

Upgrading to Water-Efficient Fixtures Results in Significant Community Savings

Looking to find savings for your community? Programs that reduce water demand have lasting economic impacts.

Floyd Wicks, Niagara Conservation

An often overlooked area of financial savings is available to communities that take steps to help residents reduce their water use and corresponding generation of wastewater. Both cities and residents can reduce the cost of water through long term conservation programs to install up to date fixtures within homes. With every toilet, faucet aerator and shower head replacement, a community becomes more efficient and achieves greater security in its water future.

Reducing community water needs affects the entire water infrastructure by reducing costs across the board. New communities demonstrate the importance of water saving devices by mandating that builders utilize them. Developers know that planning for reduced water deliveries - considering the fees and investment related to everything from water rights, installed pipe diameters (both water and wastewater), the size of the treatment facilities and their long term operation - makes great economic sense.

Existing communities, despite having infrastructure already in

place, can have similar impacts by making a widespread effort to reduce water usage.

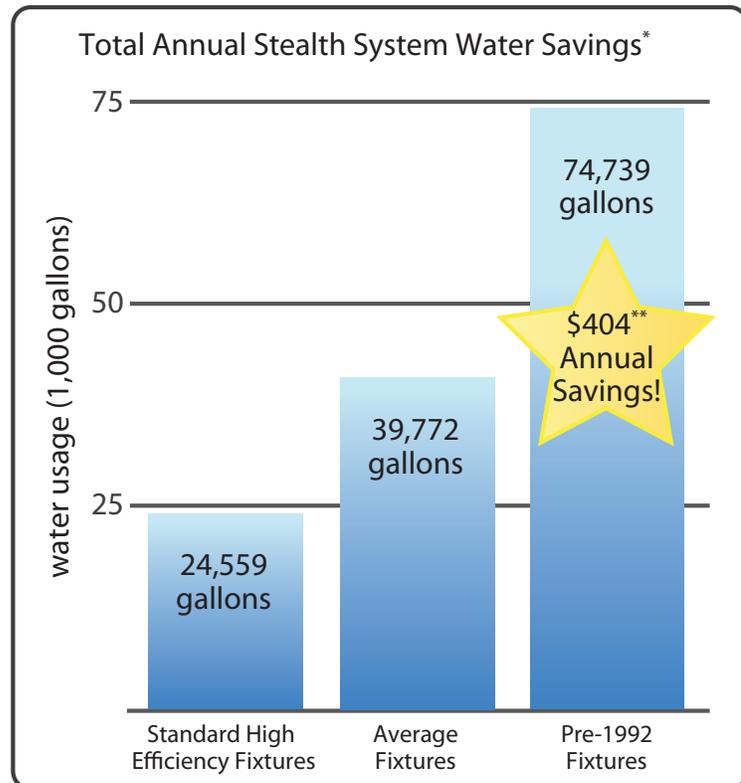
How can water use reductions help in existing communities? There are three clear ways:

1. On the water supply side, immediate reduction in the costs of pumping less water and treating less wastewater. Also, the costs and impacts associated with wastewater effluent disposal may be reduced depending on the situation.
2. Capacity in water and wastewater treatment plants is freed up. A community can

allocate this extra capacity for community growth or charge a fee for use by neighboring communities, or light industrial users.

3. Additional capacity for peak flows is created in the water distribution and sewer collection systems as the average day use comes down.

Upgrading homes with the best available technology results in immediate reductions in water and wastewater utility bills. New generation technology like Niagara's Stealth toilet requires just 0.80 gallons per flush, as opposed to a standard toilet that can require up



to six gallons per flush. The savings chart illustrates that a single family home can be expected to save somewhere between 24,559 and 74,730 gallons per year on average, based on the gallons used by the toilet, faucet aerator and showerhead being replaced. Based on savings of 40,000 gallons per year for a family of three, fixture updates in approximately 9,100 homes would reduce demand by a million gallons per day.

A Case Study

A city in northern California with a population of approximately 70,000 is currently facing the need for new water and wastewater treatment facilities.

If this city first developed a widespread installation of fixture upgrades, they could reduce demand by approximately 1.6 million gallons/day or 17% of the 2010 average daily water consumption. PERC Water has estimated that planning these upgrades in advance of the facility's construction would allow a net avoided capital investment in facilities and would reduce annual operating costs as well. See Table 1 for the Aggregate Water Savings.

Table 2 summarizes the expected annual savings once the installation program has concluded and the

City's proposed treatment facilities are downsized by 1.6 MGD.

In just over a year, savings in excess of the onetime program cost of approximately \$10,000,000 are created. Water distribution and sewer collection systems immediately see a reduction in flows and homeowners experience reductions in their energy bills.

This type of program would allow a cost cutting community pass on water and wastewater rate reductions to each homeowner totaling approximately \$55 monthly. This alone is significant but the value of the project increases even further when homeowner energy savings are considered. Based on our

assumptions, the additional savings could be as much \$18 monthly for a family of three. Table 3 illustrates the total amount of savings a single family would accrue with this program.

Today's financial atmosphere requires that communities and residents themselves take a closer look at everyday activities that can be slightly adjusted to create significant long-term savings. Conservation programs that install best available technology (efficient fixtures) within homes can drastically reduce the total cost of water infrastructure and annual operations. The best scenario for the future of urban water creates lasting economic impacts for cities and residents.

Table 1

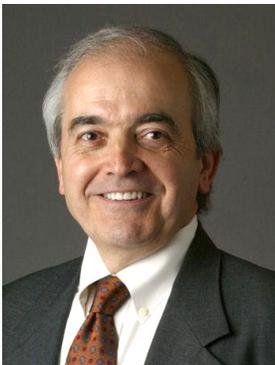
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|---|------------------|
| Single Family Homes (EDU) | 15,000 |
| Water Savings per Home (gallons/EDU/day) | 109 |
| Aggregate Water Savings for the City (gallons/day) | 1,600,000 |

Table 2

| | |
|--|--------------------|
| Annual Savings for Water Treatment | \$5,800,000 |
| Annual Savings for Wastewater Treatment | \$4,090,000 |
| Total Annual Savings for the City | \$9,890,000 |

Table 3

| | |
|--|-----------------|
| Monthly Energy Savings based on \$0.12/kWh | \$18.00 |
| Monthly Water Bill Rate Cut | \$32.50 |
| Monthly Wastewater Bill Rate Cut | \$22.50 |
| Total Monthly Homeowner Savings | \$73.00 |
| Total Annual Homeowner Savings | \$876.00 |



Floyd Wicks has been consulting for Niagara Conservation Corporation, a company which has manufactured and sold water and energy conservation products to contractors, water utilities, energy utilities and cities for more than 35 years. His work includes plans to incorporate Niagara's water products into existing Energy Savings Assistance Programs nationwide, to reflect the fact that tremendous usage of energy is needed in the process of pumping, treating and conveying water to homes and then treating the water further at wastewater treatment facilities. His efforts are being initiated at various levels of government and state regulatory bodies.

