



**BSR/ASHRAE/IES Addendum g
to ANSI/ASHRAE/IES Standard 100-2024**

Public Review Draft

**Proposed Addendum g to
Standard 100-2024, Energy and
Emissions Building Performance
Standard for Existing Buildings**

**First Public Review (March 2026)
(Draft Shows Proposed Changes to Current Standard)**

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FOREWORD

Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and strikethrough (for deletions) unless the instructions specifically mention some other means of indicating the changes. Only these changes are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed substantive changes.

This addendum primarily focuses on resolving some internal consistency issues and scope gaps created in the process of adding Greenhouse Gas Intensity (GHGI) targets to the standard for the 2024 publication. The addendum also includes a few editorial changes to improve the usability of the Standard.

For buildings with targets that need to implement EEMs and ERMs to meet their targets, the edits reinforce that compliance is achieved as long as both Energy Use Intensity (EUI) and GHGI each meet their respective targets—even if the measures result in a net increase on EUI or GHGI while reducing the other decreases. For buildings without targets, the requirements that the optimized bundle Energy Efficiency Measures (EEMs) and Emissions Reduction Measures (ERMs) must realize 75% of estimated savings and must not increase either EUI or GHGI are consistently enforced. Numerous deletions and comments remove conflicting or redundant language and redirect users to the authoritative compliance and verification procedures in Sections 4.4.2.4 and 4.4.3.4.

Another set of amendments removes inconsistencies among the various sections defining the criteria for selecting EEMs and ERMs. The updated language replaces vague or conflicting language—such as selecting the “maximum number” of EEMs and ERMs within their respective payback periods—with the primary criteria set forth in the definition for the optimized bundle of ERMs that require selecting the combination of measures that yield the largest total energy savings or emissions reductions within their respective payback periods. This avoids usage errors where adding more measures does not result in the most energy savings or emissions reductions.

The normative compliance forms in Appendix A also incorporate extensive updates to integrate GHGI throughout. New fields, checkboxes, and instructions ensure that all the EUI and GHGI calculations required to apply for compliance are included and captured accurately. The energy audit forms are also updated to align with Level 1 and Level 2 audit requirements defined in Standard 211. Previously, Form D required base case end-use analyses for Level 1 audits which is incorrect.

Collectively, these changes modernize the document, resolve inconsistencies, and ensure that GHGI is fully integrated into the compliance framework.

Addendum g to Std. 100-2024

Modify definitions as follows.

optimized bundle of EEMs: a collection of *EEMs* that maximizes the energy savings at a facility within the cost-effectiveness criteria of the standard. It excludes any measure with a *simple payback* that exceeds the life of the measure. A bundle of measures is optimized by including the ~~maximum number of EEMs with the largest total energy savings~~ within the bundle while still meeting the cost-effectiveness criteria. The process for determining the *optimized bundle of EEMs* may be an iterative one due to *interactive effects* of individual *EEMs*.

optimized bundle of ERMs: a collection of *ERMs* (including the *optimized bundle of EEMs*) that maximizes the *GHG emissions* reduction at a facility within the cost-effectiveness criteria of this standard. It excludes any measure with a *simple payback* that exceeds the life of the measure. A bundle of measures is optimized by including the *ERMs* with the largest total *GHG emissions* reduction within the bundle while still meeting the cost-effectiveness criteria. The process for determining the *optimized bundle of ERMs* may be an iterative one due to *interactive effects* of individual *ERMs*.

Revise Section 4.4.2.3 as follows.

4.4.2.3 Building Does ~~n~~Not Meet the Performance Targets. If either the *building's* measured *EUI* is greater than the *EUI target* or the *building's* measured *GHGI* is greater than the *GHGI target*, then an energy audit with decarbonization assessment shall be performed. A *qualified energy auditor* shall complete an energy audit according to Section 8. *EEMs* and *ERMs* that will reduce energy use and/or *GHG emissions* to meet the *EUI target* and *GHGI target* shall be implemented according to Section 9. Upon completion of the implementation of all required *EEMs* and *ERMs*, a *building* shall be granted *conditional compliance*.

Revise Section 4.4.2.4 as follows.

