_____Advisory Public Review Draft

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

First Advisory Public Review (June 2024)
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.

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(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 Informative Appendix provides a prescriptive compliance pathway that may be adopted by a jurisdiction or the rating authority to achieve net zero operational energy emission (NZOEE) buildings prescriptively, as well as incorporation of the NZOEE performance path of Informative Appendix M. The prescriptive option is limited to buildings with common loads and standard simple HVAC systems for which some general precision in energy performance is possible. The amendments include changes to Sections 3 through 11, Appendix C, and Appendix G. In addressing the operational energy greenhouse gas emissions of buildings, the requirements in this Informative Appendix focus on the emissions associated with building energy consumption and do not address emissions associated with other building use operations, such as refrigerant leakage and water usage. The calculation of operational greenhouse gas energy emissions accounts for both combustion and precombustion greenhouse gas emissions. Combustion greenhouse gas emissions are the result of burning a solid, liquid or gaseous fuel, either within the building or in the generation of electricity used within the building. Precombustion greenhouse gas emissions are associated with fuel extraction, processing, and transport prior to combustion within the building or in the generation of electricity or hot water. This addendum to the standard is designed to provide increased flexibility and therefore was not subject to cost effectiveness analysis.

[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 N to 90.1-2022
Modify the Informative notes at the end of Section 4.2.1.1 to include the following new item:
…
6. See Informative Appendix N for prescriptive and performance requirements that can be adopted to achieve buildings with net zero operational energy emissions (NZOEE), based on greenhouse gas (CO_{2e}) global warming potential, over one or more code cycles, as specified by the jurisdiction or *rating authority*.
…

Add Informative Appendix N as follows (where sections are new in their entirety, text is not shown as underlined for ease of reading). Renumber existing Appendix N to Appendix O.

INFORMATIVE APPENDIX N
NET ZERO OPERATIONAL ENERGY EMISSIONS PRESCRIPTIVE PATH

N1. GENERAL
This Informative Appendix provides a compliance pathway that may be adopted by a jurisdiction or the rating authority to achieve net zero operational energy emission (NZOEE) buildings over a defined number of code cycles. The amendments include changes to Sections 3 through 11, Appendix C and Appendix G. This Informative Appendix's prescriptive path requires demonstrating NZOEE by using computed values for site energy and emissions and either: 1) including on or offsite photovoltaic installations as part of the project; or 2) demonstrating that site-associated greenhouse gas (GHG) emissions are offset in total by any combination of on-site renewable energy, off-site renewable energy, procured renewable energy or renewable energy certificates, or lower-carbon fuels. This Informative Appendix's performance path requires use of the Appendix G Performance Rating Method to demonstrate compliance with two performance metric targets: (1) the Site Performance Energy Index (PEI_{site}) target establishes minimum energy efficiency, and (2) the GHG Performance Emissions Index (PEI_{CO2e}) target establishes the required GHG emissions reduction.

In addressing the operational energy GHG emissions of buildings, the requirements in this Informative Appendix focus on the emissions associated with building energy usage and do not address emissions associated with other building use or operations, such as refrigerant leakage or water usage, or embodied emissions associated with building materials. The calculation of operational energy GHG emissions accounts for both combustion and precombustion greenhouse gas emissions. Combustion GHG emissions are the result of burning a solid or liquid or gaseous fuel, either within the building or to generate electricity, steam, hot water or chilled water that is generated outside the building and used within the building. Precombustion GHG emissions are associated with fuel extraction, processing, and transport prior to combustion within the building or to generate electricity, steam, hot water or chilled water used within the building.

N2. (Reserved)

N3. CHANGES TO SECTION 3

Add or edit definitions in Section 3.2 as follows:

==Note to reviewers: definitions a, b and d-m have been approved through other addenda, but are included here for reference as they are not in the published ASHRAE 90.1-2022==

   a. ***community renewable energy facility:*** a facility that produces *energy* harvested from *renewable energy resources* and is qualified as a community renewable *energy* facility under applicable jurisdictional statutes and rules.
   b. ***directly-owned renewable energy facility:*** an off-site renewable energy system under the ownership of the building project owner.

c. ***envelope performance factor:*** the trade-off value for the *building envelope* performance compliance option, expressed in ~~annual energy cost~~total site energy use, calculated using the procedures specified in Section 5.6. For the purposes of determining building envelope requirements, the classifications are defined as follows:

