

§ 431.86

10 CFR Ch. II (1–1–23 Edition)

§ 431.86 Uniform test method for the measurement of energy efficiency of commercial packaged boilers.

(a) *Scope.* This section provides test procedures, pursuant to the Energy Policy and Conservation Act (EPCA), as amended, which must be followed for measuring the combustion efficiency

and/or thermal efficiency of a gas- or oil-fired commercial packaged boiler.

(b) *Testing and Calculations.* Determine the thermal efficiency or combustion efficiency of commercial packaged boilers by conducting the appropriate test procedure(s) indicated in Table 1 of this section.

TABLE 1—TEST REQUIREMENTS FOR COMMERCIAL PACKAGED BOILER EQUIPMENT CLASSES

Equipment category	Subcategory	Certified rated input Btu/h	Standards efficiency metric (§ 431.87)	Test procedure (corresponding to standards efficiency metric required by § 431.87)
Hot Water	Gas-fired	≥300,000 and ≤2,500,000 ...	Thermal Efficiency	Appendix A, Section 2.
Hot Water	Gas-fired	>2,500,000	Combustion Efficiency	Appendix A, Section 3.
Hot Water	Oil-fired	≥300,000 and ≤2,500,000 ...	Thermal Efficiency	Appendix A, Section 2.
Hot Water	Oil-fired	>2,500,000	Combustion Efficiency	Appendix A, Section 3.
Steam	Gas-fired (all*)	≥300,000 and ≤2,500,000 ...	Thermal Efficiency	Appendix A, Section 2.
Steam	Gas-fired (all*)	>2,500,000 and ≤5,000,000 ...	Thermal Efficiency	Appendix A, Section 2.
		>5,000,000	Thermal Efficiency	Appendix A, Section 2. OR Appendix A, Section 3 with Section 2.4.3.2.
Steam	Oil-fired	≥300,000 and ≤2,500,000 ...	Thermal Efficiency	Appendix A, Section 2.
Steam	Oil-fired	>2,500,000 and ≤5,000,000 ...	Thermal Efficiency	Appendix A, Section 2.
		>5,000,000	Thermal Efficiency	Appendix A, Section 2. OR Appendix A, Section 3. with Section 2.4.3.2.

* Equipment classes for commercial packaged boilers as of July 22, 2009 (74 FR 36355) distinguish between gas-fired natural draft and all other gas-fired (except natural draft).

(c) *Field Tests.* The field test provisions of appendix A may be used only to test a unit of commercial packaged boiler with rated input greater than 5,000,000 Btu/h.

[81 FR 89305, Dec. 9, 2016]

ENERGY EFFICIENCY STANDARDS

§ 431.87 Energy and water conservation standards and their effective dates.

(a) Each commercial packaged boiler listed in Table 1 to § 431.87 and manufactured on or after March 2, 2012 and prior to January 10, 2023, must meet the applicable energy conservation standard levels as follows:

TABLE 1 TO § 431.87—COMMERCIAL PACKAGED BOILER ENERGY CONSERVATIONS STANDARDS

Equipment	Subcategory	Size category (input)	Efficiency level— effective date: March 2, 2012 *
Hot Water Commercial Packaged Boilers.	Gas-fired	≥300,000 Btu/h and ≤2,500,000 Btu/h.	80.0% E _T .
Hot Water Commercial Packaged Boilers.	Gas-fired	>2,500,000 Btu/h	82.0% E _C .
Hot Water Commercial Packaged Boilers.	Oil-fired	≥300,000 Btu/h and ≤2,500,000 Btu/h.	82.0% E _T .
Hot Water Commercial Packaged Boilers.	Oil-fired	>2,500,000 Btu/h	84.0% E _C .
Steam Commercial Pack- aged Boilers.	Gas-fired—all, except nat- ural draft.	≥300,000 Btu/h and ≤2,500,000 Btu/h.	79.0% E _T .
Steam Commercial Pack- aged Boilers.	Gas-fired—all, except nat- ural draft.	>2,500,000 Btu/h	79.0% E _T .

