

Indoor Water Use Efficiency in Apartments

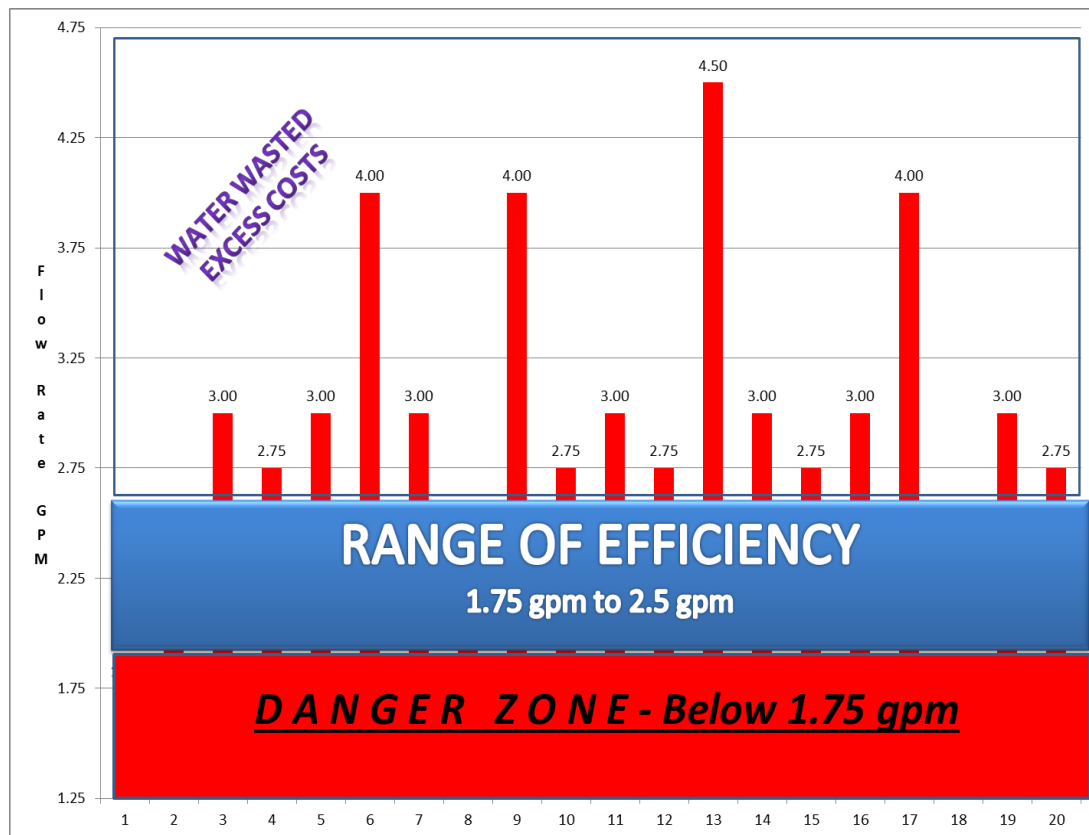
Apartment indoor water conservation efforts need to focus on Water Use Efficiency so that the benefits of water conservation are balanced with tenant satisfaction requirements. As an example, shower water flow rates of 1.5 gallons per minute (gpm) will save extraordinary amounts of water but can result in a tenant experience where someone with long hair cannot effectively rinse shampoo and conditioner from their hair. This often results in longer showers or even filling a container with water to pour over their head to rinse their hair. By increasing the flow rate to 2.0 gpm tenant satisfaction will be maintained while using water efficiently and lowering water and sewer costs.

A toilet that uses less water than required to clear the toilet bowl results in a second or third flush which wastes water. These are examples of conservation efforts that are not Water Use Efficient.

So now, let's start with some definitions for clarity:

Water efficiency is using the minimal amount of water required for a particular purpose. To obtain water efficiency water delivery must be limited to this minimal amount. Any amount of water delivery and use above this amount is wastage. Water wastage is excess water not needed to satisfy a user's requirement.

Water wastage is determined by measuring the difference between the amount of water required for a particular purpose and the actual amount of water used or delivered. Water efficiency differs from water conservation in that it focuses on reducing waste rather than just minimizing use. However, by reducing waste you are still conserving water.



