

Third Party Submittal Reviewer Scope of Work
for Projects Documenting Compliance with ASHRAE Standard 90.1 Energy Cost
Budget Method (Section 11) and Performance Rating Method (Appendix G)

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Definitions

Applicant: the person or organization submitting the permit request to demonstrate energy code compliance or in support of beyond code program participation on project following ASHRAE Standard 90.1 Section 11 Energy Cost Budget Method or Appendix G Performance Rating Method.

Authority Having Jurisdiction (AHJ): the agency or agent responsible for enforcing energy code compliance.

Energy Analyst: the person responsible for performing the energy modeling and developing documentation for the applicant to show compliance with the ASHRAE Standard 90.1 Section 11 or Appendix G.

Rating Authority (RA): the organization or agency that adopts or sanctions use of Normative Appendix G when quantifying performance that exceeds requirements of this standard.

Simulation Program: a computer program, including the simulation engine and the corresponding user interface, that is capable of simulating the *energy* performance of *building systems*.

Submittal Reviewer: the professional responsible for reviewing the compliance documentation on behalf of the authority having jurisdiction or rating authority for projects following ASHRAE Standard 90.1 Section 11 and Appendix G.

Background

ASHRAE Standard 90.1 includes two performance-based compliance options that require whole building energy simulation - the Energy Cost Budget Method (ECB) in Section 11 which may be used to document minimum code compliance, and the Performance Rating Method (PRM) in Appendix G which may be used for both documenting minimum code compliance and beyond code performance. These compliance options allow efficiency trade-offs between building systems and components, however, in achieving this flexibility, the Applicant has the burden of proof to demonstrate the accuracy and reliability of the calculations.

Review of performance-based submittals requires specialized expertise. Some jurisdictions and rating authorities review performance-based submittals in-house. Others engage external organizations or professionals, and either directly assign projects to third party reviewers or allow applicants to pick third party reviewer from the pool of pre-approved providers. The review process is illustrated in Figure 1.

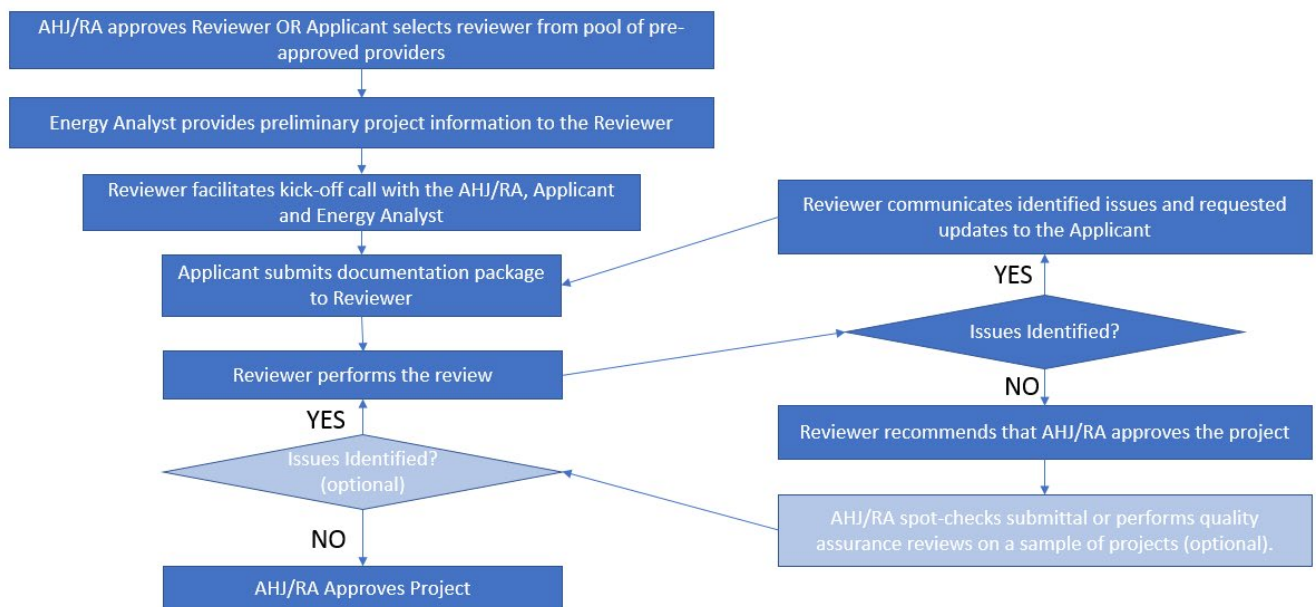


Figure 1: Submittal Review Process

The following resources help facilitating compliance documentation and submittal reviews:

