

# Aligning IECC And Standard 90.1

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In 2013, ASHRAE participated in the development of the International Energy Conservation Code (IECC) published by the International Code Council (ICC). The IECC is a model energy code that is adopted in many jurisdictions across the United States. ANSI/ASHRAE/IES Standard 90.1 serves as an alternative compliance path in the IECC. In an effort to try to reduce confusion in the marketplace, and decrease the amount of training for designers and code officials, ASHRAE submits proposals and comments with the intent of trying to align the requirements in the IECC and Standard 90.1.

The culmination of the work done this year will be published in the 2015 IECC, which will reference the newly published Standard 90.1-2013. ASHRAE staff, with support of the Code Interaction Subcommittee (CIS) and Standing Standards Project Committee (SSPC 90.1), submitted 55 proposals to the IECC in support of aligning the requirements that are summarized in *Table 1*.

Of those changes, the following were significant modifications to the existing requirements of the IECC to match Standard 90.1-2013.

## HVAC

CE200 updates the HVAC efficiencies for all HVAC equipment in Tables C403.2.3 (1) through C403.2.3 (3)

and C403.2.3 (8). This includes making the minimum equipment efficiencies for electrically operated unitary air conditioners and condensing units, electrically operated unitary and applied heat pumps, electrically operated packaged terminal air conditioners, packaged terminal heat pumps, single-package vertical air conditioners, single vertical heat pumps, room air conditioners, room air conditioner heat pumps, and heat rejection equipment consistent with Standard 90.1-2013.

CE201 adds equipment efficiencies for air conditioners and condensing units serving computer rooms. Computer and data processing room unitary air conditioners units have unique design requirements (higher static loads, higher sensible heat ratios, continuous

TABLE 1 ASHRAE's submitted proposals to IECC.

PROPOSAL	SUBJECT	COMMITTEE RECOMMENDATION FROM COMMITTEE HEARINGS (MAY 2013)	FINAL ACTION RESULT (OCTOBER 2013)	IN 2015 IECC?
CE52	Adds Definition of Continuous Insulation from Standard 90.1	As Submitted	No Action (No Comment Submitted)	Yes
CE54	Addition of Liner System and Filled Cavity Definitions	Disapproved	Approved as Modified by Public Comment (AMPC)	Yes (Liner System Definition Only)
CE55	Adds Definition of Powered Roof/Wall Ventilator	As Submitted	No Action (No Comment Submitted)	Yes
CE90	Opaque Assemblies from Addendum <i>bb</i>	Disapproved	Disapproved	No
CE120	Cool Roof Requirements	Disapproved	No Action (No Comment Submitted)	CE 121 Adds Cool Roof Requirements (Slightly Different Than 90.1)
CE121	Cool Roof Requirements	As Modified	As Modified	Yes
CE157	Solar Heat Gain Coefficient Multiplier and Building Orientation	Disapproved	No Action (No Comment Submitted)	No
CE185	Changes damper class associated with 4.0 cfm/ft <sup>2</sup> leakage is Class 1 (not Class IA, which is a 3.0 leakage rate). Consolidates damper provisions into the mechanical section.	Disapproved	No Action (No Comment Submitted)	No (CE 187 Changes Damper Class Requirement)
CE187	Changes Class 1A to Class 1 Requirement for Damper Leakage	As Submitted	No Action (No Comment Submitted)	Yes
CE191	Changes Vestibule Exception to 1,000 ft <sup>2</sup> Clarifies Which Doors Need Vestibules	Disapproved	Withdrawn	No
CE200	Updates All HVAC Efficiencies to Match What's Proposed for 90.1	As Submitted	AMPC	Yes
CE201	Adds Efficiency Requirements for Computer Room Equipment	As Submitted	AMPC	Yes
CE203	Replaces Chiller Efficiency Equation With New Equation From 90.1; Also Replaces Chiller Efficiencies	As Submitted	No Action (No Comment Submitted)	Yes
CE204	Setpoint Overlap, Deadband Requirements	As Submitted	No Action (No Comment Submitted)	Yes
CE205	Zone Isolation Requirements	As Submitted	No Action (No Comment Submitted)	Yes
CE208	Snow and Ice Melt Requirements	As Submitted	No Action (No Comment Submitted)	Yes
CE211	Enclosed Parking Garage Ventilation Requirements	As Submitted	No Action (No Comment Submitted)	Yes
CE214	Adds 10% to 20% and 20% to 30% and >= 8,000 hrs/Year Table To Energy Recovery Requirements	As Submitted	AMPC	Yes
CE220	Kitchen Exhaust System Requirements	Disapproved	AMPC	Yes
CE226	Adds Plenum to High Pressure Duct System Sealing/Insulation Requirements	As Modified	No Action (No Comment Submitted)	Yes
CE227	Lab Exhaust System Requirements	As Submitted	Disapproved	No
CE229	Change of Mean Rating Temp for Fluids <40°F	As Submitted	No Action (No Comment Submitted)	Yes
CE233	Fan Efficiency Grade Requirements	Disapproved	No Action (No Comment Submitted)	Requirements Found in CE234
CE234	Fan Efficiency Grade With Labeling	As Modified	No Action (No Comment Submitted)	Yes
CE236	Fan Power Limitation Drop Requirements	As Submitted	No Action (No Comment Submitted)	Yes
CE238	Adds an Exception for Motors Complying with 403.2.10.1	As Submitted	No Action (No Comment Submitted)	Yes
CE239	Adds Efficiency Requirements for Commercial Refrigeration, Refrigerators and Freezers	As Submitted	As Submitted	Yes
CE240	Walk-In Freezer Requirements	As Submitted	As Submitted	Yes

