

WAC 194-50-080 ASHRAE Standard 100, 2018—Section 8—Energy Audit Requirements.

8.1 The *qualified energy auditor* shall complete Form D and submit to the *authority having jurisdiction (AHJ)*. If an energy audit is required within this section, a copy of the audit summary results shall be included in the compliance documentation in a format specified in Normative Annex Z. Compliance with this standard shall be achieved by adopting *energy efficiency measures (EEMs)* that collectively will reduce annual *building* energy use.

Exception to 8.1: For Level 1 audit, no Form D is required.

8.2 Energy audit requirements for buildings without energy targets.

8.2.1 Overall process. A Level 2 energy audit (as defined in Section 8.4.2) shall be conducted for all *Tier 1 covered buildings* not having an energy target. The energy audit and the associated energy audit report shall be completed by a *qualified energy auditor* practicing within their field of competency.

Exception to 8.2.1: *Buildings* may use energy audits completed within five years prior to the *building's* compliance date, provided that the scope of the energy audit meets the requirements of this section and that there have been minimal changes to the systems within the audit scope. The energy audit must be evaluated consistent with the investment criteria in Normative Annex X.

8.2.2 The scope of the energy audit shall include the following required end uses as applicable to the *building*:

- Envelope;
- Lighting;
- Cooling;
- Heating;
- Ventilation and exhaust systems;
- Air distribution systems;
- Heating, chilled, condenser, and domestic water systems;
- Refrigeration except for food processing refrigeration;
- Power generation equipment;
- Uninterruptible power supplies and power distribution units;
- People-moving systems;
- The scope of the energy audit may include *campus district heating and/or cooling systems* when the *campus district heating and/or cooling system* serves the *building* being audited.

8.3.2 Buildings that do not meet their energy targets overall process.

An energy audit shall be conducted, and an associated energy audit report shall be provided, for all *buildings* that do not meet their energy target. The energy audit shall be completed by a *qualified energy auditor* practicing within their field of competency. The energy audit shall be at an audit level specified by the *qualified energy auditor* to be sufficient to identify and evaluate the *EEMs* that, if implemented, would result in the *building* meeting its energy target. The *qualified energy auditor* may refer to the list of potential *EEMs* in Informative Annex E.

After the completion of the audit and the selection of *EEMs* to be implemented, the applicant must calculate an adjusted *energy use intensity (EUI)* for the *building* based on the estimated energy savings from the selected *EEMs* and the historical energy use of the *building*. This adjusted *EUI* is then compared to the energy target for the *build-*

ing. If the adjusted *EUI* is less than the energy target, the applicant shall proceed with implementation as specified in Section 9. If the adjusted *EUI* is greater than the energy target, a more rigorous energy audit investigation is required to identify additional *EEMs*. This process is repeated until the *building's* adjusted *EUI* is less than its energy target.

Calculation of the adjusted *EUI* is shown in the following equation:

$$EUI_{adj} = (Energy_{hist} - Energy_{saved})/GFA$$

Where:

$Energy_{hist}$ = Historical annual energy use, kBtu

$Energy_{saved}$ = Estimated annual energy savings, kBtu

GFA = Gross floor area, ft²

Following the completion of an energy audit that has identified *EEMs* sufficient to meet the *building's* energy target, the applicant shall implement those *EEMs* per the requirements of Section 9.

Exception to 8.3.2: *Buildings* may use energy audits completed within five years prior to the *building's* compliance date, provided that the scope of the energy audit meets the requirements of this section and there have been minimal changes to the systems within the audit scope. In this case, the same comparison of adjusted *EUI* to energy target shall be made by the applicant. If the *EEMs* identified in the audit are still applicable, have not been implemented, and if implemented would result in the *building* meeting its energy target, these measures shall be implemented by the facility, and the project shall follow the procedures in Section 9. If the identified *EEMs* do not result in an adjusted *EUI* less than the energy target, a new energy audit shall be conducted as described in Section 8.3.2.

