



# ***Mandatory Requirements***

The proposed guidelines substantially increase the mandatory requirements to complete the building science foundation of the program and ensure inclusion of ENERGY STAR qualified products.

# MANDATORY REQUIREMENTS: ALL LABELED HOMES



## • ***Hot Water Efficiency***

- *Shower Heads < 2.0 gpm*
- *Efficient Hot Water Distribution*

## • ***ENERGY STAR Products***

- *Refrigerator, Dishwasher, Clothes Washer, where provided*
- *ALP or Bulbs in 80% Sockets*
- *Ceiling Fans, where provided*

## • ***Six Checklists***

# MANDATORY REQUIREMENTS: EFFICIENT WATER HEATING SYSTEM



- *Energy Factor*
- *Distribution*
- *Insulated Piping*
- *Heat Trap Above Tank/Heater*

Adding an efficient distribution system to other efficient technologies, creates a complete advanced domestic hot water system.

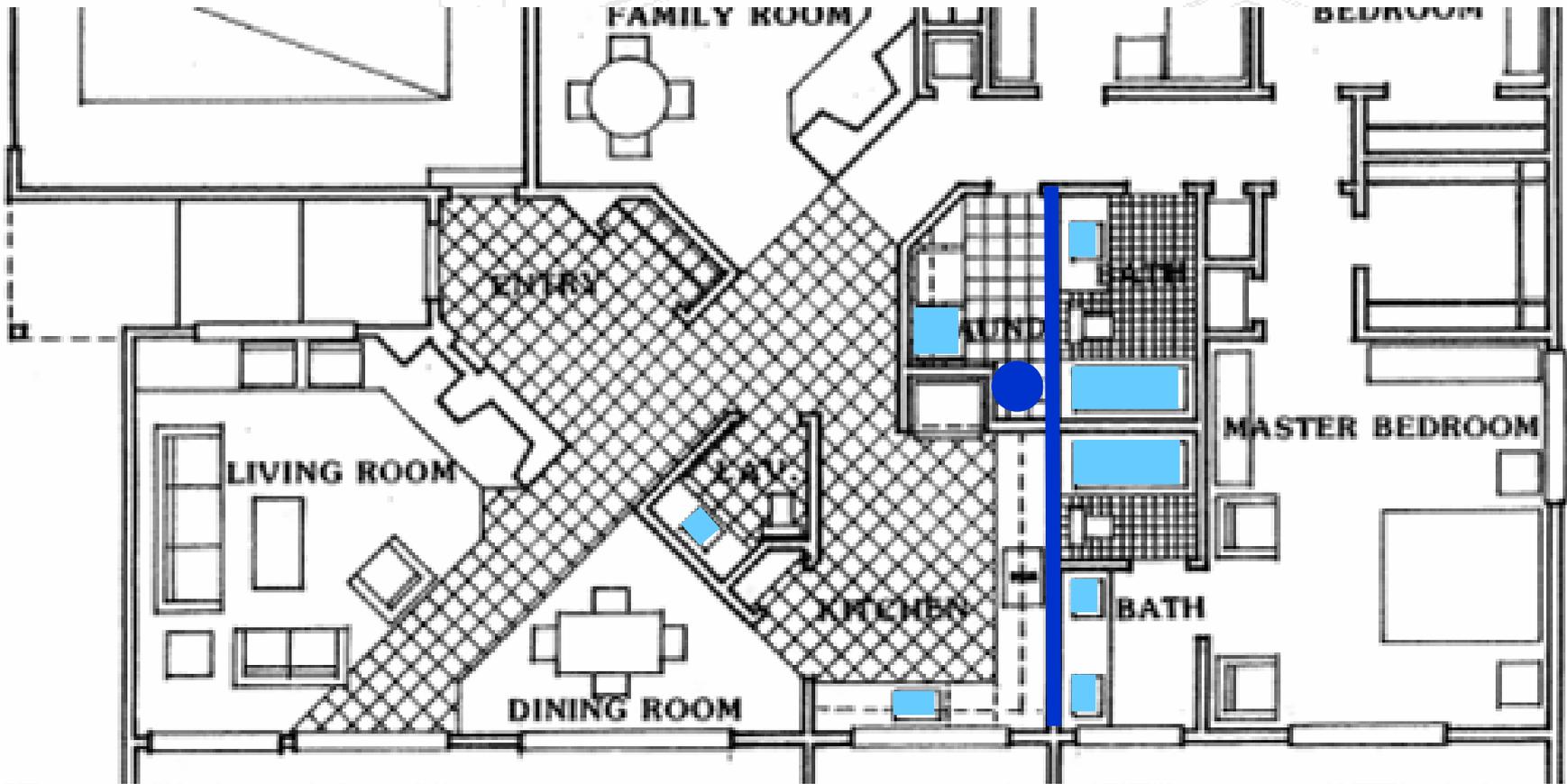
# MANDATORY REQUIREMENTS: WATER HEATING DISTRIBUTION



- *Core System (Wet Walls)*
- *Manifold System*
- *Demand Pumping System*

There are three main options for complying with the requirement for an efficient hot water distribution system.