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PROPOSAL	SUBJECT	COMMITTEE RECOMMENDATION FROM COMMITTEE HEARINGS (MAY 2013)	FINAL ACTION RESULT (OCTOBER 2013)	IN 2015 IECC?
CE245	Makes Economizer Requirements And Thresholds Consistent With 90.1	Disapproved	Approved as Modified by Public Comment (1,2)	Yes
CE250	Integrated Economizer and VAV Fan Controls	Disapproved	As Submitted	Yes
CE251	Setpoints for DDC Control	As Submitted	As Submitted	Yes
CE252	Heat Rejection Requirements	Disapproved	Disapproved	No
CE254	Boiler Turndown Requirements	As Submitted	As Submitted	Yes
CE255	Adds Heat Rejection Controls/Requirements and Cooling Towers	As Submitted	As Submitted	Yes
CE256	Allow Optimization of Multi-Zone System Ventilation as Approved By the Code Official	Withdrawn	Withdrawn	Requirements Duplicated in 257
CE257	Allow Optimization of Multi-Zone System Ventilation as Approved By the Code Official	As Submitted	As Submitted	Yes
CE258	Requirements for Fractional HP Fan Motors	As Modified	AMPC	Yes
CE259	Multi-Zone VAV System Optimization Controls	As Submitted	As Submitted	Yes
CE260	Window Switch Controls	Disapproved	Disapproved	No
CE262	Water Heating Equipment Efficiencies	As Modified	No Action (No Comment Submitted)	Yes
CE264	Water Heating Equipment That Also Provides Space Heating Must Comply With Service Water Heating Equipment Performance Requirements	As Submitted	No Action (No Comment Submitted)	Yes
CE265	Adds a Limit to Sizing of Service Water Heating Equipment Size	Disapproved	No Action (No Comment Submitted)	No
CE270	Attempts to Align Pipe Insulation Requirements in IECC	Disapproved	Withdrawn	CE270 Incorporates These Changes
CE271	Attempts to Align Pipe Insulation Requirements in IECC	Disapproved	AMPC	Yes
CE278	Adds Requirements for Circulating Pump System Controls	As Modified	AMPC	Yes
CE286	Automatic Receptacle Controls	Disapproved/Floor Action As Modified	Disapproved	No
CE290	Exempts Shop and Lab Classrooms From Lighting Control Requirements	As Submitted	No Action (No Comment Submitted)	Yes
CE297	Brings in Daylight Controls from Sidelighting and Toplighting from 90.1	Disapproved	No Action (No Comment Submitted)	No
CE299	Changes Hotel/Motels Lighting Controls, So There's a 20-Minute Threshold for Occupancy	As Modified	As Modified	Yes
CE304	Reorganizes Exterior Lighting Controls to Match 90.1	As Submitted	As Submitted	Yes
CE307	Lighting Controls in Parking Garages	Disapproved	Disapproved	No
CE310	Lighting Power Densities	As Submitted	AMPC	Yes
CE311	Lighting Power Densities	Disapproved	No Action (No Comment Submitted)	90.1 Lighting Power Densities Approved in CE310
CE323	Incorporates Energy Metering Requirements into 90.1 at the Building Level	Disapproved	Disapproved	No
CE329	Electrical Transformer Efficiencies	As Submitted	As Submitted	Yes
CE331	Electrical Motor Efficiencies	As Submitted	As Submitted	Yes
CE333	Elevator Lighting and Ventilation, and Moving Walkway Requirements	Approved As Submitted	As Submitted	Yes
CE334	Speed Threshold for Moving Walkways	Withdrawn	Withdrawn	Moving Walkway Provisions Included in CE333
CE356	Requires Additional Documentation for Lighting Design, Operation and Maintenance, and a Schedule for Inspecting/Recalibration	As Submitted	As Submitted	Yes
CE357	Functional Testing for Lighting Equipment Requirements	Disapproved	AMPC (1,2)	Yes

