Additional incentive information for modulating hot water boilers 300-1,000 MBh

Tips to determine thermal efficiency!

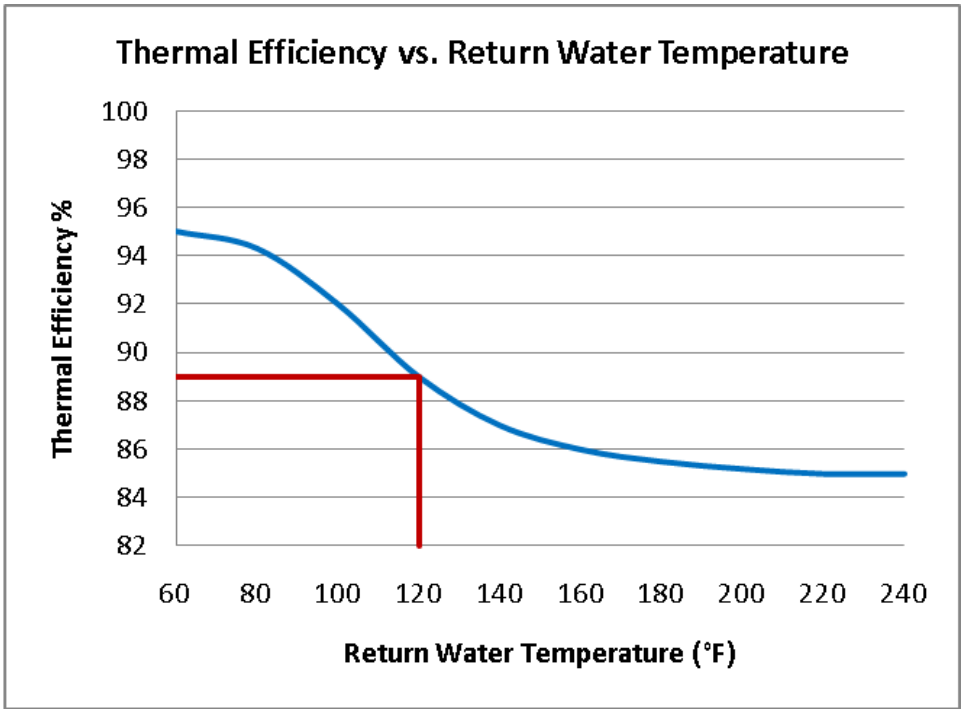
The new prescriptive incentive for modulating hot water boilers 300-1,000 MBh requires some additional technical information that is not required for smaller equipment. The small boilers with input capacity less than 300 MBh have a standard AFUE rating. Larger equipment is instead rated with a thermal efficiency value. **Thermal efficiency is critically dependent on return water temperature**. For instance, a boiler advertised as 95% thermally efficient may actually only provide 85% thermal efficiency if the building heating system returns water to the boiler at 180° F. To actually achieve the advertised 95% value, water would need to be returned at a much cooler temperature, perhaps 80° F. Therefore, Focus on Energy requires that applicants provide performance data of the boiler and return water temperature. With these two pieces of information, the applicant can estimate the actual operating efficiency.

Instructions and limitations for hot water boilers 300-1,000 MBh (see page 4 of the form):

- Boiler must have thermal efficiency ≥85% and be capable of capacity modulation.
- **Submit boiler specifications with steady state boiler input and output ratings. Ratings are to be defined per ANSI Standard Z21.13 using supply and return water temperatures applicable for each individual installation.**
- Restricted to boilers used for HVAC, space heating installations (no direct or indirect domestic hot water heating). Industrial process boilers and domestic water heating boilers may qualify for a custom incentive. Direct inquiries to 800.762.7077 then #2 for Business Programs prior to project initiation or purchase of equipment.
- For purposes of incentive calculation, boiler efficiencies will be rounded up or down to the nearest whole number (no decimals).
- Boilers purchased or installed for backup or redundant systems are not eligible.
- **Condensing boilers (thermal efficiency ≥90%, typically) will provide maximum efficiency only if the return water temperature is cool enough to condense flue gasses. If the heating system configuration cannot provide necessary operating conditions to the boiler, selection of a non-condensing boiler may be more appropriate.**

Example: Obtain the boiler manufacturer's technical literature and look for a thermal efficiency vs. return water temperature curve like the one shown below. Determine the actual or design-intent return water temperature for your specific installation. Use the graph to determine the thermal efficiency the boiler will provide at that return water temperature (the vertical and horizontal lines, below).

Note: If the manufacturer provides different curves for high fire, low fire, etc., use the curve that gives you the greater efficiency.



Don't forget—submit the following information to Focus on Energy:

- Manufacturer and model information including the chart or graph indicating the equipment thermal efficiency vs. return water temperature
- Site-specific return water temperature estimate
- Your determination of site-specific boiler thermal efficiency
- Copy of the equipment / installation invoice
- Completed incentive application