1. [DOE/PNNL ASHRAE Standard 90.1 Performance Based Compliance Form](#) (the Compliance Form) is spreadsheet-based tool that meets the documentation requirements of Standards 90.1-2016 and 2019 Section 11 Energy Cost Budget Method and Appendix G Performance Rating Method. It helps the modeler establish simulation inputs for the baseline/budget and proposed design models and includes a submittal checklist to ensure that all necessary supporting documentation is included in the submittal. It standardizes compliance documentation and simplifies submittal reviews by code officials and administrators of above code program implementers.
2. [DOE/PNNL ASHRAE 90.1 Section 11 and Appendix G Submittal Review Manual](#) (the Review Manual) is a comprehensive reference for reviewing modeling-based submittals. The Manual is a companion to the Compliance Form. It supports 2016 and 2019 editions of ANSI/ASHRAE Standard 90.1. All of the review checks described in the Manual are incorporated into the Quality Control Checks tab of

the Compliance Form, and some of the checks are automatically completed and flagged as either Pass or Fail.

The Scope of Work outlined below assumes that the submittal includes the completed DOE/PNNL Compliance Form or an alternative, equivalently detailed, compliance form approved by the rating authority or jurisdiction, and that the review follows the process outlined in the Review Manual.

The following materials must be provided by the Applicant to the Reviewer prior to the kick-off call:

1. The Compliance Form with the General Information and Contact Information tabs filled out.
2. Preliminary HVAC System Mapping Form included in Appendix A of this document for projects following ASHRAE 90.1 Section 11 and in Appendix B for projects following 90.1 Appendix G.
3. Summary of systems, components and strategies in the proposed design that improve over prescriptive provisions of 90.1.
4. Summary of systems, components and strategies in the proposed design that do not comply with the prescriptive requirements of 90.1.

Scope of Work

The third-party Reviewer shall provide the following services:

Task 1: Kick-off Call

Facilitate a kick-off call with the Applicant and the Energy Analyst to get the general understanding of the project scope and the modeling approach, explain the review process and timeline, and go over the documents that must be submitted for review. At minimum, the following shall be discussed:

1. Comments on the project information and the modeling scope included in the filled out General Information tabs of the Compliance Form provided to the Reviewer prior to the kick-off call, including the following:
 - a. Whether the *simulation program* and weather file that will be used are acceptable.
 - b. The expected Exceptional Calculations methods, if applicable.
 - c. Areas of the building that will be excluded from the energy model, if applicable
 - d. Systems and components that are existing to remain, if any, and associated modeling approach
 - e. Yet-to-be designed systems and components excluded from building permit, if any, and associated modeling approach
2. Whether modeler meets the minimum AHJ/RA qualification requirements based on the information provided in the Contact Information tab of the Compliance Form.
3. Comments on the Preliminary HVAC System Mapping Form provided to the Reviewer.
4. Overview of the Submittal Checklist tab of the Compliance Form and documentation that must be submitted for review.
5. Overview of the Quality Control Checks tab of the Compliance Form, and the requirement for the Energy Analyst to explain or resolve any flags that may be shown on this tab before submitting documentation to the Reviewer.

Deliverables:

- A. Hold kick-off call
- B. Develop minutes and share with the Permit Applicant and the AHJ/RA.

