

# Domestic Hot Water Recirculating Systems

IT'S MORE THAN JUST PUMPS!



# What's the point?

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What is the purpose of a Domestic Hot Water Recirculation System?

10-20% of household water used is wasted on waiting for the water to get hot!

It is estimated that Americans waste around 280,000,000 gallons of water a day waiting on the water to get HOT!  
(Natural Resources Defense Council, [nrdc.org](http://nrdc.org), Waiting For Hot water)

According to the U.S. Dept. of Energy, that is reported to be somewhere between 400 Billion and 1.3 Trillion gallons of water a year!

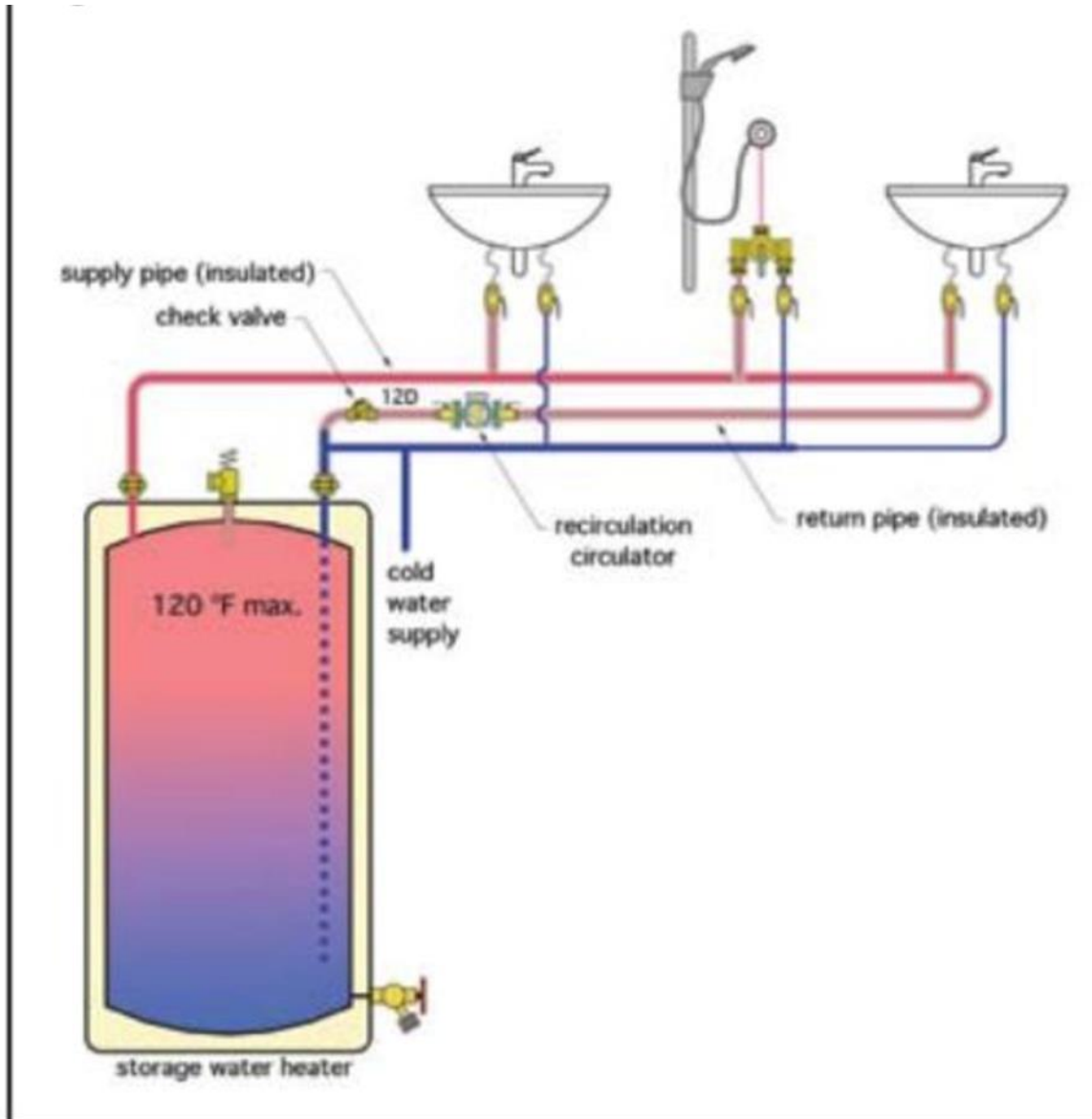
# Hot water recirculating pumps.

