ADDENDA

ANSI/ASHRAE/IES Addendum bu to
ANSI/ASHRAE/IES Standard 90.1-2022

Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings

Approved by ASHRAE and the American National Standards Institute on November 28, 2025, and by the Illuminating Engineering Society on December 3, 2025.

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 bu updates to the language in Table G3.1 #16 based on the requirement in Section 10.4.3.4 of Standard 90.1-2022 that the energy efficiency class of proposed elevators shall be E or better per ISO 25745-2, Table 7. Since Standard 90.1-2016, the energy efficiency class has been required to be reported on design documents, but until Standard 90.1-2022 there was no requirement to specify a particular class or better.

ISO 25745-2, Table 7 includes equations for calculating kWh consumption. There is both an in-operation and standby/idle component to the calculation. Normative Appendix G is updated to help modelers develop model inputs, promote methodological consistency across projects, prevent elevator consumption from being modeled higher than justified, and ensure that the standby/idle component of elevator operation is adequately accounted for in the models. This essentially aligns Appendix G requirements with the kWh calculations in ISO 25745-2 based on the energy efficiency class. Because there was no efficiency class requirement prior to Standard 90.1-2022, the baseline requirements were estimated at class F/G. The proposed model would then be modeled with the as-specified energy efficiency class and the kWh calculated accordingly. The elevator motor schedules would be modeled identically across the baseline and proposed.

Informative 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.

Addendum bu to Standard 90.1-2022

Modify Table G3.1 as shown (I-P and SI).

Table G3.1 Modeling Requirements for Calculating Proposed Building Performance and Baseline Building Performance

Proposed Building Performance	Baseline Building Performance
[. . .]	

16. Elevators

Proposed Building Performance

Where the *proposed design* includes elevators, the elevator motor~~,~~ and *ventilation* fan, ~~and light load~~ shall be included in the model. The cab *ventilation* fan ~~and lights~~ shall be modeled with the same schedule as the elevator motor.

The modeled elevator cab annual energy consumption shall be calculated based on elevator consumption coefficients as follows:

Annual Operating kWh = OpDays × $Coeff_1$ × Q × n_d × s_{av}/1,000,000
Annual Standby/Idle kWh = $Coeff_2$ × t_{nr} × (1/1,000)

where

OpDays	=	number of days annually where the building is occupied
Q	=	rated load of elevator, lbs (kg).
n_d	=	number of trips per day from Table G3.2.3.17.
s_{av}	=	one-way average travel distance for the installation, ft (m)
	=	[Average floor to floor height, ft (m) × (Number of floors – 1)] × % of average travel distance from Table G3.2.3.17
$Coeff_1$, $Coeff_2$	=	coefficients from Table G3.2.3.16 based on the energy efficiency class of the *proposed design.*
t_{nr}	=	annual nonrunning idle/standby time = [24 – n_d/3600 × (s_{av}/v + v/a + a/j + t_d)] × OpDays

where

v	=	rated speed, ft/s (m/s)
t_d	=	time for the opening, opened, and closing times of the elevator doors at the landings, s. Default from Table G3.2.3.18 can be used where unknown.
a	=	average acceleration, ft/s^2 (m/s^2). Default from Table G3.2.3.18 can be used where unknown.
j	=	average jerk, ft/s^3 (m/s^3). Default from Table G3.2.3.18 can be used where unknown.

Exception: Where the daily nonrunning (idle/standby) (E_{nr}, kWh) and daily running (E_{rd}, kWh) energy consumption, determined according to the ISO 25745-2 testing procedure, are available from the manufacturer the annual modeled elevator cab energy consumption shall be modeled based on the following calculations:

Annual operating kWh = E_{rd} × OpDays
Annual standby/idle kWh = E_{nr} × OpDays

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Baseline Building Performance

Where the *proposed design* includes elevators, the *baseline building design* shall be modeled to include the elevator cab and *ventilation* fans~~, and lighting power~~.

The elevator cab modeled annual energy consumption shall be calculated the same as the *proposed design*, with $Coeff_1$ = 0.756 (5.47) and $Coeff_2$ = 1600. If the exception is used to calculate *proposed design* annual energy consumption from E_{nr} and E_{rd}, the baseline shall be calculated using *proposed design* parameters, and the elevator coefficient equations in the proposed design column.

