

SAVANNAH WATER EFFICIENCY PROJECT: A PLUMBING RETROFIT CASE STUDY

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Abstract. With growing concerns about the Floridan Aquifer in Southeast Georgia, and a 10 mgd reduction required by the Georgia EPD, the city of Savannah began looking for water efficient projects to help reduce their groundwater withdrawal. The first step was to fund a Water Conservation Program to educate and show a measurable result in the reduction of water usage in the system. As part of this program, plumbing retrofits in older neighborhoods began.

This paper addresses the plumbing retrofit program in Savannah. In increments, the City of Savannah replaced old, leaky toilets in chosen neighborhoods with low flow plumbing fixtures. Starting in 1998, the city has targeted several areas within the city to reduce water waste. With this program, the city has seen a 16% to 28% reduction in water use from the targeted neighborhoods.

INTRODUCTION

In Chatham County, residents have depended on a relatively inexpensive, pristine source of drinking water. It seems that this may be coming to an end. The Floridan Aquifer, the main supply for Chatham County, is experiencing a reversal of pressure within the aquifer creating encroachment of saltwater in Hilton Head, South Carolina and Brunswick, Georgia. Chatham County is sitting on the cone of depression, putting this area in a difficult position. In the 1995 Comprehensive Water Supply Management Plan for Chatham County, a water conservation program was developed to reduce domestic water consumption at least 29% from the current usage rate of 169 gallons per capita per day by 2025. In order to achieve this reduction, the water conservation program created a vigorous educational program along with looking for more measurable results such as plumbing retrofits. A program was created to reduce water usage by conducting a bathroom plumbing retrofit in areas of need within the community.

The program was modeled after successful water conservation efforts conducted in Los Angeles, San Diego, New York City, and Atlanta. The program involves purchasing and distributing low flow showerheads, faucet aerators, and ultra-low flow toilets, with the participant installing and returning old fixtures to be recycled. The program is managed by a community-based organization, that earns money for each fixture recycled.

METHODOLOGY

Establishing funding for this program was the first step. Originally, the Water Conservation Program received a Coastal Incentive Grant and that was matched through in-kind contributions from the Water Conservation Program and the City of Savannah. Since the pilot project, funding has come solely from the Water Conservation budget.

With funding established, a committee was created consisting of staff from the Water Conservation Program, the City of Savannah Water & Sewer Bureau, the community-based organization, Neighborhood Improvement Association, and a coalition of local businesses. The first event targeted six neighborhoods that were older, low income areas of the city to be eligible for this retrofit program. It was established that the budget would allow for 400 low-flow toilets, showerheads and aerators to be purchased. The community-based organization set out to pre-register citizens to receive the new fixtures. Pre-registration did not insure them of receiving new fixtures, but it did improve the process and gave the registered citizens a better chance to receive the new fixtures. If any toilets were left over at a certain time, walkups and out of area individuals were allowed the opportunity to receive new plumbing fixtures with proof of residence. The community-based organization was in charge of recruiting volunteers for the event, canvassing the area for pre-registration, collecting return toilets, creating a

waiting list, transportation of toilets for elderly, and following up on non-returned toilets.

Event Day

Event Day is the chosen day in which a specific site is set up to distribute the plumbing fixtures to the community. The selection of the site is important due to the need of having enough space to bring people in at one entrance and have them leave through another access. School sites are prime examples of the type of area that is needed. Also, make sure the area is near or in the chosen neighborhoods that are targeted.

There is a registration desk to review/fill out paper work. Citizens have to show proof of residency with a water bill. This is sometimes a difficult process unless registration volunteers are well-trained, and they are willing to make a judgment call. For example, the water bill may not be in the name of the person that is there to pick up the plumbing fixtures or the bill may be in the deceased husband's name. Often citizens will arrive without the water bill. The important factor in the paper work is the account number. If it is possible to acquire that information through an address then you may wish to go ahead and process their paper work. This needs to be discussed prior to event day. The forms provide account number information as well as number of plumbing fixtures in the home. This information is very important in the final analysis of the event.