4.4.2.4 Verification of Compliance. Within fifteen months after the completion of Section 4.4.2.3, the *EUI* and *GHGI* shall be recalculated by the *energy manager (EM)* or *qualified person* from 12 consecutive months of measured energy use, and Form A shall be resubmitted to the *AHJ*. If the *building's* postimplementation *EUI* is less than or equal to the *EUI target*, and the *building's* postimplementation *GHGI* is less than or equal to the *GHGI target*, the *building* complies with the standard. If the *building's* postimplementation measured *EUI* is greater than the *EUI target*, or the *building's* postimplementation measured *GHGI* is greater than the *GHGI target*, the *building* does not comply with the standard and the *conditional compliance* is suspended until either

Revise Section 4.4.3.4 as follows.

4.4.3.4 Verification of Compliance. If the *building* complies with Section 4.3, then within 15 months after the completion of Section 4.4.3.3, the *energy manager (EM)* or *qualified person* following the completion of implementation of the *optimized bundle* of *ERMs*, *building owners* with *conditional compliance* or the *qualified person* representing the *building owner* shall submit verification that measured postimplementation energy savings and *GHG emissions* reduction meet or exceed 75% of the energy savings and *GHG emissions* reduction projected in the energy audit with decarbonization assessment report to the *AHJ*. Energy savings and *GHG emissions* reduction shall be compared at the whole-*building* consumption level in common units for electricity, fossil fuels, and other sources. If the measured postimplementation energy savings and *GHG emissions* reduction of the *optimized bundle of ERMs* do not meet or exceed 75% of the energy savings and *GHG emissions* reduction projected in the energy audit with decarbonization assessment, the *conditional compliance* is suspended until either

- a. Additional *EEMs* and/or *ERMs* are implemented that reduce the subsequently measured energy savings and/or *GHG emissions* reduction of the *optimized bundle of ERMs* so that it meets or exceeds 75% of the energy savings and *GHG emissions* reduction of the energy savings projected in the energy audit with decarbonization assessment

or

- b. The AHJ revokes *conditional compliance*

Remove Section 8.1.2.

~~**8.1.2 Requirements for Measures.** The *optimized bundle of ERMs* shall not increase the *energy use intensity (EUI)* or *greenhouse gas intensity (GHGI)* of the building.~~

Revise Section 4.4.3.4 as follows.

8.3.2 Buildings that Do ~~n~~ot Meet Their Energy Use Intensity Performance Targets Overall Process. An energy audit with decarbonization assessment shall be conducted, and an associated report shall be provided, for all *buildings* that do not meet their *performance target*. The energy audit with decarbonization assessment shall be completed by a *qualified energy auditor* practicing within their field of competency. The energy audit with decarbonization assessment shall be ~~at an either a Level 1 or Level 2 audit level~~ (as described in Section 8.4) specified by the *qualified energy auditor* to be sufficient to identify and evaluate the *EEMs* and *ERMs* that, if implemented, would result in the *building* meeting its *performance target*. The *qualified energy auditor* may refer to the list of potential *EEMs* in Informative Appendix H.

Revise Section 9.1.1 as follows.

9. IMPLEMENTATION AND VERIFICATION REQUIREMENTS

9.1 Developing and Implementing an Energy and Emissions Management Plan

9.1.1 Requirements. *Buildings* that have *performance targets* shall comply with the requirements of Section 9.1.1.1. *Buildings* that do not have *performance targets* shall comply with the requirements of Section 9.1.1.2. All *buildings* larger than 5000 ft² (465 m²) shall implement an energy and emissions management plan as described in Section 5. ~~The energy and emissions management plan shall be integrated into the building's capital management plan as described in Section 5. The energy and emissions management plan shall include the elements listed in Section 5.~~

9.1.1.1 Buildings with Performance Targets. For *buildings* having *performance targets*, *energy efficiency measures (EEMs)*, and *emissions reduction measure (ERMs)* identified from the energy audit with decarbonization assessment shall be implemented in order to meet the *building's energy use intensity (EUI) target* and *greenhouse gas intensity (GHGI) target*. ~~Develop a written plan for maintaining the building's EUI and GHGI at or below the EUI target and GHGI target. Implementation of the EEMs and ERMs and the plan for maintaining the building operations below the targets shall not result in an increase in either the building's EUI or GHGI.~~

9.1.1.2 Buildings without Performance Targets. *Buildings* that do not have *performance targets* shall implement the *EEMs* and *ERMs* identified from the energy audit with decarbonization assessment within four years from the application of compliance. Implementation of the *optimized bundle of EEMs* and *ERMs* shall not result in an increase in either the *building's EUI* or *GHGI*.