Are they worth it?

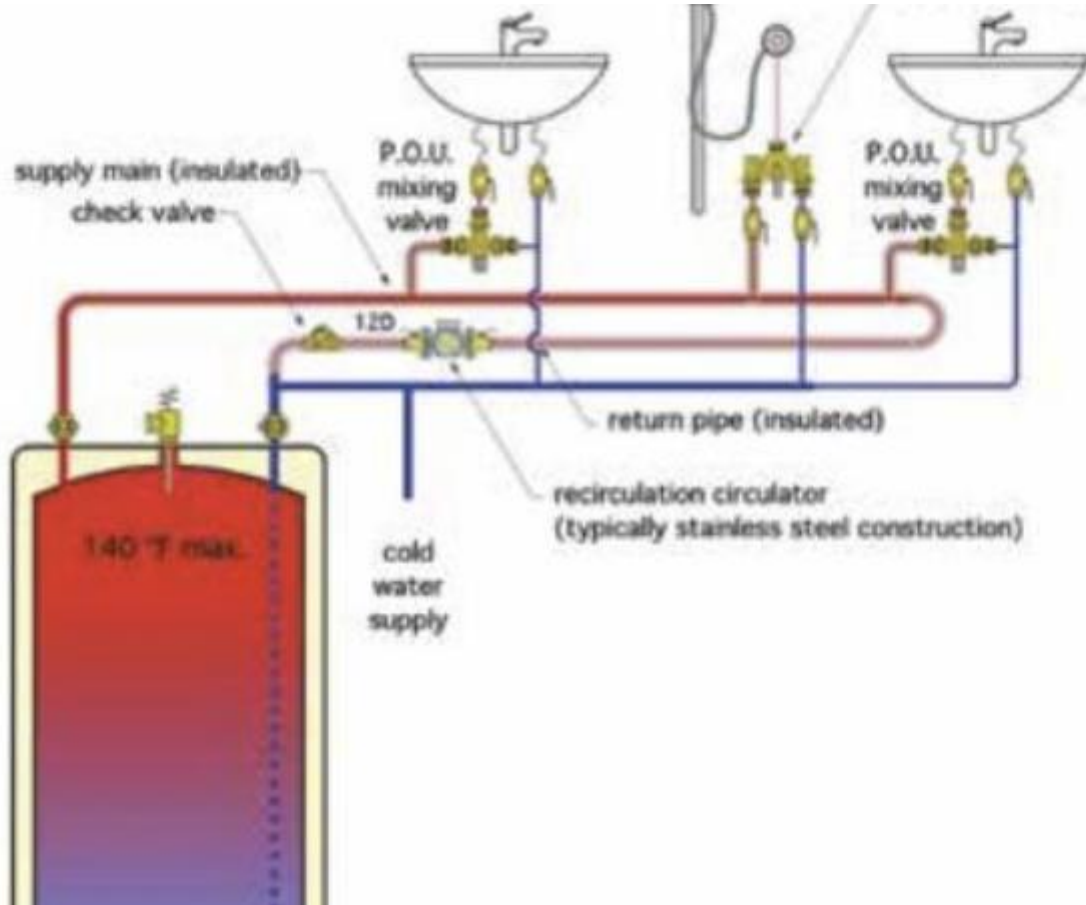
Reports are conflicted and the U.S. Dept of Energy has been working on an efficiency standard for circulation pumps since 2016. The calculations depend on what you include in the formula, where you are in the US, and utility costs for water, electricity, and gas.



