**BSR/ASHRAE/IES Addendum ca**
**to ANSI/ASHRAE/IES Standard 90.1-2022**

**Public Review Draft**

# Proposed Addendum ca to Standard 90.1-2022, Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings

**First Public Review (April 2025)**
**(Draft Shows Proposed Changes to Current Standard)**

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed standard, go to the ASHRAE website at www.ashrae.org/standards-research--technology/public-review-drafts and access the online comment database. The draft is subject to modification until it is approved for publication by the Board of Directors and ANSI. Until this time, the current edition of the standard (as modified by any published addenda on the ASHRAE website) remains in effect. The current edition of any standard may be purchased from the ASHRAE Online Store at www.ashrae.org/bookstore or by calling 404-636-8400 or 1-800-727-4723 (for orders in the U.S. or Canada).

This standard is under continuous maintenance. To propose a change to the current standard, use the change submittal form available on the ASHRAE website, www.ashrae.org.

The appearance of any technical data or editorial material in this public review document does not constitute endorsement, warranty, or guaranty by ASHARE of any product, service, process, procedure, or design, and ASHRAE expressly disclaims such.

© 2025 ASHRAE. This draft is covered under ASHRAE copyright. Permission to reproduce or redistribute all or any part of this document must be obtained from the ASHRAE Manager of Standards, 180 Technology Parkway NW, Peachtree Corners, GA 30092. Phone: 404-636-8400, Ext. 1125. Fax: 404-321-5478. E-mail: standards.section@ashrae.org.

**ASHRAE, 180 Technology Parkway NW, Peachtree Corners, GA 30092**

**© 2025 ASHRAE**

***This draft is covered under ASHRAE copyright. The appearance of any technical data or editorial material in this publication document does not constitute endorsement, warranty, or guaranty by ASHRAE of any product, service, process, procedure, design or the like and ASHRAE expressly disclaims such. Permission to republish or redistribute must be obtained from the MOS.***

**(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)**

# FOREWORD

*This addendum modifies the Additional Efficiency Requirements located in Section 11. This proposed addendum covers three areas. It cleans up and modifies some existing credit language, it introduces new credits, and it modifies the number of required credits.*

*These are described in three sections below:*

1. *Cleanup of existing energy credit language for lighting and cooking equipment:*
    a. *Lighting Efficiency Measures – added limits to achievable lighting credits to account for interactions between the different credits.*
    b. *L02 – revised measure to be lighting power based rather than floor area based.*
    c. *L03 – revised to align with Section 9 changes*
    d. *L05 – revised to better align with Section 9 changes*
    e. *L06 – revised measure to be lighting power based rather than floor area based*
    f. *Q02 – revised so that each type of eligible kitchen equipment can earn credits making it easier to achieve this measure.*
    g. *G01 – revised measure to be lighting power based rather than floor area based*
    h. *G05 – Modifications to HVAC Cooling Energy Storage that align with proposed Heating Energy Storage credit G10.*
2. *Proposed new energy credits:*
    a. *E02 Reduced air leakage energy credit*
    b. *H08 Axial Fan Open Circuit Cooling Tower Efficiency Improvement (with update to H03 – HVAC Cooling Performance Improvement)*
    c. *W10 Commercial Ozone Laundry Systems*
    d. *W11 Low-Temperature dishwashing*
    e. *G08 Electric Vehicle Charging Load Management*
    f. *G09 Electric Vehicle Power Export*
    g. *G10 HVAC Heating Energy Storage*
3. *Energy credits and Load Management credit requirement changes:*
    a. *This addendum modifies the required number of credits from range of 28 to 50 to a range of 46 to 122 depending on building type and climate zone. This represents an average increase across all climate zones and building types of 79%. Note, this does not represent an energy savings of 79%.*
    b. *This addendum puts a limit of 60% (as a function of required credits) on the number of credits related to load management that can be utilized for compliance.*

*PNNL provided the 90.1 committee analysis showing two different energy credit packages or pathways. The first package is a cost-effective package that utilizes all available credits including credits for increased equipment efficiency. This package did not use any of the new credits. The second package is a minimum efficiency package that looked at the credits that could be achieved without applying credits for increased equipment efficiency. The minimum efficiency package confirms a compliance pathway that allows the use of Federal minimum equipment efficiencies. This package did use some of the newly proposed credits.*

*The final credit requirements are a combination of the cost-effective package and minimum equipment package, whichever was lower.*

*The following chart summarizes the scalar ratio calculations of the cost-effective package. Using just energy cost savings and no time of use energy cost or cost of carbon considerations the package is deemed cost effective using the economic criteria established by the 90.1 Committee. Weighted Scalar Ratio Limit (>1 = cost effective). We use a weighted Scalar Ratio because different credits have different equipment lives: (note this is based on the actual credits achievable cost effectively which in the addendum was reduced by 20%, meaning these scalar values are conservative)*

*Summary of cost-effective package Scalar Analysis (>1 = cost effective per 90.1 Committee criteria)*

| Building Use Type | Section | Climate Zone | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0A | 0B | 1A | 1B | 2A | 2B | 3A | 3B | 3C | 4A | 4B | 4C | 5A | 5B | 5C | 6A | 6B | 7 | 8 |
| Multi-family/Dormitory | | 2.8 | 2.6 | 2.4 | 2.4 | 2.1 | 2.1 | 1.8 | 2.0 | 1.5 | 1.9 | 1.9 | 1.5 | 1.9 | 1.9 | 1.4 | 2.2 | 2.0 | 2.2 | 2.4 |
| Healthcare | | 4.7 | 4.2 | 4.2 | 4.1 | 4.2 | 3.5 | 3.9 | 3.6 | 3.9 | 3.9 | 3.7 | 3.8 | 3.6 | 3.5 | 4.2 | 3.8 | 3.8 | 4.3 | 4.3 |
| Hotel/Motel | | 11.3 | 10.0 | 8.8 | 8.9 | 7.8 | 6.7 | 6.4 | 6.3 | 5.9 | 5.8 | 5.9 | 4.6 | 4.6 | 4.8 | 4.5 | 5.2 | 4.7 | 5.6 | 6.1 |
| Office Buildings | | 2.5 | 2.5 | 2.3 | 2.5 | 2.1 | 2.1 | 1.8 | 2.1 | 1.8 | 1.8 | 1.9 | 1.6 | 1.9 | 1.9 | 1.6 | 2.0 | 1.9 | 2.0 | 2.0 |
| Restaurant Buildings | | 6.0 | 5.4 | 4.7 | 4.9 | 4.6 | 4.1 | 2.9 | 2.8 | 2.1 | 3.0 | 2.8 | 2.5 | 3.1 | 3.0 | 2.8 | 3.5 | 3.2 | 4.0 | 4.2 |
| Retail Buildings | | 3.8 | 3.5 | 2.9 | 3.0 | 2.4 | 2.1 | 1.7 | 1.7 | 1.4 | 1.7 | 1.6 | 1.2 | 1.7 | 1.5 | 1.1 | 1.9 | 1.6 | 1.6 | 1.7 |
| School/Education Buildings | | 3.1 | 2.8 | 2.5 | 2.7 | 2.4 | 2.2 | 2.1 | 2.8 | 2.5 | 2.7 | 2.9 | 2.3 | 2.6 | 2.9 | 2.2 | 3.0 | 2.7 | 3.0 | 3.2 |
| Warehouse and Semiheated | | 1.3 | 1.4 | 1.3 | 1.3 | 1.2 | 1.3 | 1.2 | 1.3 | 1.4 | 1.8 | 1.6 | 1.7 | 2.5 | 2.1 | 1.6 | 3.3 | 2.6 | 3.0 | 2.9 |

*The number of achievable credits in the cost-effective package, based on all available credits, are shown in the Table below.*

| Building Use Type | Climate Zone | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0A | 0B | 1A | 1B | 2A | 2B | 3A | 3B | 3C | 4A | 4B | 4C | 5A | 5B | 5C | 6A | 6B | 7 | 8 |
| Multi-family/Dormitory | 130 | 121 | 118 | 119 | 112 | 110 | 95 | 104 | 95 | 106 | 105 | 95 | 104 | 110 | 92 | 113 | 108 | 105 | 114 |
| Healthcare | 108 | 100 | 100 | 99 | 99 | 94 | 96 | 91 | 102 | 95 | 89 | 96 | 87 | 87 | 100 | 93 | 91 | 96 | 93 |
| Hotel/Motel | 131 | 124 | 117 | 116 | 106 | 97 | 94 | 94 | 90 | 85 | 88 | 73 | 84 | 84 | 74 | 91 | 80 | 89 | 88 |
| Office Buildings | 130 | 134 | 129 | 138 | 122 | 123 | 125 | 121 | 115 | 124 | 124 | 115 | 128 | 128 | 113 | 134 | 129 | 136 | 131 |
| Restaurant Buildings | 128 | 122 | 116 | 118 | 111 | 101 | 111 | 103 | 85 | 116 | 102 | 96 | 118 | 109 | 107 | 127 | 117 | 142 | 153 |
| Retail Buildings | 155 | 146 | 141 | 143 | 131 | 121 | 113 | 113 | 88 | 106 | 97 | 80 | 101 | 96 | 78 | 108 | 96 | 89 | 91 |
| School/Education Buildings | 147 | 144 | 141 | 145 | 140 | 137 | 134 | 143 | 130 | 131 | 146 | 128 | 129 | 148 | 117 | 138 | 137 | 142 | 138 |
| Warehouse and Semiheated | 119 | 115 | 132 | 123 | 130 | 134 | 114 | 136 | 142 | 142 | 146 | 132 | 144 | 142 | 128 | 150 | 144 | 147 | 138 |
| Other* | 65 | 63 | 62 | 62 | 59 | 57 | 55 | 57 | 53 | 57 | 56 | 51 | 56 | 57 | 51 | 60 | 56 | 59 | 59 |

* Other Building Use Type credit values are the average of all building use types * 50%

*The separate minimum efficiency package looked at how many credits could be earned without using the credit measures for increased equipment efficiencies. This package ensures that a credit compliance pathway is available that allows the use of federal minimum equipment efficiencies. A cost-effectiveness analysis was not conducted on the minimum efficiency package. The table below shows the number of credits in the minimum efficiency package.*

| Building Use Type | Climate Zone | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0A | 0B | 1A | 1B | 2A | 2B | 3A | 3B | 3C | 4A | 4B | 4C | 5A | 5B | 5C | 6A | 6B | 7 | 8 |
| Multi-family/Dormitory | 89 | 93 | 100 | 101 | 106 | 114 | 108 | 117 | 123 | 113 | 126 | 114 | 109 | 124 | 114 | 112 | 120 | 111 | 105 |
| Healthcare | 80 | 72 | 88 | 80 | 89 | 94 | 101 | 107 | 115 | 96 | 108 | 111 | 90 | 104 | 116 | 89 | 99 | 86 | 79 |
| Hotel/Motel | 129 | 135 | 151 | 149 | 160 | 174 | 180 | 189 | 209 | 194 | 202 | 209 | 200 | 204 | 212 | 201 | 199 | 196 | 189 |
| Office Buildings | 113 | 101 | 131 | 121 | 129 | 137 | 140 | 161 | 148 | 133 | 158 | 137 | 127 | 148 | 133 | 122 | 148 | 121 | 108 |
| Restaurant Buildings | 130 | 131 | 143 | 138 | 149 | 152 | 158 | 162 | 170 | 166 | 167 | 172 | 163 | 168 | 177 | 160 | 167 | 164 | 157 |
| Retail Buildings | 117 | 116 | 120 | 122 | 122 | 126 | 112 | 125 | 129 | 93 | 115 | 98 | 81 | 99 | 87 | 78 | 87 | 77 | 69 |
| School/Education Buildings | 97 | 100 | 114 | 110 | 118 | 132 | 128 | 148 | 148 | 142 | 160 | 145 | 135 | 155 | 146 | 134 | 149 | 131 | 111 |
| Warehouse and Semiheated | 106 | 102 | 128 | 118 | 130 | 123 | 122 | 130 | 139 | 105 | 121 | 114 | 89 | 99 | 124 | 82 | 98 | 88 | 75 |
| Other | 54 | 53 | 61 | 59 | 63 | 66 | 66 | 71 | 74 | 65 | 72 | 69 | 62 | 69 | 69 | 61 | 67 | 61 | 56 |

* Other Building Use Type credit values are the average of all building use types * 50%

***[Note to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current***

***standard are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed changes.]***

# Addendum ca to 90.1-2022

*Modify Section 3 as follows*
**3. DEFINITIONS, ABBREVIATIONS, AND ACRONYMS**

**[…]**
***demand response signal:*** A signal that provides actionable information to modify electricity consumption for a limited time period.