> ***base envelope performance factor:*** the *building envelope performance factor* for the base design.
> ***proposed envelope performance factor:*** the *building envelope performance factor* for the *proposed design*.

d. ***fan electrical input power:*** the electrical input power in *kilowatts* required to operate an individual fan or fan array at design conditions. It includes the power consumption of motor controllers, if present.

e. ***fan nameplate electrical input power:*** the nominal electrical input power rating stamped on a fan assembly nameplate.

f. ***fan system:*** all the fans that contribute to the movement of air serving *spaces* that pass through a point of a common duct, plenum, or cabinet.

g. ***fan system airflow:*** the sum of the airflow of all fans in a *fan system* at *fan system design conditions*.

h. ***fan system design conditions:*** operating conditions that can be expected to occur during normal *system* operation that result in the highest airflow rate of the system, other than during air economizer operation.

i. ***fan system electrical input power:*** sum of the *fan electrical input power*, in *kilowatts*, of all fans that are required to operate at *fan system design conditions*.

j. ***financial renewable energy purchase agreement:*** a financial arrangement between a renewable energy provider and a purchaser wherein the purchaser pays or guarantees a price to the provider for the project's renewable energy.

k. ***lower-carbon fuel:*** a gaseous or liquid fuel that has lower lifecycle greenhouse gas emissions on a per unit *energy* basis than the equivalent fossil fuel.

l. ***physical renewable energy purchase agreement:*** a contract for the purchase of renewable *energy* from a specific renewable *energy* provider to a purchaser of renewable *energy*.

m. ***renewable energy certificate:*** a market-based instrument that represents and conveys the environmental, social, and other non-power attributes of 1 MWh of renewable electricity generation or 3,412 kBtu of renewable thermal *energy* or bioenergy production and could be sold separately from the underlying physical energy associated with *renewable energy resources*; also known as "energy attribute" and "energy attribute certificate" (EAC).

N4. CHANGES TO SECTION 4

a. Replace Section 4.1.1.1, in its entirety, with the language in Section N4.1

b. Replace Section 4.2.1.1, in its entirety, with the language in Section N4.2

c. Modify Section 4.2.1.3 as edited in Section N4.1.3

d. Add a new section, Section 4.2.6, using the language in Section N4.2

e. Add a new section, Section 4.2.6.1, using the language in Section N4.2.1

f. Add a new section, Section 4.2.6.1.1, using the language in Section N4.2.1.1

g. Add a new section, Section 4.2.6.1.2, using the language in Section N4.2.1.2

h. Add a new section, Section 4.2.6.2, using the language in Section N4.2.2

i. Add a new section, Section 4.2.6.2.1, using the language in Section 4.2.2.1

j. Add a new table, Table 4.2.6.2.1, based on value in Table N4.2.2.1

k. Add a new section, Section 4.2.6.2.2, using the language in Section N4.2.2.2

l. Add a new section, Section 4.2.6.2.2.1, using the language in Section N4.2.2.2.1

m. Add new tables, Tables 4.2.6.2.2.1(a) and 4.2.6.2.2.1(b), using the values in Tables N4.2.2.2.1.1 and N4.2.2.2.1.2

n. Add a new section, Section 4.2.6.2.2.2, using the language in Section N4.2.2.2.2

o. Add new tables, Tables 4.2.6.2.2.2(a) and 4.2.6.2.2.2(b), using the values in Tables N4.2.2.2.2.1 and N4.2.2.2.2.2

p. Add a new section, Section 4.2.6.2.2.3, using the language in Section N4.2.2.2.3

q. Add new tables, Tables 4.2.6.2.2.3(a) and 4.2.6.2.2.3(b), using the values in Tables N4.2.2.2.3.1 and N4.2.2.2.3.2

r. Add a new section, Section 4.2.6.2.2.4, using the language in Section N4.2.2.2.4

s. Add a new table, Table 4.2.6.2.2.4, using the values in Table N4.2.2.2.4

t. Add a new section, Section 4.2.6.2.2.5, using the language in Section N4.2.2.2.5

u. Add new tables, Tables 4.2.6.2.2.5(a) and 4.2.6.2.2.5(b), using the values in Tables N4.2.2.2.5.1 and N4.2.2.2.5.2

v. Add a new section, Section 4.2.6.2.2.6, using the language in Section N4.2.2.2.6