# Commercial Hot Water Circulation Systems



# Unprotected Recirculation System



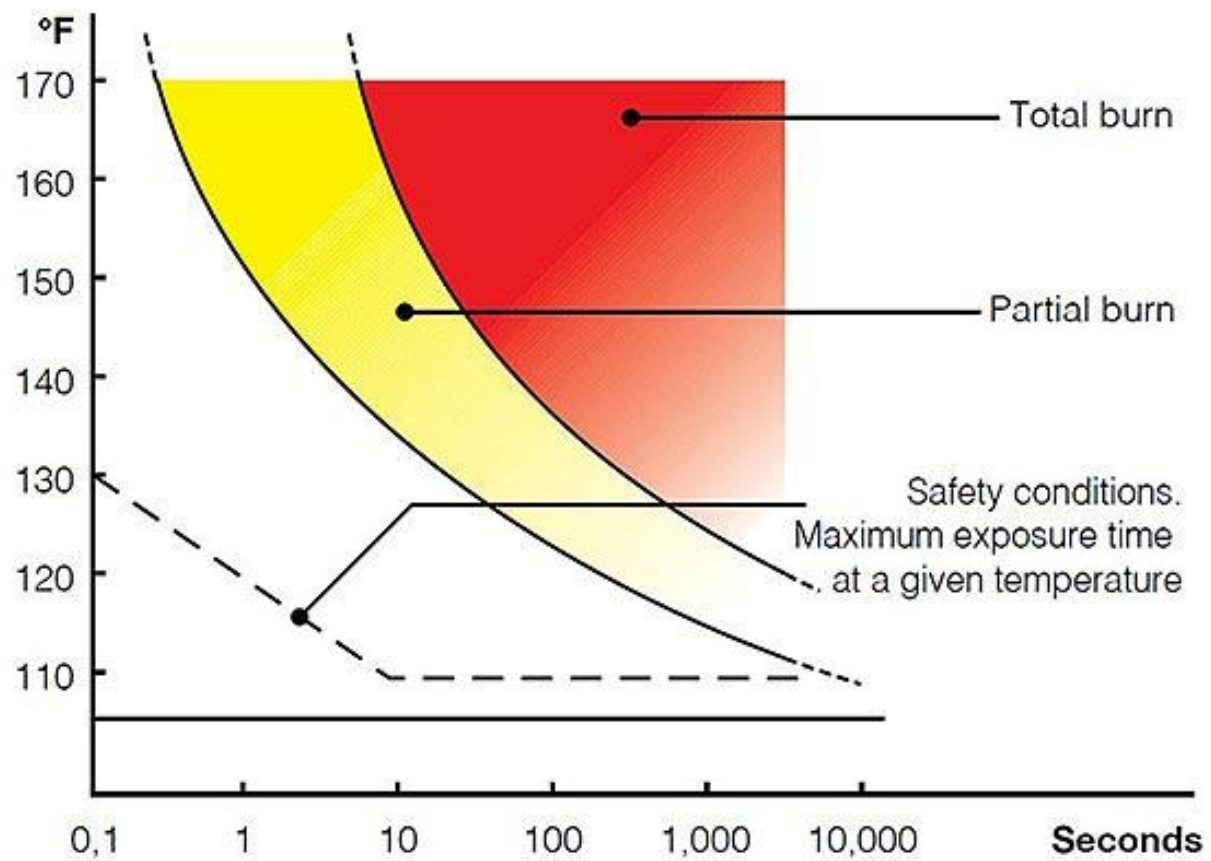
Point of Use  
scald guard  
protection.