9.1.1.2.1 For nonfederal *buildings*, the *qualified energy auditor* shall first determine the *optimized bundle of EEMs* and then determine the *optimized bundle of ERMs*.

9.1.1.2.2 The *optimized bundle of EEMs* shall ~~use all~~ include the *EEMs with the largest total energy savings* with a combined *simple payback* less than or equal to five years.

Revise Section 9.1.1.2.3 as follows.

9.1.1.2.3 The *optimized bundle of ERMs* shall use all *EEMs* identified in Section 9.1.1.2.2 and include the *ERMs with the largest total GHG emissions reduction* with a combined *simple payback* less than or equal to ten years. For the purposes of this combined *simple payback* calculation, *EEM* energy savings shall be translated into *GHG emissions* reductions and shall include *carbon cost* to account for the impact of the measures where the *energy cost* does not already include *carbon costs*.

Revise Section 9.1.2 as follows.

9.1.2 Implementing the Energy and Emissions Management Plan. The sequence in which measures are implemented shall be evaluated so that *EEMs* and *ERMs* take into account the impact of previously implemented *EEMs* and *ERMs* and do not result in an increase in either the *building's EUI* or *GHGI*.

Revise Section 9.2.1 and 9.2.2 as follows.

9.2.1 Verification of Energy Efficiency Measures and Emissions Reduction Measures for Buildings with Performance Targets. Upon implementation of *EEMs* and *ERMs*, the *building's EUI* and *GHGI* shall be verified as required in Section 4.4.2.4 ~~monitored until one full year's data demonstrate that performance targets have been met and the implementation did not result in an increase in either the *building's EUI* or *GHGI*.~~

9.2.2 Verification of Implemented Energy Efficiency Measures and Emissions Reduction Measures for Buildings without Performance Targets. Upon implementation of *EEMs* and *ERMs*, the building's EUI and GHGI shall be verified as required in Section 4.4.3.4 ~~the affected end use systems shall be monitored for one year to verify *EEM* and *ERM* energy savings and *GHG emissions* reduction. The *qualified energy auditor* or *qualified person* shall review the results of the *EEM* and *ERM* energy monitoring and certify that the energy savings and *GHG emissions* reduction projected in the energy audit with decarbonization assessment and the implementation did not result in an increase in either the *building's EUI* or *GHGI*.~~

Revise Appendix A Forms A, B, D, and E as follows.

**NORMATIVE APPENDIX A
 FORMS**

Form A—Compliance with Standard 100

Name of Building					
Street Address					
City		State		Zip Code	
Building Owner:					
Name of qualified person:					
Street Address					
City		State		Zip Code	
Telephone No.				<input type="checkbox"/> Licensed	<input type="checkbox"/> Certified <input type="checkbox"/> AHJ
Licensure or Certifying Authority:					
Name of energy manager (if different):					
Street Address					
City		State		Zip Code	
Telephone No.					
This compliance is for (a) whole building or (b) individual dwellings or tenant spaces. List dwelling units or tenants space names below. (Use additional sheets if necessary.)				<input type="checkbox"/> Whole building <input type="checkbox"/> Dwelling or tenants	
List the building types as defined in Table 7-1 with the percent of floor area for each:					
Use Form B and attach to this form.					
kBtu/ft²·yr (MJ/m²·yr)					
Reported units of EUI				<input type="checkbox"/> kBtu/ft ² ·yr <input type="checkbox"/> MJ/m ² ·yr	
Reported units of GHGI				<input type="checkbox"/> lb CO ₂ e/ft ² ·yr <input type="checkbox"/> kg CO ₂ e/m ² ·yr	
List the EUI target for this building (as calculated in Section 7.2).					
List Note the Actual measured EUI for this building (Use Form C-1 or C-2 and attach to this form).					
Note the Actual measured GHGI for this building (Form C-3 and attach to this form).					
List the months/year of the collected data (mm/yyyy – mm/yyyy)					
<i>Buildings with performance targets</i>					
Note the EUI target for this building (as calculated in Section 7.2).					

