

AUDIT FINDINGS

We looked at 8 audit cases from 4 separate utilities for a total of 2,217 audits. Audit programs analyzed took place between 1999 and 2003.

The utilities we examined were: 2 large utilities (serving over 200,000 customers), 1 mid-sized utility (100,000 to 199,999 customers) and 1 small utility (less than 100,000 customers).

The programs varied from balanced indoor and outdoor auditing to almost entirely outdoor in scope. We are unable to analyze the programs based on this emphasis.

AUDIT PROGRAMS	
Total Audits:	2,217
Participating Utilities:	4
Cases Analyzed:	8
Customers Analyzed:	SF
Years Analyzed:	1999 - 2003

Utility A-1 audits were 70% targeted to high summer users and 30% referred from Customer Service, not necessarily high water users. The program has evolved through the years to put greater emphasis on outdoor water use. Marketing has also changed to target the utility's higher water users.

Utility A-2 has an untargeted audit program, based on response to customer requests. This was the first year the program had been offered by this utility.

Utility A-3 offers an untargeted program, in response to customer requests.

Utility A-4 also has an untargeted program, responding to customer requests.

WATER SAVINGS

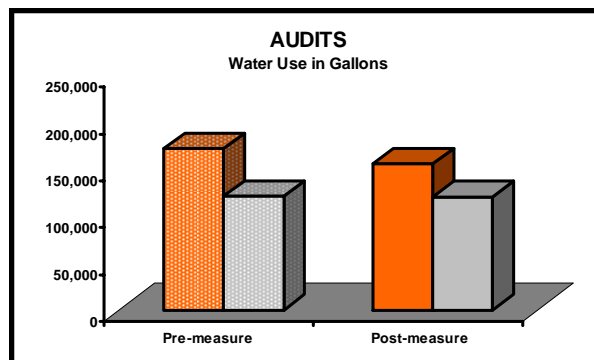
Some analyses show "negative" water savings, where control group water use decreased more (or increased less) than participant water use.

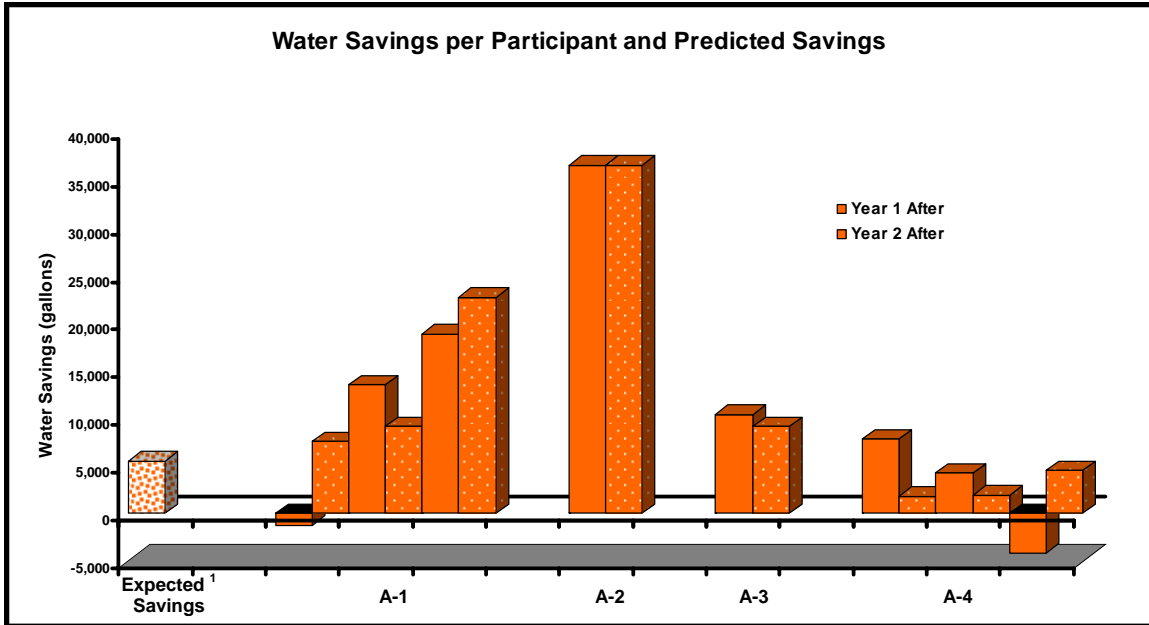
PRE- & POST- MEASURE RELATIVE WATER USE

The overall water use of participants in these audit programs ranged from 114% of the control group to 159%, with an **average of 144% of the control group before the audits to 132% of control group after the audits.**