***demand response control:*** A control capable of receiving and automatically responding to a *demand response signal*.

***Electric Vehicle Power Export Equipment (EVPE):*** Equipment that manages the export of electrical power, stored in electrical vehicles, to a *building, site* or electrical grid. EVPE and EVSE may be combined in one piece of equipment and be synonymous with the term bidirectional EVSE. See NFPA 70/NEC Article 625.

### 3.3 Abbreviations and Acronyms
**[…]**

| | |
|---|---|
| *EVPE* | *electric vehicle power export equipment* |
| EVSE | electric vehicle supply equipment |

*Modify Section 11.5.1 as follows:*

**11.5.1 Energy Credits Required** Projects shall achieve the total number of credits required in Table 11.5.1.-1 based on the *building* use type and climate zone. ~~and no~~ Not less than five ~~of those~~ credits shall be from measures described in Section 11.5.2.6 (R01) and 11.5.2.8 (G01-G10). *Buildings* ~~Projects with multiple *building* use types, *unconditioned* or *semiheated buildings*, parking garages, projects using *on site renewable energy*, *alterations*, and *buildings* with separate shell-and-core and initial build-out *construction* permits~~ shall comply as follows:

*(Note: items 11.5.1 a through e unchanged.)*

*Delete Table 11.5.1-1 and replace as follows:*

**Table 11.5.1-1 Energy Credit Requirements by Building Use Type**

| Building Use Type [a] | Climate Zone | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0A | 0B | 1A | 1B | 2A | 2B | 3A | 3B | 3C | 4A | 4B | 4C | 5A | 5B | 5C | 6A | 6B | 7 | 8 |
| Multifamily [b] | 89 | 93 | 94 | 95 | 89 | 88 | 76 | 83 | 76 | 85 | 84 | 76 | 83 | 88 | 73 | 90 | 86 | 84 | 91 |
| Health care [c] | 80 | 72 | 80 | 79 | 79 | 75 | 77 | 73 | 81 | 76 | 71 | 76 | 69 | 70 | 80 | 75 | 73 | 77 | 74 |
| Hotel/motel | 105 | 100 | 94 | 93 | 84 | 78 | 75 | 75 | 72 | 68 | 71 | 59 | 67 | 68 | 59 | 73 | 64 | 71 | 71 |
| Office [d] | 104 | 101 | 103 | 110 | 98 | 98 | 100 | 97 | 92 | 99 | 99 | 92 | 102 | 102 | 90 | 107 | 103 | 109 | 105 |
| Restaurant [e] | 102 | 98 | 93 | 94 | 89 | 81 | 89 | 82 | 68 | 93 | 82 | 77 | 94 | 87 | 86 | 102 | 94 | 114 | 122 |
| Retail | 117 | 116 | 112 | 114 | 105 | 97 | 90 | 90 | 70 | 85 | 77 | 64 | 81 | 77 | 62 | 78 | 77 | 71 | 69 |
| Education [f] | 97 | 100 | 113 | 110 | 112 | 110 | 107 | 114 | 104 | 105 | 117 | 102 | 103 | 118 | 94 | 110 | 110 | 114 | 110 |
| Warehouse [g] | 95 | 92 | 105 | 98 | 104 | 107 | 91 | 109 | 113 | 105 | 117 | 106 | 89 | 99 | 102 | 82 | 98 | 88 | 75 |
| Other [h] | 52 | 50 | 50 | 50 | 47 | 46 | 44 | 46 | 42 | 46 | 45 | 41 | 45 | 46 | 41 | 48 | 45 | 47 | 47 |

| ~~Building Use Type~~ [a] | ~~Climate Zone~~ | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ~~0A~~ | ~~0B~~ | ~~1A~~ | ~~1B~~ | ~~2A~~ | ~~2B~~ | ~~3A~~ | ~~3B~~ | ~~3C~~ | ~~4A~~ | ~~4B~~ | ~~4C~~ | ~~5A~~ | ~~5B~~ | ~~5C~~ | ~~6A~~ | ~~6B~~ | ~~7~~ | ~~8~~ |
| ~~Multifamily~~ [b] | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~46~~ | ~~50~~ | ~~50~~ | ~~48~~ | ~~50~~ | ~~46~~ | ~~50~~ | ~~50~~ | ~~49~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ |
| ~~Health care~~ [c] | ~~50~~ | ~~46~~ | ~~47~~ | ~~46~~ | ~~47~~ | ~~45~~ | ~~49~~ | ~~47~~ | ~~50~~ | ~~46~~ | ~~46~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ |
| ~~Hotel/motel~~ | ~~50~~ | ~~45~~ | ~~47~~ | ~~46~~ | ~~49~~ | ~~48~~ | ~~46~~ | ~~47~~ | ~~50~~ | ~~48~~ | ~~50~~ | ~~50~~ | ~~47~~ | ~~46~~ | ~~47~~ | ~~49~~ | ~~46~~ | ~~50~~ | ~~50~~ |
| ~~Office~~ [d] | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ |
| ~~Restaurant~~ [e] | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ |
| ~~Retail~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~49~~ | ~~50~~ | ~~47~~ | ~~48~~ | ~~45~~ | ~~42~~ | ~~46~~ |
| ~~Education~~ [f] | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~46~~ |
| ~~Warehouse~~ [g] | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ | ~~50~~ |
| ~~Other~~ [h] | ~~39~~ | ~~36~~ | ~~37~~ | ~~37~~ | ~~35~~ | ~~34~~ | ~~30~~ | ~~32~~ | ~~33~~ | ~~28~~ | ~~32~~ | ~~30~~ | ~~29~~ | ~~31~~ | ~~30~~ | ~~29~~ | ~~30~~ | ~~29~~ | ~~29~~ |

*Modify Section 11.5.2 as follows*

**11.5.2 Energy Credits Achieved.** Energy credits achieved for the project shall be the sum of measure energy credits for individual measures included in the project. Where a project contains multiple *building* use types, credits achieved for each *building* use type shall be weighted by the *gross floor area* of each *building* use type group to determine the weighted-average project energy credits achieved. The combined renewable (R01) and load management (G01 through ~~G07~~G10) energy credits achieved through Section 11.5.2.6 and 11.5.2.8 shall be limited to ~~meeting~~ no greater than 60% of required energy credits. Credits are available for the measures listed in Section 11.5.2.1 through 11.5.2.8~~.~~ and the ~~Base~~ base energy ~~credits~~ credit values are ~~shown in~~specified by Tables 11.5.3-1 through 11.5.3-9 by *building* use types ~~in each~~ and climate zone~~.~~ Measure *energy* credits achieved shall be determined in one of three ways, depending on the measure:

a. The measure energy credit shall be the base *energy* credit for the measure, where no adjustment factor or formula is shown in the measure description (e.g., $EC_{H02\_base}$).
b. The measure energy credit shall be the base *energy* credit for the measure, adjusted by a factor or formula as stated in the measure description in this section. Where adjustments are applied, each measure *energy* credit shall be rounded to the nearest whole number (e.g., $EC_{H02\_adj}$).
c. The measure energy credit shall be by direct formula as stated in the measure description in this section, where each measure credit shall be rounded to the nearest whole number (e.g., $EC_{H02\_calc}$).

***Informative Note:*** The number of energy credits achieved for each individual measure is determined in one of three ways:

1. The base energy credit for the measure shown in Tables 11.5.3-1 through 11.5.3-9 for the building use type and climate zone where no adjustment factor or formula is shown in the measure description. This applies to the following measures:
   - E02: 11.5.2.2, "Reduced air leakage"
   - H04: 11.5.2.2.4, "Residential Space HVAC Control"
   - H07: 11.5.2.2.7, "Improved HVAC Sequence of Operations"
   - W01: 11.5.2.3.1(a), "Heat Recovery for Service Hot-Water Preheating"
   - W05: 11.5.2.3.3(a), "Point-of-Use Water Heater"
   - W06: 11.5.2.3.3(b), "Thermostatic Balancing Valves"
   - W07: 11.5.2.3.4, "Dwelling-Unit Service Hot-Water Submeters"
   - W08: 11.5.2.3.5, ~~"Right Sizing the Hot-Water Distribution System"~~ "Reduce Residential Service Hot-Water Fixture Flow"
   - W11: 11.5.2.3.8, "Low-Temperature Commercial Dishwashers"

- P01: 11.5.2.4, "Energy Monitoring"
- L03: 11.5.2.5.3, "Occupancy Sensor Control Areas"
- ~~Q02: 11.5.2.7.2, "Efficient Kitchen Equipment"~~
- Q03: 11.5.2.7.3, "Fault Detection and Diagnostics System"
- G02: 11.5.2.8.2, "HVAC Load Management"
- G03: 11.5.2.8.3, "Automated Shading Load Management"
- G07: 11.5.2.8.7, "Building Thermal Mass"

2. The base credit for the measure shown in Tables 11.5.3-1 through 11.5.3-9 for the *building* use type and climate zone adjusted by proration factor or formula as stated in the measure description in this section. This applies to the following measures:
   - H02: 11.5.2.2.2, "HVAC Heating Performance Improvement"
   - H03: 11.5.2.2.3, "HVAC Cooling Performance Improvement"
   - H05: 11.5.2.2.5, "Ground-Source Heat-Pump System"
   - H06: 11.5.2.2.6, "Dedicated Outdoor Air System with Zone Fan Control"
   - H08: 11.5.2.2.8, "Axial Fan Open-Circuit Cooling Tower Efficiency Improvement"
   - W02: 11.5.2.3.1(b), "Heat-Pump Water Heater"
   - W03: 11.5.2.3.1(c), "Efficient Gas Water Heater"
   - W04: 11.5.2.3.2, "Service Hot-Water Piping Insulation Increase"
   - W09: 11.5.2.3.6, "Shower Drain Heat Recovery"
   - W10: 11.5.2.3.7, "Ozone Laundry Sanitation"
   - L02: 11.5.2.5.2, "Continuous Dimming and High-End Trim"
   - L04: 11.5.2.5.4, "Increased Daylighting Control Area"
   - L05: 11.5.2.5.5, "Lighting Control for Multifamily Buildings"
   - L06: 11.5.2.5.6, "Reduce Interior Lighting Power"
   - R01: 11.5.2.6, "On-Site Renewable Energy"
   - Q01: 11.5.2.7.1, "Efficient Elevator Equipment"
   - Q02: 11.5.2.7.2, "Efficient Kitchen Equipment"
   - G01: 11.5.2.8.1, "Lighting Load Management"
   - G04: 11.5.2.8.4, "Electric Energy Storage"
   - G05: 11.5.2.8.5, "HVAC Cooling Energy Storage"
   - G06: 11.5.2.8.6, "Service Hot-Water Thermal Storage"
   - G08: 11.5.2.8.7, "Electric Vehicle Charging Load Management"
   - G09: 11.5.2.8.8, "Electric Vehicle Power Export"
   - G10: 11.5.2.8.9, "HVAC Heating Energy Storage"

*Modify Section 11.5.2.1.1 and add new Sections 11.5.2.1 and 11.5.2.1.2 and Tables 11.5.2.1.2-1 and 11.5.2.1.2-2 as follows:*

**11.5.2.1 Improved Building Envelope Performance.** To achieve these credits, *building envelope* measures shall be installed in accordance with Section 11.5.2.1.1 or 11.5.2.1.2. The *building envelope* shall also comply with Sections 5.4 and 5.5.

