

# ADDENDA

**ANSI/ASHRAE/IES Addendum p to  
ANSI/ASHRAE/IES Standard 90.1-2019**

# Energy Standard for Buildings Except Low-Rise Residential Buildings

Approved by ASHRAE and the American National Standards Institute on February 26, 2021, and by the Illuminating Engineering Society on February 18, 2021.

This addendum was approved by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard. Instructions for how to submit a change can be found on the ASHRAE® website (<https://www.ashrae.org/continuous-maintenance>).

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ISSN 1041-2336



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## FOREWORD

*Addendum p captures additional energy savings by updating the requirements of Section 9.1.2 to close loopholes that allow alteration projects to comply without meeting all the requirements of Section 9. The unintended loophole in Exception 1 did not require energy savings.*

*The new language requires meeting current LPA requirements or meeting a minimum 50% energy savings.*

*An alteration is defined by Standard 90.1 as “a replacement or addition to a building or its systems and equipment.” Section 4.2.1.3 specifically states that the alteration meet Section 9, “Lighting,” along with Section 4.2.2, “Compliance Documentation” (Section 9.7.3.2); Section 4.2.3, “Labeling of Material and Equipment”; Section 4.2.4, “Inspections”; and Section 4.2.5, “Verification, Testing, and Commissioning” (Section 9.9.1 and 9.9.2).*

*Under Standard 90.1-2019, Section 9.1.2, “Lighting Alterations,” only requires meeting the interior or exterior LPD allowances and a subset of the mandatory controls; therefore any alteration (complete or partial) would not have to comply with the following lighting sections: 9.3, “Simplified Building Method Compliance Path”; 9.4.1.1(e), “Automatic daylight responsive controls for sidelighting”; 9.4.1.1(f), “Automatic daylight responsive controls for toplighting”; 9.6.2, “Additional Interior Lighting Power”; 9.6.3, “Additional Interior Lighting Power Using Nonmandatory Controls”; 9.6.4, “Room Geometry Adjustment; and 9.7, “Submittals” (9.7.3.1 and 9.7.3.3).*

*The change in this addendum treats all alterations, regardless of size, the same in that first they have to meet all of the requirements of Section 9, not the subset defined in Section 9.1.2, “Alterations,” or Section 4.2.1.3, “Alterations of Existing Buildings.”*

*The limitations to the existing exceptions are as follows.*

- *Existing Exception 9.1.2.1 allows for an alteration of up to 20% of the connected load to happen without saving any energy.*
- *Existing Exception 9.1.2.2 allows for an alteration of one-for-one replacement, on an unlimited basis, if the interior or exterior LPD allowances are met.*
  - *For interior lighting alterations, both exceptions are being replaced by a wattage threshold of 2000 W. If the alteration is over 2000 W, the projects must meet all of Section 9 requirements. If the alteration is 2000 W or less, each space must meet a subset of the Section 9.4.1 controls and either meet the space-by-space LPA or result in at least a 50% reduction in wattage from the existing wattage.*
  - *For exterior lighting alterations, both exceptions are being replaced by a threshold of 10 luminaires (or length of 20 ft for linear luminaires). Additionally, exterior alterations are not allowed to use the base site allowance of Table 9.4.2-2 to eliminate double counting. If the alteration is over the threshold, the projects must meet all of Section 9 requirements. If the alteration meets the threshold, the alteration must meet a subset of the Section 9.4.1 controls and either meet the LPA of Table 9.4.2-2 or result in at least a 50% reduction in wattage from the existing wattage.*
- *Existing Exception 9.1.2.3 allows for routine maintenance or repair of existing lights. While this may seem straightforward, the “repair” definition in the standard is “the reconstruction or renewal of any part of an existing building for the purpose of its maintenance.” This definition doesn’t clarify the intent.*
  - *This exception is replaced with “The maintenance of a lighting system to return it to working order shall not be considered an alteration.”*
- *A new requirement for determining the wattage of a retrofitted luminaire is added.*

### **Economic Justification**

*If the exceptions cannot be used, the project must meet all requirements of Section 9, which will increase the cost of the project versus a similar project using the 2019 Standard. However,*

large-scale alterations should be treated as new construction and meet all the requirements of Section 9 and not be excluded from meeting the daylighting requirements.

For projects that do meet the wattage threshold, there is likely little if any additional cost. As an example, the current Exception 2 would not allow for fewer lights to be replaced than removed, even if it met the LPD allowance, as this would not meet the one-for-one requirement. In this example, the cost would be higher to install the required one-for-one versus the desired fewer lights. This is often true for warehouse and high-ceiling spaces where fewer LED fixtures can be installed than were existing and still meet the lighting requirements. However, with the proposed language, if the new wattage of the project is 2000 W or less, the installation of fewer lights would be allowed if it resulted in a 50% energy reduction or met the LPA of Table 9.6.1.

