



2010 High Efficiency Toilet Rebate Program

**Pagosa Area Water and
Sanitation District**



Summary and Results

February 2011

INTRODUCTION

The following provides a program summary and results of the Pagosa Area Water and Sanitation District's (PAWSD or District) 2010 Toilet Rebate Program. Section 1.0 provides background information, Section 2.0 presents a summary of results, section 3.0 presents the past years programs and their cumulative effects at a glance, and Section 4.0 provides conclusions.

It should be noted that the estimated water use data found in this report, as well as in reports past, have been based upon Amy Vicker's industry standard textbook *Handbook of Water Use and Conservation* (2001) wherein conservative and liberal water use data is presented. For the 2009 report it was determined that an *average* between the conservative and liberal estimations would be used in an attempt to most realistically represent the accomplishments of the program. That same methodology has been applied to the 2010 report as well.

1.0 BACKGROUND

Outdoor water use notwithstanding (which accounts for approximately 50% of domestic water use), research data indicates the highest *indoor* water use for the residential sector is in the bathroom. Toilets typically represent nearly 30 percent of this indoor water use. The statistics are broken-down and illustrated in Figure 1 below.

Figure 1. Average Residential Indoor Water Use



Source: Albuquerque Bernalillo Water Utility Authority.

Based on the above-referenced information, PAWSD initiated their first toilet rebate program in 2004. The goal of the program is to reduce water use within the District boundaries by encouraging the replacement of [approximately] pre-1994 high-volume (e.g., 3.5, 5, and 7 gallon per flush (gpf)) toilets. It bears mentioning that in 1994 Federal Law mandated that all new toilets introduced to the market consume 1.6 gpf or less. High Efficiency toilets consume 1.28 gpf or less.

2.0 PAWSD 2010 TOILET REBATE PROGRAM SUMMARY OF RESULTS

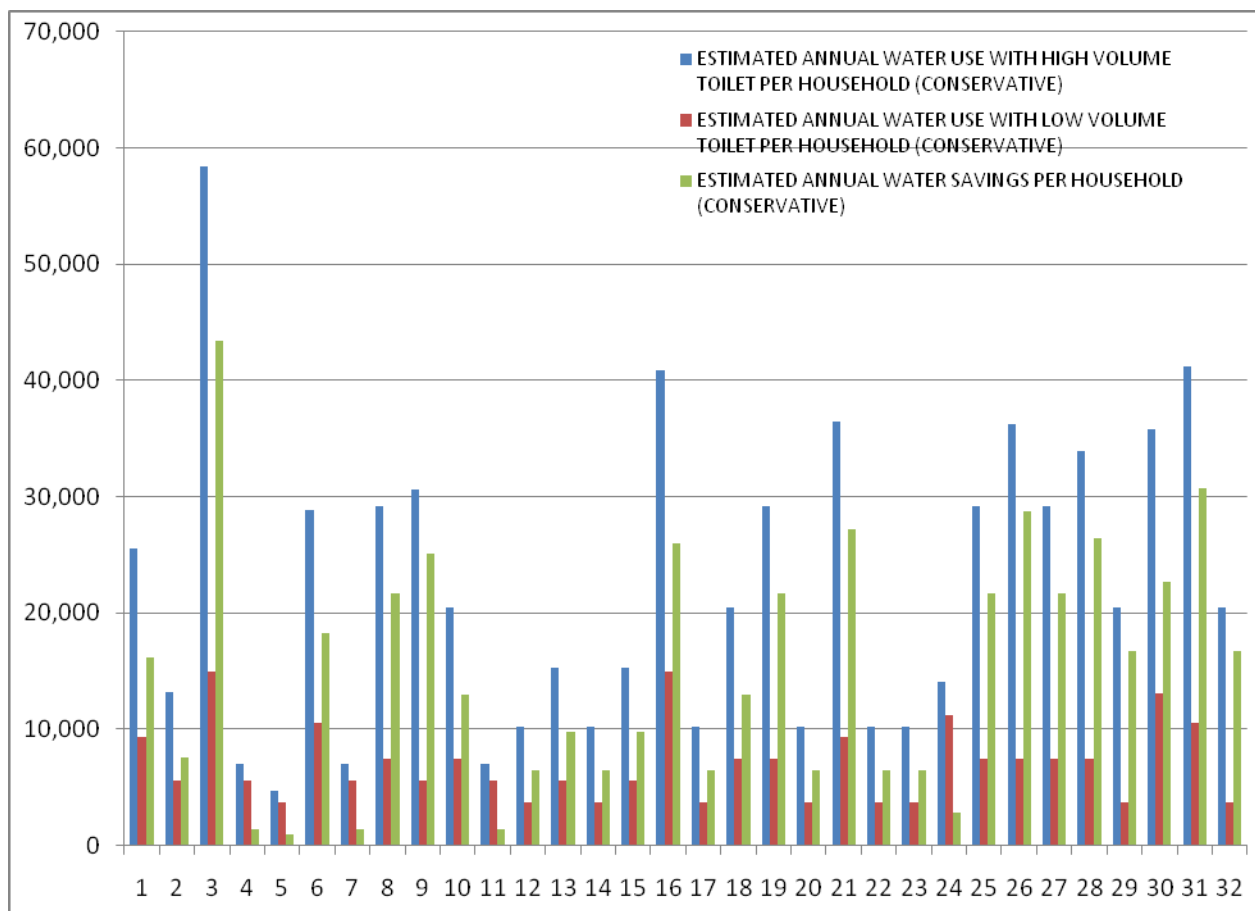
The 2010 High Efficiency Toilet Rebate program was launched on January 1, 2010 and concluded on November 24, 2010. The program was budgeted with \$6,650 for high-volume (i.e. greater than 1.6 gallons per flush) toilet replacements in the PAWSD service area. However,