# MANDATORY REQUIREMENTS: CORE WALL DISTRIBUTION

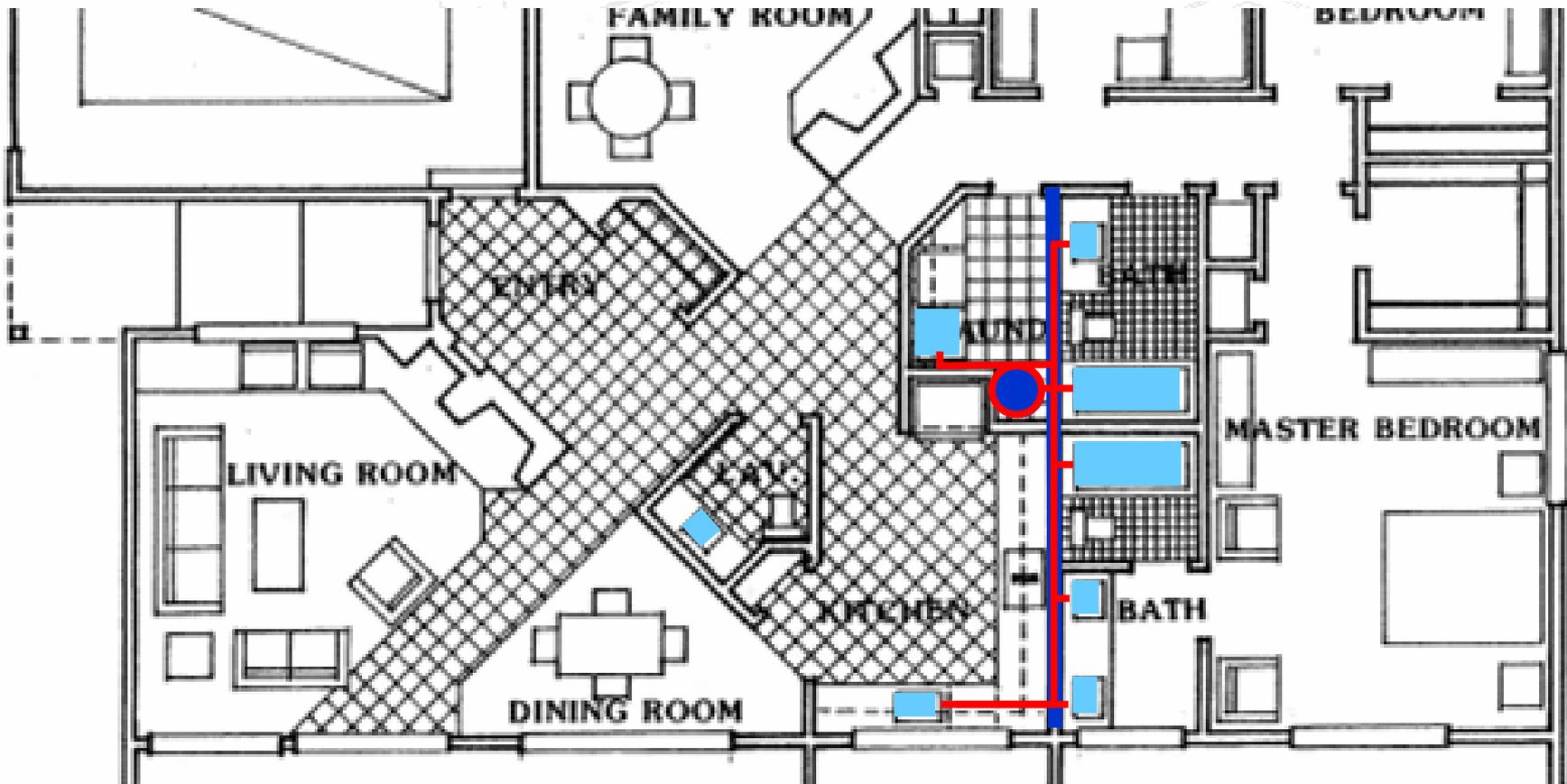


This home is designed with a very efficient “wet wall” or “core wall” plumbing design. The dark blue circle is the water heater, and the lighter blue boxes are the sinks and tubs.

