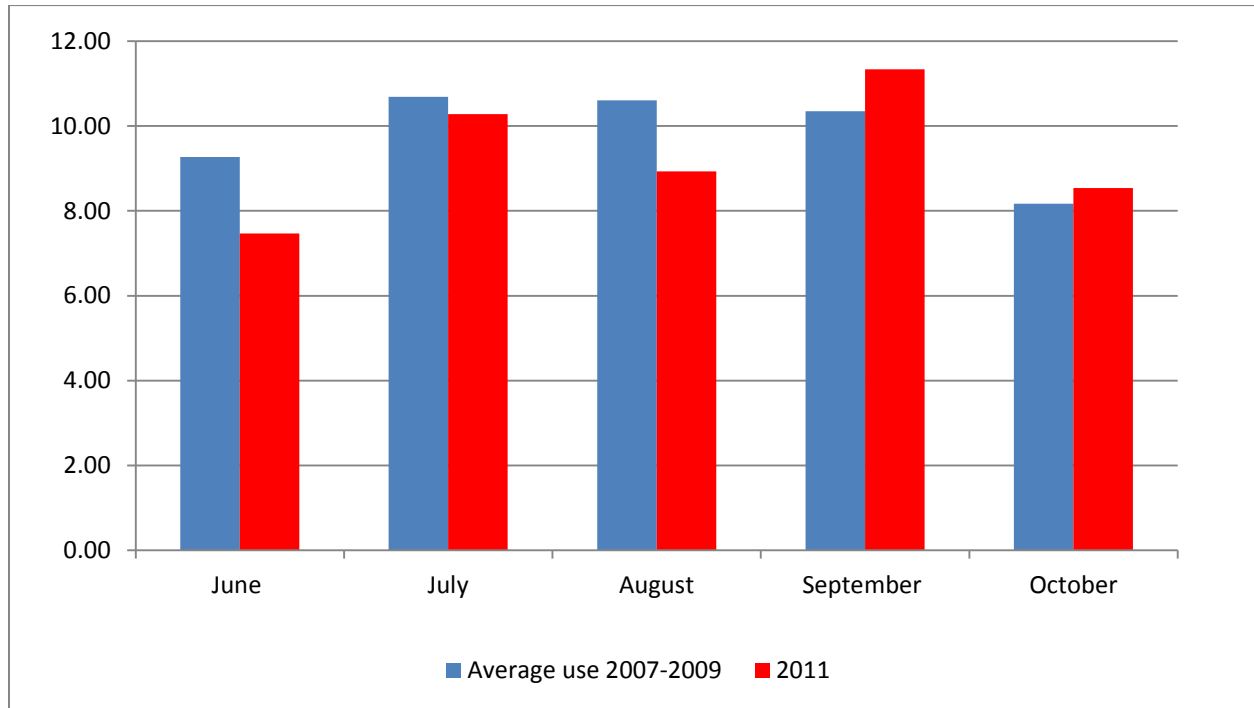
Heritage High was established in 2007, one grade level attended the first year, and additional grade levels were added each year until 2010. This school had 242 aerators and 22 faucets installed in January of 2010. The estimated water savings from these devices is 1.21 AFY. Comparing indoor demand one year prior and one year post, results in a savings of 0.8 acre-feet. Comparing post installation data with a two year average demand shows savings, despite the progressive increase in students. Table 7 shows the result of evaluation of annual savings.

Table 7. Water Use Heritage High Indoor Meter

Water Use (AF)	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2007-2008 Average	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.5	0.6	0.5	0.3	4.2
1 Yr. Pre installation	0.2	0.2	0.3	0.3	0.3	0.4	0.2	0.3	0.6	0.7	0.8	0.4	4.7
1 Yr. post installation	0.2	0.3	0.3	0.4	0.4	0.4	0.2	0.1	0.3	0.5	0.4	0.3	3.9

After reviewing accounts with one full year of post installation data, six additional indoor accounts that participated in the program were reviewed. The demand for June through October 2011 was less than average demand for the same months in 2007 through 2010. Actual savings totaled 2.2 AF compared to an estimated 4.1 AF. Although savings are less than estimated for the time period, several factors may impact demand, including higher enrollment in 2011. Figure 3 shows indoor demand for 2007-2009 and 2011 for participating accounts.