<u>Note the adjusted EUI estimate for this building (as calculated in Section 8.3.2.1. N/A if none required).</u>	
<u>Note the GHGI target for this building (as calculated in Section 7.3).</u>	
<u>Note the adjusted GHGI estimate for this building (as calculated in Section 8.3.3.2. N/A if none required).</u>	
<i>Buildings without performance targets</i>	
<u>Note the EUI savings estimate for this building.</u>	
<u>Note the EUI target for this building (Actual measured EUI minus 75% × EUI savings estimate).</u>	
<u>Note the GHGI emissions reduction estimate for this building.</u>	
<u>Note the GHGI target for this building (Actual measured GHGI minus 75% × GHGI savings estimate).</u>	
<u>Have the energy management requirements of Section 5 been met? [] Yes [] No</u>	
<u>Have the energy management requirements of Section 5 been met (N/A if none required)?</u>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
<u>Have the operation and maintenance requirements of Section 6 been met? [] Yes [] No</u>	
<u>Have the operation and maintenance requirements of Section 6 been met?</u>	<input type="checkbox"/> Yes <input type="checkbox"/> No
<u>Date the Level I audit was completed (N/A if none required).</u>	
<u>Date the Level II audit was completed (N/A if none required) (Use Form D and attach to this form).</u>	
<u>Have all EEMs and ERM s required by Section 8 been implemented (N/A if none required)?</u>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
<u>Have the requirements of Section 9 been completed (N/A if none required)?</u>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
We state that this building complies with ANSI/ASHRAE/IES Standard 100:	
Signature of qualified person: _____ Date: _____	
Signature of energy manager: _____ Date: _____	
Signature of authority having jurisdiction: (Conditional)(Final) Compliance _____ _____ Date: _____	
Circle ONE	

Complete Form B with the Following Information

1. A *building* identifier (optional) and a *building* address, including city, state, country, and zip code.
2. The ASHRAE climate zone as found on the map in Informative Appendix E.
3. The gross floor area in square feet (square metres) shall be reported as defined in Section 3.
4. If the entire *building* is a single activity/type not listed in Table 7-1, it should be listed as “*building* without target” on Form A. List “*EUI target*” and “*GHGI target*” as “N/A” on Form B, and Form B is considered complete.
5. Fill in fraction of gross floor area (A_i) for each activity. For single-activity *buildings*, this is 1.0.
6. Fill in the operating shifts normalization factor, S_i , from Section 7-7 for each activity that has an area entered from Step 56.
7. Fill in the activity *EUI target* (EUI_{t1})_i and activity *GHGI target* ($GHGI_{t1}$)_i from Tables 7-2, 7-3, 7-4, 7-5, and 7-6 (or table from the *authority having jurisdiction*) for each activity that has an area entered from Step 56.
8. Calculate weighted space *EUI target* ($A \times S \times EUI_{t1}$)_i and weighted space GHGI target ($A \times S \times GHGI_{t1}$)_i for each activity that has an area entered from Step 56.
9. Add up fraction of floor area and enter sum in “Total fraction of floor area with target,” and add up all weighted space *EUI targets* and enter sum as the “*EUI target*” on Forms A and B, and add up all weighted space *GHGI targets* and enter sum as the “*GHGI target*” on Forms A and B.
10. If more than 50% of gross floor area has no target, it should be listed as “building without target” on Form A. List “*EUI target*” as “N/A” on Form B.

Form B—Building Activity, and Energy Use Intensity (EUI) Target, and Greenhouse Gas Intensity (GHG) Target

Building identifier:													
Address:													
City, State, Country, Zip (mail) Code:													
ASHRAE climate zone as found on the map in Appendix F:													
The gross floor area of the building in ft² (m²):													
Building Activity/Type	Fraction Floor Area (A_i)	Operating Shifts (S_i)	Activity EUI Target (EUI_{t1}) _i	Space (EUI) _i	Activity GHGI Target ($GHGI_{t1}$) _i	Space (GHGI) _i	Building Activity/Type	Fraction Floor Area (A_i)	Operating Shifts (S_i)	Activity EUI Target (EUI_{t1}) _i	Space (EUI) _i	Activity GHGI Target ($GHGI_{t1}$) _i	Space (GHGI) _i
Admin/professional office							Preschool/daycare						
Bank/other financial							Other classroom education						
Government office							Fast food						
Medical office (nondiagnostic)							Restaurant/cafeteria						
Mixed-use office							Other food service						
Other office							Hospital/inpatient health						
Laboratory							Nursing home/assisted living						
Distribution/ship center							Dormitory/fraternity/sorority						
Nonrefrigerated warehouse							Hotel						
Convenience store							Motel or inn						
Convenience store and gas							Other lodging						
Grocery/food market							Vehicle dealership/showroom						