# MANDATORY REQUIREMENTS: CORE WALL DISTRIBUTION

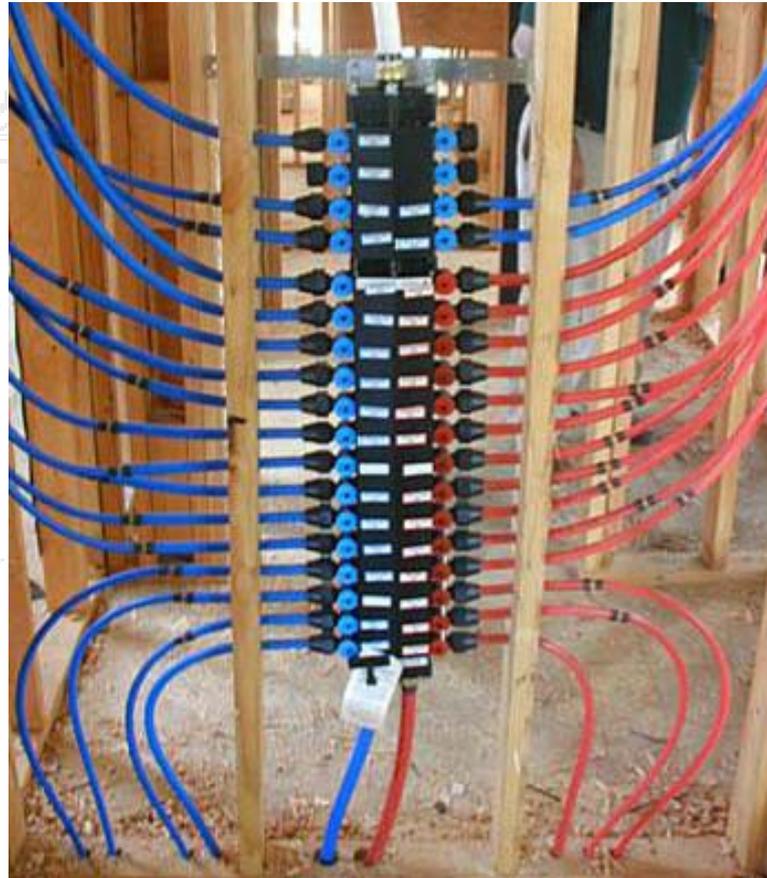


ENERGY STAR



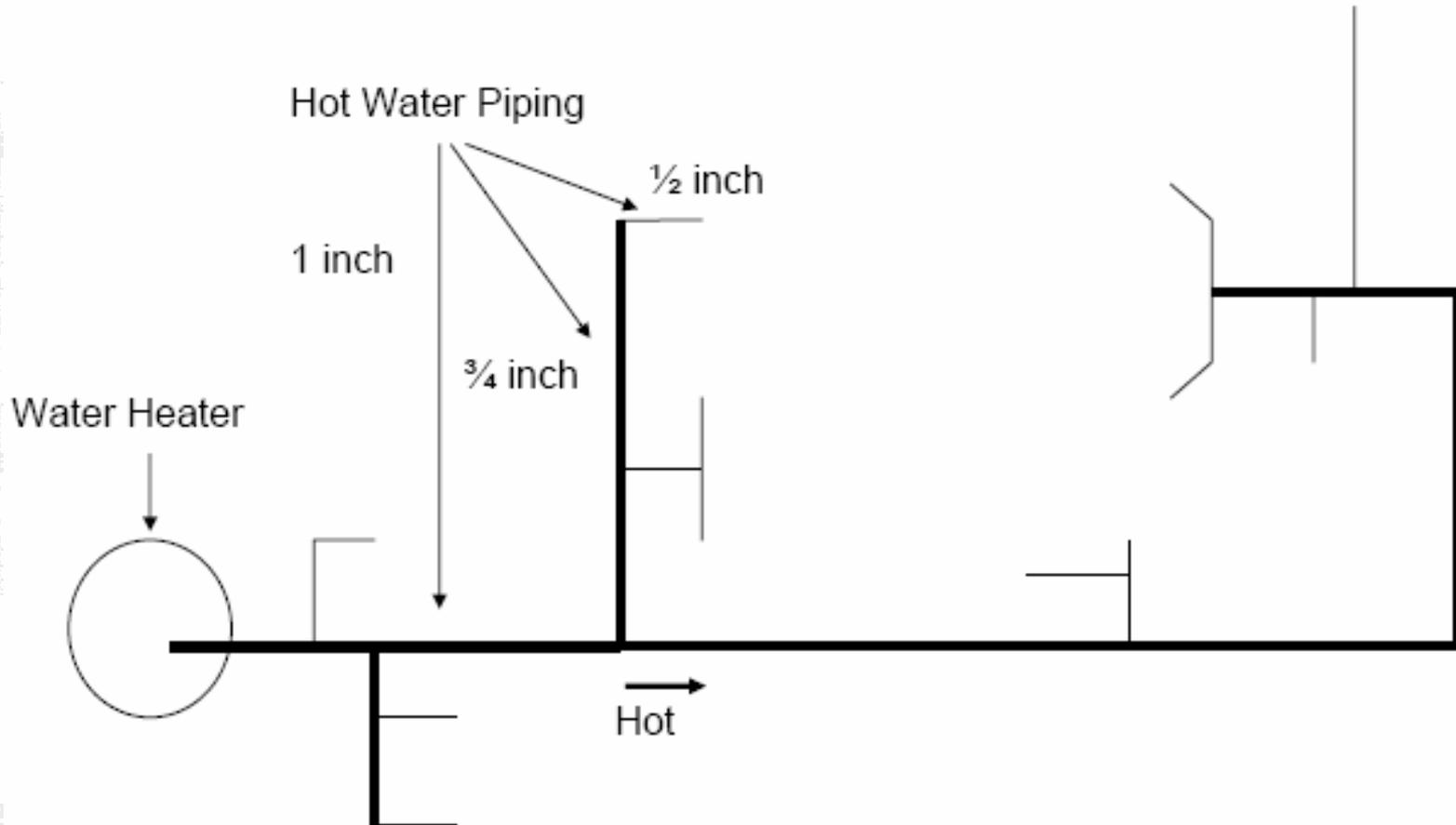
The core wall contains very short runs to each fixture that minimize wait time for hot water, wasted water, and heat loss through pipes.

