

The standards recognize other distribution systems that may be more or less efficient than the standard system. Table 5-1 gives brief definitions of all of the distribution system types for water heating serving a single dwelling that are recognized by the standards.

*Table 5-1 – System Component Descriptions: Distribution Systems within a Dwelling Unit*

Distribution Systems	Description
Standard (STD)	Standard system without any pumps for distributing hot water. The first 5 ft of pipes from the storage tank is insulated for both hot and cold water pipes. Pipes from the water heater to the kitchen that are 0.75 in. or larger are insulated. Pipe insulation is required per §150(j).
Point of Use (POU)	System with no more than 8 ft horizontal distance between the water heater and hot water fixtures, except laundry.
Pipe Insulation (PIA)	All hot water pipes are insulated per the requirements of §150(j).
Standard Pipes with No Insulation (SNI)	Standard system, but without insulation on the pipes to the kitchen.
Parallel Piping (PP)	Individual pipes radiate from a manifold on the water heater to each of the fixtures.
Recirculation No Control (RNC)	Distribution system using a pump to recirculate hot water to branch piping through a looped hot water main. Pump operation and water flow are continuous. Pipe insulation is required per §150(j).
Recirculation with Temperature Control (RTmp)	Recirculation system that uses temperature controls to cycle pump operation to maintain recirculated water temperatures within certain limits. Pipe insulation is required per §150(j).
Recirculation with Timer Control (RTm)	Recirculation system that uses a timer control to cycle pump operation based on time of day. Pipe insulation is required per §150(j).
Recirculation with Timer and Temperature Control (RTmTmp)	Recirculation system that uses both temperature and timer controls to regulate pump operation. Pipe insulation is required per §150(j).
Recirculation with Demand Control (RDmd)	Recirculation system that uses brief pump operation to recirculate hot water to fixtures just prior to hot water use when a demand for hot water is indicated. Pipe insulation is required per §150(j).

For water heating systems that serve multiple dwellings, there are separate distribution system definitions and requirements. The terms “Standard,” “Point of Use,” “Standard Pipes with No Insulation” and “Parallel Piping” do not apply to systems serving multiple dwellings. The term “Pipe Insulation” has a different meaning for central water heating systems than for systems serving a single dwelling unit. Piping for recirculation loops is required by the mandatory measures to be insulated, but a higher level of insulation can also save energy and is recognized by the compliance software programs.

Additionally, more information is required for demonstrating compliance of systems serving multiple dwelling units. The compliance documentation must specify the length of piping that is inside the building, outside, or underground, and the insulation R-value on each portion

The base case system used to develop the standard budget for central water heating assumes a minimal amount of piping outside and none underground. It also assumes a recirculation pump with a timer control, and R-4 or R-6 insulation on the pipes (depending upon pipe diameter). The new proposed system also is assumed to have a recirculation pump, but in an existing multiple dwelling building it may lack controls. There is an exception for multifamily