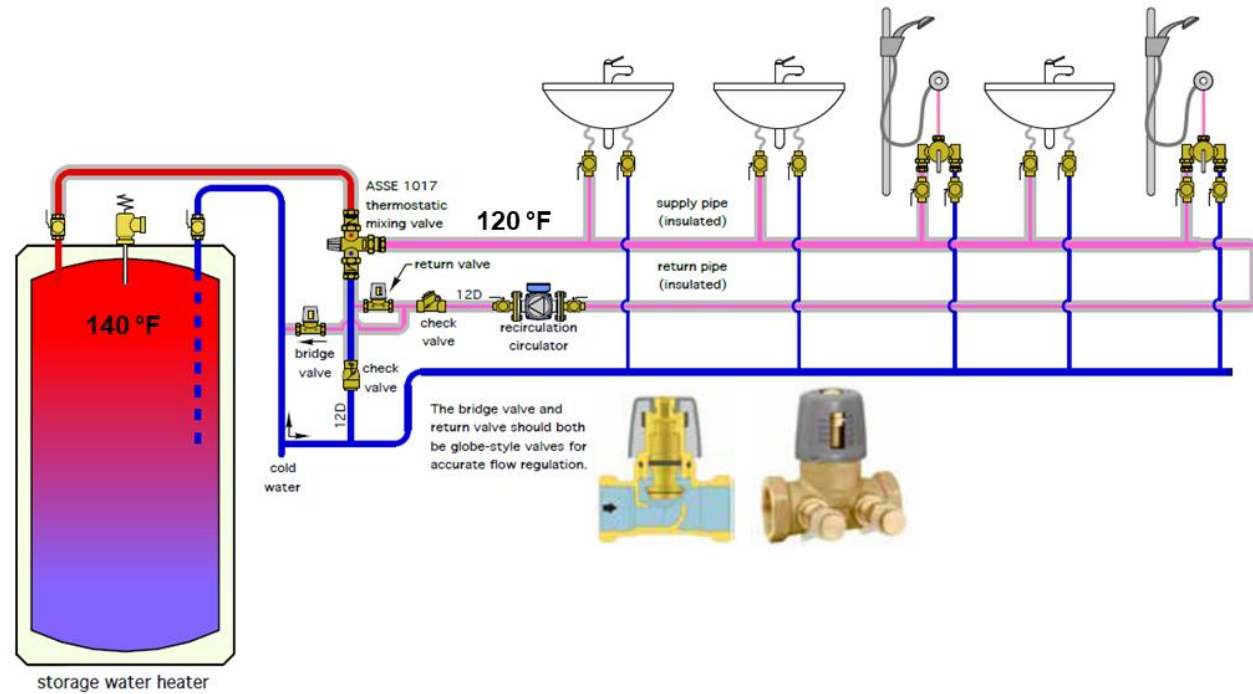


Why is scald guard protection necessary?

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### Temperature • Exposure time