due to the overwhelming success of the Washing Machine Rebate Program, \$3000 was removed from the Toilet Rebate Program on May 15, 2010 and issued to the Washing Machine Rebate Program to best satisfy the demand.

As shown in Appendix A, there were a total of 33 toilet rebates issued and 4842 toilets replaced. The total rebate amount expended was \$3,450 or 94 percent of the revised program budget. The average toilet replaced was about 4.0 gallons per flush (gpf). The average number of residents per household was 2.2, and an estimate of the average water saved per household was about 16,672 gallons. Figure 2 (below) illustrates each participating rebate account's average total annual high- versus low-volume toilet water use with associated water savings (based upon conservative estimates).

Before the toilet replacement, the average total water use of high-volume toilets was estimated at 809,159 gallons per year with an average yearly consumption of 29,286 gallons per participating household. Overall water use with low-volume toilet replacements was estimated at 257,855 with a new average yearly consumption of 8,058 gallons per participating household. Total water savings for PAWSD and the customers who participated in the 2010 Toilet Rebate Program is estimated at approximately 533,507 gallons. This is a water savings of 69.2% of the average high volume toilet usage.

Figure 2. Participating Rebate Accounts Average Total Annual Low/High-Volume Toilet Water Use per Household with Associated Savings



3.0 PAST YEARS AT A GLANCE

Low Volume/High Efficiency Toilet Rebate Program Overview

	2004	2005	2006	2007	2008	2009	2010	Total
# of Acct's Issued Rebates	41	45	33	28	21	36	33	
# of Toilets Replaced	58	70	44	45	32	48	42	339
Total Rebate Expenditure	\$5,400	\$6,400	\$3,400	\$4,275	\$2,600	\$4,049	\$3,450	\$29,574
Estimated Average Annual Water Savings (total gallons)	858,727	964,231	477,585	582,907	316,041	671,250	484,663	
# of years as multiplier	7	6	5	4	3	2	1	
Total gallons through 2010	6,011,089	5,785,386	2,387,925	2,331,628	948,123	1,342,500	484,663	19,291,314
Total Acre Feet (AF)	18.45	17.75	7.33	7.16	2.91	4.12	1.49	59.20
Estimated Average Water Saving per household (gallons)	20,945	21,427	14,472	20,818	15,050	18,646	15,146	
# of years as multiplier	7	6	5	4	3	2	1	
Total gallons through 2010	146,615	128,562	72,360	83,272	45,150	37,292	15,146	
Annual Avoided Cost Savings (@ \$11.77/1000)	\$10,107	\$11,349	\$5,621	\$6,861	\$3,720	\$7,901	\$5,704	
# of years as multiplier	7	6	5	4	3	2	1	
Total savings through 2010	\$70,751	\$68,094	\$28,106	\$27,443	\$11,159	\$15,801	\$5,704	\$227,059

4.0 SUMMARY AND CONCLUSIONS

To-date, 339 toilets have been replaced in the PAWSD service area. **The seven year toilet rebate program is estimated to have saved the District approximately 59.20 AF of water. Based on the current cost to treat and distribute potable water (\$7.86/1000 gallons) and the cost to collect and treat the resulting wastewater (\$3.91/1000 gallons), it is estimated that the cumulative avoided cost to the District is approximately \$227,059 per year and growing.** As current water resources begin to be stretched thin, the cost to procure new water increases the value of the resource exponentially. Based upon the PAWSD 2008 Water Conservation Master Plan, the cost for new water resource procurement and development is \$20,000 / AF. Using this number, the 59.20 AF of water savings has a replacement value of \$1,184,000.

The toilet rebate program has met with considerable success, though market penetration may be approaching. It is recommended the toilet rebate program remain in effect until such a time as the market no longer demands an incentive program of this nature.