**11.5.2.1.1 E01: Improved Envelope Performance.** ~~To achieve this credit, building envelope measures shall be installed to improve the energy performance of the project. Measure e~~ Energy credits for ~~improvement of the~~ improved *building envelope energy* performance shall be determined ~~based on the following~~ as follows:

$$EC_{E01_{calc}} = 1000x\frac{EPF_{E01_{base}} - EPF}{EPF_{E01_{base}}}$$

where

$EC_{E01\_calc}$ = energy credits achieved for improved envelope performance
$EPF_{E01\_base}$ = *base envelope performance factor* calculated in accordance with Normative Appendix C
$EPF_{prop}$ = *proposed envelope performance factor* calculated in accordance with Normative Appendix C

**11.5.2.1.2 E02: Reduced Air Leakage.** Where tested in accordance with the applicable method specified in Section 5.4.3.1.4, energy credits for measured *air leakage* less than the maximum *air leakage* permitted by Section 5.4.3.1.4 shall be determined as follows:

a. Energy credits for multifamily *buildings* shall be the product of the applicable value in Table 11.5.2.1.2-1 and the number of above-grade floors, rounded to the nearest whole number.

b. For all other *building* use types energy credits shall be the applicable value specified in Table 11.5.2.1.2-2.

**Table 11.5.2.1.2-1: E02 Reduced Air Leakage Credits for Multifamily Buildings**

| ***Building* Use Type** | **Maximum Measured Air Leakage (cfm/sf @ 75 Pa)** | **Climate Zone** | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **0A** | **0B** | **1A** | **1B** | **2A** | **2B** | **3A** | **3B** | **3C** | **4A** | **4B** | **4C** | **5A** | **5B** | **5C** | **6A** | **6B** | **7** | **8** |
| Multifamily (credit /floor)[a] | 0.30 | 0.4 | 0.5 | 0.2 | 0.2 | 0.1 | 0.1 | 0.3 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.9 | 0.2 | 0.0 | 1.2 | 0.6 | 0.9 | 0.4 |
| | 0.25 | 0.7 | 0.8 | 0.2 | 0.3 | 0.2 | 0.1 | 0.4 | 0.0 | 0.0 | 0.9 | 0.0 | 0.1 | 1.3 | 0.2 | 0.0 | 1.8 | 0.8 | 1.3 | 0.6 |
| | 0.20 | 0.9 | 1.0 | 0.3 | 0.4 | 0.2 | 0.2 | 0.5 | 0.0 | 0.0 | 1.2 | 0.0 | 0.1 | 1.8 | 0.3 | 0.0 | 2.3 | 1.1 | 1.7 | 0.7 |
| | 0.15 | 1.1 | 1.3 | 0.4 | 0.5 | 0.3 | 0.2 | 0.6 | 0.1 | 0.0 | 1.4 | 0.0 | 0.1 | 2.2 | 0.3 | 0.0 | 2.9 | 1.3 | 2.1 | 0.9 |
| | 0.10 | 1.3 | 1.5 | 0.4 | 0.6 | 0.3 | 0.2 | 0.7 | 0.1 | 0.0 | 1.6 | 0.0 | 0.1 | 2.6 | 0.3 | 0.0 | 3.4 | 1.5 | 2.5 | 1.1 |
| [a]E02 = Number of floors x tabular credits rounded to the nearest whole number. | | | | | | | | | | | | | | | | | | | | |

**Table 11.5.2.1.2-1: E02 Reduced Air Leakage Credits for Buildings other than Multifamily**

| ***Building* Use Type** | **Maximum Measured Air Leakage (cfm/sf @ 75 Pa)** | **Climate Zone** | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **0A** | **0B** | **1A** | **1B** | **2A** | **2B** | **3A** | **3B** | **3C** | **4A** | **4B** | **4C** | **5A** | **5B** | **5C** | **6A** | **6B** | **7** | **8** |
| Healthcare | 0.30 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 0.25 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| | 0.20 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |
| | 0.15 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| | 0.10 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| Hotel/motel | 0.30 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 3 | 1 | 3 | 2 |
| | 0.25 | 2 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 3 | 1 | 0 | 5 | 2 | 4 | 3 |
| | 0.20 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 4 | 1 | 0 | 6 | 3 | 6 | 4 |
| | 0.15 | 3 | 3 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 3 | 1 | 0 | 5 | 1 | 0 | 8 | 3 | 7 | 5 |
| | 0.10 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 4 | 1 | 1 | 6 | 2 | 0 | 9 | 4 | 8 | 6 |
| Office | 0.30 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 3 | 1 | 0 | 4 | 2 | 3 | 2 |
| | 0.25 | 2 | 1 | 1 | 1 | 1 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 4 | 1 | 0 | 6 | 3 | 4 | 2 |
| | 0.20 | 2 | 1 | 1 | 1 | 1 | 0 | 2 | 1 | 0 | 3 | 0 | 1 | 5 | 2 | 1 | 7 | 4 | 6 | 3 |
| | 0.15 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 0 | 4 | 0 | 2 | 6 | 2 | 1 | 9 | 5 | 7 | 4 |
| | 0.10 | 3 | 2 | 2 | 1 | 2 | 1 | 3 | 1 | 0 | 5 | 1 | 2 | 7 | 2 | 1 | 11 | 6 | 9 | 4 |
| Restaurant | 0.30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 0.25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| | 0.20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 2 | 1 | 0 |
| | 0.15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 1 | 0 |
| | 0.10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| Retail | 0.30 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 2 | 2 | 1 |
| | 0.25 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 0 | 3 | 1 | 2 | 2 | 2 | 1 | 5 | 3 | 3 | 2 |
| | 0.20 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 0 | 4 | 1 | 2 | 3 | 2 | 1 | 6 | 4 | 5 | 2 |
| | 0.15 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 0 | 5 | 2 | 3 | 5 | 3 | 2 | 7 | 5 | 6 | 3 |
| | 0.10 | 2 | 3 | 1 | 1 | 1 | 1 | 3 | 2 | 0 | 6 | 2 | 4 | 6 | 3 | 2 | 9 | 6 | 7 | 4 |
| Education | 0.30 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 2 | 1 | 2 | 1 |
| | 0.25 | 1 | 1 | 1 | 1 | 1 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 3 | 1 | 0 | 3 | 2 | 3 | 2 |
| | 0.20 | 1 | 2 | 1 | 1 | 1 | 0 | 3 | 0 | 0 | 3 | 0 | 1 | 4 | 1 | 0 | 5 | 2 | 4 | 2 |
| | 0.15 | 2 | 2 | 1 | 1 | 2 | 1 | 3 | 1 | 0 | 4 | 0 | 1 | 6 | 1 | 0 | 6 | 3 | 5 | 3 |
| | 0.10 | 2 | 2 | 2 | 1 | 2 | 1 | 3 | 1 | 0 | 4 | 0 | 1 | 7 | 1 | 0 | 7 | 4 | 6 | 3 |
| Warehouse | 0.30 | 3 | 4 | 1 | 2 | 1 | 1 | 6 | 2 | 0 | 12 | 4 | 6 | 17 | 10 | 4 | 20 | 14 | 17 | 9 |
| | 0.25 | 4 | 6 | 1 | 3 | 2 | 2 | 10 | 3 | 0 | 18 | 7 | 9 | 25 | 14 | 6 | 30 | 21 | 25 | 14 |
| | 0.20 | 6 | 9 | 2 | 3 | 2 | 3 | 13 | 4 | 0 | 24 | 10 | 12 | 33 | 19 | 7 | 40 | 28 | 33 | 18 |
| | 0.15 | 7 | 11 | 2 | 4 | 3 | 3 | 15 | 5 | 0 | 30 | 11 | 15 | 42 | 23 | 9 | 50 | 35 | 42 | 23 |
| | 0.10 | 9 | 14 | 3 | 5 | 4 | 4 | 18 | 6 | 0 | 36 | 14 | 18 | 50 | 28 | 11 | 60 | 42 | 50 | 28 |
| Other | 0.30 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 2 | 1 | 0 | 3 | 2 | 3 | 2 |
| | 0.25 | 2 | 1 | 1 | 1 | 1 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 3 | 1 | 0 | 5 | 3 | 4 | 2 |
| | 0.20 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 0 | 3 | 0 | 1 | 4 | 2 | 1 | 6 | 3 | 5 | 3 |
| | 0.15 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 0 | 4 | 1 | 2 | 6 | 2 | 1 | 8 | 4 | 6 | 4 |
| | 0.10 | 3 | 3 | 2 | 1 | 2 | 1 | 3 | 1 | 0 | 5 | 1 | 2 | 7 | 2 | 1 | 9 | 5 | 8 | 4 |

*Modify section 11.5.2.2 as follows*

**11.1.2.2 Improved HVAC Performance.** *Equipment* shall ~~meet applicable requirements of~~ comply with Sections 6.4 and 6.5. Credits shall be as ~~shown in~~specified by Section 11.5.3 or as specified in each subsection for *building* use types where base ~~energy~~ credits are included in ~~Section~~ section tables. Systems are permitted to achieve HVAC energy credits by ~~meeting the requirements of~~ complying with one of the following:

a. Section 11.5.2.2.1, H01
b. Section 11.5.2.2.2, H02
c. Section 11.5.2.2.3, H03
d. Section 11.5.2.2.4, H04
e. Section 11.5.2.2.5, H05
f. Section 11.5.2.2.6, H06
g. Section 11.5.2.2.7, H07
h. Section 11.5.2.2.8, H08
i. Any combination of H02, H03, H04, H05, H06, H07, H08
j. Any combination H01, H04, and H07

*Modify section 11.5.2.2.3 as follows*

**11.5.2.2.3 H03: HVAC Cooling Performance Improvement.** To achieve this credit, *space* cooling *equipment* *efficiency* shall ~~exceed the minimum cooling *efficiency* requirements by~~ be 5% or more efficient than the minimum *efficiency* ~~listed in~~ specified in the applicable ~~the~~ tables in Section 6.8.1 ~~or Informative Appendix F~~. For water-cooled chiller plants, heat rejection *efficiency* shall also ~~exceed~~ be greater than the minimum *efficiency* ~~listed in~~ specified in Table 6.8.1-7 by ~~at least~~ not less than the percentage improvement in ~~the~~ chiller *efficiency*. Credit H08 shall be used to calculate the energy credit for the improved heat rejection *efficiency* of axial fan open-circuit cooling towers that is not in proportion to the percent of cooling *efficiency* improvement. The measure energy credit ($EC_{CE}$) for cooling *efficiency* improvement shall be determined as follows:

$$EC_{H03\_adj} = EC_{H03\_base} \, x \, \frac{EI_{cool}}{0.05}$$

$EC_{H03\_adj}$ = energy credits achieved for cooling *efficiency* improvement

$EC_{H03\_base}$ = H03 base energy credits from Section 11.5.3

$EI_{cool}$ = lesser of the percentage improvement (as a fraction) above minimum cooling *efficiency* requirements or ~~20% (0.20)~~50%(0.50) for DX systems or 30%(0.30) for air and water cooled chillers. Where cooling *equipment* with different minimum ~~efficiencies~~*efficiencies* are included in the *building*, a cooling capacity weighted-average improvement shall be used. Where multiple cooling performance requirements are provided, the *equipment* shall ~~exceed~~ be more efficient than the annualized *energy* or part-load requirement. Meeting both part-load and full-load *efficiencies* is not required.

