

**INTERPRETATION IC 90.1-2010-38 OF  
ANSI/ASHRAE/IES STANDARD 90.1-2010  
Energy Standard for Buildings Except Low-Rise Residential Buildings**

**Date Approved:** January 13, 2019

**Request from:** Eoghan Hayes, P. Eng, BEMP, Edge Consultants, 306-51 West First Avenue Vancouver, BC, V5Y 0A5.

**Reference:** This request for interpretation refers to the requirements presented in ANSI/ASHRAE/IES Standard 90.1-2010, Table 11.3.1.12, regarding miscellaneous loads, and Table 11.3.1.5, regarding building envelope.

**Background 1:** I am completing an ECB model for a warehouse project. In Table 11.3.1.12 Miscellaneous Loads of the ANSI/ASHRAE/IES Standard 90.1-2010 it states “Receptacle, motor, and *process loads* shall be modeled and estimated based on the buildign type or *space* type category and shall be assumed to be identical in the *proposed* and *budget buildign designs*. These loads shall be included in the simulations of the building and shall be included when calculating the *energy cost budget* and *design energy cost*. All end use load components within and associated with the buildign shall be modeled, unless specifically excluded by Sections 13 and 14 of Table 11.3.1: including, but not limited to, exhaust fans, parking garage *ventilation* fans, exterior building lighting, swimming *pool* heaters and pumps, elevators and escalators, refrigerant *equipment* and cooking *equipment*.”

Page 11-18 Budget Building of the ANSI/ASHRAE/IES Standard 90.1-2010 User’s Manual states in paragraph four (4) “Exterior lighting is not included in the ECB Method calculations. Those lighting systems must meet the Standard’s prescriptive requirement and no tradeoff is permitted.”

**Background 2:** I am completing an ECB model for a warehouse project. In Table 11.3.1.5 Building Envelope of the ANSI/ASHRAE/IES Standard 90.1-2010 it states “The *budget building design* shall have identical *conditioned floor area* and identical exterior dimensions and *orientations* as the *proposed building design*, except as follows:

- a. *Opaque assemblies*, such as *roof, floors, doors, and walls*, shall be modeled as having the same *heat capacity* as the *proposed design* but with the minimum *U-factor* required in Section 5.5 for new *buildings* or additions and Section 5.1.3 for *alterations*.
- b. *Roof Solar Reflectance* and *Thermal Emittance*. The exterior *roof* surfaces shall be modeled with a solar *reflectance* and thermal *emittance* as required in Section 5.5.3.1.1(a). All other *roofs*, including *roofs* exempted from the requirements in Section 5.5.3.1.1, shall be modeled the same as the *proposed design*.
- c. *Fenestration*—No shading projections are to be modeled; *fenestration* shall be assumed to be flush with the exterior *wall* or *roof*. If the *fenestration area* for new buildings or *additions* exceeds the maximum allowed by Section 5.5.4.2, the area shall be reduced proportionally along each exposure until the limit set in Section 5.5.4.2 is met. If the *fenestration area* facing west or east of the proposed building exceeds the area limit set in Section 5.5.4.5, the area shall be reduced proportionally until the area is the same as the area limit set in Section 5.5.4.5. The area limit is the *fenestration area* facing south in the northern hemisphere or the *fenestration area* facing north in the southern hemisphere as defined in Section 5.5.4.5. *Fenestration U-factor* shall be the minimum required for the climate, and the SHGC shall be the maximum allowed for the

climate and *orientation*. The *fenestration* model for envelope *alterations* shall reflect the limitations on area, *U-factor*, and SHGC as described in Section 5.1.3.

The project meets the requirements for Section 5.5.4.2.3 of the ANSI/ASHRAE/IES Standard 90.1-2010 and therefore requires skylights.

The ANSI/ASHRAE/IES Standard 90.1-2010 User's Manual on page 11-5, Figure 11-B graphically confirms the budget model must meet the prescriptive requirements of the standard.

Based on the language in Table 11.3.1.5 Building Envelope, it does not explicitly state the budget building model must meet all the prescriptive requirements of that standard, however, although the standard does not explicitly state the prescriptive requirements must be adhered to when constructing the budget energy model, the user manual implies this is the intent of the standard.

**Interpretation No.1:** Based on the language in Table 11.3.1.12 it is our interpretation that exterior building lighting must be included in both the budget and proposed building design ECB models and credit can be taken for exterior building lighting that exceeds the prescriptive requirements of ANSI/ASHRAE/IES Standard 90.1-2010.

**Question No.1:** Is this interpretation correct?

**Answer No.1:** No.

**Comments:** Per the cited section of the standard, the exterior lighting power shall be modeled and be identical between the budget building and the proposed building. The user's manual provides guidance on the use of the standard and is not part of the standard.

**Interpretation No.2:** Based on the above, as our project does meet the Section 5.5.4.2.3 of the ANSI/ASHRAE/IES Standard 90.1-2010, it is our interpretation that skylights must be included in the budget ECB model in accordance with the minimum areas outlines in Section 5.5.4.2.3 of the ANSI/ASHRAE/IES Standard 90.1-2010 and that the baseline model must be constructed to adhere to all the prescriptive requirements of the ANSI/ASHRAE/IES Standard 90.1-2010.

**Question No.2:** Is this interpretation correct?

**Answer No.2:** No.

**Comments:** As stated in Table 11.3.1 Number 1. Design Model - Column B: "The budget building design shall be developed by modifying the proposed design as described in this table. Except as specifically instructed in this table, all building systems and equipment shall be modeled identically in the budget building design and proposed building design."