Once all the paperwork is in place, the citizen is asked to drive around to the loading area. Volunteers are to load the plumbing fixtures into the citizen's vehicle. Volunteers should remind each citizen to return their old toilets for two reasons, proof of installation and to insure proper disposal. (In some areas, the toilets can be recycled.) Volunteers may be needed to offer assistance to citizens with special needs. Volunteers with trucks or vans could assist with the delivery after the special needs citizen finalizes the paper work. This service does not need to be advertised, but the service should be provided on an as-needed basis. A list of plumbers that will provide installation service for a specified price should also be given to participating citizens. This list is usually supplied by the community-based organization.

The first SWEP was designed to be an educational and festival type event. Other agencies that deal with the chosen neighborhoods were invited to set up educational booths for the citizens that were there to pick up plumbing fixtures. Refreshments were provided as well.

At the end of each event, a waiting list has been created. The waiting list is used to start the next event. Due to the limited plumbing fixtures, these events can create unhappy citizens when they show up wanting a toilet and get told there are no more to be distributed. The committee takes their information and explains that they will be sent an invitation for the next event. Those citizens on the waiting list are provided with water conservation kits in the mean time. These kits provide: leak detection tablets, low-flow showerhead, two sink aerators, and toilet bank bag.

Water & Sewer staff follows up in six months to collect the water billing data. To account for water reductions, it is needed to collect three months of water usage. With the City of Savannah, billing is bi-monthly, so water data collection cannot begin until six months pass. A data base is needed to be kept for those water accounts that received plumbing fixtures. This data base can be used to query water usage information but also to assist in preventing duplication at other plumbing retrofit events. Once the water billing information is confirmed, water usage data is calculated for at least three months prior and three months after the event. An average water usage number for prior to the event and an average water usage number after the event needs to be compared to give the amount gallons of water saved from the plumbing retrofit. City's data is collected in units of cubic feet, so a conversion to gallons might be needed. Accessibility to billing data is very important. Make notes of unusual numbers such as a great increase instead of a reduction. There may need to be a follow up on the unusual numbers. The community group may need to verify installation or see if something in the household has changed. Overall, there has been a 16% to 25% reduction in the water use.

Lessons Learned

Things to consider when coordinating such an event: the time in which the event is to be held to distribute the plumbing fixtures. Depending on demographics, don't choose an early morning time. Other community activities need to be considered when scheduling the plumbing retrofit event.

What month of the year? Depending on location, weather is a huge factor in this type of event being a success. It also has an effect on the water data once the event is complete. Be aware that outdoor water use is not affected by this event, so summer months in comparison to winter months may make the numbers unusually high. To compensate for this, a comparison to previous summer data can create accurate savings.

Instead of three to six months, a complete year can be reviewed.

Another issue that was encountered in a plumbing retrofit was ownership versus rentals. The target area that is chosen needs to have a high percentage of homeowners not renters. The success of the event is dependant on public participation and homeowners are more willing to participate when something can save them money, where renters do not.

CONCLUSION

Retrofitting older homes is a vital way to save water, and an excellent way to build community relations. This program assisted many households that could not afford their high water bills due to leaks nor afford to purchase new plumbing fixtures. The program also made the community more aware of its water usage, and changes that can be made to be more water efficient.

ACKNOWLEDGEMENTS

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SELECTED REFERENCES

- Chatham County – Savannah Metropolitan Planning Commission (MPC), 1995. *Chatham County Comprehensive Water Supply Management Plan*, Chatham County – Savannah Metropolitan Planning Commission, Savannah, GA, 174 p.
- Chatham County – Savannah Metropolitan Planning Commission (MPC), 1999. *Savannah Water Efficiency Project 1998, Final Report*.