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TABLE 1 TO § 431.87—COMMERCIAL PACKAGED BOILER ENERGY CONSERVATIONS STANDARDS—
Continued

Equipment	Subcategory	Size category (input)	Efficiency level—effective date: March 2, 2012 *
Steam Commercial Packaged Boilers.	Gas-fired—natural draft	≥300,000 Btu/h and ≤2,500,000 Btu/h.	77.0% E _T .
Steam Commercial Packaged Boilers.	Gas-fired—natural draft	>2,500,000 Btu/h	77.0% E _T .
Steam Commercial Packaged Boilers.	Oil-fired	≥300,000 Btu/h and ≤2,500,000 Btu/h.	81.0% E _T .
Steam Commercial Packaged Boilers.	Oil-fired	>2,500,000 Btu/h	81.0% E _T .

* Where E_T means “thermal efficiency” and E_C means “combustion efficiency” as defined in 10 CFR 431.82.

(b) Each commercial packaged boiler must meet the applicable energy conservation standard levels as follows:
listed in Table 2 to §431.87 and manufactured on or after January 10, 2023,

TABLE 2 TO § 431.87—COMMERCIAL PACKAGED BOILER ENERGY CONSERVATIONS STANDARDS

Equipment	Size category (rated input)	Energy conservation standard
Small Gas-Fired Hot Water Commercial Packaged Boilers.	≥300,000 Btu/h and ≤2,500,000 Btu/h	84.0% E _T .
Large Gas-Fired Hot Water Commercial Packaged Boilers.	>2,500,000 Btu/h and ≤10,000,000 Btu/h	85.0% E _C .
Very Large Gas-Fired Hot Water Commercial Packaged Boilers.	>10,000,000 Btu/h	82.0% E _C .
Small Oil-Fired Hot Water Commercial Packaged Boilers.	≥300,000 Btu/h and ≤2,500,000 Btu/h	87.0% E _T .
Large Oil-Fired Hot Water Commercial Packaged Boilers.	>2,500,000 Btu/h and ≤10,000,000 Btu/h	88.0% E _C .
Very Large Oil-Fired Hot Water Commercial Packaged Boilers.	>10,000,000 Btu/h	84.0% E _C .
Small Gas-Fired Steam Commercial Packaged Boilers.	≥300,000 Btu/h and ≤2,500,000 Btu/h	81.0% E _T .
Large Gas-Fired Steam Commercial Packaged Boilers.	>2,500,000 Btu/h and ≤10,000,000 Btu/h	82.0% E _T .
Very Large Gas-Fired Steam Commercial Packaged Boilers**.	>10,000,000 Btu/h	79.0% E _T .
Small Oil-Fired Steam Commercial Packaged Boilers.	≥300,000 Btu/h and ≤2,500,000 Btu/h	84.0% E _T .
Large Oil-Fired Steam Commercial Packaged Boilers.	>2,500,000 Btu/h and ≤10,000,000 Btu/h	85.0% E _T .
Very Large Oil-Fired Steam Commercial Packaged Boilers.	>10,000,000 Btu/h	81.0% E _T .

* Where E_T means “thermal efficiency” and E_C means “combustion efficiency” as defined in 10 CFR 431.82.

** Prior to March 2, 2022, for natural draft very large gas-fired steam commercial packaged boilers, a minimum thermal efficiency level of 77 percent is permitted and meets Federal commercial packaged boiler energy conservation standards.

[85 FR 1681, Jan. 10, 2020]

APPENDIX A TO SUBPART E OF PART 431—UNIFORM TEST METHOD FOR THE MEASUREMENT OF THERMAL EFFICIENCY AND COMBUSTION EFFICIENCY OF COMMERCIAL PACKAGED BOILERS

NOTE: Prior to December 4, 2017, manufacturers must make any representations with respect to the energy use or efficiency of

commercial packaged boilers in accordance with the results of testing pursuant to this Appendix or the test procedures as they appeared in 10 CFR 431.86 revised as of January 1, 2016. On and after December 4, 2017, manufacturers must make any representations with respect to energy use or efficiency in accordance with the results of testing pursuant to this appendix.

1. Definitions.

For purposes of this appendix, the Department of Energy incorporates by reference