Figure 3. Demand for 2007-2009 and 2011 for Participating Indoor Accounts



Overall Analysis

Table of Water Savings Analysis Summary					
	Pre Installation Time Period	Pre Installation Demand (AF)	Post Installation Demand (AF)	Difference (AF)	Estimated Saving (AF)
Valley View (Outdoor)	2003-2008	27.1	17.0	10.1	1.2
Landscape Accounts	June - Oct 2009	170.5	147.1	23.4	27.9
Nan Sanders	2003-2008	20.1	10.1	10.0	4.3
Fruitvale	2003-2008	21.9	15.4	6.5	1.4
Mixed Use Accounts	June- Oct, 2007-2009	143.4	132.5	10.9	15.6
Valley View (Indoor)	1999-2008	1.4	1.5	0.0	1.4
Menifee Valley	1999-2008	3.1	2.1	1.0	3.0
Herritage High	2007-2008	4.2	3.9	0.3	1.2
Indoor Accounts	June- Oct, 2007-2009	49.1	46.6	2.5	4.2
Total		440.9	376.1	64.7	60.2

Total water saved by the account analyzed exceeds the estimated savings, mainly due to higher than estimated landscape water savings. Analysis of individual accounts determines that indoor saving may be overestimated and further analysis may be required to determine long term water savings. In most cases participating schools saw a reduction in demand, some even though there were additional student and higher ET post installation. Eastern will continue to work with schools to encourage proper controller programming and the continued use of high efficiency nozzle to maintain water saving levels.

Conclusion and Recommendations

There are opportunities to achieve water savings in the public sector, including public schools. The PSR Program provides a model for water agencies to implement direct install programs in these settings. Keys to success are removing barriers to participation, educating the public and school district staff, installing water saving devices cost effectively and developing partnerships.

Installation cost and staff time limited school participation in regional water use efficiency programs. To eliminate these barriers Eastern worked with schools to install devices at no cost and with little paperwork. Because of the success of this program Eastern is looking to expand the landscape elements

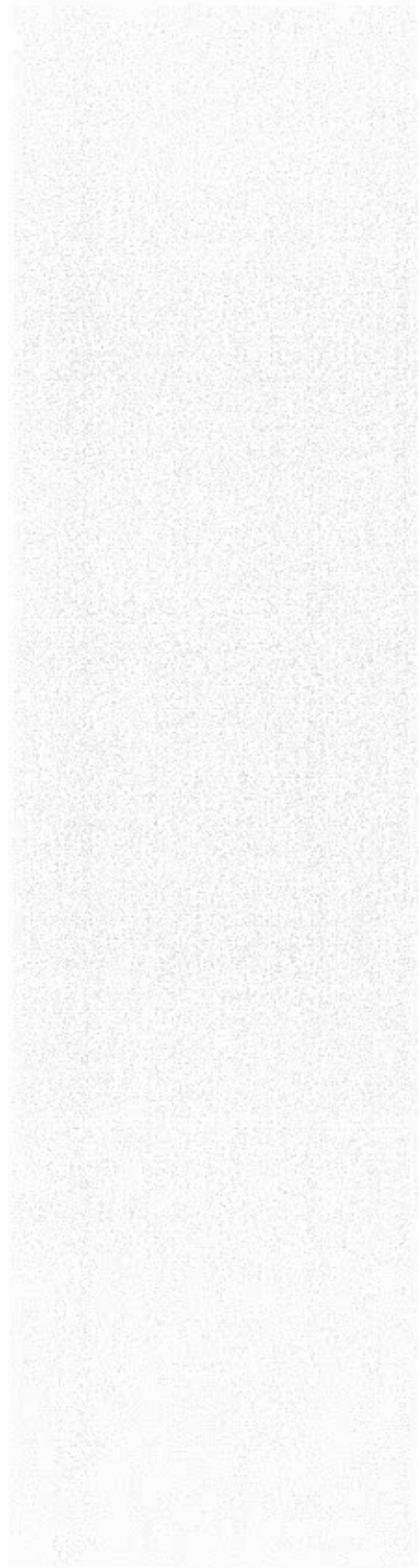
of the program to other customers. Using staff resources and regional funding to install devices, EMWD may be able to assist other customer unable to participate in rebate programs.