w. Add new tables, Tables 4.2.6.2.2.6(a) and 4.2.6.2.2.6(b), using the values in Tables N4.2.2.2.6.1 and N4.2.2.2.6.2

x. Add new section, Section 4.2.6.2.3, using the language in Section N4.2.2.3

y. Add new section, Section 4.2.6.2.3.1, using the language in Section N4.2.2.3.1

z. Add new tables, Tables 4.2.6.2.3.1(a) and 4.2.6.2.3.1(b), using the values in Tables N4.2.2.3.1.1 and N4.2.2.3.1.2

aa. Add new section, Section 4.2.6.2.3.2, using the language in Section N4.2.2.3.2

bb. Add new section, Section 4.2.6.2.3.3, using the language in Section N4.2.2.3.3

cc. Add new table, Table 4.2.6.2.3.3, using the values in Table N4.2.2.3.3

dd. Add new section, Section 4.2.6.2.3.4, using the language in Section N4.2.2.3.4

ee. Add new table, Table 4.2.6.2.3.4, using the values in Table N4.2.2.3.4

ff. Add a new section, Section 4.2.6.2.3.5, using the language in Section N4.2.2.3.5

gg. Add a new section, Section 4.2.6.3, using the language in Section N4.2.3

hh. Add a new section, Section 4.2.6.3.1, using the language in Section N4.2.3.1

ii. Add a new section, Section 4.2.6.3.2, using the language in Section N4.2.3.2

jj. Add a new section, Section 4.2.6.3.3, using the language in Section N4.2.3.3

kk. Add a new section, Section 4.2.6.3.4, using the language in Section N4.2.3.4

ll. Add new tables, Tables 4.2.6.3(1) and 4.2.6.3(2), based on values in Tables N4.2.3.1 and N4.2.3.2. Electricity greenhouse gas emission factors should only be included in Table 4.2.6.3(2) for the eGRID subregion associated with the project

mm.   Add a new section, Section 4.2.6.4, using the language in Section N4.2.4

nn. Add a new table, Table 4.2.6.4, using the values in Table N4.2.4

oo. Add a new section, Section 4.2.6.5, using the language in Section N4.2.5

pp. Add a new section, Section 4.2.6.6, using the language in Section N4.2.6

qq. Add a new section, Section 4.2.6.7, using the language in Section N4.2.7

rr. Add a new table, Table 4.2.6.7, using the values in Table N4.2.7

ss. Add a new section, Section 4.2.6.7, using the language in Section N4.2.8

N4.1 Compliance (modifies Section 4.2)

N4.1.1 New Buildings (replaces Section 4.2.1.1)

New *buildings* shall comply with Sections 4.2.2 through 4.2.6.

N4.1.2 Additions to Existing Buildings (replaces Section 4.2.1.2)

Additions to *existing buildings* shall comply with Sections 4.2.2 through 4.2.6.

N4.1.2.1 (modifies Section 4.2.1.2.1)

When an *addition* to an *existing building* cannot comply by itself, trade-offs will be allowed by modification to one or more of the existing components of the *existing building*. Modeling of the modified components of the *existing building* and *addition* shall employ the procedures of ~~Section 12 or~~ Normative Appendix G; the *addition* shall not increase the *energy* consumption of the *existing building* plus the *addition* beyond the *energy* that would be consumed by the *existing building* plus the *addition* if the *addition* alone did comply.

N4.1.3 Alterations of Existing Building Assemblies, Systems, and Equipment (modifies Section 4.2.1.3)

Alterations of *existing building* assemblies, *systems*, and *equipment* shall comply with the provisions of Section 4.2.2 through 4.2.5 and one of the following:

a. Sections 5, "Building Envelope"; 6, "Heating, Ventilating, and Air Conditioning"; 7, "Service Water Heating"; 8, "Power"; 9, "Lighting"; 10, "Other Equipment"; and 11, "Additional Efficiency Requirements," or

~~b. Section 12, "Energy Cost Budget Method," or~~

~~c.~~b. Normative Appendix G, "Performance Rating Method," in accordance with Section 4.2.1.1 with the following modifications:

   1. *Alterations* that meet the criteria in Section G3.1.4(a) shall use the BPF from Table 4.2.1.1 multiplied by 1.05.
   2. All other *alterations* modeled following Section G3.3 shall use BPF = 1.