~~The elevator peak motor power shall be calculated as follows:~~

~~bhp = (Weight of Car + Rated Load – Counterweight) × Speed of Car/(33,000 × $h_{mechanical}$)~~

~~P_m = bhp × 746/h_{motor}~~

~~where~~

~~Weight of Car~~	=	~~proposed design elevator car weight, lb~~
~~Rated Load~~	=	~~the proposed design elevator load at which to operate, lb (kg)~~
~~Counterweight of Car~~	=	~~elevator car counterweight, from Table G3.9.2, lb (kg)~~
~~Speed of Car~~	=	~~speed of the proposed elevator, ft/min~~
~~$h_{mechanical}$~~	=	~~mechanical efficiency of the elevator from Table G3.9.2~~
~~h_{motor}~~	=	~~motor efficiency from Table G3.9.2~~
~~P_m~~	=	~~peak elevator motor power, W~~

The elevator motor use shall be modeled with the same schedule as the *proposed design*.

When included in the *proposed design*, the baseline elevator cab *ventilation* fan shall be 0.33 W/cfm (0.699 W/L·s) ~~and the *lighting power density* shall be 3.14 W/ft^2 (33.8 W/m^2); both operate~~ operated continuously.

[. . .]

Delete Tables G3.9.2 and G3.9.3 as shown (I-P and SI)

~~**Table G3.9.2 Performance Rating Method Baseline Elevator Motor**~~

~~Number of Stories (Including Basement)~~	~~Motor Type~~	~~Counterweight~~	~~Mechanical Efficiency~~	~~Motor Efficiency[a]~~
~~≤4~~	~~Hydraulic~~	~~None~~	~~58%~~	
~~>4~~	~~Traction~~	~~*Proposed design* counterweight, if not specified use weight of the car plus 40% of the rated load~~	~~64%~~	

~~a. Use the *efficiency* for the next motor size greater than the calculated bhp (input *kW*).~~

~~**Table G3.9.3 Performance Rating Method Hydraulic Elevator Motor Efficiency**~~

~~Shaft Input Power~~	~~Full-Load Motor Efficiency for Modeling, %~~
~~10 (7.5)~~	~~72%~~
~~20 (15)~~	~~75%~~
~~30 (22)~~	~~78%~~
~~40 (30)~~	~~78%~~
~~100 (75)~~	~~80%~~

Add new Tables G3.2.3.16, G3.2.3.17, and G3.2.3.18 as shown (I-P and SI).

Table G3.2.3.16 Coefficients for Elevator Consumption Calculations

Energy Efficiency Class	$Coeff_1$	$Coeff_2$
A	0.100 (0.72)	50
B	0.149 (1.08)	100
C	0.224 (1.62)	200
D	0.336 (2.43)	400
E	0.505 (3.65)	800
F/G	0.756 (5.47)	1600

Table G3.2.3.17 Inputs for Elevator Consumption Calculations

Usage Category	Very Low	Low	Medium	High	Very High	Extremely High
Trips per day (n_d)	50	125	300	750	1500	2500
Number of Stopping Floors	**Percentage of Average Travel Distance**					
2	1	1	1	1	1	1
3	0.67	0.67	0.67	0.67	0.67	0.67
>3	0.49	0.49	0.49	0.44	0.39	0.32

Informative Note: Below are the buildings typically associated with each usage category in Table G3.2.3.17. Projects should pick the usage category that best aligns with expected building operation.

Usage Category	Very Low	Low	Medium	High	Very High	Extremely High
Typical buildings	• Residential building up to six dwellings • Residential care home • Small office or administrative building with few operations • Suburban railway stations	• Residential building up to 20 dwellings • Small office or administrative building with two to five floors • Small hotels • Office parking lots • General parking lots • Library • Entertainment centers • Mainline railway stations • Stadia	• Residential building with up to 50 dwellings • Medium-sized office or administrative building with up to ten floors • Medium-sized hotel • Airports • University • Small hospital • Shopping center	• Residential building with more than 50 dwellings • Large office or administrative building with more than ten floors • Large hotel	• Very large office or administrative building over 328 ft (100 m) height	• Very large office or administrative building over 328 ft (100 m) height

Table G3.2.3.18 Defaults for Elevator Consumption Calculations

Variable	Description	Default Value	Units
a	Acceleration	3.28 (1.0)	ft/s^2 (m/s^2)
j	Jerk	4.1 (1.25)	ft/s^3 (m/s^3)
t_d	Door operation time	8	s

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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.

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