



Title

Habits and Occupant Behavior

Categories

- Learn > Case Studies > Human Behavior
 - >Whole Building Systems
 - >Water
 - >Procurement
 - >Financial Decision-Making

Short Description

People are creatures of habit. We repeat actions we've learned rather than choosing alternatives. Habits are automatic and occur without thinking and are often triggered by cues in the environment. Although habitual behaviors often interfere with sustainability goals (such as turning lights on regardless of daylight levels in a space), in some circumstances habits can be used to promote sustainability. In these cases, adapting product design to take advantage of this human tendency can help spread sustainable behavior and make it stick. In this case study, we address how toilet flushing habits were used to improve water conservation.

1. Why is occupant behavior important?

- When Occupants incorrectly use water efficient plumbing fixtures it causes tremendous water waste. Occupant education and participation stands out as one of the most cost-effective water and energy saving strategies.
- **What is the impact of occupant behavior on adoption and correct use of new water-saving technologies, strategies and practices?**
When efficient equipment is installed to align with people's established habits, it provides significant savings with minimal investment in training. Changing habits is harder than installing hardware that works with people's default behavior.

2. Incorporating Occupant Behavior to Achieve Sustainability: Key Practices

- **Understand occupant behavior.** Observe and study how people act before choosing a design or specification.
- **Educate.** Explain how and why resource conservation matters to them. Focus on the cumulative effect of individual behavior to empower occupants.
- **Design to Align.** Understand your options to achieve the desired savings/conservation goals while being aware of and working with people's established habits. While not always possible, aligning solutions with habits to achieve goals may minimize investment for training to change habits.
- **Measure Resource Use.** Measure resource use to track progress and demonstrate value.



- **Provide Feedback:** Establish a method to provide resource savings feedback to occupants to inform, educate and reinforce positive occupant behavior.
- **Communicate.**
 - Place placards or signs near efficient fixtures and systems to highlight and educate occupants. Be sure the text is readable (e.g., not too small or too much text to read quickly).
 - Include a resource-saving article in an employee newsletter featuring actual savings statistics.
 - Participate in the annual Fix a Leak Week in March and Earth Day in April.
- **Engage.** Initiate open communication between occupants and facility managers to gather incident reports and recognize resource-saving ideas.

3. Benefits

- Economic
 - Reduced water/energy costs with minimal training costs
 - Building an environmentally sustainable operation
- Environmental
 - Use fewer natural resources
 - Reduced negative environmental impact
- Social
 - Increased awareness of human behavior

4. Case Study: Wynkoop

The Wynkoop Building dual-flush toilet installation did not result in the water savings anticipated. The toilet handle was designed to be pushed *down* for *full* flush and pulled *up* for *reduced* flush.

- **Problem**
 - Investigation revealed that in nearly all instances, users were pushing down and activating the *full* flush due to their long-time habit of pushing *down* on handles.
- **Resolution**
 - Building management installed new handles that worked with established default behavior by installing handles where pushing *down* would save water.
- **Results**
 - The handle retrofit resulted in *significant* water and cost savings. (e.g. 76% of all toilet flushings used less than 1 gallon of water post retrofit compared with only 6% prior to retrofit.) See graphic #1.

5. Project Checklist

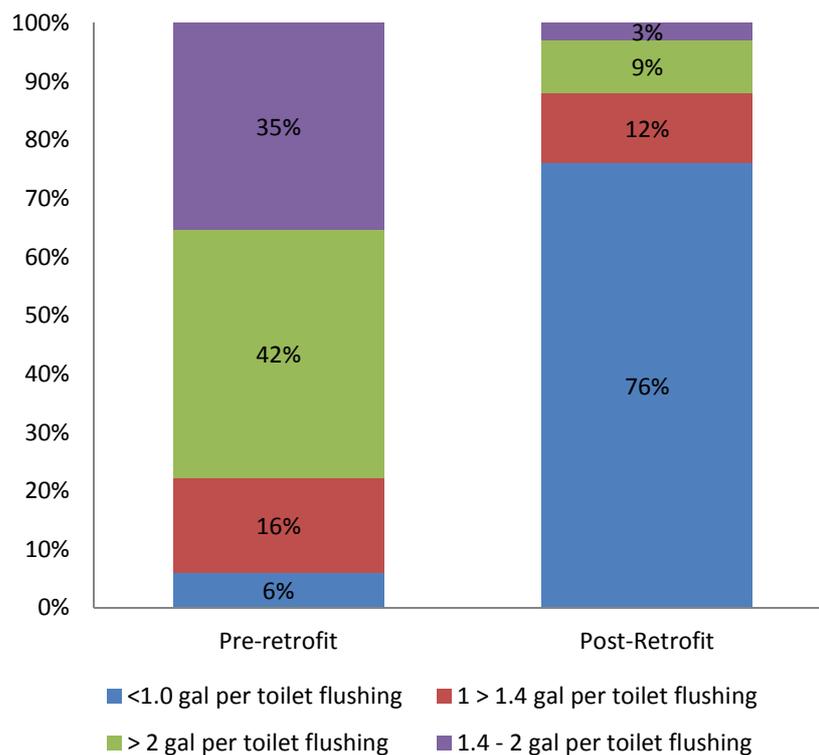
- DEFINE**
 - Define the nature of the problem that needs to be solved.
 - Why did it occur?
 - Who is affected?
 - What is my timeframe for a solution?
- MEASURE**
 - What (if any) changes are required in occupant behavior?