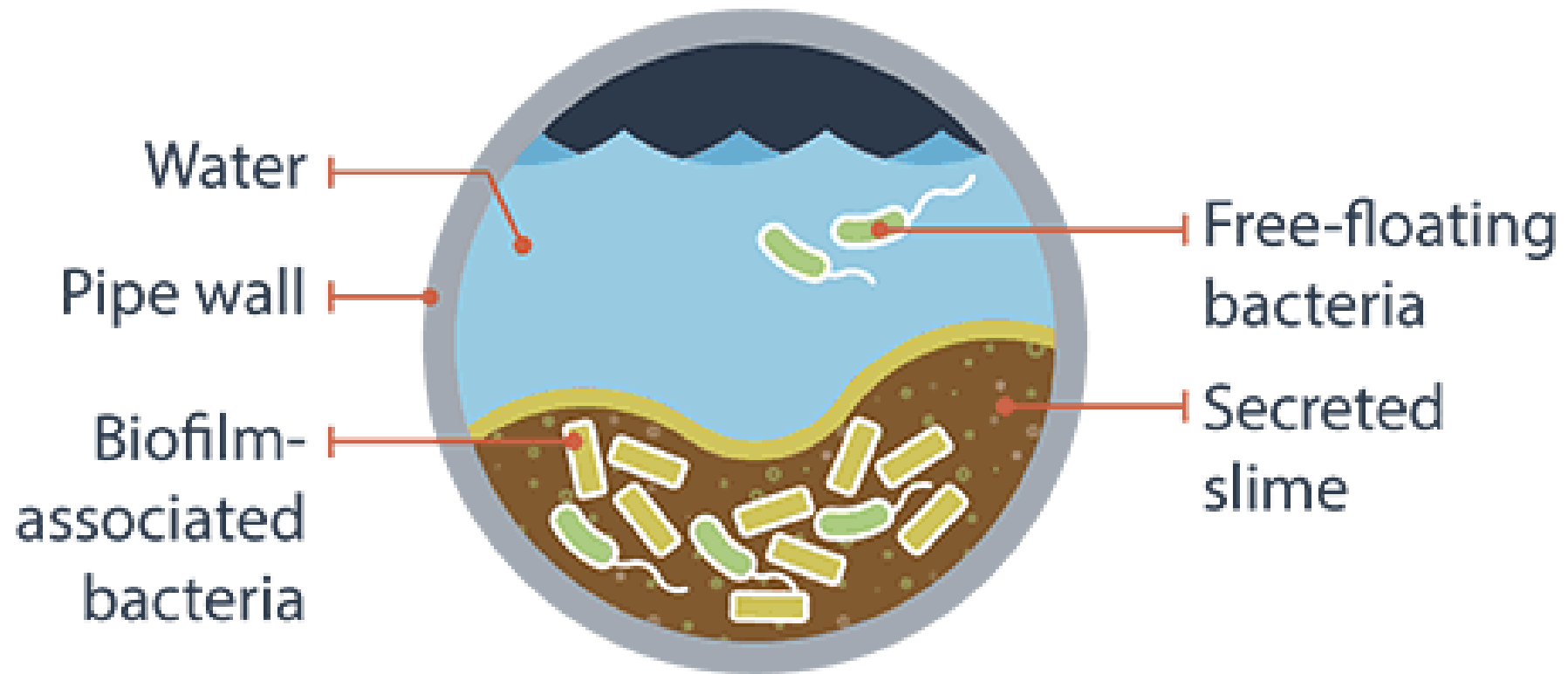
Sample installation with a Point Of Distribution Mixing Valve.



# What is Legionella?

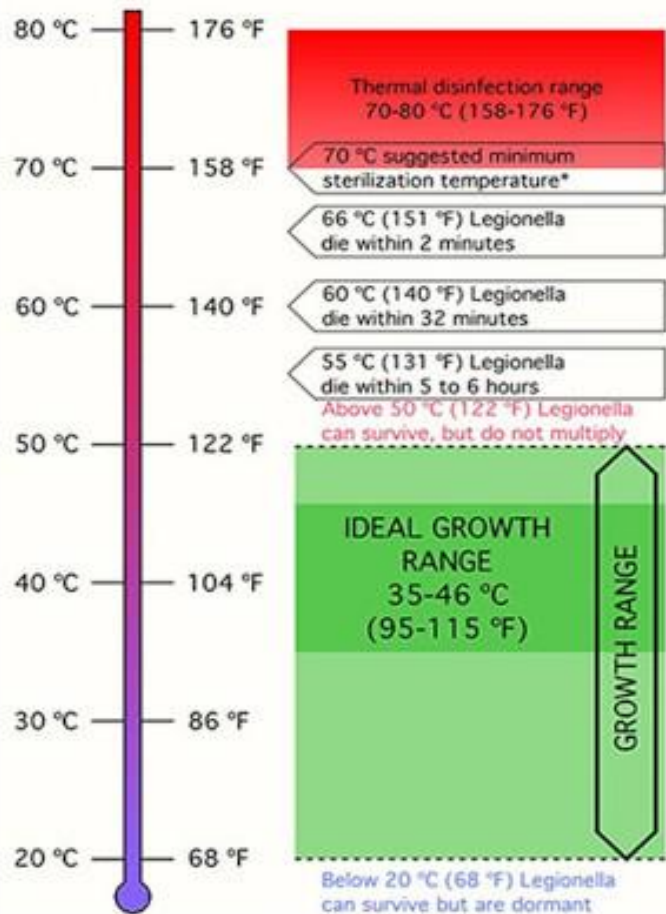
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## *Legionella* can live and grow in biofilm