# WATER HEATING DISTRIBUTION: MANIFOLD HOT WATER DISTRIBUTION



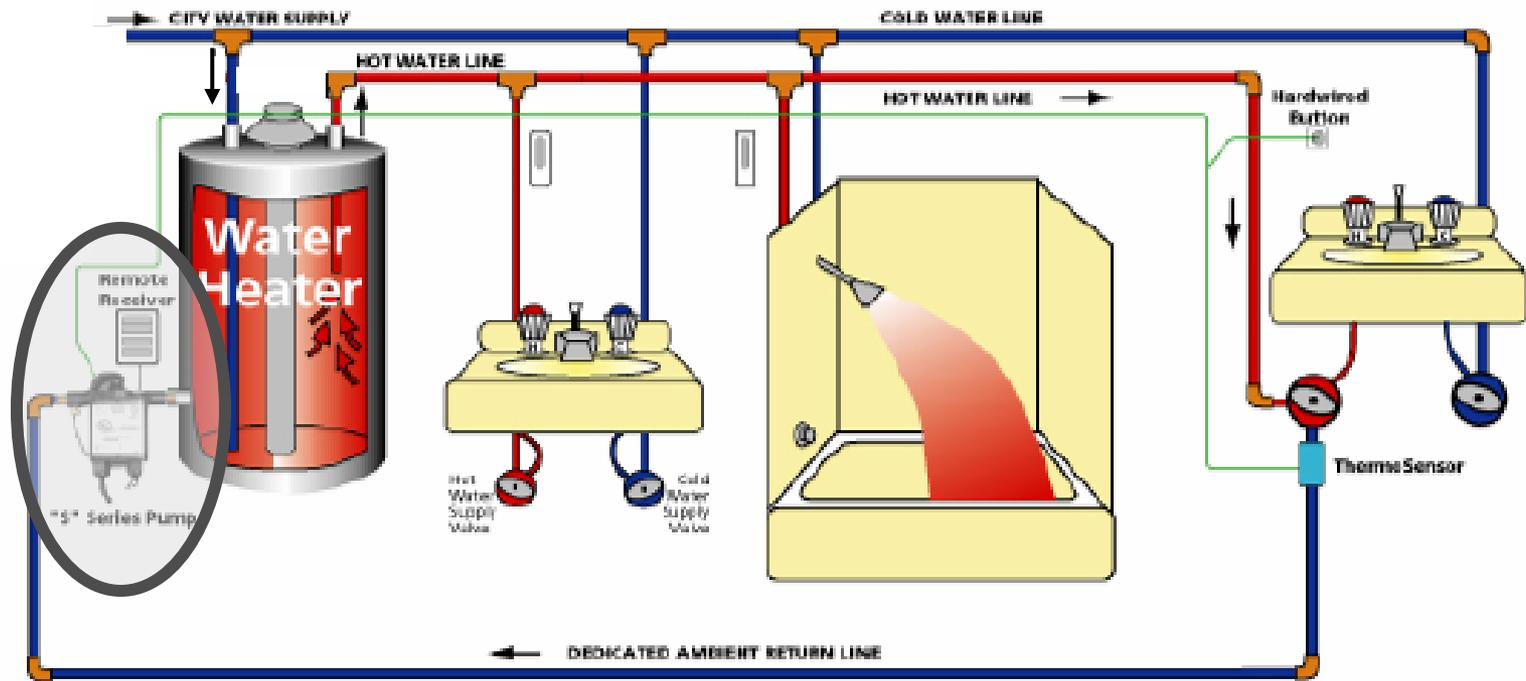
A manifold hot water distribution system takes a large feed from the water heater directly to each fixture with a dedicated line.

