

recirculation systems, must be analyzed using the performance compliance approach to show that the energy use of the building has not been increased.

To decrease the wait time, another alternative may be to install a second water heater close to the fixture. Installing an additional water heater into an existing building's water heating system must be analyzed using the performance compliance approach to show that the energy use of the building has not been increased. However, if a natural gas or propane instantaneous water heater is added, the water heating system is pre-determined to comply with the prescriptive water heating alteration requirements. If instead, an additional storage water heater were to be added, the performance compliance approach must be used, as the added storage will increase the standby losses of the water heating system and that energy increase will need to be offset with other efficiency improvements.

Example 9-25

Question

I want to install an additional water heater to a single family residence with an existing natural gas water heater. Does this comply?

Answer

When there is an increase in the number of water heaters with an existing water heating system, the system must be analyzed using the performance compliance approach to show that the energy use of the system has not been increased. However, if the additional water heater is a natural gas or propane instantaneous water heater, the system automatically complies. No water heating calculations are needed.

The following table lists replacement heat pump water heating systems by climate zones that have equal or lower TDV energy than a standard design system with natural gas, LPG, or electric fuel source. These systems have been pre-calculated to comply with the prescriptive water heating alteration requirements when serving a single dwelling unit, with or without natural gas connection. These are only a few of many possible combinations that will comply using the performance compliance approach.

Table 9-7: Pre-calculated Replacement Heat Pump Water Heating Systems for Single Dwelling Units

CZ	Energy Factor greater than or equal to
1	2.75
2	2.75
3	2.75
4	2.8
5	2.75
6	2.33
7	2.5
8	2.33
9	2.33
10	2.33
11	2.5
12	2.8
13	2.5
14	2.5
15	2.33
16	EF \geq 3, plus a solar water heating system with solar saving fraction \geq 0.4