Taking a Bath on Showerhead Savings

Kathryn E. Parlin, Al Bartsch West Hill Energy & Computing, Chelsea, VT
Robert Wirshafter, Wirtshafter Associates, Rydal, PA

Introduction

An innovative strategy, involving two separate study components, allowed us to calculate showerhead savings as one component of an impact evaluation for a low income program. It was virtually impossible to isolate these savings from other hot water measure savings in a regression model and knowing the value of this part of the package provides insight into the relative contributions of the other water heating conservation measures. The results led us to rethink what we know about showerhead replacements and provided valuable insights into possible modifications to field implementation.

First, we drew a two-stage cluster sample and requested randomly selected delivery contractors to collect all of the showerheads and aerators removed from participants' homes beginning on a specific day. These devices were sent to a testing facility and tested at four pressures, ranging from 20 to 80 pounds per square inch (psi). The costs for this component of the project came to about $25,000 for the collection and testing of 474 fittings.

Translating these results into program savings required additional inputs, including accounting for the variations in flowing pressure at the participants' homes and the throttling of the high flow devices. The static and flowing pressures at the homes were collected during an on site survey of program participants fielded as part of the comprehensive impact evaluation, and external studies were used to fill in other critical data points.

The combination of the bench testing and additional on site data collection provides a solid basis for estimating the savings from the low flow devices installed through this program. This poster presents the results of these evaluation activities, including the distribution of flow rates, a comparison of the rated and actual flows, how changes in pressure affect flow rates, the range of flowing and static pressure measured on site, a summary of the method used to calculate savings and the energy savings estimated for showerhead replacements from this study.