Contributing Paper

Water Efficiency Case Studies from California: The reservoir that toilets built

Mary Ann Dickinson
California Urban Water Conservation Council, USA

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WATER EFFICIENCY CASE STUDIES

THE RESERVOIR THAT TOILETS BUILT

In 1992, an interesting experiment was tried in Los Angeles, California. Gripped by a drought of nearly six years, southern California was struggling to make its dwindling water supplies meet the thirsty demands of its growing population. Numerous water conservation programs were undertaken at that time, but none more successful than the community-based-organization experiment with the Mothers of East Los Angeles.

An obvious strategy for water efficiency was the retrofitting of households with low-flow plumbing fixtures. Ultra-low-flush toilets, at 1.6 gallons per flush, showed the most promise for savings, since they were replacing fixtures flushing at 3.5 or even 5 gallons per flush, affecting nearly 25% of indoor water use. To accomplish the replacement of older toilets with these new models, rebates were being offered to consumers by water utilities throughout southern California. If customers purchased and installed these low-flush toilets, they could receive rebates of $100 or more from their utility.

But the rebate program was not working well in lower-income neighborhoods. Very few toilets were being replaced, mostly because the residents could not afford to undertake the purchase and installation costs while waiting for the water agencies to process a rebate check. Language barriers also prevented participation in the program, as a number of Hispanic residents spoke no English. As a result, there were very few low-income households receiving the benefit of the water conservation programs, thus leaving thousands of Los Angeles residents out of the program.

At their request, an experiment was undertaken with the Mothers of East Los Angeles (MELA). A non-profit group of women activists, the MELA works to improve conditions in the impoverished East Los Angeles area. Interested in bringing water efficiency to their community, they approached the water utilities at a public meeting and asked for a special program to address their community's needs. The partnership that was formed as a result was simple: for every toilet that MELA could guarantee was replaced, they would be paid $25 per toilet. The guarantee consisted of the old toilet being removed and brought to MELA for recycling. The new toilets were provided free of charge by the water utility. The water utility customer records were marked that a toilet had been replaced at each customer location, thus preventing fraud. And MELA got to keep the $25 per toilet, to pay community workers in the toilet program and to pay for scholarships, graffiti abatement, and other community needs. Ironically, the overall program cost to the water utility was identical to that of the original rebate program.

The MELA program was extraordinarily successful. The experiment had envisioned 1,000 toilets to be distributed within a two-month period. However, during the first year, over 8,000 toilets were distributed. By 1998, well over 50,000 toilets had been replaced, while at the same time employing 25 full-time and three part-time community residents in the MELA program. The MELA program has since been

duplicated throughout southern California. Dozens of community organizations now do the same toilet replacement programs.

As of 1999, a total of 1.3 million ultra-low-flush toilets had been installed in southern California, saving a phenomenal amount of water. Each toilet saves 24 gallons per day in single family households, and 42 gallons per day in multiple-family households. In total, the 1.3 million toilets installed by water conservation programs will save over 850,000 acre-feet of water over the 20-year life span of the toilets. Annually, these savings amount to nearly 48,000 acre-feet, easily the size of a fully-constructed water supply reservoir. And all for less than $200 per acre foot.

RECYLING YOUR ASSETS

Water is becoming an increasingly precious and scarce commodity in many areas of the arid American southwest. And as population growth skyrockets, communities must carefully and efficiently use what water is available to maximize the beneficial use of this valuable resource.

Our society recycles solid waste and turns it into usable products. Why not the same opportunity for water? Why must we continually strive to supply pristine, drinking quality water at great environmental expense for uses such as industrial cooling or irrigating landscapes, crops, golf courses, and parks? Treating and reusing wastewater becomes an obvious answer to meet these non-potable water demands.

Early water recycling projects were constructed more in response to the need for controlling pollution from wastewater discharges than to the need for new water supply. The regulatory requirements of the Federal Clean Water Act mandated that cities reduce the pollutant load in their discharges. Cities such as New York and Boston had exhausted their wastewater treatment capacity at their existing treatment facilities, without the necessary capital resources or even the regulatory approvals to expand. Thus, water recycling was born. But it was the recent droughts in the southwestern United States that brought into sharp focus the need for water recycling as an additional potential WATER SUPPLY source – as a way to ensure that fresh water, potable supplies would go for strictly potable drinking water uses. Within thirty years hundreds of water recycling plants were built throughout the western United States.

The recent surge in water recycling activity can be linked to improvements in technology as well as to growing public acceptance and recognition of the economic, social, and environmental benefits of recycling. Acceptance is also high with commercial and industrial customers, who welcome the increased reliability that recycled water brings as well as the lower water supply cost. U.S. industries with names like Gallo, Korbel, Chevron, Mobil and Bethlehem Steel now rely on recycled water for cooling and other water supply needs.

The statistics from the state of California are illuminating. Generally, the state produces 2.5 to 3 million acre-feet of wastewater each year for its 35 million people.

This sizable amount of wastewater is both a crisis as well as an opportunity. One way to reduce the wastewater discharge is to treat it at a tertiary level and recycle it. By 1995, 250 water recycling systems had been built to tap this wastewater stream, providing 485,000 acre feet of recycled water supply. 32% of the recycled water supply was used for agricultural irrigation, 27% for groundwater recharge, 17% for landscape irrigation, 7% for industrial uses, and the remainder for environmental and other uses. In 1999, enough water was recycled to meet the needs of over two million people.

Recycled water is thus becoming more than a stable part of the state's water supply portfolio: it is becoming the fastest growing water supply in California. In 1999, 165 new water recycling plant projects were underway. The State of California Department of Water Resources estimates that by 2020 over one million acre feet of new water supply will be developed in California from recycled water sources, enough to meet the needs of six million people.

A million acre-feet for six million people that will not need to be obtained from a river-damming surface water reservoir.