- What technology aligns with current behavior AND achieves project and operations and maintenance goals (i.e. durability)?
- How does my recent water use compare with the baseline?
- **MANAGE**
 - Explore logical alternative approaches to solving the problem
 - Select the most appropriate solution
 - Install, commission and observe how people use technology
 - Communicate the reason for the change to occupants
 - Solicit feedback regarding how the solution performs
 - Evaluate success
 - Find alternative solutions if the problem persists

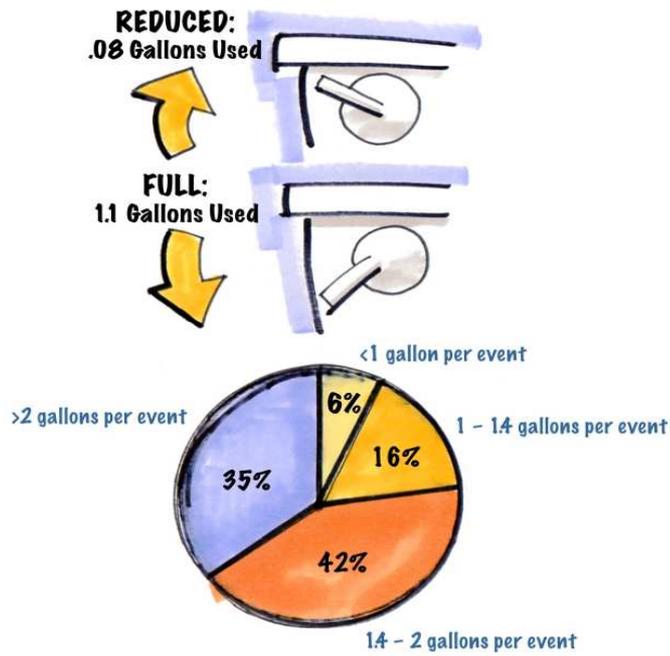
Images (To be integrated with content as appropriate in on www.sftool.gov)

1. Percent of toilet flushings on the 7th floor at Wynkoop pre and post retrofit.





2. Original design of the dual-flush toilet handle.

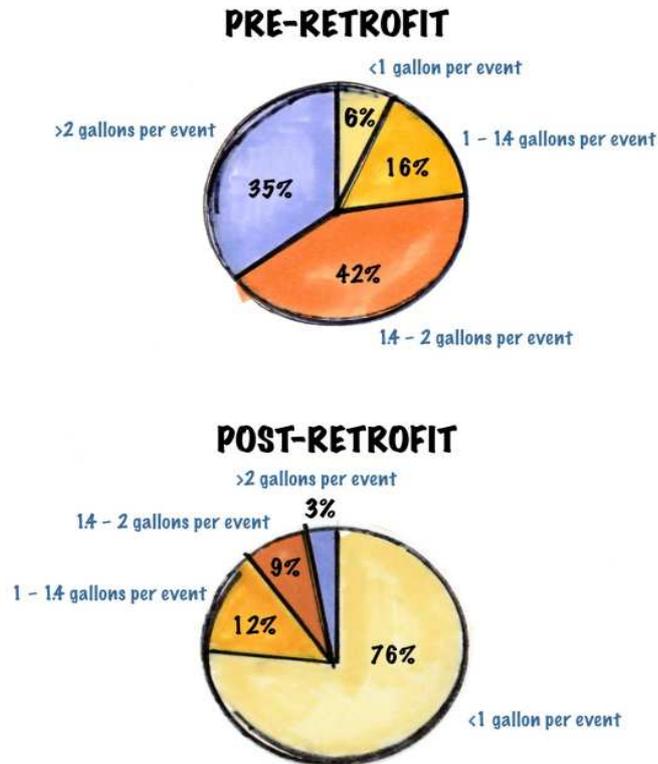


3. Post-Retrofit Commercial Flushometer





4. Retrofit dual flush toilet handles: pre- and post-retrofit results



Tags

Default effects are the human tendency to stick with the option that is selected automatically instead of choosing an alternate option.

Dual-flush toilets are those that have two levels of flushing – a higher water use flush for solids and a lower water use one for liquids. Dual-flush toilets have been in use for many years in countries like Australia as well as most European countries, where water rationing is very common. Dual-flush toilets are available in tank or flush valve types. They can conserve significant amounts of water but require educating of building occupants for optimum water saving results.