# WATER HEATING DISTRIBUTION: SINGLE TRUNK AND BRANCH



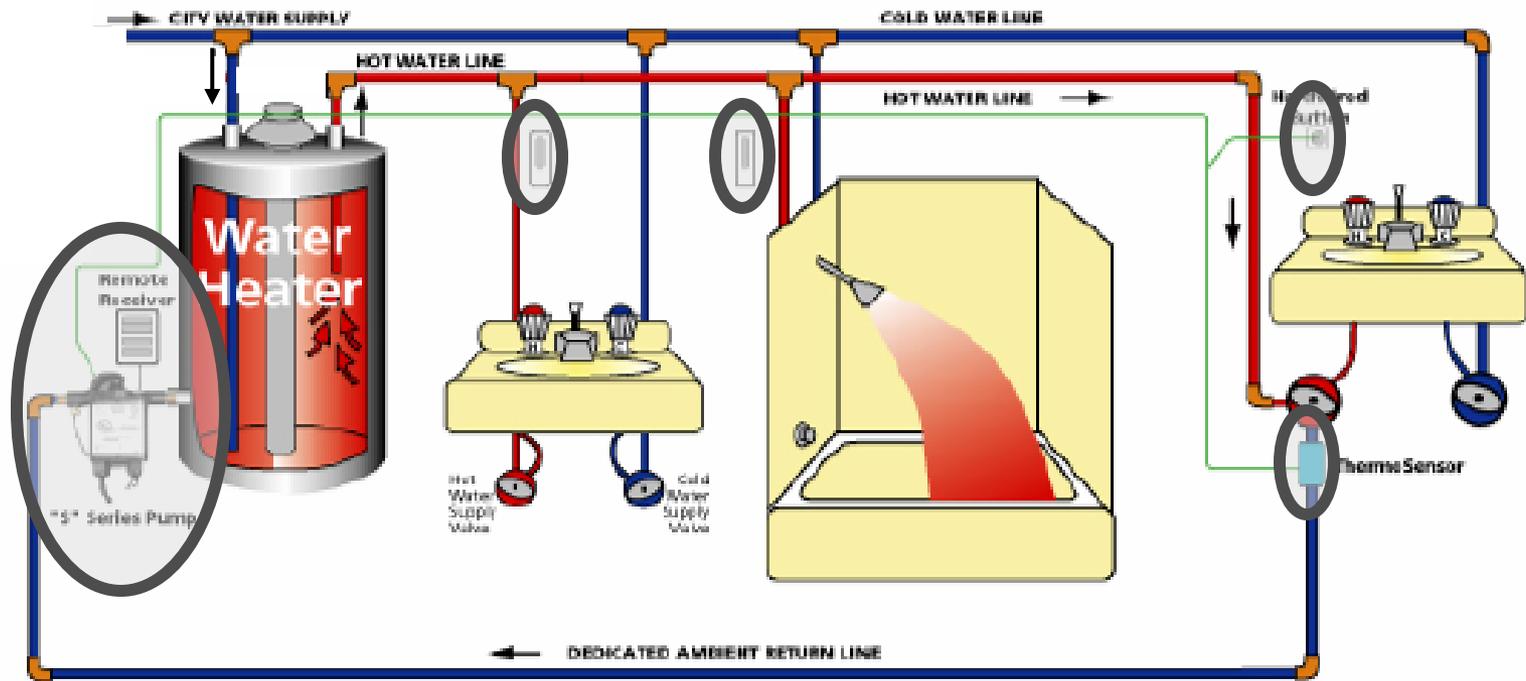
A typical single trunk and branch layout requires a significant amount of piping.

