

ADDENDA

**ANSI/ASHRAE/IES Addendum bb 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 July 29, 2022, and by the Illuminating Engineering Society on July 26, 2022.

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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FOREWORD

Addendum bb updates the lighting power density (LPD) values in the Building Area Method Compliance Path. Standard 90.1-2019 established consistency among the lighting power compliance approaches and made the space-by-space LPD values the primary values. In the Building Area Method, the LPD value for each building type is developed via a weighted-average approach using the space-by-space LPD values.

There is no cost increase for this addendum. The proposed reduced lighting power density values are based on manufacturer data sheets. Manufacturers have improved the performance of their products, and these values are based on those improvements.

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 bb to Standard 90.1-2019

Modify the standard as shown (I-P). (Note: The sections below were previously modified by that published Addendum ad to 90.1-2019, which can be downloaded at <https://www.ashrae.org/technical-resources/standards-and-guidelines/standards-addenda/addenda-to-standard-90-1-2019>.)

9.5 Prescriptive Compliance Path. Interior lighting power shall comply with either Section 9.5.1 or Section 9.5.2. Lighting control requirements shall comply with Section 9.4.1 and Table 9.5.2.1

9.5.1 Building Area Method of Calculating Interior Lighting Power Allowance Compliance Path. Use the following steps to determine the interior lighting power allowance by the Building Area Method:

- Determine the appropriate building area type from Table 9.5.1 and the corresponding LPD allowance. For building area types not listed, selection of a reasonably equivalent type shall be permitted.
- Determine the gross lighted floor area in ft² of the building area type.
- Multiply the gross lighted floor areas of the building area types times the LPD.
- The interior lighting power allowance for the building is the sum of the lighting power allowances of all building area types. Trade-offs among building area types are permitted, provided that the total installed interior lighting power does not exceed the interior lighting power allowance.

Table 9.5.1 Lighting Power Density Allowances Using the Building Area Method

Building Area Typea	LPD, W/ft2
Automotive facility	0.75 <u>0.73</u>
Convention center	0.64
Courthouse	0.79 <u>0.75</u>
Dining: Bar lounge/leisure	0.80 <u>0.74</u>
Dining: Cafeteria/fast food	0.76 <u>0.70</u>
Dining: Family	0.71 <u>0.65</u>
Dormitory	0.53 <u>0.52</u>
Exercise center	0.72
Fire station	0.56
Gymnasium	0.76 <u>0.75</u>
Health-care clinic	0.81 <u>0.77</u>

Table 9.5.1 Lighting Power Density Allowances Using the Building Area Method

<i>Building Area Type^a</i>	<i>LPD, W/ft²</i>
Hospital	0.96 <u>0.92</u>
Hotel/motel	0.56 <u>0.53</u>
Library	0.83
Manufacturing facility	0.82
Motion picture theater	0.44 <u>0.43</u>
Multifamily	0.45 <u>0.46</u>
Museum	0.55 <u>0.56</u>
Office	0.64 <u>0.62</u>
Parking garage	0.18 <u>0.17</u>
Penitentiary	0.69 <u>0.65</u>
Performing arts theater	0.84 <u>0.82</u>
Police station	0.66 <u>0.62</u>
Post office	0.65 <u>0.64</u>
Religious facility	0.67 <u>0.66</u>
Retail	0.84 <u>0.78</u>
School/university	0.72 <u>0.70</u>
Sports arena	0.76 <u>0.73</u>
Town hall	0.69 <u>0.67</u>
Transportation	0.50 <u>0.56</u>
Warehouse	0.45
Workshop	0.91 <u>0.86</u>

Modify the standard as follows (SI Units). Note that published Addendum ad to 90.1-2019 made changes to Section 9.5, seen here as the base text.

9.5 Prescriptive Compliance Path. *Interior lighting power* shall comply with either Section 9.5.1 or Section 9.5.2. Lighting control requirements shall comply with Section 9.4.1 and Table 9.5.2.1

9.5.1 Building Area Method of Calculating Interior Lighting Power Allowance Compliance Path. Use the following steps to determine the *interior lighting power allowance* by the *Building Area Method*:

- Determine the appropriate *building area type* from Table 9.5.1 and the corresponding *LPD* allowance. For *building area types* not listed, selection of a reasonably equivalent type shall be permitted.
- Determine the *gross lighted floor area* in m² of the *building area type*.
- Multiply the *gross lighted floor areas* of the *building area types* times the *LPD*.
- The *interior lighting power allowance* for the *building* is the sum of the lighting power allowances of all *building area types*. Trade-offs among *building area types* are permitted, provided that the total *installed interior lighting power* does not exceed the *interior lighting power allowance*.

Table 9.5.1 Lighting Power Density Allowances Using the Building Area Method

<i>Building Area Typea</i>	<i>LPD, W/m2</i>
Automotive facility	8.0 7.9
Convention center	6.8
Courthouse	8.4 8.0
Dining: Bar lounge/leisure	8.6 8.0
Dining: Cafeteria/fast food	8.1 7.5
Dining: Family	7.6 7.0
Dormitory	5.7 5.6
Exercise center	7.7 7.8
Fire station	6.0
Gymnasium	8.2 8.1
Health-care clinic	8.7 8.3
Hospital	10.3 9.9
Hotel/motel	6.0 5.7
Library	9.0
Manufacturing facility	8.9 8.8
Motion picture theater	4.8 4.6
Multifamily	4.9
Museum	5.9 6.0
Office	6.8 6.7
Parking garage	2.0 1.8
Penitentiary	7.4 7.0
Performing arts theater	9.0 8.8
Police station	7.1 6.6
Post office	7.0 6.8
Religious facility	7.2 7.1

Table 9.5.1 Lighting Power Density Allowances Using the Building Area Method

<i>Building Area Type^a</i>	<i>LPD, W/m²</i>
Retail	9.1 <u>8.4</u>
School/university	7.8 <u>7.5</u>
Sports arena	8.1 <u>7.8</u>
Town hall	7.5 <u>7.2</u>
Transportation	5.4 <u>6.0</u>
Warehouse	4.9 <u>4.8</u>
Workshop	9.8 <u>9.3</u>

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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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The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.

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