Targeting schools offered Eastern the opportunity to encourage the public to save water. Including a public outreach tool like a banner encourages schools participating in the program and keeps the community informed. In addition to educating the public Eastern educated school district staff about the efficiency and operation of landscape water saving devices. Education is an important component to plan for and include in any similar program.

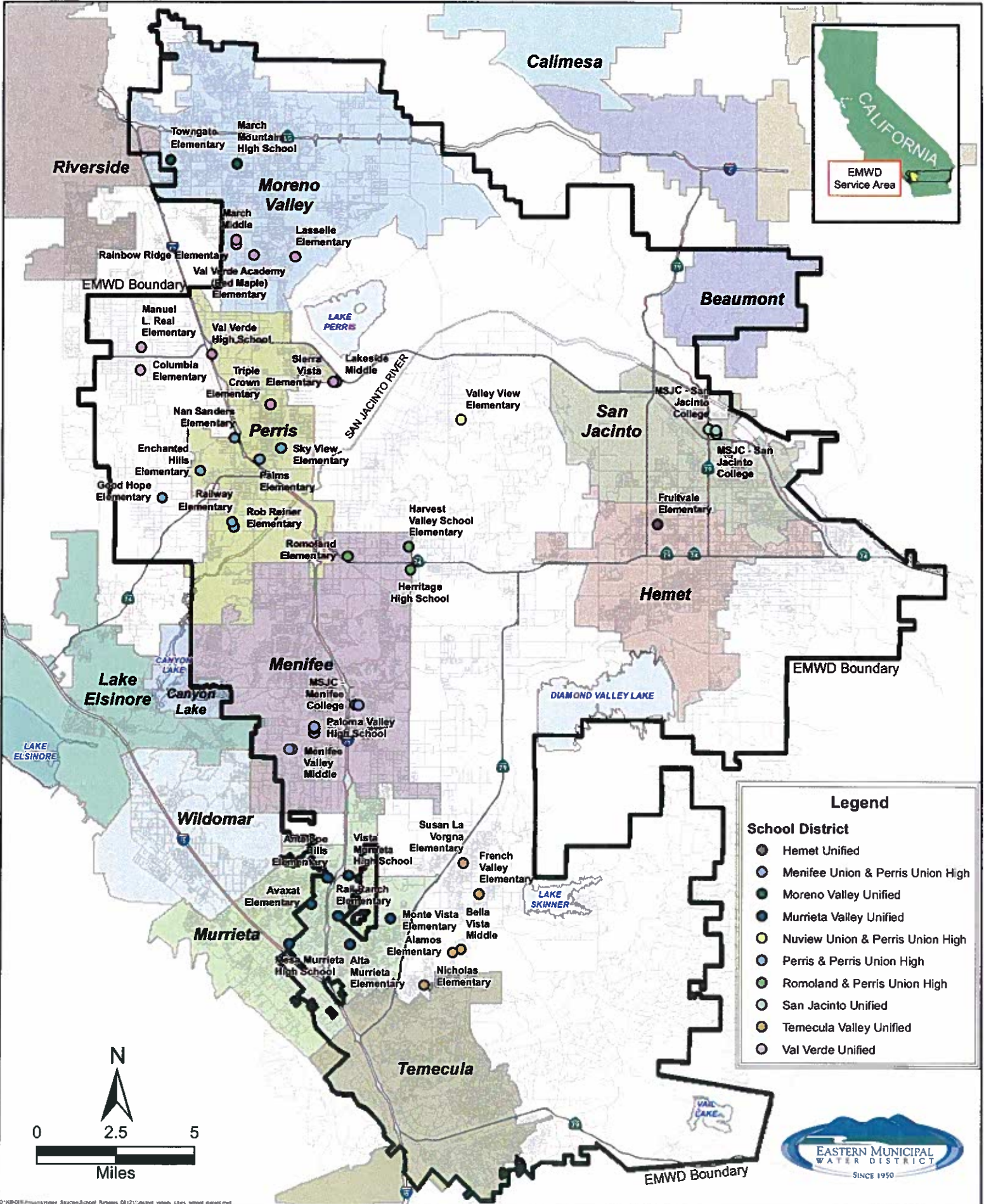
Analysis showed that outdoor devices saved water cost effectively. Installation cost were kept down through vendor selection. By having multiple vendors implement the program, Eastern was able maintain a lower cost for installing nozzles. Currently, based on the success of this program, Eastern is encouraging Metropolitan to take a regional approach with controller and nozzle installation. Metropolitan competitively soliciting proposals from multiple vendors within the region could allow individual agencies to install devices at costs lower than rebate cost.