*Add section 11.5.2.2.8 as follows*

**11.5.2.2.8 H08: Axial Fan Open Circuit Cooling Tower Efficiency Improvement.** To achieve this credit, the heat rejection *efficiency* of axial fan open circuit cooling towers shall be 15% or more efficient than the minimum *efficiency* specified, at the applicable rating condition, by Table 6.8.1-7. The credit shall be calculated as follows:

$$EC_{H08\_adj} = EC_{H08\_base} \, x \, \frac{(El_{CT} - EI_{cool})}{0.15}$$

Where

$EC_{H08\_adj}$ = energy credits achieved for heat rejection efficiency improvement

$EC_{H08\ base}$ = H08 base energy credit from Section 11.5.3

$EI_{CT}$ = lesser of the percentage cooling tower efficiency improvement (as a fraction) above minimum *efficiency* requirements from Table 6.8.107 or 60% (0.60)

$EI_{cool}$ = percentage improvement (as a fraction) in cooling efficiency taken for H03.

*Modify sections 11.5.2.3 as follows*

**11.1.2.3 Reduced Energy Use in Service Water Heating.** Energy credits described in Section 11.5.2.3.1 through ~~11.5.2.3.6~~ 11.5.2.3.8 are available in any combination described in those sections for *building* use types where base energy credits are specified by Section 11.5.3 ~~tables~~.

*Add new sections 11.5.2.3.7 and 11.5.2.3.8 as follows*

**11.5.2.3.7 W10: Ozone Laundry Sanitation.** To achieve this credit one or more washing machines in a central laundry facility, within the *building*, shall be designed and installed to use ozone laundry systems for sanitation. Washing machines intended for individual use by *building* occupants are not eligible to achieve this credit. Washing machines with ozone laundry systems shall comply with the following:

a) Be sized to provide ozone concentrations~~,~~ of not less than 2.0 ppm per washing machine, and designed to transfer ozone into the water using venturi injection or bubble diffusion.

b) Be specified on the construction documents submitted for permitting and installed prior to the issuance of the certificate of occupancy.

Base energy credit values, shall be adjusted based on the washing machine capacity being served by ozone laundry systems using the following factor:

$$EC_{W10_{adj}} = EC_{W10_{base}} x \frac{OzoneCapacity}{TotalCapacity}$$

Where:
$EC_{W10\_adj}$ = energy credits achieved for commercial ozone laundry systems
$EC_{W10\_base}$ = W10 base energy credit specified by Section 11.5.3
OzoneCapacity = The rated washing capacity, in pounds, of all washing machine equipment in central laundry facilities to be provided with ozone laundry systems.
TotalCapacity = The rated washing capacity, in pounds, of all washing machine equipment in central laundry facilities eligible to achieve this credit.

**11.5.2.3.8 W11: Low-Temperature Commercial Dishwashers.** To achieve this credit dishwashing *equipment* in commercial kitchens shall be low-temperature dishwashers that apply a chemical sanitizing solution for final sanitation and that comply with the applicable efficiency requirements specified in Table 11.5.2.7.2-3. Such equipment shall be specified on the construction documents submitted for permitting and installed prior to the issuance of the certificate of occupancy.

**Table 11.5.2.7.2-3 ~~Minimum~~ Efficiency Requirements for Energy Credits: Commercial Dishwashers[a]**

| Machine Type | High-Temp Efficiency Requirements | | Low-Temp Efficiency Requirements | | Test Procedure |
|---|---|---|---|---|---|
| | Idle Energy Rate [ab] | Water Consumption [bc] | Idle Energy Rate [ab] | Water Consumption [bc] | |
| Under counter | ~~≤0.50 kW~~ ≤0.30 *kW* | ≤0.86 GPR | ~~≤0.50 kW~~ ≤0.25 *kW* | ≤1.19 GPR | ASTM Standard ~~F1696-18~~ F1696-20 |
| Stationary single-tank door | ~~≤0.70 kW~~ ≤0.55 *kW* | ≤0.89 GPR | ~~≤0.60 kW~~ ≤0.30 *kW* | ≤1.18 GPR | ASTM Standard F1920-15 |
| Pot, pan, and utensil | ~~≤1.20 kW~~ ≤0.90 *kW* | ≤0.58 GPR | ~~≤1.00 kW~~ | ~~≤0.58 GPSF~~ | |
| Single-tank conveyor | ~~≤1.50 kW~~ ≤1.20 *kW* | ≤0.70 GPR | ~~≤1.50 kW~~ ≤0.85 *kW* | ≤0.79 GPR | |
| Multiple-tank conveyor | ~~≤2.25 kW~~ ≤1.85 *kW* | ≤0.54 GPR | ~~≤2.00 kW~~ ≤1.00 *kW* | ≤0.54 GPR | |
| Single-tank flight type | Reported | GPH ≤ 2.975*x* + 55.00 | ~~Reported~~ | ~~GPH ≤ 2.975x + 55.00~~ | |
| Multiple-tank flight type | Reported | GPH ≤ 4.96*x* + 17.00 | ~~Reported~~ | ~~GPH ≤ 4.96x + 17.00~~ | |

- Energy and water requirements from ENERGY STAR Program Requirements for Commercial Dishwashers – Eligibility Criteria (Rev. September – 2021)
- Idle results should be measured with the door closed and represent the total idle *energy* consumed by the machine including all tank heater(s) and controls. Internal or external booster heater *energy* consumption shall not be part of this measurement unless it cannot be separately monitored.
- GPR = gallons per rack; GPSF = gallons per square foot of rack; GPH = gallons per hour; x = square feet of conveyor belt (i.e., width × length)/min (max conveyor speed) x = maximum conveyor speed (feet/min as verified through NSF 3 certification) x conveyor belt width (feet).

*Modify sections 11.5.2.5 as follows*

**11.5.2.5 Lighting Efficiency Measures.** ~~To achieve these credits, interior lighting in the project shall meet~~ measure requirements in accordance with Sections ~~11.5.2.5.2, 11.5.2.5.3, 11.5.2.5.4, 11.5.2.5.5, or~~

~~11.5.2.5.6. Credits shall be as in Section 11.5.3. Use of multiple credits from this section shall be allowed. Functional testing of lighting controls shall comply with Section 9.9.~~Lighting efficiency base energy credit values shall be as specified by Section 11.5.3. Functional testing of lighting controls for lighting measures shall comply with Section 9.9.

1. L01 may not be used with any other lighting measures L02 – L06.
2. L02 and L06 may not be used together.
3. The sum of achieved energy credits from measures L02 – L06 and G01 shall not be more than 75 percent of the total available lighting credits from these measures for the applicable building use type and climate zone. Where a building includes multiple building use types the available lighting credits shall be the weighted average based on the *gross floor area* of each building use type.

~~***Informative Note:*** Where lighting *efficiency* measures include reductions in lighting power, the lighting design should achieve ANSI/IES recommended practice for illuminance levels as referenced at www.ies.org/standards/lighting-library/the-interactive-illuminance-selector or in relevant IES recommended practice (RP) standards.~~

*Modify sections 11.5.2.5.2 and 11.5.2.5.3 as follows*

**11.5.2.5.2 L02: Continuous Dimming and High-End Trim.** To achieve this credit, ~~*general lighting* in~~ 75% or more of ~~*gross lighted floor area*~~ the installed *interior lighting power* shall have *luminaires* configured for *continuous dimming* and *control devices* configured for *high-end trim* or *lumen maintenance*. Construction documents for permitting shall specify the maximum initial and tuned *set points* for each control group of *luminaires* at the time of permitting. *Control devices* shall be accessible only to authorized personnel, and shall comply with one of the following:

a. *Luminaires,* to be installed with *control devices* configured to use ~~*High*~~*high-end trim,* ~~shall be implemented, and *construction documents* shall state that maximum light output or power of controlled lighting~~ shall ~~be~~ have initial lighting power ~~initially~~ reduced by ~~at least~~ 15% or more from full output. ~~The average maximum light output or power of the controlled lighting shall be documented without *high-end trim* and with *high-end trim* in accordance with Section 9.9.1 to verify reduction of light output or power by at least 15% when tuned.~~
b. *Luminaires*, to be installed with *control devices* configured to use *lumen maintenance* ~~*control*~~ without lighting sensors, ~~is used, controls~~ shall be configured to limit the initial maximum lumen output or maximum lighting power to 85% or less of full light output or full power draw.
c. ~~*High-end trim* and *lumen maintenance* controls shall be accessible only to authorized personnel.~~
~~d.~~

~~Where this credit is taken, the additional *interior lighting power allowance* in Section 9.5.2.3 related to dimming control is not permitted to be used.~~ For hotel and multifamily *building* use types, the *gross lighted floor area* ~~is for common areas~~ shall not ~~including~~ include *dwelling units* or guest rooms. Where *general lighting* in less than 75% but ~~at least~~not less than 50% of the *gross lighted floor area* receives *high-end trim*, the base credits from the tables in Section 11.5.3 shall be prorated as follows:

~~$$\frac{\text{\% Tuned area of } \textit{gross lighted floor area}}{75\%} \text{ x Base energy credits for L02}$$~~

$$EC_{L02\_adj} = \frac{LUM_{tuned}}{75\%} \; x \; EC_{L02\_base}$$

where

$EC_{L02\_adj}$ = energy credits achieved for lighting load management

$LUM_{tuned}$ = percentage of installed interior lighting power using *luminaires* with *continuous dimming* and *control devices* configured for *high-end trim* or *lumen maintenance,* where $50\% \leq LUM_{tuned} \leq 75\%$

$EC_{L02\_base}$ = L02 base energy credit value specified by Section 11.5.3

***EDITORIAL NOTE:*** *Addendum BD modifies the titles of several types of lighting controls. See the below the line section*

**11.5.2.5.3 L03: Occupancy Sensor Control Areas.** To achieve this credit, *buildings* ~~either *buildings*~~ shall ~~use~~ comply with one of the following:

a. Section 9.3, "Simplified Building Method Compliance Path,"
b. ~~or in all spaces where automatic partial OFF (See Section 9.4.1.1[g]) or automatic full OFF (See Section 9.4.1.1[h]) is not required,it shall be installed as follows~~:

Where a space type in Table 9.5.2.1-1 or Table 9.5.2.1-2 specifies Add2 for Auto Reduction or Auto Full, occupancy sensors serving the space shall be installed and configured as follows:

1. *Automatic* shutoff or light reduction shall occur within 15 minutes of all occupants leaving each control zone.
2. For *spaces* with multiple control zones or *automatic* partial OFF control, *automatic* full shutoff shall occur within 15 minutes of all occupants leaving the *space*.
3. For *spaces* with one control zone, *automatic* full OFF control shall be used.
4. All areas of the project with *automatic* partial OFF or *automatic full* OFF control shall have one *control device* for every 600 ft$^2$ of *gross lighted area*.

**Exception to 11.5.2.5.3:** ~~Exception to *automatic* full OFF control requirement:~~ *Automatic* full OFF is not required for stairwells.