The chart above compares audited actual shower flow rates. The Range of Efficiency flow rates are 1.75 gpm to 2.5 gpm and the danger zone flow rates below 1.75 gpm.

The feedback we have received from our customers is that the range of efficiency for showerheads is 1.75 gpm to 2.5 gpm. Individual property requirements for tenant satisfaction drive the desired flow rate for each property. This range is the blue area of the graph above. Flows above or below that range cause waste or guest dissatisfaction and is the danger zone of water flows. This is the red area of the graph.

Actual flow rate audit results are reflected in the red bars of the graph. Bars that exceed the Range of Efficiency illustrate the flow rates that result in wasted water. Nearly all of these measurements were taken from showerheads rated between 2.0 and 2.5 gpm.

Our audit results have also found that fixture flow rates can vary dramatically within a property depending on the floor level and supporting water system. This presents additional challenges for multi-floor properties.

Achieving indoor water efficiency requires both new methods and new practices.

Our water audits have revealed to us that water efficiency with showers and sink

faucets cannot be achieved with low flow showerheads and aerators. More than 80% of the showerheads and sink faucets we audit have water flows that exceed the rated flows stamped on these fixtures. This is due to the following factors:

- They contain plastic components. Hot water causes plastic to deform increasing water flow over time.
- It is frequently necessary to install different size flow limiting devices within a property to achieve consistent flow rates throughout a property because of varying water pressure. Mass produced devices are not adequately calibrated for varying water pressures.
- These devices are mass produced and are identical. One size does not fit all. Therefore, they can flow at higher rates than specified right out of the box in some circumstances.

The good news is you can do more than low flow showerheads and aerators. As recommended by the California Department of Water Resources, you can install flow reducers or flow limiters that attach upstream to the low flow shower heads and angle stop valves on faucets. Custom calibrated flow limiters deliver the desired flow rate to the fixtures based on existing water pressure. Therefore, you can get the desired flow rate with existing fixtures on every floor in a property.

Determining indoor water efficiency for showers and sinks requires the following steps:

- First determine your property's Current Flow profile by measuring current flow rates. Current flow rates often exceed the flow rates specified on low flow device fixtures
- Select as your Ideal Flow Rate the lowest flow rate within the Range of Efficiency that satisfies your guests with by testing various flow rates
- Compare the Current Flow rates to your Ideal ("Water Efficient") Flow Rate
- The difference is wastage which can be eliminated to save costs while maintaining guest satisfaction

Other ways to increase indoor water efficiency include:

- Install ultra-low flow toilets or reduce the gallons per flush on existing toilets with water displacement devices and spill water diverters in the toilet tanks
- Wash only full loads in dishwashers and laundry washers
- Read meters monthly to monitor success of water efficiency efforts and detect leaks
- Implement a periodic leak detection and correction program to find and fix leaks before they do major damage and dramatically increase water and sewer costs

A two year study by WegoWise, a building efficiency software provider, in 2015 found that on average California apartments use 6 percent less water in the first half of 2015 compared to the first half of 2013. This level of savings was significantly below the 27 percent reduction reported for the state of California as a whole. Because multifamily property owners typically pay the water bills, tenants do not have an incentive to conserve water.

However, savings levels varied across the population of buildings in the study. Apartment buildings that implemented plumbing retrofits achieved markedly higher savings than the other buildings in the study reducing water use by 25 percent. Retrofits included water fixture and plumbing overhauls for sinks showers and toilets and landscaping upgrades like drip irrigation replacements.

The study concluded that California apartment buildings are brimming with untapped efficiency potential. Implementing targeted upgrades can meet statewide conservation goals and lower operating costs that boost cash flow.

An effective way to get started on a water efficiency strategy is to assign Water Czar Responsibilities to a management employee to promote, monitor and manage water efficiency initiatives. This individual reports on water efficiency ideas, projects, progress, problems and solutions. The Water Czar should seek tenant, employee and professional suggestions for water efficiency and conservation ideas that can be considered. Lastly, for water efficiency initiatives to work best they need to be monitored and measured like every other operational objective. The result will be more cash flow for owners.

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