Task 2: Perform Submittal Review

Review the Compliance Form and supporting documentation provided by the Applicant and the Energy Analyst following the process described in the DOE/PNNL ASHRAE 90.1 Section 11 and Appendix G Submittal Review Manual Section 4. The following shall be included:

1. Verify that submittal is complete and meets ASHRAE Standard 90.1 Section 11 or Appendix G reporting requirements, based on the Submittal Checklist tab of the Compliance Form.
2. If the AHJ/RA has submittal requirements in addition to 90.1 that are not directly supported by the DOE/PNNL Compliance Form, verify that these requirements are met.
3. Verify that the specified systems and components reported in the Compliance Form reflect design documents.
4. Verify that the systems and components specified in the design documents and reflected in the compliance form meet the applicable 90.1 mandatory requirements.
5. Verify that the budget/baseline systems and components reported in the Compliance Form are established correctly following the rules of ASHRAE Standard 90.1 Section 11 or Appendix G.
6. Verify that submittals meet the general simulation requirements of ASHRAE Standard 90.1 Section 11 or Appendix G (e.g., that it uses the approved simulation tool, weather files, utility rates, etc.)
7. Verify that the simulation inputs for the budget/baseline and proposed design reflect information reported in the Compliance Form.
8. Verify that the compliance outcome is established correctly based on the simulation results and accounting for the applicable caps such as on contribution of the renewable energy and exceptional calculations toward compliance.

The Submittal Reviewer shall use the DOE/PNNL Compliance Form, Quality Control Checks tab to document the completed review checks, the Pass/Fail outcome of each check, and the comments and requested corrective actions for each failed check. With prior approval from the AHJ/RA, an alternative equally rigorous review scope and reporting format may be used.

Deliverables

1. Filled out Quality Control Checks tab of the submitted DOE/PNNL Compliance Form documenting the following:
 - a. The completed review checks
 - b. Pass or Fail outcome for each completed check
 - c. Justifications and requested corrective actions for each check with the Fail outcome.
 - d. The overall compliance outcomes for the project.
2. Call with the Applicant and the Energy Modeler to discuss review findings and outcome and the requested corrective actions, or to communicate project approval.
3. Memo to the AHJ/RA to summarize review outcome and findings, and to recommend project approval if applicable

Schedule

Review shall be completed within 3 weeks after the complete project documentation package is received by the Reviewer. *(Alternative schedule may be requested by AHJ/RA, depending on project complexity and other factors.)*

Other Requirements

1. Reviewer shall meet the [Recommended Minimum Qualifications of Submittal Reviewer](#).
2. Reviewer must demonstrate an ability to operate impartially by documenting procedures that will be used for the following:
 - a. Identifying and avoiding potential conflicts of interest
 - b. Maintaining impartiality and confidentiality in the project approval process
 - c. Ensuring they do not review submittals for which they provided any energy modeling, design, testing, commissioning, procurement, or inspection services; and
 - d. An impartial conflict resolution process for when the submitter disagrees with the reviewer's comments.

Appendix A: 90.1 Section 11 Preliminary HVAC Systems Mapping Form

The table below must be filled out by the Energy Analyst prior to kick-off call, to summarize planned HVAC design and the corresponding budget systems that will be modeled.

Table 1: HVAC Systems Mapping

Proposed HVAC Systems						Budget HVAC System Number (From 90.1 Figure 11.5.2 and Table 11.5.2-1)
HVAC System Tags [E.g., RTUs 1-10, indicate if DOAS]	Condenser Cooling Source [water/ground/air/NA]	Cooling Fuel [Electricity/fossil fuel/purchased chilled water/NA]	Heating System Classification [El.resistance/heat pump/fossil fuel/purchased heat/NA]	Single or multi-zone?	Areas Served	

Appendix B: 90.1 Appendix G Preliminary HVAC Systems Mapping Form

The tables below must be filled out by the Energy Analyst prior to kick-off call, to summarize planned HVAC design and the corresponding budget systems that will be modeled.

Table 1: Proposed HVAC Systems

HVAC System Tags [E.g., RTUs 1-10, indicate if DOAS]	Condenser Cooling Source [water/ground/air/NA]	Cooling Fuel [Electricity/fossil fuel/purchased chilled water/NA]	Heating System Classification [El.resistance/heat pump/fossil fuel/purchased heat/NA]	Single or multi-zone?	Areas Served

Table 2: Baseline HVAC Systems

Baseline HVAC System Number (from 90.1 Table G3.1.1-3)	Areas Served