*Modify sections 11.5.2.5.5 as follows:*

**11.5.2.5.5 L05: Lighting Control for Multifamily Buildings**

a. Common-areas and ~~restrooms, laundry rooms, storage rooms~~, utility rooms~~, and garages~~ shall have *automatic* full OFF control in accordance with Section 9.4.1.1(h).
b. ~~Stairwells, lobbies, and corridors shall have *automatic* partial OFF in accordance with Section 9.4.1.1(g) controls that shall reduce *general lighting* power in the *space* by at least 66% of full lighting power within 15 minutes of all occupants leaving the *space*.~~

Each *dwelling unit* shall have a main control by the main entrance that turns off all the lights and all switched receptacles in the *dwelling unit*. Not less than two switched receptacles shall be provided in living and sleeping rooms or areas and clearly identified. All switched receptacles shall be located within 12 in. of an unswitched receptacle. The main control shall be permitted to have two controls, one for permanently wired lighting and one for switched receptacles. The main controls should be clearly identified as "lights master off" and "switched outlets master off".

Alternatively, where all permanently wired lighting is controlled by *occupancy sensors*, only ~~the~~ switched outlets are required to be master switched.

~~Alternatively, stairwells are permitted to be excluded from item (b) and measure credits shall be one less than L05 base credits from Section 11.5.3.~~

**11.5.2.5.6 L06: Reduce Interior Lighting Power.** To achieve this credit, the building shall use Section 9.3, "Simplified Building Method Compliance Path," or the *installed interior lighting power*, less any additional lighting ~~allowed from~~ permitted by Section 9.5.2.2, shall be 95% or less than the *interior lighting power allowance,* less any additional lighting ~~allowed~~ ~~in~~ permitted by Section 9.5.2.2. In multifamily, dormitory, hotel, and motel *buildings*, the credit ~~is~~ shall be calculated for ~~common~~ all areas excluding *dwelling units,* dormitories, living quarters, fire station sleeping quarters, and guest rooms~~other than *dwelling units* and guest rooms~~. Energy credits shall not be greater than ~~two~~ 2 times the L06 base energy credit ~~from~~ specified by Section 11.5.3 and shall be determined as follows:

$$EC_{L06\_adj} = \sout{EC_{Stm}} + EC_{L06\_base} x LP_{DCCF} x 20 x \frac{LPA_{net} - LP_{net}}{LPA_{net}}$$

$EC_{L06\_adj}$ = energy credits achieved for lighting power reduction

~~$EC_{sim}$ = $EC_{L06\_base}$ where *buildings* use Section 9.3, otherwise $EC_{sim}$ = 0~~

$EC_{L06\_base}$ = L06 base energy credit from Section 11.5.3

LP_DCCF = *installed interior lighting power* DC-coupling factor (1.05 if *DC-coupled*, 1.0 if *AC-coupled)*. Where *installed lighting power systems* with different LP_DCCF values are included in the *building,* an *installed interior lighting power* weighted-average LP_DCCF shall be used.

$LPA_{net}$ = net *interior lighting power allowance* wattage calculated in accordance with the method used to ~~meet the requirements of~~ comply with Section 9.2.2.1, ~~W,~~ excluding any additional interior lighting allowances ~~in~~ permitted by Section 9.5.2.2

$LP_{net}$ = net *installed interior lighting power* wattage calculated in accordance with Sections 9.1.3 and 9.1.4, W, excluding any additional interior lighting allowances ~~in~~ permitted by Section 9.5.2.2

*Modify sections 11.5.2.7.2 as follows*

**11.5.2.7.2 Q02: Efficient Kitchen Equipment.** This credit applies to ~~To achieve this credit, in projects or facilities that include a~~ commercial kitchens, within a *building*, ~~with~~ where~~at least~~ one or more gas or electric fryers is to be installed.~~, all fryers, dishwashers, steam cookers, and/or ovens shall comply with all of the following:~~. Credit options exist for fryers, dishwashers, steam cookers, and/or ovens. All units of the same equipment type, installed in the building, shall comply. To achieve this credit, commercial kitchen equipment shall:

a. Achieve performance levels in accordance with the *equipment* specifications listed in Tables 11.5.2.7.2-1 through 11.5.2.7.2-4 ~~when~~ where rated in accordance with the applicable test procedure.
b. Be installed prior to the issuance of the certificate of occupancy.
c. Have associated performance levels ~~listed on~~ specified in the *construction documents* submitted for permitting.

Energy credits for efficient kitchen *equipment* shall be determined as follows:

$$EC_{Q02\_adj} = EC_{Q02\_fryer} + EC_{Q02\_steam} + EC_{Q02\_Dish} + EC_{Q02\_Oven}$$

Where
$EC_{Q02\_adj}$ = energy credits achieved for efficient kitchen equipment
$EC_{Q02\_Fryer}$ = Q02 base energy credit from Section 11.5.3
$EC_{Q02\_Steam} = (EC_{Q02_{Fryer}} - 1)$ where steam cookers from Table 11.5.2.7.2-2 are installed
$EC_{Q02\_Dish} = (EC_{Q02_{Fryer}} - 1)$ where commercial dishwashers from Table 11.5.2.7.2-3 are installed
$EC_{Q02\_Oven} = (EC_{Q02_{Fryer}} - 2)$ where commercial ovens from Table 11.5.2.7.2-4 are installed

Energy credits for efficient kitchen *equipment* shall be as stated in Section 11.5.3.

***Informative Note:*** Where a commercial kitchen is included in a *building* where base energy credit~~s~~ values for efficient kitchen *equipment* are ~~excluded~~ not specified by Section 11.5.3, such as a cafeteria in an office *building*, ~~treat~~ the kitchen and dining area shall be treated as a restaurant *building* use type following the weighted-average method specified by~~in~~ Section 11.5.1(a).

*Modify sections 11.5.2.8, 11.5.2.8.1 and 11.5.2.8.2 as follows*

**11.5.2.8 Load Management Systems.** Energy credits for load management measures in Sections 11.5.2.8.1 through 11.5.2.8.10 are available in any combination to projects in *buildings* that have ~~at least~~ one or more of the following:

**11.5.2.8.1 G01: Lighting Load Management.** To achieve this credit, *luminaires* shall have dimming capability, and load management controls shall gradually, over ~~a period of~~ not more than 15 minutes, reduce *general lighting* power with *continuous dimming* ~~in 75% of the project area~~ by ~~at least~~ not less than 20%

~~during peak price periods coincident with high *building* load~~. It shall be permitted to substitute decorative and display- lighting equivalent power reductions for *general lighting* reductions. Where ~~less than~~ 50% or more, but not greater than 75%, ~~but at least 50%~~ of the project *general lighting* power is controlled, the base energy credit~~s~~ values from the tables in Section 11.5.3 shall be pro- rated as follows:

~~Portion of project with lighting load management, % / 75% × G01 table credits~~

$$EC_{G01\_adj} = \frac{IGLP_{lmc}}{75\%} x EC_{G01\_base}$$

where

$EC_{G01\_adj}$ = energy credits achieved for lighting load management

$IGLP_{lmc}$ = percentage of installed *general lighting* power with load management controls, where $50\% \le IGLP_{lmc} \le 75\%$

$EC_{G01\_base}$ = G01 base energy credit value specified by Section 11.5.3

**Exception to 11.5.2.8.1:** Load management controls shall be permitted to turn-off 25% or more of lighting power in ~~Warehouse~~ warehouse~~,~~ ~~*semiheated* semiheated~~, and ~~or~~ retail storage areas ~~with load management controls shall be permitted to switch off at least 25% of lighting power~~ in 75% of the ~~project area~~ *interior lighting power allowance* without dimming.

**11.5.2.8.2 G02: HVAC Load Management.** To achieve this credit, load management controls shall be configured to:

a. ~~gradually~~ increase the cooling *set point* by ~~at least~~ 3°F or more or reduce effective cooling capacity to 60% of installed capacity during the period of coincident high *building* load and summer peak prices;
b. ~~where electric heating is used, gradually~~ reduce the heating *set point* of electric heating by ~~at least~~ 3°F or more or reduce effective heating capacity to 60% of installed capacity during the period of coincident high *building* load and winter peak prices; and
c. provide excess *outdoor air* preceding the peak summer price period and reduce *outdoor air* by ~~at least~~ 30% or more during the period of coincident high *building* load and summer peak prices, in accordance with ~~ASHRAE Standard 62.1~~, Section 6.2.5.2 of ASHRAE Standard 62.1.

*Modify sections 11.5.2.8.4, 11.5.2.8.5 and 11.5.2.8.6 as follows*

**11.5.2.8.4 G04: ~~Electric~~ Electrical Energy Storage.** To achieve this credit, ~~electric~~ electrical *energy* storage devices, such as batteries or flywheel~~s devices,~~ shall be designed to be charged by load management controls ~~to store electricity~~ during off-peak periods and to use stored *energy* during on-peak periods to reduce *building* peak period *demand*. ~~Electric~~ Electrical *energy* storage devices shall have a ~~minimum~~ capacity ~~between~~ of ~~at least~~ not less than 0.5 Wh/ft$^2$ based on project *gross floor area*. and ~~For capacity other than 1.0 Wh/ft$^2$, credits can~~ Base energy credit values specified by Section 11.5.3 shall be prorated as follows:

~~$\frac{installedelectricstoragecapacity, W\,h/ft\,2}{1.0} x G04 table credits$~~

$$EC_{G04\_adj} = \frac{EESC_{inst}}{1.0} x EC_{G04\_base}$$

where

$EC_{G04\_adj}$ = energy credits achieved for electrical *energy* storage

$EESC_{inst}$ = *installed electrical energy storage capacity, Wh/ft$^2$*

$EC_{G04\ base}$ = G04 base energy credit value specified by Section 11.5.3

**11.5.2.8.5 G05: HVAC Cooling Energy Storage.** To achieve this credit, ice or chilled-water storage *equipment* shall be installed and load management controls configured to reduce electric cooling peak *demand,* shift load to match regional generation of renewable energy, or shift load to match favorable outdoor ambient conditions that reduce overall energy consumption. Storage ~~tank(s)~~container(s) shall be demonstrated through analysis to have less than 2% loss of stored capacity over a 24-hour period for the cooling design day.

Base energy credits in Section 11.5.3 are for storage capacity of 1.0 ton-hours storage per ton of design-day peak cooling load with a 1.15 sizing factor. ~~Prorate *energy.*~~ Energy credits for ~~other~~ installed storage *systems* sized between 0.5 and ~~4.0~~5.0 ton-hours (kWh) storage per ton (kW) of design-day peak cooling load shall be prorated. Larger storage shall be permitted; however, prorated credits shall be ~~are~~ limited by a storage ratio no greater than ~~o~~ ~~4.0~~5.0 ton-hours (kWh) storage per ton (kW) of design-day cooling load. The capacity of the thermal storage device shall be provided by the manufacturer of the device on the construction documents submitted for permitting. ~~Energy~~ Prorated energy credits shall be determined as follows:

$$EC_{G05\_adj} = EC_{G05\_base}\ x\ \frac{(1.44\ x\ SR + 0.71)}{2.15}$$

Where

$EC_{G05\_adj}$ = energy credits achieved for HVAC cooling *energy* storage

$EC_{G05\_base}$ = G05 base energy credit for *building* use type and climate zone based on ton-hours storage per ton (kW-hr storage per kW) of design-day peak cooling load

SR = storage ratio in ton-hours (kWh) storage per ton (kW) of design-day peak cooling load, where $0.5 \le SR \le$ ~~4.0~~5.0

***Informative Note:*** Where the thermal storage system is capable of and configured to provide storage for heating and cooling load management credits may be claimed for both sections 11.5.2.8.5 and 11.5.2.8.10. AHRI 900 can be utilized for the testing and rating of thermal storage equipment used for cooling, which may be charged and discharged with any variety of heat transfer fluids, including thermal storage using water, ice on coil, encapsulated ice, phase change material, ice harvester chiller, ice slurry, or unitary. Measure G05 base energy credit values in Section 11.5.3 are based on a storage capacity of 1.0 ton-hours (kWh) storage per ton (kW) of design-day peak cooling load with a 1.15 sizing factor.