The alteration of a private office would unlikely be able to take the current Exception 1 and would be required to meet all of the control requirements except the daylighting controls. The private office could be designed to meet the current Exception 2. Using the proposed language, and if the total new wattage of the projects is 2000 W or less, the installation would result in the same costs.

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

## Addendum p to Standard 90.1-2019

*Modify the standard as follows (I-P and SI units).*

### 3.2 Definitions

[...]

**lighting power allowance (LPA), exterior:** the maximum lighting power in watts allowed for the exterior of a building.

**lighting power allowance (LPA), interior:** the maximum lighting power in watts allowed for the interior of a building.

[...]

### 3.3 Abbreviations and Acronyms

[...]

LPA            maximum lighting power allowed in watts (W)

[...]

**9.1.2 Lighting Alterations.** ~~For the alteration of any lighting system in an interior space, that space shall comply with the lighting power density (LPD) allowances of Section 9.5.1 or 9.6.1 and the control requirements of Section 9.4.1.1 (a), (b), (c), (d), (g), (h), and (i), as applicable to that space.~~

~~For the alteration of any lighting system for the exterior of a building application, that lighting system shall comply with the lighting power density (LPD) allowances of Section 9.4.2 applicable to the area illuminated by that lighting system and the applicable control requirements of Sections 9.4.1.4 and 9.4.2.~~

The alteration of a lighting system in an interior space shall comply with Section 9.1.2.1. The alteration of a lighting system in an exterior area shall comply with Section 9.1.2.2.

#### ~~Exceptions to 9.1.2:~~

- ~~1. Alterations that involve 20% or less of the connected lighting load in a space or area need not comply with these requirements, provided that such alterations do not increase the installed lighting power.~~
- ~~2. Lighting alterations that only involve replacement of lamps plus ballasts/drivers or only involve one for one luminaire replacement need only comply with LPD requirement and Section 9.4.1.1(h) or 9.4.1.1(i).~~
- ~~3. Routine maintenance or repair situations.~~

The maintenance of an existing lighting system to return it to working order shall not be considered an alteration. Retrofitting a luminaire for which the original lamps and ballast/driver are replaced with a new lamp/light source and driver/ballast that was not a component of the original luminaire shall be considered an alteration.

**9.1.2.1 Lighting Alterations for Interior Building Spaces.** The alteration of a lighting system in an interior space shall meet one of the following requirements:

- a. The alteration shall comply with Section 9.2 when the total wattage of all new and retrofitted luminaires is greater than 2000 W.
- b. When the total wattage of all new and retrofitted luminaires is 2000 W or less, each altered space shall comply with the LPA of Table 9.6.1 and Section 9.6.2, or the alteration shall result in a new wattage at least 50% below the original wattage of each altered lighting system. Additionally, the new and retrofitted lighting shall comply with the control requirements of Sections 9.4.1.1(a), 9.4.1.1(h), 9.4.1.1(i) as applicable to each altered space as shown in Table 9.6.1 and Section 9.6.2.

**9.1.2.2 Lighting Alterations for Exterior Building Areas.** The alteration of a lighting system for an exterior area shall use only the area-specific allowances in Table 9.4.2-2 and shall not use the base site allowances to determine the LPA. Additionally, the exterior alteration shall meet one of the following:

- a. The alteration shall comply with Section 9.2 when the total number of new and retrofitted luminaires is greater than 10 or where the combined length of new and retrofitted linear luminaires is greater than 20 linear feet (6.1 linear metres).
- b. Where the total number of new and retrofitted luminaires is not greater than 10 or where the combined length of new and retrofitted linear luminaires is not greater than 20 linear feet (6.1 linear metres) of linear luminaires, the total wattage of the alteration shall be no greater than the maximum LPA permitted by Table 9.4.2-2, or the total new wattage shall be at least 50% below the total original wattage of that lighting system. Additionally, the new and retrofitted lighting shall comply with the control requirements of Section 9.4.1.4(a).

[ . . . ]

#### **9.1.4 Interior and Exterior Luminaire Wattage**

[ . . . ]

- f. The wattage of a retrofitted luminaire shall be the manufacturer's labeled input power of the new light source plus driver.
- fg. The wattage of all other miscellaneous lighting equipment shall be the specified wattage of the lighting equipment.

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