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operation year-round) that have been recognized with a unique test and rating standard (ANSI/ASHRAE Standard 127).

CE203 makes changes to the requirements for air- and water-cooled chillers, which is a continuation of the efficiency improvements that were implemented in Standard 90.1-2010 by further improving the efficiency requirements. Improvements also were made to the requirements to clarify the use of reference standards for rating and certification. An additional exclusion was added for high temperature heat reclaim chillers from the equipment efficiency requirements of Table 6.8.1C when the leaving condenser temperatures are greater than 115°F (46°C).

## Lighting

CE 310/311 updates the lighting power densities (LPDs) to account for changes to recommended light levels as published in the new, 10<sup>th</sup> edition of the IES's *The Lighting Handbook* to match the changes in Addenda *bh* and *dj* to Standard 90.1-2010. Some values have gone up while others have gone down. As an average, the changed LPDs dropped 6%. Four new space types have been added in response to user requests: copy/print rooms, loading docks, interior, and computer rooms. Also in response to user requests, new space types for assisted living facilities were added including corridor, dining area, lobby, restroom, chapel and recreation room. In all cases these modified LPDs are restricted to those spaces that are used primarily by the residents.

## IECC Proposals

Last year, proposals to the IECC were submitted by Jan. 3, 2013, which were heard and discussed at the IECC Committee Action Hearings held April 20 to 30, 2013. Comments on committee action were submitted by July 15, 2013. Final action was taken on all proposals and comments at the Public Comment Hearings held from Oct. 5 to 10, 2013.

### Equipment That Is Federally Mandated

These proposals added current federally mandated requirements into the IECC so code officials have the information in one book, rather than needing to search the Code of Federal Regulations. These products will be phased out of the marketplace to comply with federal law, but this will prevent the use of aftermarket and phased out products in permitted construction.

CE240 adds minimum efficiencies for walk-in coolers and freezers that the Department of Energy defined as of Jan. 1, 2010. Additional requirements for commercial refrigeration equipment also have been defined and approved per 10CFR Part 431 and went into effect on Jan. 1, 2012. As part of the DOE evaluation, they have calculated that the standard changes will result in 1.035 quads of energy savings over a 30-year-period from 2012–42. The economic analysis shows a scalar (payback) of 1.3 to 3.9.

CE329 adds requirements for electrical transformers. Under the Energy Policy Act of 2005, new national minimum efficiency

standards went into effect for low voltage dry-type transformers manufactured on or after Jan. 1, 2007. According to an analysis performed by DOE in the *Federal Register* (Volume 69, No. 145), the changes would result in an estimated savings of 4.74 quads of primary energy over 28 years (2007 to 2035). In terms of cumulative electric site energy savings, that is roughly equivalent to 596 billion kWh over 28 years, or 21.3 billion kWh per year.

CE331 adds requirements for general purpose electrical motors (Subtype I and II) as defined in Section 313 of the Energy Independence and Security Act of 2007 (EISA 2007) and mandates that the efficiency of general purpose motors (manufactured or imported) that are rated at 1.0 horsepower and larger be increased for motors. In addition, there are new efficiency standards that are required for larger motors that may be used by commercial/industrial customers (sized greater than 200 hp [149 kW] and less than or equal to 500 hp [373 kW]).

*Table 1* further summarizes the results of all proposals of interest to ASHRAE in addition to the summary above. Thirty-seven of the proposals submitted by ASHRAE were accepted (green), five of the proposals were disapproved but a similar proposal was approved (white/blue respectively), 10 were disapproved (red), and three were withdrawn (red).

In future code cycles (starting in 2014), ICC will allow all members to vote electronically on proposals during their process. For more information, visit <http://tinyurl.com/k9qs67c> or contact the author. ■