Other food sales							Retail store						
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Form B—Building Activity, and Energy Use Intensity (EUI) Target, and Greenhouse Gas Intensity (GHG) Target (Continued)

Building Activity/Type	Fraction Floor Area (A_i)	Operating Shifts (S_i)	Activity EUI Target ($EUI_{t,i}$)	Space (EUI) ρ_i	Activity GHGI Target ($GHGI_{t,i}$)	Space (GHGI) ρ_i	Building Activity/Type	Fraction Floor Area (A_i)	Operating Shifts (S_i)	Activity EUI Target ($EUI_{t,i}$)	Space (EUI) ρ_i	Activity GHGI Target ($GHGI_{t,i}$)	Space (GHGI) ρ_i
Fire/police station							Other retail						
Other public order/safety							Post office/postal center						
Medical office (diagnostic)							Repair shop						
Clinic/other outpatient health							Vehicle service/repair shop						
Refrigerated warehouse							Vehicle storage/maintenance						
Religious worship							Other service						
Entertainment/culture							Strip shopping mall						
Library							Enclosed mall						
Recreation							Residential Building Activity/Type						
Social/meeting							Mobile home						
Other public assembly							SF-detached						
College/university							SF-attached						
Elementary/middle school							Apartment building (2-4 units)						
High school							Apartment building (5+ units)						
Total fraction of floor area with target:													
EUI Target (EUI_t):													
GHGI Target ($GHGI_t$):													

Form D—End Use Analysis Requirements Level 1

Compliance Form—Standard 100 Section 8, “Energy Audit with Decarbonization Requirements” End-Use Analysis Requirements—Level 1				
Complete the following tables OR attach a report summarizing same (such as DOE-2 BEPS). Add additional sheets as necessary for other fuel sources.				
Electric End Uses (List base-case energy use estimates of all identified EEMs.)				
End-Use Description	Base-Case Consumption Estimate, kWh	% of Total		
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
Total:				
Historical annual electricity consumption:				
Compute % of historical:				
Fuel or Other End Uses (list base-case energy use estimates of all identified EEMs)				
End-Use Description	Base-Case Consumption Estimate, kBtu	% of Total		
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
Total:				
Historical annual fuel/other consumption (kBtu):				
Compute % of historical:				
<input type="checkbox"/> We affirm that the estimated base-case energy use for the end uses at the site are less than or equal to the annual historical energy consumption.				

Signature of person determining compliance: _____

Form DE—Base-Case End Use Analysis Requirements Level 2

Compliance Form—Standard 100
Section 8, “Energy Audit with Decarbonization Requirements”
Base-Case End Use Analysis Requirements—Level 2

Complete the following tables OR attach a report summarizing same (such as DOE-2 BEPFS),
 Add additional sheets as necessary for other fuel sources.

Base-Case Electric End Uses (List base-case energy use and GHG emissions estimates of all end uses that comprise >5% of annual site use or emissions).

<u>Base-Case End-Use Description</u>	<u>Base-Case Consumption Estimate, kWh</u>	<u>% of Total</u>	<u>Base-Case Greenhouse Gas Emissions Estimate, lb CO2e/yr</u>	<u>% of Total</u>
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
Total				
Historical annual electricity consumption and GHG emissions				
Compute % of historical				

Base-Case Fuel or Other End Uses (List base-case energy use and GHG emissions estimates of all end uses that comprise >5% of annual site use or emissions.)

<u>Base-Case End-Use Description</u>	<u>Base-Case Consumption Estimate, kBtu</u>	<u>% of Total</u>	<u>Base-Case Greenhouse Gas Emissions Estimate, lb CO2e/yr</u>	<u>% of Total</u>
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
Total				
Historical annual fuel/other consumption (kBtu) and GHG emissions				
Compute % of historical				

We affirm that

- All end uses that comprise >5% of the annual historic energy use and GHG emissions are included in this analysis.
- The total energy use of base-case energy use and GHG emissions are is-between 90% and 100% of historical consumption and emissions.
- The same base-case energy use was used to determine estimated energy savings for the site.

Signature of <i>qualified person</i> person -determining compliance: _____