


# Service Water Pressure



 **Optional Water Efficiency Measure:** May contribute to the 30 percent water efficiency requirement, depending on the chosen WaterSense® Approved Certification Method (WACM).



## UNDERSTAND

- Water pressure in supply main lines can reach 100 pounds per square inch (psi) or more. High water pressure can damage plumbing piping, fixtures, and appliances, and can lead to increased water consumption, premature equipment failure, and risk of leaks.
- Most U.S. plumbing codes require pressure-regulating valves (PRVs, also called pressure regulators) on domestic systems where the pressure of the supplied water exceeds 80 psi.
- Single-family residences supplied by groundwater wells should use a pressure tank set at 60 psi. This not only ensures optimal performance of the home and protects it from leaks, but conserves energy.
- WaterSense recommends incoming service pressure to be between 45 and 60 psi to ensure efficient use of water and proper system function. This water pressure is within the optimal pressure range for water-using fixtures and appliances, while still reducing the amount of water used and risk to the system compared to higher pressures.



## BUILD

- **CONFIRM** that service pressure does not exceed 80 psi by consulting with the public water supplier.
- **INSTALL** a PRV downstream of the point of connection to the water source and set the PRV to limit pressure to between 45 and 60 psi.
- **CONSULT** local plumbing codes to see if thermal expansion, which can occur from installing a PRV since it creates a closed system, needs to be addressed.
- **MAINTAIN** fire sprinkler systems in accordance with state and local codes and regulations.



## VERIFY

- **VERIFY** the water pressure to the home or unit to determine if the PRV, if installed, is set and working correctly.
  - Attach a pressure gauge to a hose bibb, the cold-water faucet for the washing machine hookup, or a cold-water faucet on the first floor. Turn on the water to the fully open position.
  - If the home has multiple water supplies (e.g., an independent source for irrigation), verify the water pressure from each supply.

*\*NOTE: Consult with the Home Certification Organization for specific verification protocols.*

### Direct-Acting Valves

The most common type of water pressure-reducing valve is a direct-acting valve, which consists of a globe-type body with a spring-loaded, heat-resistant diaphragm connected to the outlet of the valve that acts upon a spring. Water entering the valve is constricted within the valve body and directed through the inner chamber, which is controlled by an adjustable spring-loaded diaphragm and disc. The minimum flow through a PRV should be between 10 and 15 percent of the maximum desired flow rate. Select a regulator for which operating pressures fall within the middle of its rated range, not based on the size of the pipe to which it will be attached.

### Learn More

Visit the Building America Solution Center at <https://basc.pnnl.gov/resource-guides/service-water-pressure> to learn more.