8.4.1 Level 1 Audit. *Buildings* shall perform a Level 1 audit (walk-through analysis) as defined in ANSI/ASHRAE/ACCA Standard 211-2018 Standard for Commercial Building Energy Audits, Section 5.3¹².

8.4.2 Level 2 Audit. *Buildings* shall perform a Level 2 Audit (energy survey and engineering analysis) as defined in ANSI/ASHRAE/ACCA Standard 211-2018 Standard for Commercial Building Energy Audits, Section 5.4¹².

8.5.1 Audit results. The energy audit report shall define the actions necessary for the *building owner* to achieve the energy and cost savings that are recommended in the report.

Energy audit results shall be presented in a summary table that includes, at a minimum, an estimate of each of the following:

- A list of recommended *EEMs* that, if implemented, will either meet the energy target for the *building* if it has a target or, if it does not have an energy target, will meet the economic criteria set by the standard in Section 9.

- The estimated energy savings and peak demand savings associated with each recommended *EEM*, expressed in the cost units used on the *building owner's* energy bills, and the units used for comparison with the energy target.

- The estimated (modeled) *energy cost* savings associated with each recommended *EEM*.
- The estimated cost of implementation for each recommended *EEM*. The costs of implementation shall include the required monitoring of energy savings per the requirements of Section 9.

The economic evaluation of measures are required by Normative Annex X.

8.5.2 Interactive effects. Energy savings analysis shall include *interactive effects* of all selected *EEMs*. When considering multiple *EEMs* with *interactive effects*, the order of analysis shall start with load reduction measures and proceed through distribution systems and associated equipment efficiencies and then plant and heat-rejection systems. Any *interactive effects* on equipment sizing and part load performance of equipment shall be accounted for due to reduced loads on subsequent systems.

8.5.4.1 Nonfederal facilities. The minimum financial criteria required for reporting is specified in Normative Annex X.

8.5.4.2 U.S. Federal Facilities - Not adopted.

8.5.5 End-use analysis. The energy audit shall include an end-use analysis that compares the estimated energy use of the facility after implementation of all selected *EEMs* to historical utility consumption. The intent of this requirement is to ensure that estimates of the base-case end-use energy estimates and potential energy-savings estimates in the energy audit report are reasonable.

Informative Note: For example, if the audit identifies lighting retrofit opportunities, the *qualified energy auditor* shall compare the identified energy savings for those opportunities with the base-case energy use of the facility and demonstrate that they make up a reasonable fraction of the historical electricity consumption at the site.

8.5.5.2 Requirements for Level 2 Audits. The *qualified energy auditor* is required to estimate the energy use of all end uses that individually comprise more than five percent of total historical *building* energy use. The energy estimates for these end uses shall be summed and compared to historical energy consumption for the facility. The sum of the base-case end-use energy estimates must be between 90 percent and 100 percent of the historical energy use at the site.

This comparison shall be conducted separately for each fuel type, such as electricity, natural gas, or fuel oil, for which *EEMs* are identified. On-site energy sources such as solar, photovoltaic, geothermal, and wind shall be included.

Correction for historical weather for the base year versus average weather used in *baseline* estimates may be used.

The same energy use estimates that comprise the end-use analysis shall also be used as the basis for energy savings calculations. The *qualified energy auditor* shall verify that each *EEM* savings estimate is reasonable in comparison to the historical energy consumption of that end use based on energy consumption survey data or experience with similar sites.

The *qualified energy auditor* shall verify that the combined savings from multiple *EEMs* shall take into account *interactive effects* among measures.

Miscellaneous plug loads may be estimated on average equipment power density and *building* area. (See Form D in Normative Annex Z.)

[Statutory Authority: RCW 19.27A.210 and 19.27A.250. WSR 24-03-033, § 194-50-080, filed 1/8/24, effective 2/8/24. Statutory Authority: RCW 19.27A.210. WSR 20-22-059, § 194-50-080, filed 10/30/20, effective 11/30/20.]