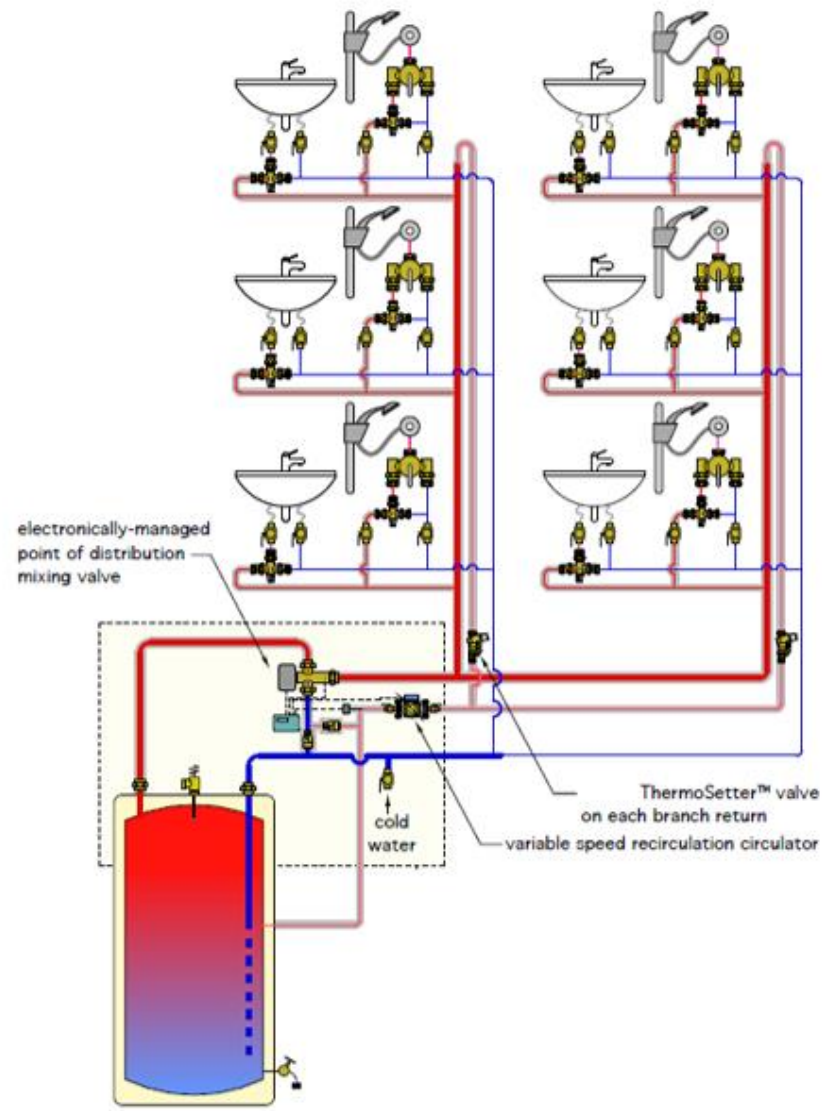


Cross section of pipe

### Legionella bacteria versus water temperature



\*Assumes maximum concentration of 1000 colony-forming units /ml<sup>3</sup>



Commercial  
DHW with  
Recirculation  
system.

# Balancing valves. Why are they needed?

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