**11.5.2.8.6 G06: Service Hot-Water Thermal Storage.** To achieve this credit, where service hot water is heated by electricity, *automatic* controls activated by ~~utility~~ ~~*demand* response signal~~ *demand response signal*, peak price period time control, or local *building demand* monitoring shall be configured to preheat stored service hot water before the peak- price period and suspend electric water heating during the period of peak prices coincident with peak *building* load. *Demand response controls* shall be in accordance with AHRI Standard 1430. Where heat pump water heating is used, the required, additional ~~Storage~~storage capacity shall ~~be provided by~~ comply with item (b). All other systems shall comply with ~~be provided by~~ either item (a.) or item (b.)~~of the following~~.

a. ~~Preheating~~ Preheat water above 140°F delivery temperature to provide ~~with at least~~ 1.2 kWh or more of additional *energy* storage per *kW* of water heating capacity. Tempering valves shall be provided at the *water heater* delivery location. ~~This option is not available where heat pump water heating is used.~~
b. ~~Providing~~ Provide additional heated water tank storage capacity above peak service hot-water demand with equivalent peak storage capacity to that calculated in accordance with item (a).

*Add new sections 11.5.2.8.8 through 11.5.2.8.10*

**11.5.2.8.8 G08: Electric Vehicle Charging Load Management.** To achieve this credit, buildings with parking facilities with 40 kW or more of load dedicated to electric vehicle charging shall have automatic

controls activated by a utility demand response signal, peak price period time control, or local building monitoring which shall be configured to reduce electric vehicle charging load by not less than 10% of the active load dedicated to electric vehicle charging. For projects capable of reducing electric vehicle charging load by more than 4 kW, credits shall be prorated as follows:

$$EC_{G08\_adj} = \frac{EV_{CL\_red}}{1.0} \; x \; EC_{G08\_base}$$

where

$EC_{G08\_adj}$ = energy credits achieved for electric vehicle charging load management

$EV_{CL\_red}$ = *electric vehicle charging load reduction, kW*

$EC_{G08\_base}$ = G08 base energy credit value specified by Section 11.5.3

**11.5.2.8.9 G09: Electric Vehicle Power Export.** To achieve this credit, warehouses and multifamily buildings with parking facilities with 40 kW or more of load dedicated to electric vehicle charging shall have:

a. Electric vehicle power transfer equipment configured to export power from electric vehicles into the building's power supply,

b. Automatic controls, activated by utility demand response signal, peak price period time control, or local building monitoring, shall enable electric vehicle power export by 10% or more of active load dedicated to electric vehicle charging and be configured to use stored energy during on-peak periods to reduce building peak period demand.

For projects with more than 40 kW of electric vehicle power export or projects that enable electric vehicle power export by 10% or more of overall load dedicated to electric vehicle charging, credits can be prorated as follows:

$$EC_{G09\_adj} = \frac{EVSE_{cap}}{1.0} \; x \; EC_{G09\_base}$$

where

$EC_{G09\_adj}$ = energy credits achieved for electric vehicle charging load management

$EVSE_{cap}$ = installed EVSE capacity capable of electric vehicle power export, *kW*

$EC_{G09\_base}$ = G08 base energy credit value specified by Section 11.5.3

**11.5.2.8.10 G10: HVAC Heating Energy Storage.** To achieve this credit, stored heating thermal energy shall be generated by electrical means. Thermal energy storage heating equipment shall be installed and load management controls configured to reduce electric heating peak demand, shift load to match regional generation of renewable energy, or shift load to match favorable outdoor ambient conditions that reduce overall energy consumption. Storage container(s) shall be demonstrated through analysis to have less than 2% loss of stored thermal capacity over a 24-hour period for the heating design day.

Energy credits for installed storage systems sized between 0.5 and 5.0 MBTU (kWh) storage per MBTU/hr (kW) of design-day peak heating load shall be prorated. Larger storage shall be permitted; however, prorated credits shall be limited by a storage ratio no greater than 5.0 MBTU (kWh) storage per MBTU/hr (kW) of design-day peak heating load. The capacity of the thermal storage device provided by the manufacturer shall be specified in the construction documents submitted for permitting. Prorated energy credits shall be determined as follows:

$EC_{G10\_adj} = EC_{G10\_base}$ x HeatTypeMult x $(0.198 + 0.545 \text{ x SR} - 0.072 \text{ x SR}^2)$

where

$EC_{G10\_adj}$ = energy credits achieved for HVAC heating energy storage
$EC_{G10\_base}$ = G10 base energy credit for building use type and climate zone based on MBTU storage per MBTU/hr (kW-hr storage per kW) of design-day heating load
HeatTypeMult = 1.0 for electric resistance heating
0.42 for heat pump heating in climate zones 0 to 4, 5A, and 5C
0.57 for heat pump heating in climate zones 5B, 6A, 6B, 7, and 8
SR = storage ratio in MBTU storage per MBTU/hr (kW-hr storage per kW) of design-day heating load, where $0.5 \le SR \le 5.0$

***Informative Note**:* Where the thermal storage system is capable of and configured to provide storage for heating and cooling load management credits may be claimed for Sections 11.5.2.8.5 and 11.5.2.8.10. Measure G10 base energy credit values in Section 11.5.3 are based on storage capacity of 2.0 MBTU (kWh) storage per MBTU/hr (kW) of design-day peak heating load with a 1.15 sizing factor.

*Modify Tables 11.5.3-1 through 11.5.3-9 as follows. Rows not shown are unchanged.*

**Table 11.5.3-1 Energy Credits for Multifamily**

| ID | Energy Credit Abbreviated Title | Section | Climate Zone | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0A | 0B | 1A | 1B | 2A | 2B | 3A | 3B | 3C | 4A | 4B | 4C | 5A | 5B | 5C | 6A | 6B | 7 | 8 |
| E01 | Improved Envelope Performance | 11.5.2.1 | Determined in accordance with Section ~~11.5.2.1~~11.5.2.1.1 | | | | | | | | | | | | | | | | | | |
| E02 | Air Leakage | | Determined in accordance with Section 11.5.2.1.2 | | | | | | | | | | | | | | | | | | |
| H07 | Guideline 36 Sequences | 11.5.2.2.7 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 |
| H08 | Cooling Tower Efficiency | 11.5.2.2.8 | 5 | 4 | 4 | 3 | 3 | 1 | 2 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| W09 | Shower Drain Heat Recovery | 11.5.2.3.6 | 9 | 9 | 11 | 11 | 13 | 14 | 17 | 16 | 20 | 19 | 19 | 22 | 20 | 20 | 23 | 20 | 21 | 21 | 21 |
| W10 | Ozone Laundry Sanitation | 11.5.2.3.7 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| W11 | Low-Temperature Dishwashers | 11.5.2.3.8 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| ~~G05~~ | ~~HVAC Cooling Energy Storage~~ | ~~11.5.2.8.5~~ | ~~22~~ | ~~5~~ | ~~27~~ | ~~12~~ | ~~19~~ | ~~18~~ | ~~19~~ | ~~33~~ | ~~10~~ | ~~11~~ | ~~20~~ | ~~9~~ | ~~7~~ | ~~14~~ | ~~8~~ | ~~6~~ | ~~15~~ | ~~1~~ | ~~3~~ |
| G05 | HVAC Cooling Energy Storage | 11.5.2.8.5 | 21 | 23 | 22 | 23 | 23 | 18 | 18 | 16 | 14 | 17 | 14 | 12 | 14 | 13 | 11 | 14 | 11 | 14 | 9 |
| G07 | Building Mass/Night Flush | 11.5.2.8.7 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| G08 | Electric Vehicle Charging Load Management | 11.5.2.8.8 | 7 | 8 | 9 | 8 | 10 | 9 | 10 | 11 | 14 | 13 | 10 | 13 | 11 | 10 | 13 | 11 | 10 | 11 | 12 |
| G09 | Electric Vehicle Power Export | 11.5.2.8.9 | 7 | 8 | 9 | 8 | 10 | 9 | 10 | 11 | 14 | 13 | 10 | 13 | 11 | 10 | 13 | 11 | 10 | 11 | 12 |
| G10 | HVAC Heating Energy Storage | 11.5.2.8.10 | 0 | 0 | 0 | 0 | 1 | 1 | 8 | 4 | 3 | 12 | 4 | 9 | 13 | 10 | 6 | 27 | 19 | 24 | 27 |

× = Credits excluded from this *building* use type and climate zone.

**Table 11.5.3-2 Energy Credits for Health Care Buildings**

| ID | Energy Credit Abbreviated Title | Section | Climate Zone | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0A | 0B | 1A | 1B | 2A | 2B | 3A | 3B | 3C | 4A | 4B | 4C | 5A | 5B | 5C | 6A | 6B | 7 | 8 |
| E01 | Improved Envelope Performance | 11.5.2.1 | Determined in accordance with Section ~~11.5.2.1~~11.5.2.1.1 | | | | | | | | | | | | | | | | | | |
| E02 | Air Leakage | | Determined in accordance with Section 11.5.2.1.2 | | | | | | | | | | | | | | | | | | |
| H07 | Guideline 36 Sequences | 11.5.2.2.7 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 |
| H08 | Cooling Tower Efficiency | 11.5.2.2.8 | 3 | 2 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| W09 | Shower Drain Heat Recovery | 11.5.2.3.6 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| W10 | Ozone Laundry Sanitation | 11.5.2.3.7 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| W11 | Low-Temperature Dishwashers | 11.5.2.3.8 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 |
| ~~G05~~ | ~~HVAC Cooling Energy Storage~~ | ~~11.5.2.8.5~~ | ~~9~~ | ~~2~~ | ~~12~~ | ~~5~~ | ~~9~~ | ~~7~~ | ~~10~~ | ~~14~~ | ~~10~~ | ~~6~~ | ~~8~~ | ~~7~~ | ~~5~~ | ~~7~~ | ~~5~~ | ~~4~~ | ~~8~~ | ~~1~~ | ~~1~~ |
| G05 | HVAC Cooling Energy Storage | 11.5.2.8.5 | 17 | 17 | 16 | 16 | 17 | 13 | 15 | 13 | 14 | 16 | 11 | 12 | 13 | 10 | 10 | 14 | 10 | 13 | 6 |
| G07 | Building Mass/Night Flush | 11.5.2.8.7 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| G08 | Electric Vehicle Charging Load Management | 11.5.2.8.8 | 9 | 10 | 10 | 10 | 10 | 11 | 10 | 11 | 11 | 10 | 11 | 12 | 10 | 11 | 11 | 10 | 10 | 9 | 9 |
| G09 | Electric Vehicle Power Export | 11.5.2.8.9 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| G10 | HVAC Heating Energy Storage | 11.5.2.8.10 | 1 | 2 | 2 | 3 | 6 | 5 | 9 | 7 | 11 | 14 | 9 | 17 | 15 | 14 | 13 | 24 | 17 | 25 | 30 |

× = credits excluded from this *building* use type and climate zone.