# WATER HEATING DISTRIBUTION: DEMAND PUMPING SYSTEM



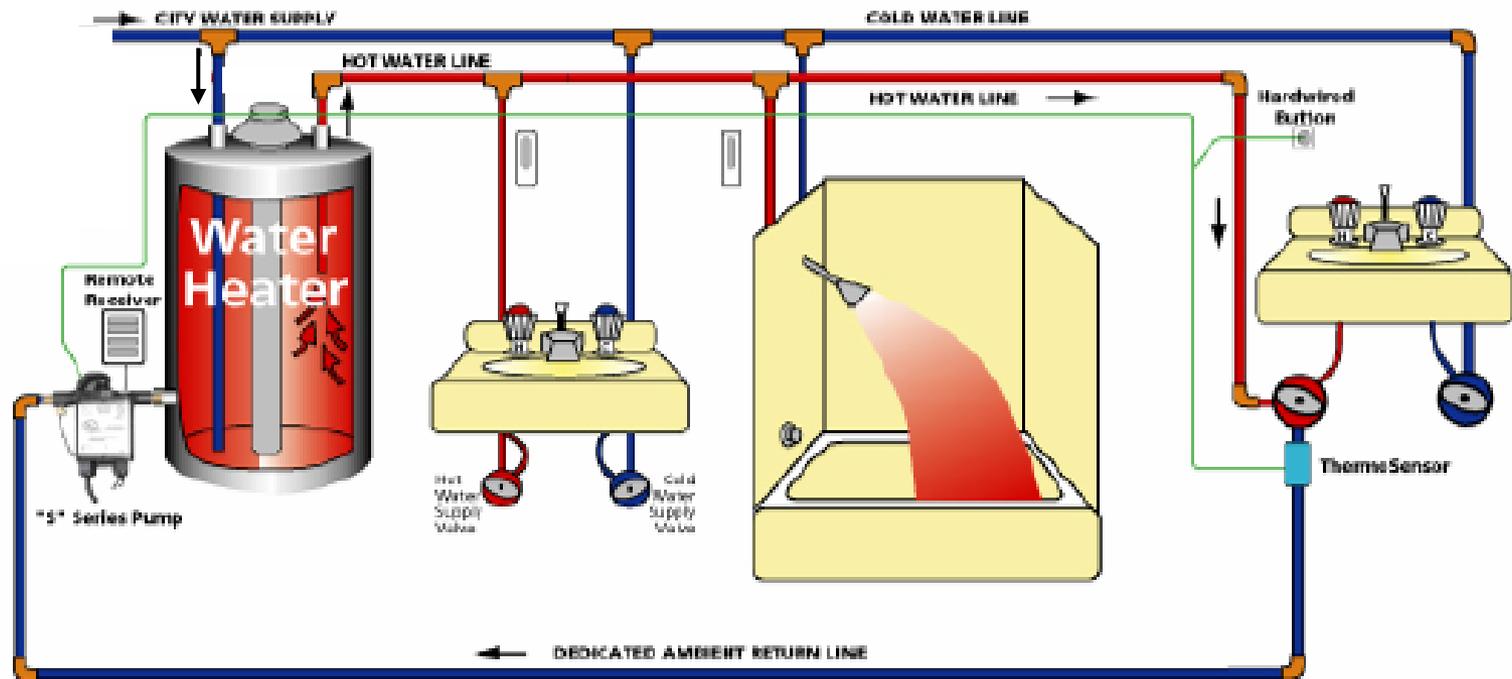
A demand pumping system features a dedicated hot water return to the tank with a pump.

