

Choosing the Right “Lower-Flow” Showerhead

Installing a new showerhead is one of the simplest and least expensive ways to “go green”. Best of all, the benefits go beyond doing your part to save our environment; you’ll also be helping your pocket book by lowering monthly water and energy bills.

But, before running off to the hardware store, we suggest doing a little research. There are a myriad of lower flow showerheads available today, but they achieve their results in different ways. Each of the different “saving” attributes has trade-offs that can impact not only how much you save, but also how much you continue to enjoy your daily shower. Chose right, and using a lower-flow showerhead will be a surprisingly pleasant experience.

Flow Rate:

Expressed in gallons/minute (gallons per minute), a showerhead’s flow rate is one indicator of a its water and energy savings potential. The word “potential” is used because the anticipated savings are directly impacted by how much time the user spends showering. A flow rate that’s too low will likely require the user to spend more time removing soap from the body and hair. As a result, the savings “potential” of the showerhead is reduced or in some cases negated.

Since 1992 all showerheads sold in the United States have been required to flow at a rate of no more than 2.5 gallons per minute when the water is at 80 pounds per square inch of pressure (2.5 GPM MAX @ 80psi). In general, any showerhead with a flow rate below 2.5 GPM has the “potential” to save both water and energy.

A showerhead with a flow rate between 1.75 GPM – 1.5 GPM can deliver an optimum blend of savings and comfort when designed into a properly engineered showerhead. A good quality 1.75 GPM – 1.5 GPM showerhead lowers your shower-based water and energy consumption by 30% - 40%, doesn’t require increased shower times and leaves you feeling clean, happy, refreshed and warm.

showerhead flow rate	savings potential
2.5 GPM	0%
2.25 GPM	10%
2 GPM	20%
1.75 GPM	30%
1.5 GPM	40%
1.25 GPM	50%
1 GPM	60%

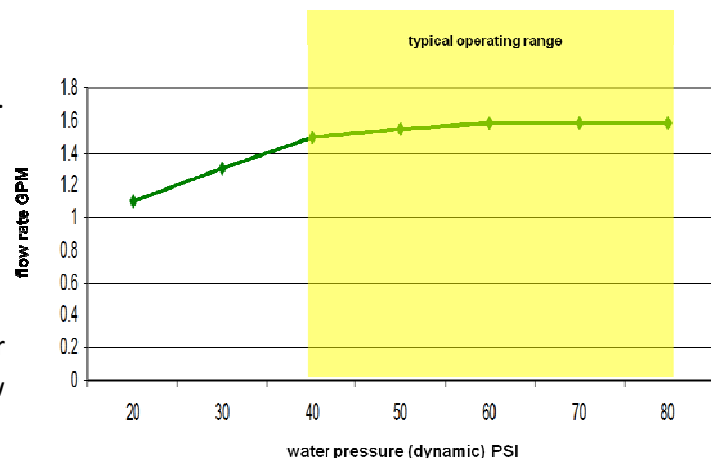
Spray Strength – Pressure Compensating Flow Regulator:

Anyone who showers knows that all showerheads are not created equal. Some feel too strong, others too weak and the one's that you love ... they feel just right. Why is that? It has to do with how the showerhead adjusts to the specific water pressure coming into it from the home in which the showerhead is being used.

Every home has a different water pressure. The pressure is a simple function of the difference in height between your town's water reservoir (lake or tower) and the elevation of your home - the greater the distance, the higher your water pressure. Water pressures of homes in a given community can vary greatly. Some could be as low as 20 PSI, others as high as or higher than 80 PSI. It is this difference in water pressure that can make the same exact showerhead feel very different depending on whose home it's in. In a low pressure home the stream feels weak. In a high pressure home it stings. Both are far from ideal.

In many ways this pressure issue is magnified when lowering the showerhead's flow rate. As a result, it is critical that the showerhead manufacturer incorporate a mechanism allowing the showerhead to deliver a consistent flow rate across a wide variety pressure ranges. Failure to do so will result in an unsatisfactory showering experience for many users.

The best performing showerheads will incorporate a high quality pressure compensating flow regulator into their design. Although it increases manufacturing cost, use of such a device greatly enhances user satisfaction. In fact, the best designs deliver a nearly identical flow rate within the typical pressure range of 40 – 80 PSI. For example, when tested, the **evolve** Roadrunner 1.59 GPM showerhead has less than a 6% flow variance within the aforementioned pressure range.



Spray Feel – Aeration or Nozzle Diameter Optimization:

When lowering the showerhead flow rate it is critically important to maintain a “feel” that is as close to a standard showerhead as possible. There are two primary methods for achieving this objective:

- aeration – pumping air into the water stream to make it “feel” more voluminous
- reduced spray nozzle diameter – shrinking the size of the spray nozzle opening to enhance the “feel” of the spray as it hits the body

Aeration of the water can improve the “feel” of the showerhead spray pattern, but it does so by inadvertently reducing the showerhead’s energy saving effectiveness. In the aeration process ambient air (70° - 80°) is drawn into the showerhead and rapidly mixed with bathing temperature water (100° – 107°). The introduction of the much cooler air, as much as 30° cooler, can lower the temperature of the water as it exits the showerhead. To compensate for their cooler shower many people find it necessary to increase the temperature of the water entering the showerhead by turning-up the hot water, raising the temperature of their hot water heater, or both.