**Table 11.5.3-3 Energy Credits for Hotel/Motel**

| ID | Energy Credit Abbreviated Title | Section | Climate Zone | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0A | 0B | 1A | 1B | 2A | 2B | 3A | 3B | 3C | 4A | 4B | 4C | 5A | 5B | 5C | 6A | 6B | 7 | 8 |
| E01 | Improved Envelope Performance | 11.5.2.1 | Determined in accordance with Section ~~11.5.2.1~~11.5.2.1.1 | | | | | | | | | | | | | | | | | | |
| E02 | Air Leakage | | Determined in accordance with Section 11.5.2.1.2 | | | | | | | | | | | | | | | | | | |
| H07 | Guideline 36 Sequences | 11.5.2.2.7 | 4 | 4 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| H08 | Cooling Tower Efficiency | 11.5.2.2.8 | 6 | 4 | 5 | 3 | 5 | 1 | 3 | 1 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| W09 | Shower Drain Heat Recovery | 11.5.2.3.6 | 3 | 3 | 4 | 4 | 4 | 5 | 6 | 5 | 6 | 6 | 6 | 7 | 7 | 7 | 8 | 7 | 7 | 8 | 8 |
| W10 | Ozone Laundry Sanitation | 11.5.2.3.7 | 44 | 45 | 52 | 51 | 57 | 62 | 67 | 70 | 80 | 77 | 77 | 86 | 84 | 81 | 89 | 83 | 84 | 83 | 82 |
| W11 | Low-Temperature Dishwashers | 11.5.2.3.8 | 11 | 12 | 13 | 13 | 14 | 15 | 15 | 16 | 18 | 16 | 17 | 18 | 17 | 17 | 18 | 16 | 17 | 16 | 15 |
| ~~G05~~ | ~~HVAC Cooling Energy Storage~~ | ~~11.5.2.8.5~~ | ~~18~~ | ~~5~~ | ~~25~~ | ~~11~~ | ~~19~~ | ~~17~~ | ~~22~~ | ~~33~~ | ~~20~~ | ~~14~~ | ~~19~~ | ~~12~~ | ~~12~~ | ~~16~~ | ~~8~~ | ~~9~~ | ~~19~~ | ~~2~~ | ~~3~~ |
| G05 | HVAC Cooling Energy Storage | 11.5.2.8.5 | 14 | 16 | 14 | 16 | 15 | 13 | 15 | 12 | 12 | 17 | 12 | 14 | 16 | 12 | 13 | 18 | 13 | 16 | 11 |
| G07 | Building Mass/Night Flush | 11.5.2.8.7 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| G08 | Electric Vehicle Charging Load Management | 11.5.2.8.8 | 5 | 5 | 6 | 6 | 6 | 6 | 7 | 7 | 6 | 6 | 7 | 7 | 6 | 7 | 8 | 6 | 7 | 6 | 6 |
| G09 | Electric Vehicle Power Export | 11.5.2.8.9 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| G10 | HVAC Heating Energy Storage | 11.5.2.8.10 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 3 | 1 | 6 | 6 | 6 | 9 | 10 | 8 | 14 | 15 | 20 | 29 |

× = credits excluded from this *building* use type and climate zone.

**Table 11.5.3-4 Energy Credits for Office Buildings**

| ID | Energy Credit Abbreviated Title | Section | Climate Zone | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0A | 0B | 1A | 1B | 2A | 2B | 3A | 3B | 3C | 4A | 4B | 4C | 5A | 5B | 5C | 6A | 6B | 7 | 8 |
| E01 | Improved Envelope Performance | 11.5.2.1 | Determined in accordance with Section ~~11.5.2.1~~11.5.2.1.1 | | | | | | | | | | | | | | | | | | |
| E02 | Air Leakage | | Determined in accordance with Section 11.5.2.1.2 | | | | | | | | | | | | | | | | | | |
| H07 | Guideline 36 Sequences | 11.5.2.2.7 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 |
| H08 | Cooling Tower Efficiency | 11.5.2.2.8 | 7 | 5 | 5 | 4 | 4 | 1 | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| W09 | Shower Drain Heat Recovery | 11.5.2.3.6 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| W10 | Ozone Laundry Sanitation | 11.5.2.3.7 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| W11 | Low-Temperature Dishwashers | 11.5.2.3.8 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| ~~G05~~ | ~~HVAC Cooling Energy Storage~~ | ~~11.5.2.8.5~~ | ~~22~~ | ~~6~~ | ~~29~~ | ~~13~~ | ~~21~~ | ~~19~~ | ~~22~~ | ~~37~~ | ~~22~~ | ~~13~~ | ~~21~~ | ~~12~~ | ~~12~~ | ~~16~~ | ~~8~~ | ~~9~~ | ~~20~~ | ~~2~~ | ~~3~~ |
| G05 | HVAC Cooling Energy Storage | 11.5.2.8.5 | 33 | 37 | 34 | 36 | 37 | 34 | 32 | 27 | 31 | 33 | 24 | 18 | 29 | 19 | 14 | 26 | 18 | 28 | 11 |
| G07 | Building Mass/Night Flush | 11.5.2.8.7 | 4 | 1 | 6 | 3 | 9 | 14 | 12 | 14 | 20 | 11 | 20 | 20 | 19 | 20 | 20 | 16 | 26 | 25 | 12 |
| G08 | Electric Vehicle Charging Load Management | 11.5.2.8.8 | 9 | 8 | 10 | 10 | 11 | 11 | 11 | 12 | 12 | 10 | 12 | 12 | 11 | 11 | 12 | 11 | 11 | 9 | 8 |
| G09 | Electric Vehicle Power Export | 11.5.2.8.9 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| G10 | HVAC Heating Energy Storage | 11.5.2.8.10 | 0 | 0 | 0 | 1 | 2 | 2 | 15 | 10 | 2 | 27 | 13 | 24 | 33 | 27 | 28 | 54 | 43 | 46 | 58 |

× = credits excluded from this *building* use type and climate zone.

**Table 11.5.3-5 Energy Credits for Restaurant Buildings**

| ID | Energy Credit Abbreviated Title | Section | Climate Zone | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0A | 0B | 1A | 1B | 2A | 2B | 3A | 3B | 3C | 4A | 4B | 4C | 5A | 5B | 5C | 6A | 6B | 7 | 8 |
| E01 | Improved Envelope Performance | 11.5.2.1 | Determined in accordance with Section ~~11.5.2.1~~11.5.2.1.1 | | | | | | | | | | | | | | | | | | |
| E02 | Air Leakage | | Determined in accordance with Section 11.5.2.1.2 | | | | | | | | | | | | | | | | | | |
| H07 | Guideline 36 Sequences | 11.5.2.2.7 | 4 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 3 | 3 |
| H08 | Cooling Tower Efficiency | 11.5.2.2.8 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| W09 | Shower Drain Heat Recovery | 11.5.2.3.6 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| W10 | Ozone Laundry Sanitation | 11.5.2.3.7 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| W11 | Low-Temperature Dishwashers | 11.5.2.3.8 | 58 | 59 | 65 | 63 | 68 | 70 | 70 | 73 | 81 | 71 | 72 | 78 | 70 | 71 | 77 | 66 | 70 | 63 | 58 |
| ~~Q02~~ | ~~Efficient Kitchen Equipment~~ | ~~11.5.2.7.2~~ | ~~19~~ | ~~21~~ | ~~24~~ | ~~22~~ | ~~24~~ | ~~26~~ | ~~26~~ | ~~27~~ | ~~31~~ | ~~27~~ | ~~28~~ | ~~30~~ | ~~26~~ | ~~27~~ | ~~30~~ | ~~24~~ | ~~26~~ | ~~23~~ | ~~22~~ |
| Q02 | Efficient Kitchen Equipment | 11.5.2.7.2 | 6 | 6 | 7 | 7 | 7 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 | 8 | 6 | 6 |
| ~~G05~~ | ~~HVAC Cooling Energy Storage~~ | ~~11.5.2.8.5~~ | ~~4~~ | ~~1~~ | ~~5~~ | ~~2~~ | ~~4~~ | ~~3~~ | ~~4~~ | ~~6~~ | ~~2~~ | ~~2~~ | ~~3~~ | ~~1~~ | ~~1~~ | ~~2~~ | ~~x~~ | ~~1~~ | ~~2~~ | ~~x~~ | ~~x~~ |
| G05 | HVAC Cooling Energy Storage | 11.5.2.8.5 | 16 | 19 | 15 | 18 | 18 | 15 | 14 | 14 | 13 | 13 | 11 | 9 | 10 | 9 | 8 | 11 | 8 | 11 | 5 |
| G07 | Building Mass/Night Flush | 11.5.2.8.7 | 2 | × | 3 | 1 | 4 | 6 | 4 | 5 | 11 | 3 | 7 | 7 | 4 | 9 | 5 | 3 | 6 | 4 | 1 |
| G08 | Electric Vehicle Charging Load Management | 11.5.2.8.8 | 5 | 5 | 6 | 6 | 6 | 6 | 7 | 7 | 6 | 6 | 7 | 7 | 6 | 7 | 8 | 6 | 7 | 6 | 6 |
| G09 | Electric Vehicle Power Export | 11.5.2.8.9 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| G10 | HVAC Heating Energy Storage | 11.5.2.8.10 | 0 | 0 | 0 | 2 | 2 | 5 | 10 | 9 | 9 | 17 | 12 | 17 | 31 | 20 | 21 | 32 | 29 | 56 | 61 |

× = credits excluded from this *building* use type and climate zone.

**Table 11.5.3-6 Energy Credits for Retail Buildings**

| ID | Energy Credit Abbreviated Title | Section | Climate Zone | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0A | 0B | 1A | 1B | 2A | 2B | 3A | 3B | 3C | 4A | 4B | 4C | 5A | 5B | 5C | 6A | 6B | 7 | 8 |
| E01 | Improved Envelope Performance | 11.5.2.1 | Determined in accordance with Section ~~11.5.2.1~~11.5.2.1.1 | | | | | | | | | | | | | | | | | | |
| E02 | Air Leakage | | Determined in accordance with Section 11.5.2.1.2 | | | | | | | | | | | | | | | | | | |
| H07 | Guideline 36 Sequences | 11.5.2.2.7 | 5 | 5 | 4 | 4 | 4 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 4 |
| H08 | Cooling Tower Efficiency | 11.5.2.2.8 | 7 | 5 | 6 | 4 | 6 | 2 | 3 | 2 | 1 | 2 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| W09 | Shower Drain Heat Recovery | 11.5.2.3.6 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| W10 | Ozone Laundry Sanitation | 11.5.2.3.7 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| W11 | Low-Temperature Dishwashers | 11.5.2.3.8 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| ~~G05~~ | ~~HVAC Cooling Energy Storage~~ | ~~11.5.2.8.5~~ | ~~24~~ | ~~6~~ | ~~35~~ | ~~15~~ | ~~26~~ | ~~23~~ | ~~28~~ | ~~40~~ | ~~18~~ | ~~15~~ | ~~23~~ | ~~9~~ | ~~10~~ | ~~16~~ | ~~3~~ | ~~8~~ | ~~16~~ | ~~2~~ | ~~2~~ |
| G05 | HVAC Cooling Energy Storage | 11.5.2.8.5 | 27 | 31 | 27 | 31 | 30 | 26 | 26 | 25 | 25 | 24 | 21 | 18 | 19 | 17 | 17 | 20 | 16 | 20 | 11 |
| G07 | Building Mass/Night Flush | 11.5.2.8.7 | 4 | 1 | 6 | 2 | 8 | 14 | 11 | 14 | 32 | 9 | 20 | 20 | 16 | 20 | 18 | 13 | 23 | 21 | 10 |
| G08 | Electric Vehicle Charging Load Management | 11.5.2.8.8 | 9 | 8 | 10 | 10 | 11 | 11 | 11 | 12 | 12 | 10 | 12 | 12 | 11 | 11 | 12 | 11 | 11 | 9 | 8 |
| G09 | Electric Vehicle Power Export | 11.5.2.8.9 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| G10 | HVAC Heating Energy Storage | 11.5.2.8.10 | 0 | 0 | 0 | 2 | 1 | 2 | 12 | 8 | 3 | 22 | 13 | 24 | 26 | 26 | 26 | 39 | 35 | 48 | 55 |

× = credits excluded from this *building* use type and climate zone.

