

ADDENDA

**ANSI/ASHRAE/IBPSA Addendum c to
ANSI/ASHRAE/IBPSA Standard 209-2024**

Building Performance Simulation Process

Approved by ASHRAE and the American National Standards Institute on January 30, 2026, and by the International Building Performance Simulation Association on January 12, 2026.

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ASHRAE Standing Standard Project Committee 209

Cognizant TC: 4.7, Energy Calculations

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FOREWORD

Addendum c makes the following revisions to Modeling Cycle #6—Design Integration and Optimization:

- a. Updates the cycle's name to "Design Optimization," reflecting the cycle's specific intent
- b. Revises the purpose to more clearly describe how the cycle supports the evaluation of alternatives and the identification of optimal ones
- c. Introduces an informative note distinguishing between the cycle's minimum requirements (single-objective optimization) and cases where exceeding the minimum requirements (multi-objective optimization) can provide benefits for projects with more demanding requirements
- d. Introduces an informative note encouraging early initiation of this cycle and its continuation as the design evolves

Informative Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~striking through~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum c to Standard 209-2024

Modify Section 6.6 as shown.

6.6 Modeling Cycle #6—Design ~~Integration and~~ Optimization

6.6.1 Purpose. ~~Integrate building systems through an optimization process to assist in meeting one or more of the project performance goals by exploring the complex interactions of multiple variables. Apply building performance simulation to explore the impact of complex interactions between design variables on at least one performance objective. Evaluate the trade-offs and synergies between design alternatives and their effect on building performance. Identify the design alternative or set of alternatives that optimally achieve the identified performance objective or objectives.~~

Informative Note: When this cycle is used to demonstrate compliance with the standard, the minimum compliance requirements can be met by performing multivariant single-objective optimization analysis. In this case, at least one fundamental performance optimization objective is identified and analyzed; for example, minimize energy use or minimize carbon emissions. However, the size, complexity, or stringent performance targets for some projects could warrant a more complex analysis. For example, multiobjective optimization can be used to help balance potentially conflicting objectives, such as balancing low energy consumption with high occupant comfort and cost-effectiveness.

6.6.2 Applicability. When this *modeling cycle* is used to show compliance with the standard, it shall be completed before the end of the *construction document phase*.

Informative Note: It is advisable to initiate the process early in the design when many parameters are not fixed, there are higher degrees of freedom, and the opportunity for impact is greatest. The process can continue into later design stages where the input to the model can be updated based on the prevailing state of the design.

6.6.3 Analysis

6.6.3.1 ~~The energy modeler shall~~ Identify one or more *optimization objective* for the analysis that relates to the performance goals as identified in Section 5.6.

6.6.3.2 ~~The energy modeler shall~~ Identify at least two *design variables* of interest for a multivariate *optimization process*.

6.6.3.3 ~~The energy modeler shall~~ Identify the *design constraints* or test range for each analyzed *design variable*.

6.6.3.4 Conduct an *optimization analysis* using the defined *optimization objective* or *optimization objectives*, *design variable* or *design variables*, and *design constraints*.

Informative Note: An *optimization analysis* does not guarantee that the global minimum or maximum of the *optimization objective* will be found, only a local minimum or maximum given the *design variables*, *design constraints*, initializing values, and *optimization method*.

6.6.4 Reporting. In addition to the general reporting requirements in Section 5.7.3, for each design *optimization* measure, report the following:

- a. *Optimization objective or optimization objectives*
- b. *Design variable or design variables* analyzed
- c. *Design constraints* or test range for each *design variable*
- d. Description of the optimization method

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ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the Standards and Guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive Technical Committee structure, continue to generate up-to-date Standards and Guidelines where appropriate and adopt, recommend, and promote those new and revised Standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date Standards and design considerations as the material is systematically revised.

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