A final component of program success is developing partnerships. Finding funding partner can accomplish more than a single agency can accomplish independently. Building a relationship with schools and other public agencies will extend the success of a program and lead to other opportunities to save water.

Vicinity Map with School Districts



Eastern Municipal Water District District Vicinity and Cities



Legend	
School District	
	Hemet Unified
	Menifee Union & Perris Union High
	Moreno Valley Unified
	Murrieta Valley Unified
	Nuview Union & Perris Union High
	Perris & Perris Union High
	Romoland & Perris Union High
	San Jacinto Unified
	Temecula Valley Unified
	Val Verde Unified



Water Savings Data

Water Use Summary

Landscape Accounts

Number of Accounts Included	10	
Average Use 2007 - 2010	224.43	AFY
Estimated Saving for Devices	36.69	AF
Estimated Saving Percent	16.35%	

Landscape Water Use (AF)	June	July	Aug	Sept	Oct	Jun-Oct
2009	24.61	46.40	34.25	36.14	29.10	170.51
2011	24.95	36.19	33.07	36.17	16.75	147.14
Estimated Savings	4.02	7.59	5.60	5.91	4.76	27.87
Actual Savings	-0.34	10.22	1.18	-0.03	12.34	23.37

Mixed-Use Accounts

Number of Accounts Included	27	
Average Use 2007 - 2010	829.49	AFY
Estimated Saving for Devices	89.94	AF
Estimated Saving Percent	10.84%	

Landscape Water Use (AF)	June	July	Aug	Sept	Oct	Jun-Oct
2007	30.07	31.12	30.78	36.39	22.71	151.07
2008	27.35	31.51	29.98	30.61	23.54	143.00
2009	22.36	30.25	30.45	28.95	24.20	136.21
Average Use 2007-2009	26.59	30.96	30.40	31.99	23.48	143.43
2011	22.01	29.99	25.96	33.73	20.81	132.50
Estimated Savings	2.88	3.36	3.30	3.47	2.55	15.55
Actual Savings	4.58	0.97	4.44	-1.74	2.67	10.93

Indoor Accounts

Number of Accounts Included	6	
Average Use 2007 - 2010	97.59	AFY
Estimated Saving for Devices	8.27	AF
Estimated Saving Percent	8.47%	

Landscape Water Use (AF)	June	July	Aug	Sept	Oct	Jun-Oct
2009	9.58	10.46	9.72	11.18	7.87	48.81
2008	10.81	11.56	11.47	8.34	8.69	50.88
2009	7.43	10.06	10.62	11.53	7.95	47.60
Average Use 2007-2009	9.27	10.69	10.61	10.35	8.17	49.10
2011	7.47	10.28	8.93	11.34	8.54	46.57
Estimated Savings	0.79	0.91	0.90	0.88	0.69	4.16
Actual Savings	1.80	0.41	1.68	-0.99	-0.37	2.53