RANGE, AVERAGE, MEDIAN SAVINGS

Water savings per participant varied from **-4,152** gallons (a relative increase in water use) to 36,490 gallons per participant for the eight cases looked at. The





average savings was 8,690 gallons per participant.

We used annual water savings of 5,474 gallons (15 gpd)¹ as a predictor for expected savings. The prediction is indicated as column number one(1) above. The average water savings was 159% of expected.

PERSISTENCE OF SAVINGS

The average water savings per participant for these programs was 8,543 gallons for year one after the programs and 8,838 gallons for year two after, which shows a 3% increase in water savings from the first year after to the second year after the programs. This translates to a savings of 156% of expected for year one after and 161% for year two after the program.

This was one of the programs we examined that actually showed an increase in average water savings for year two. Because of the short lifespan of audits and because no major hardware is involved, we expected to see some percentage of fall off in water savings for year two.

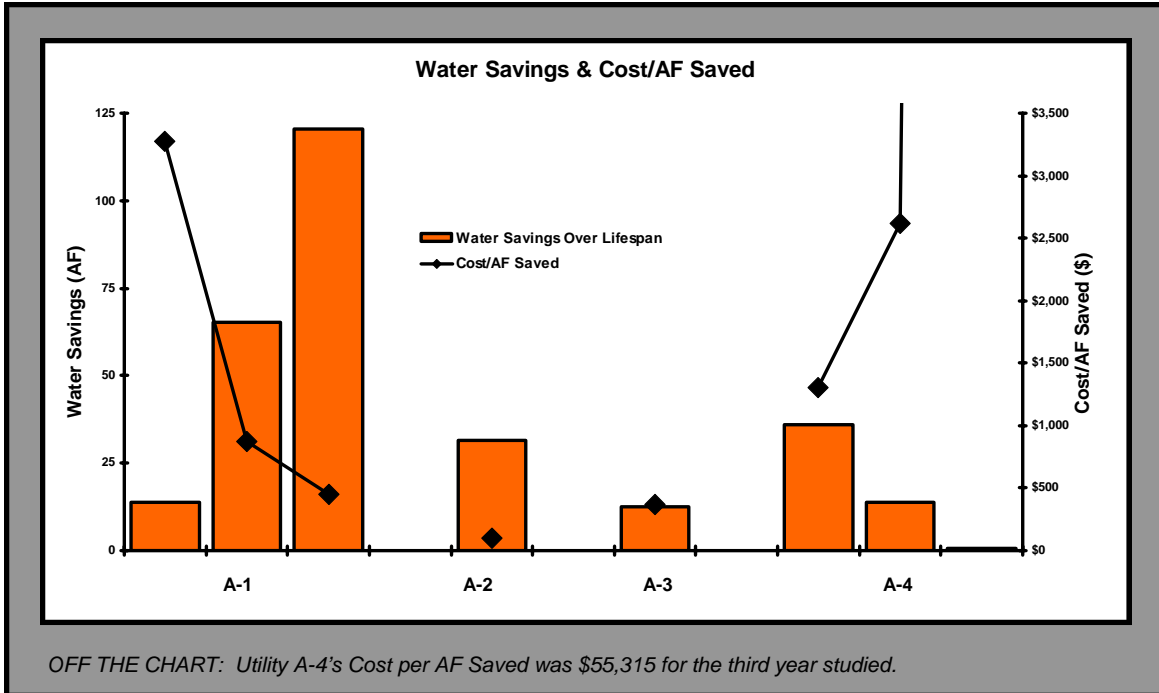
ECONOMIC ANALYSIS

COST PER ACRE FOOT SAVED

The cost to the utility to save an acre foot of water with the audit programs studied ranged from a high of \$55,315 to a low of \$101. **The average cost to save an acre foot of water was a \$8,038 and the median cost to save an AF was \$1,090. If the most anomalous cost per AF (\$55,315) is not included, the average cost to save an AF of water is \$1,284 and the median cost is \$873.**

Utility A-1 appears to have adapted their audits through time to become more efficient and effective, thereby saving increasing amounts of water each year and cutting their costs to save an acre foot of water substantially.

