

Oregon Department of Energy Audit Quality Control Review Internal Process/Procedures

Purpose of review

Oregon Department of Energy's quality control review has been structured to reduce or eliminate audit problems. In the past, some audits have been less than satisfactory. Deficiencies have included: incorrect and unsubstantiated calculations, incomplete analysis of all building systems, missed energy efficiency measures (EEMs), and inadequate consideration of existing equipment conditions.

This overview of the Department of Energy's quality control review process is included in this RFP to provide proposers and Qualified Energy Auditors with additional information regarding the Department's requirements and expectations for audits performed under Work Assignment Contracts pursuant to this RFP.

General review process

The Department of Energy reviewer will:

1. Select audits to review
2. Collect data
3. Review audit document
4. Perform on-site review
5. Consider general issues
6. Document findings
7. Correspond with Auditor (Contractor) and Contracting Agency

1. Selecting audits to review

Facility selection is based on the data described below and the number of audits performed (and QC reviewed). For example, a facility with a high Energy Use Index (EUI) and only three (3) EEMs suggests that several EEMs have been omitted or the energy calculations are incorrect.

- A. Check if Auditor (firm and potentially individual within firm) has had a quality control review at each audit level for each year.
- B. Check the number of audits performed by Auditor (firm and potentially individual within firm).
- C. To select an audit from an Auditor
 - Check facility's Energy Use Index (EUI) values
 - Check number and types of EEMs recommended
 - Check simple paybacks (e.g., all under 10 years)
- D. Check with Contracting Agency regarding any concern or complaint.
- E. Check on other information available within the Department of Energy (e.g., existing knowledge regarding a facility).

2. Collect data

Get copy of audit and print out from the SB 1149 Schools Database ("Database").
Check if Energy Efficiency Measures (EEMs) are listed in the Database.

3. Review audit document

The purpose of the review process is to ensure audits are accurate and complete. There are two parts to the review process – document review and on-site review. Document review determines if the analysis method is appropriate, complete, assumptions are justified, values are internally consistent (e.g., combustion efficiency values are the same for all heating EEMs), and reasonable (e.g., the simple payback for windows exceeds 20 years). A complete audit provides a whole building analysis - not just for one or two systems within the building - and provides an analysis of all feasible EEMs and Operation and Maintenance practices (O&M). A feasible EEM is loosely defined as a measure with a capital cost that is less than or equal to four (4) times its simple payback. In addition, the audit must provide sufficient information for the Contracting Agency to act on the recommended measures (i.e., how to get started, which may include hiring a contractor and/or engineer to provide the final details for implementation) as well as meet the all requirements of this RFP, including all attachments, exhibits and appendices.

General Document Review includes:

- Check annual hours of operation
- Check utility data
- Check simple paybacks for reasonableness
- Check calculation methodology (simple, bin, DOE2) for appropriateness as the methodology relates to the type of EEM as well as the audit level
- Check equations for accuracy, completeness and appropriateness
- Check proposed measures descriptions (e.g., sufficient info for audience)
- Check building descriptions against proposed measures
- Check proposed measure against description of existing equipment
- Check for interactive effects of proposed measures
- Check for customization (i.e., if proposed measures are routine or show understanding of the energy systems and their proposed solutions)
- Check if non-energy issues are addressed or ignored (e.g., IAQ, noise, comfort, etc.)
- Check costing data and source
- Check tables for consistency and accuracy (make sure the calculations seem reasonable for the entire row [e.g., the proposed lamp uses less energy (kWh) and wattage than the existing lamps])

4. Perform On-Site Review

For the on-site review, accuracy and completeness are essential. For an on-site review, an accurate review considers the feasibility of implementing the EEM(s), determining if the existing equipment and the condition of the equipment match the audit, and performing datalogging if necessary. To be complete, the energy audit should have: identified all the potential EEMs that exist at the facility; addressed major technical barriers (e.g., no space to install a secondary boiler in the boiler room); addressed non-energy issues (e.g., IAQ); provided multiple EEM suggestions (e.g., several layers of controls); and addressed all energy using systems – not just high-cost items.

The reviewer will take the audit/Database printout to the site for reference. The audit should be carried and the content confirmed as the facility is explored. The reviewer will check building and equipment descriptions against audit descriptions. Also, documentation review provides a list of recommended EEMs in audits to check as well as missed EEMs. Check to determine if the energy audit found all potentially significant EEMs that exist at the facility.

As part of the on-site review, interview staff on temperature and Indoor Air Quality (IAQ) problems/issues.

The on site survey will include at least the following items:

- Check heating, cooling and ventilation equipment as well as water heating equipment and lighting
- Check boiler combustion air-fuel ratio (unless believe auditor's values)
- Check outside air dampers for:
 - Freedom of motion
 - Correct operation (close at night, economizer operation)
- Check control operation for:
 - Start-up and shutdown functions (i.e., sequence of operation)
 - Check economizer function
 - Other control sequences (if possible due to weather conditions)Obtain data trending from DDC system
- Check for problems with equipment operation
 - Excessive on/off
 - Equipment limits (e.g., insufficient outside air opening for required CFM)
 - Equipment problems (e.g., bad ball bearings)
- Check for problems within maintenance procedures
- Check condition of equipment
- Check for non-energy issues (e.g., IAQ)

Compare the report's assumptions, calculations, and recommendations against the data gathered from the on-site survey. Especially, check to determine if proposed EEMs are reasonable based on equipment's and facility's configuration and condition.

5. General issues to consider

Whole-building analysis is required for every audit, not just lighting or boilers or a small number of systems (e.g., lighting and domestic hot water [DHW]).

The on-site survey is, in essence, a modified energy audit. Much of the work has been completed. The Department of Energy is to verify and discover missed EEMs, not perform a complete audit.

Timely, high quality work is essential. Perfection by the Auditor or by the Department of Energy is NOT expected. However, the Auditor is expected to find the subtle EEMs (e.g., DDC system does not allow economizer operation) as well as the obvious (e.g., lights, controls).

Spot checking by the reviewer is mandatory, but not every system and damper is to be checked.

The audit report is for the Contracting Agency, not the Department of Energy. Thus the information should be presented in a format and in sufficient detail for the Contracting Agency's benefit and needs.

Documentation review may range from 1 hour to 16 hours for a complicated and very long report. However, most reviews should not exceed 8 hours. The on-site visit should not exceed 8 hours.

6. Document findings

The Department of Energy audit review documentation should avoid confrontational (e.g., avoid “you”) and harsh language (e.g., “inept”).

Comments should provide sufficient information for the auditor to understand the issue(s). Calculations and examples should also be included so the Auditor knows what is expected.

The comments will be forwarded to the Auditor and the Contracting Agency and should be appropriate for a broad audience.

7. Correspond with Auditor and Contracting Agency

Allow the Auditor to respond to all comments before sending the review comments and Auditor's responses to the Contracting Agency.

Use colors ("track changes") to distinguish the reviewer's original comments, the Auditor's response, and subsequent comments and responses.

Once the Department of Energy has accepted the Auditor's responses or the Auditor has stopped corresponding, forward all correspondence to the Contracting Agency.

The Department of Energy reviewer should address any Contracting Agency concerns regarding the audit quality control findings.