

ADDENDA

**ANSI/ASHRAE/IES Addendum bh 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 January 21, 2022, and by the Illuminating Engineering Society on January 18, 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 bh changes the on-site photovoltaic system parameter for temperature coefficient of power described in Section 11, Table 11.5.1[15]. The parameters described in this section are used to determine the amount of on-site renewable energy to be included in the energy cost budget when a proposed design does not include an on-site renewable energy system. The parameters were originally proposed to align with default inputs for a standard efficiency solar panel in PV Watts, a commonly used tool for estimating annual photovoltaic generation. In aligning baseline requirements with PV Watts inputs, the intent was to make it easy for an energy analyst to estimate the required on-site generation for the energy cost budget in those cases when the proposed design did not include an on-site renewable energy system.

During public review of Addendum ck, the panel efficiency was updated from 15% to 19% to more closely align with the average panel efficiency being used in the U.S. marketplace. In making that update the temperature coefficient of power was not similarly updated. The default temperature coefficient of power in PV Watts for a 19% efficient panel is $-0.35\text{ }^{\circ}\text{C}$. This change makes it easier for users of Section 11 to quickly estimate the amount of on-site renewable energy to include in the Energy Cost Budget using the PV Watts tool or the PV Watts methodology that is embedded within some common energy simulation tools.

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

Addendum bh to Standard 90.1-2019

Revise Table 11.5.1 as shown (I-P and SI).

Table 11.5.1 Modeling Requirements for Calculating *Design Energy Cost* and *Energy Cost Budget*

<i>Proposed Design (Column A)</i> <i>Design Energy Cost (DEC)</i>	<i>Budget Building Design (Column B)</i> <i>Energy Cost Budget (ECB)</i>
[...]	
<p><i>On-site renewable energy</i> in the <i>proposed design</i> shall be determined as follows:</p> <ol style="list-style-type: none"> Where a complete <i>system</i> providing <i>on-site renewable energy</i> exists, the model shall reflect the actual <i>system</i> type using actual component capacities and efficiencies. Where a <i>system</i> providing <i>on-site renewable energy</i> has been designed, the <i>system</i> model shall be consistent with design documents. Where no <i>system</i> exists or is specified to provide <i>on-site renewable energy</i>, no <i>system</i> shall be modeled. 	<p><i>On-site renewable energy</i> shall be included in the <i>budget building design</i> when required by Section 10.5.1 and shall be determined as follows:</p> <ol style="list-style-type: none"> Where a <i>system</i> providing <i>on-site renewable energy</i> has been modeled in the <i>proposed design</i>, the same <i>system</i> shall be modeled identically in the <i>budget building design</i> except the rated capacity shall meet the requirements of Section 10.5.1.1. Where more than one type of <i>on-site renewable energy system</i> is modeled, the total capacities shall be allocated in the same proportion as in the <i>proposed design</i>. Where no <i>system</i> exists or is specified to provide <i>on-site renewable energy</i> in the <i>proposed design</i>, <i>on-site renewable energy</i> shall be modeled as an unshaded photovoltaic system with the following physical characteristics: <ul style="list-style-type: none"> Size: Rated capacity per Section 10.5.1.1. Module Type: Crystalline Silicon Panel with a glass cover, 19.1% nominal efficiency and temperature coefficient of -0.47-0.35%/°C, Performance shall be based on a reference temperature of 77°F (25°C) and irradiance of 317 Btu/h·ft² (1000 W/m²). Array Type: Rack mounted array with installed nominal operating cell temperature (INOCT) of 103°F (45°C). Total System Losses (DC output to AC output): 11.3%. Tilt: 0-degrees (mounted horizontally). Azimuth: 180 degrees. <p>If the <i>on-site renewable energy system</i> cannot be modeled in the <i>simulation program</i>, Section 11.4.5 shall be used.</p>
[...]	

POLICY STATEMENT DEFINING ASHRAE'S CONCERN FOR THE ENVIRONMENTAL IMPACT OF ITS ACTIVITIES

ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted Standards and the practical state of the art.

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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