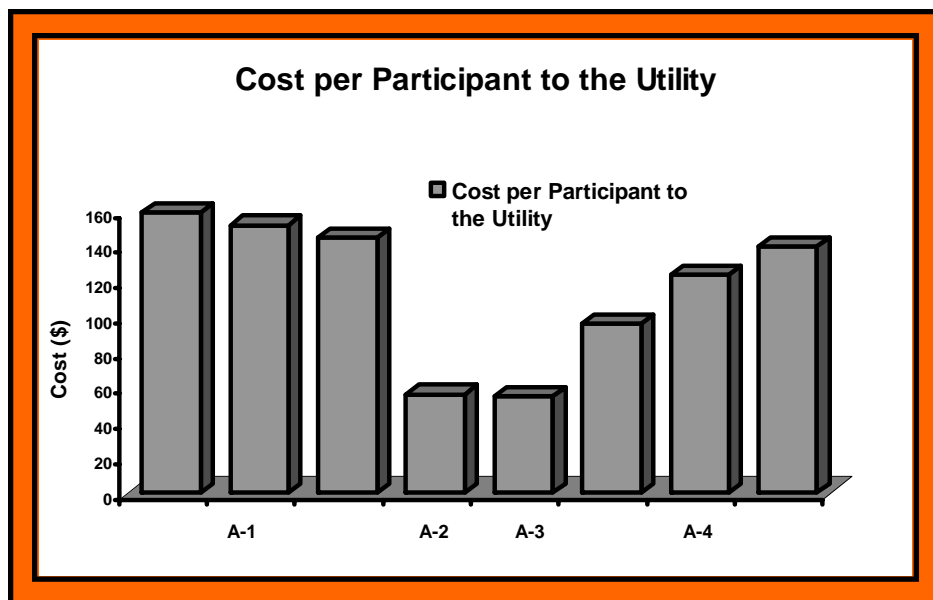
¹ Gary Fiske & Associates. California Urban Water Agencies Urban Water Conservation Potential Final Report. 2001.



Utility A-4 seems to have lost focus on efficiency through time and become less effective at cutting participant's water use. By the third year studied, they were saving practically no water and their cost per participant had gone up 146%, which creates a skyrocketing cost to save an acre foot of water of over \$55,000.

COST TO UTILITY AND OTHERS PER PARTICIPANT

The cost to the utilities to administer the programs and perform the audits ranged from \$55 to \$159 per participant. There were no outside funders for these audit programs. **The average cost to the utilities offering the audits was \$116 per participant.**



COST TO PARTICIPANTS

There were no quantified costs to the participants of the audit programs.

NET PRESENT VALUE

The Net Present Value to the utilities ranged from **-\$3,162** to **-\$46,923**, with an average of **-\$29,235**. The Net Present Value to the participants ranged from **-719** to **-\$105,743**, with an average of **-\$35,809**. The overall Net Present Value ranged from **-\$7,587** to **-\$76,762**, with an average of **-\$25,795**.

Thoughts on AUDITS

- ◆ The wide range of savings achieved and the large variation in costs to save an AF of water may indicate that the auditor is key to program success, as is targeting the customers with the greatest potential for water savings.
- ◆ This type of measure benefits from focus on potential for savings through size of facility, age of property and the irrigation system as well as overall water use. The potential for savings is generally higher with large multifamily and commercial properties.
- ◆ Audits are excellent customer service tools, putting a face on the utility with a personal visit.
- ◆ Coupling audits with ordinances that focus on a certain standard of irrigation system performance can be highly effective. Used together they may yield greater savings than each effort individually.
- ◆ Rather surprisingly, there was no fall-off in water savings from the first to the second year after the audit.