**Table 11.5.3-7 Energy Credits for Education Buildings**

| ID | Energy Credit Abbreviated Title | Section | Climate Zone | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0A | 0B | 1A | 1B | 2A | 2B | 3A | 3B | 3C | 4A | 4B | 4C | 5A | 5B | 5C | 6A | 6B | 7 | 8 |
| E01 | Improved Envelope Performance | 11.5.2.1 | Determined in accordance with Section ~~11.5.2.1~~11.5.2.1.1 | | | | | | | | | | | | | | | | | | |
| E02 | Air Leakage | | Determined in accordance with Section 11.5.2.1.2 | | | | | | | | | | | | | | | | | | |
| H07 | Guideline 36 Sequences | 11.5.2.2.7 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 |
| H08 | Cooling Tower Efficiency | 11.5.2.2.8 | 6 | 4 | 4 | 3 | 4 | 1 | 2 | 1 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| W09 | Shower Drain Heat Recovery | 11.5.2.3.6 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| W10 | Ozone Laundry Sanitation | 11.5.2.3.7 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| W11 | Low-Temperature Dishwashers | 11.5.2.3.8 | 8 | 9 | 10 | 10 | 10 | 12 | 11 | 14 | 15 | 14 | 14 | 16 | 14 | 14 | 16 | 13 | 14 | 13 | 12 |
| ~~G05~~ | ~~HVAC Cooling Energy Storage~~ | ~~11.5.2.8.5~~ | ~~26~~ | ~~7~~ | ~~37~~ | ~~17~~ | ~~30~~ | ~~28~~ | ~~36~~ | ~~40~~ | ~~38~~ | ~~23~~ | ~~37~~ | ~~22~~ | ~~20~~ | ~~28~~ | ~~13~~ | ~~16~~ | ~~32~~ | ~~3~~ | ~~4~~ |
| G05 | HVAC Cooling Energy Storage | 11.5.2.8.5 | 24 | 28 | 23 | 27 | 23 | 25 | 18 | 21 | 23 | 22 | 17 | 13 | 18 | 16 | 12 | 23 | 12 | 15 | 8 |
| G07 | Building Mass/Night Flush | 11.5.2.8.7 | 4 | 1 | 6 | 2 | 8 | 14 | 11 | 14 | 20 | 10 | 20 | 20 | 19 | 30 | 19 | 16 | 20 | 20 | 10 |
| G08 | Electric Vehicle Charging Load Management | 11.5.2.8.8 | 2 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | 3 | 3 | 4 | 4 | 2 | 4 | 5 | 4 | 3 | 3 | 3 |
| G09 | Electric Vehicle Power Export | 11.5.2.8.9 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| G10 | HVAC Heating Energy Storage | 11.5.2.8.10 | 1 | 0 | 4 | 1 | 8 | 1 | 18 | 5 | 5 | 12 | 9 | 19 | 18 | 21 | 19 | 25 | 18 | 31 | 44 |

× = credits excluded from this *building* use type and climate zone.

**Table 11.5.3-8 Energy Credits for Warehouse Buildings**

| ID | Energy Credit Abbreviated Title | Section | Climate Zone | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0A | 0B | 1A | 1B | 2A | 2B | 3A | 3B | 3C | 4A | 4B | 4C | 5A | 5B | 5C | 6A | 6B | 7 | 8 |
| E01 | Improved Envelope Performance | 11.5.2.1 | Determined in accordance with Section ~~11.5.2.1~~11.5.2.1.1 | | | | | | | | | | | | | | | | | | |
| E02 | Air Leakage | | Determined in accordance with Section 11.5.2.1.2 | | | | | | | | | | | | | | | | | | |
| H07 | Guideline 36 Sequences | 11.5.2.2.7 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 3 | 2 | 2 | 4 | 3 | 2 | 4 | 3 | 4 | 4 |
| H08 | Cooling Tower Efficiency | 11.5.2.2.8 | 6 | 4 | 4 | 3 | 4 | 1 | 2 | 1 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| W09 | Shower Drain Heat Recovery | 11.5.2.3.6 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| W10 | Ozone Laundry Sanitation | 11.5.2.3.7 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| W11 | Low-Temperature Dishwashers | 11.5.2.3.8 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| ~~G05~~ | ~~HVAC Cooling Energy Storage~~ | ~~11.5.2.8.5~~ | ~~40~~ | ~~15~~ | ~~40~~ | ~~32~~ | ~~40~~ | ~~40~~ | ~~32~~ | ~~40~~ | ~~17~~ | ~~12~~ | ~~26~~ | ~~4~~ | ~~5~~ | ~~12~~ | ~~1~~ | ~~3~~ | ~~7~~ | ~~x~~ | ~~x~~ |
| G05 | HVAC Cooling Energy Storage | 11.5.2.8.5 | 30 | 35 | 28 | 34 | 30 | 28 | 17 | 22 | 13 | 12 | 13 | 3 | 5 | 6 | 1 | 3 | 2 | 2 | 0 |
| G07 | Building Mass/Night Flush | 11.5.2.8.7 | 4 | 1 | 6 | 3 | 9 | 15 | 12 | 14 | 20 | 9 | 20 | 20 | 14 | 20 | 19 | 10 | 20 | 15 | 6 |
| G08 | Electric Vehicle Charging Load Management | 11.5.2.8.8 | 6 | 7 | 8 | 7 | 8 | 9 | 8 | 9 | 9 | 6 | 8 | 9 | 6 | 7 | 9 | 5 | 7 | 5 | 5 |
| G09 | Electric Vehicle Power Export | 11.5.2.8.9 | 33 | 34 | 40 | 35 | 41 | 39 | 40 | 43 | 49 | 34 | 40 | 42 | 29 | 34 | 42 | 22 | 28 | 23 | 24 |
| G10 | HVAC Heating Energy Storage | 11.5.2.8.10 | 0 | 0 | 0 | 0 | 0 | 1 | 28 | 11 | 1 | 71 | 46 | 47 | 70 | 71 | 45 | 96 | 84 | 95 | 83 |

× = credits excluded from this *building* use type and climate zone.

**Table 11.5.3-9 Energy Credits for Other Buildings**

| ID | Energy Credit Abbreviated Title | Section | Climate Zone | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0A | 0B | 1A | 1B | 2A | 2B | 3A | 3B | 3C | 4A | 4B | 4C | 5A | 5B | 5C | 6A | 6B | 7 | 8 |
| E01 | Improved Envelope Performance | 11.5.2.1 | Determined in accordance with Section ~~11.5.2.1~~11.5.2.1.1 | | | | | | | | | | | | | | | | | | |
| E02 | Air Leakage | | Determined in accordance with Section 11.5.2.1.2 | | | | | | | | | | | | | | | | | | |
| H07 | Guideline 36 Sequences | 11.5.2.2.7 | 4 | 4 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 |
| H08 | Cooling Tower Efficiency | 11.5.2.2.8 | 5 | 3 | 4 | 3 | 3 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| W09 | Shower Drain Heat Recovery | 11.5.2.3.6 | 4 | 4 | 5 | 5 | 6 | 7 | 8 | 8 | 9 | 9 | 9 | 10 | 10 | 10 | 11 | 10 | 10 | 10 | 10 |
| W10 | Ozone Laundry Sanitation | 11.5.2.3.7 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| W11 | Low-Temperature Dishwashers | 11.5.2.3.8 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| ~~G05~~ | ~~HVAC Cooling Energy Storage~~ | ~~11.5.2.8.5~~ | ~~21~~ | ~~6~~ | ~~26~~ | ~~13~~ | ~~21~~ | ~~19~~ | ~~22~~ | ~~30~~ | ~~17~~ | ~~12~~ | ~~20~~ | ~~10~~ | ~~9~~ | ~~14~~ | ~~7~~ | ~~7~~ | ~~15~~ | ~~2~~ | ~~3~~ |
| G05 | HVAC Cooling Energy Storage | 11.5.2.8.5 | 23 | 26 | 22 | 25 | 24 | 22 | 19 | 19 | 18 | 19 | 15 | 12 | 16 | 13 | 11 | 16 | 11 | 15 | 8 |
| G07 | Building Mass/Night Flush | 11.5.2.8.7 | 4 | 1 | 5 | 2 | 8 | 13 | 10 | 12 | 20 | 8 | 19 | 20 | 14 | 25 | 16 | 12 | 20 | 18 | 8 |
| G08 | Electric Vehicle Charging Load Management | 11.5.2.8.8 | 6 | 6 | 7 | 7 | 7 | 8 | 7 | 8 | 8 | 6 | 8 | 8 | 6 | 7 | 9 | 7 | 7 | 6 | 6 |
| G09 | Electric Vehicle Power Export | 11.5.2.8.9 | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| G10 | HVAC Heating Energy Storage | 11.5.2.8.10 | 0 | 0 | 1 | 1 | 3 | 2 | 13 | 7 | 4 | 23 | 14 | 20 | 27 | 25 | 21 | 39 | 33 | 43 | 48 |

× = credits excluded from this *building* use type and climate zone.

*Add the following references to Section 13:*

| Reference | Section |
|---|---|
| AHRI 1430-2022: Demand Flexible Electric Storage Water Heaters | 11.5.2.8.6 |
| ~~ASTM F1696-18~~ ASTM F1696-20 Standard Test Method for Energy Performance of Stationary-Rack, Door-Type Commercial Dishwashing Machines | Table 11.5.2.7.2-3 |
| ~~ASTM F1920-15~~ ASTM F1920-20 Standard Test Method for Performance of Rack Conveyor Commercial Dishwashing Machines | Table 11.5.2.7.2-3 |

***For Reference Only: Section 11.5.2.5.3 and 11.5.2.5.5 are also modified by addendum bd which is not yet published. If addendum bd and this addendum are published, the section will appear as follows.***

. . .

**11.5.2.5.3 L03: Occupancy Sensor Control Areas.** To achieve this credit, *buildings* shall comply with one of the following:

a. Section 9.3, "Simplified Building Method Compliance Path,"

b. Where a space type in Table 9.5.2.1-1 or Table 9.5.2.1-2 specifies Add2 for *occupancy sensor* reduction or *occupancy sensor* shutoff, occupancy sensors serving the space shall be installed and configured as follows:

1. *Automatic* shutoff or light reduction shall occur within 15 minutes of all occupants leaving each control zone.

2. For *spaces* with multiple control zones or *occupancy sensor* reduction control, *occupancy sensor* shutoff shall occur within 15 minutes of all occupants leaving the *space*.

3. For *spaces* with one control zone, *occupancy sensor* shutoff control shall be used.

4. All areas of the project with *occupancy sensor* reduction or *occupancy sensor* shutoff control shall have one *control device* for every 600 $ft^2$ of *gross lighted area*.

**Exception to 11.5.2.5.3:** *occupancy sensor* shutoff is not required for stairwells.

…

**11.5.2.5.5 L05: Lighting Control for Multifamily Buildings**

a. Common-areas and utility rooms, shall have *occupancy sensor* shutoff control in accordance with Section 9.4.1.1(h).

b. Each *dwelling unit* shall have a main control by the main entrance that turns off all the lights and all switched receptacles in the *dwelling unit,* except for kitchens and bathrooms. Not less than two switched receptacles shall be provided in living and sleeping rooms or areas and clearly identified. All switched receptacles shall be located within 12 in. of an unswitched receptacle. The main control shall be permitted to have two controls, one for permanently wired lighting and one for switched receptacles. The main controls should be clearly identified as “lights master off” and “switched outlets master off”.

Alternatively, where all permanently wired lighting is controlled by *occupancy sensors*, only switched outlets are required to be master switched.