A study conducted by the Energy Systems Laboratory, Mechanical Engineering department at Texas A&M University found that the low flow heads they tested required water temperatures to be approximately 10 F higher achieve comparable temperatures in the spray pattern.

Furthermore Alan Meier notes in a column for Home Energy Magazine On-Line, “Aeration is often used in the low-flow showerheads to give them extra body, but it results in rapidly declining temperature between the time the water leaves the showerhead and hits the naked body. (Aeration is in fact the principle behind power plant cooling towers and evaporative coolers.) Without knowing it, many users raise the temperature of the water 1deg.F to 10deg.F to maintain the same “impact temperature”.”

The traditional complaint regarding smaller diameter spray nozzles is the potential for the water to have a “needle-like” feel as it hits the body. This is a particularly valid concern for showerheads used in areas with water pressures in the higher end of the typical range. However, advances in flow regulation technology, namely the use of high quality pressure compensating flow regulators, eliminate this issue because they ensure the same water volume flows from the spray nozzle regardless of a home’s water pressure. As a result, the showerhead designer can reduce spray nozzle diameter and provide a great feeling shower.

When coupled with an effective pressure compensating flow regulator, a reduced diameter spray nozzle showerhead delivers a great feeling shower without the increased energy consumption associated with aerating showerheads.

Spray Coverage – Warmth of the Pattern

One of the biggest factors influencing how much we enjoy a shower is how warm we feel when taking it. Everyone has lasting and unpleasant memories of the times they just couldn’t get warm enough in the shower and how awful it made their entire day. The level of warmth we feel in the shower is influenced by more than the water’s temperature. It’s also impacted by how the spray pattern covers the body.

Many showerheads spray the water in a “cone” shaped pattern. This cone is essentially a circle with a hollow center. When water in a cone shape hits the body, the area in the center of the pattern is not directly covered by the spray. Conversely, water sprayed in a “full” pattern feels warmer because it does not have a hollow center.



full spray pattern – distributing nozzles evenly throughout diameter of spray face helps shower feel warmer

Rather than concentrating the spray in an outer ring with a hollow center, the “full” pattern consists of a series of concentric rings designed to distribute water evenly across the entire diameter of the spray face.

Upon first glance most showerheads appear to have nozzles covering the entire spray face. Don’t be confused, if a showerhead has nozzles covering the entire spray face, but offers multiple spray patterns it will deliver each different type of spray pattern from a different set of nozzles. In other words, the spray head looks like it could be a “full”, but it’s really a “cone”. The easiest way to tell the difference is to look closely at the spray head. If all the nozzles are identical and the head sprays 1 pattern only, it is a full spray pattern. If there is a difference between the nozzle shapes and the head sprays multiple patterns it is a cone spray pattern.



cone spray pattern – nozzles throughout spray face, but they are different shapes and sizes



full spray pattern – nozzles throughout spray face and all nozzles are same shape and size

Additional Considerations – ShowerStart Technology

One of the drawbacks to using a low flow showerhead is that it increases the amount of time you must wait for your shower to get warm. For example switching from a 2.5 GPM showerhead to a more efficient 1.5 GPM showerhead will lengthen the time it takes for hot water to start flowing by 40%. If it took 1 minute for your shower to get warm it will now take an additional 24 seconds for a total of 1:24.

A new technology, called ShowerStart, has been created to take the inconvenience out of waiting for your shower to get warm. With ShowerStart technology built into your showerhead you no longer have to stand with your hand in the water waiting for it to get to bathing temperature. Rather, ShowerStart monitors the shower’s temperature for you and automatically shuts the water flow down to a trickle as soon as it’s warm enough – about 95°. Reducing the flow to a trickle accomplishes two objectives:

1. you’ll know (hear) the moment your shower is ready
2. it keeps hot water from running needlessly down the drain before you start taking your shower

Not only does the addition of ShowerStart make the low-flow showerhead more convenient, it also has the potential, depending on your behavior patterns, to increase the water and energy savings effectiveness of your new showerhead by 14% or more.

	Low Flow Showerhead	Low Flow Showerhead with ShowerStart
Flow Rate - GPM	1.59	1.59
Length of Shower - Minutes	5	5
Gallons Used While In Shower	7.95	7.95
Time Spent Away From Shower During Warm Up - Minutes	2	2
Length of Time For Water to Actually Become Warm - Minutes	1	1
Water Used During Warm Up - Gallons	3.18	1.59
Total Gallons Used for Shower	11.13	9.54
Extra Savings For Showerhead with ShowerStart		14%

ShowerStart technology can be found exclusively throughout the evolve family of eco-friendly showerheads.

Installing a new showerhead is one of the quickest and easiest ways to “go green” while lowering your utility bills. Taking the following factors into consideration when making your selection will get you off to a great start each and every day.

- Flow Rate:** 1.75 GPM to 1.5 GPM is optimal for balancing savings and comfort
- Spray Strength:** Selecting a showerhead with a pressure compensating flow regulator ensures spray consistency
- Spray Feel:** Choosing a non-aerated showerhead minimizes the likelihood of accidental energy waste
- Spray Coverage:** Picking a showerhead with a “full” spray pattern ensures maximum warmth and comfort
- ShowerStart:** Purchasing a showerhead with ShowerStart technology eliminates the inconvenience of waiting for your shower to get warm while boosting its water and energy savings effectiveness by up to 14% or more.