# WATER HEATING DISTRIBUTION: DEMAND PUMPING SYSTEM



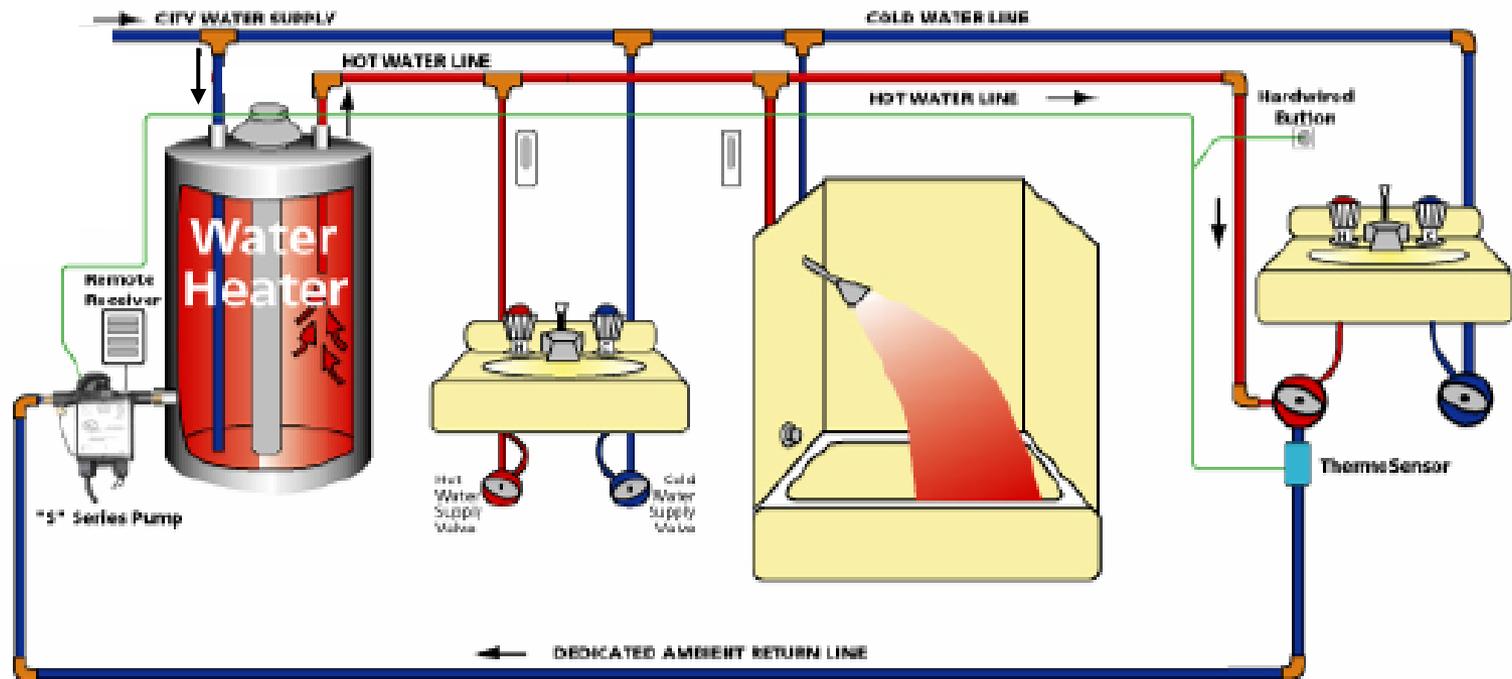
A demand pumping system also includes switches or occupancy sensors and water temperature sensors at each fixture.

# WATER HEATING DISTRIBUTION: DEMAND PUMPING SYSTEM



When the occupancy sensor is triggered or someone flips a switch, the pump circulates hot water until the sensor detects it at the activated fixture and shuts off the pump.

# WATER HEATING DISTRIBUTION: DEMAND PUMPING SYSTEM



Demand pumping systems also recirculate water into the tank at room temperature, which is typically much warmer than the temperature of the inlet water from the utility.

# ENERGY STAR PRODUCTS: ADVANCED LIGHTING



As the improved envelope and equipment reduce heating and cooling energy use, lighting becomes a more significant part of the load. The proposed 2011 guidelines require every home to have advanced lighting.

# ENERGY STAR PRODUCTS: ADVANCED LIGHTING



Either 60% of the fixtures must be ENERGY STAR qualified or 80% of the sockets must include ENERGY STAR qualified CFLs.

# MANDATORY REQUIREMENTS: ENERGY STAR APPLIANCES/FANS



Key appliances in kitchens, laundry rooms, and bathrooms also represent an increasing part of the remaining energy loads. Where provided by the builder, they must be ENERGY STAR qualified.