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Subject:
Water Conservation

Poster Title:
Toilet End Use Evaluation Methodology for Single-Family Residences in Tampa, Florida

Abstract:

Water conservation is a topic gaining much attention in the environmental engineering field due to the continuous water supply issues that exist across the nation. Florida in particular will face a severe deficit in drinking water supply to meet the demand of the fast-growing population and has already begun to look for alternative sources of water such as brackish, desalination, and water reuse. Water conservation has not generally been discussed as an alternative source of drinking water, but should be considered as such. This practice helps alleviate the need to explore alternative sources of water and delays the construction of water treatment plants or expansions of existing ones.

The American Water Works Association Research Foundation (AwwaRF) conducted a study in 1999 on single-family homes across the U.S. to identify how much water use can be attributed to a variety of common household devices (showers, toilets, faucets, etc.), as classified by Trace Wizard software. Tampa, Florida was one of the 12 cities included in this report by AwwaRF. Five years later, a conservation study was published for the Tampa Water Department explaining the impacts of high efficient plumbing fixture retrofits in single-family homes. Indoor water using devices were replaced by more water efficient devices in 26 single-family residences in Tampa. The study also includes detailed information (through surveys) about usage patterns and customer opinions.

Research for this particular study being conducted through the UF Environmental Engineering Sciences Department uses the existing data from studies before and after toilet retrofits in Tampa. The main purpose of the research is to develop a model to determine which homes in Tampa are targets for retrofits and for conserving the most water by means of replacing old, inefficient fixtures. Parameters such as year house was built, number of toilets and number of occupants are used in the model developed with @Risk software. For example, an older home with 2 old toilets and 6 residents would be a candidate for retrofits over a newer home with 1 toilet and 1 person. The objective is to provide information to the utility about which homes should replace toilets for ones with fewer gallons per flush so that the most water can be conserved.