Exceptions to 4.2.1.3: A *building* that has been specifically designated as historically significant by the *adopting authority* or is listed in The National Register of Historic Places or has been determined to be eligible for listing by the U.S. Secretary of the Interior need not comply with these requirements.

N4.2 Net Zero Operational Energy Emissions (new Section 4.2.6)

New *buildings* and *additions* to *existing buildings* shall comply with either Section 4.2.6.1 or Section 4.2.6.2.

N4.2.1 Performance Path (new Section 4.2.6.1)

New *buildings*, *additions* to *existing buildings* and *alterations* to *existing buildings* shall comply with Normative Appendix G and Sections 4.2.6.1.1 and 4.2.6.1.2.

N4.2.1.1 Site Performance Energy Index (new Section 4.2.6.1.1)

The Site Performance Energy Index (PEI_{site}) shall be less than or equal to the Site Performance Energy Index Target ($PEI_{site,t}$) calculated in accordance with the following:

$$PEI_{site,t} = \frac{BBUEU_{site} + BPF_{site} * BBREU_{site}}{BBEU_{site}}$$

Where:

$PEI_{site,t}$ = Site Performance Energy Index Target.

$BBUEU_{site}$	=	*baseline building design* unregulated site energy use, the portion of the annual site energy use of a *baseline building design* that is due to *unregulated energy use.*
BPF_{site}	=	*building performance factor* site from Table 4.2.6.1. For *building* area types not listed in Table 4.2.6.1, use "All others." Where a *building* has multiple *building* area types, the required BPF shall be equal to the area-weighted average of the *building* area types based on their *gross floor area.*
$BBREU_{site}$	=	*baseline building design* regulated site energy use, the portion of the annual site energy use of a *baseline building* design that is due to *regulated energy use.*
$BBEU_{site}$	=	*baseline* building *design* site energy use of a *baseline building design* that is due to both *regulated energy use* and *unregulated energy use.*

Table N4.2.1-1 Building Performance Factor (BPF$_{site}$) (new Table 4.2.6.1 in place of Table 4.2.1.1)

Building Type	Climate Zone																		
	0A	0B	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
Multifamily	0.55	0.54	0.58	0.56	0.59	0.59	0.61	0.59	0.56	0.49	0.56	0.53	0.46	0.51	0.53	0.44	0.47	0.45	0.47
Healthcare/ hospital	0.47	0.46	0.47	0.46	0.45	0.43	0.43	0.45	0.44	0.42	0.43	0.42	0.43	0.43	0.46	0.42	0.45	0.44	0.45
Hotel/motel	0.57	0.56	0.58	0.56	0.57	0.55	0.57	0.57	0.59	0.54	0.56	0.57	0.53	0.55	0.57	0.51	0.53	0.50	0.49
Office	0.40	0.40	0.40	0.39	0.38	0.38	0.37	0.39	0.34	0.34	0.37	0.35	0.35	0.37	0.35	0.34	0.35	0.31	0.33
Restaurant	0.57	0.52	0.52	0.51	0.54	0.48	0.55	0.52	0.55	0.55	0.55	0.56	0.57	0.58	0.57	0.59	0.61	0.60	0.61
Retail	0.38	0.36	0.35	0.35	0.32	0.30	0.31	0.31	0.31	0.31	0.31	0.33	0.34	0.31	0.34	0.34	0.33	0.33	0.34
School	0.40	0.42	0.44	0.42	0.40	0.37	0.40	0.37	0.40	0.31	0.35	0.39	0.32	0.36	0.38	0.32	0.31	0.30	0.32
Warehouse	0.20	0.21	0.17	0.19	0.16	0.16	0.18	0.15	0.13	0.25	0.18	0.20	0.31	0.25	0.20	0.36	0.30	0.32	0.35
All others	0.50	0.49	0.49	0.48	0.43	0.39	0.42	0.41	0.45	0.41	0.40	0.44	0.41	0.42	0.44	0.42	0.42	0.41	0.42

N4.2.1.2 Greenhouse Gas Performance Emissions Index (new Section 4.2.6.1.2)

The Greenhouse Gas Performance Emissions Index (PEI_{CO2e}) shall be less than or equal to the Greenhouse Gas Performance Emissions Index Target ($PEI_{CO2e,t}$), specified as follows.

$$PEICO2e,t = 0$$

The greenhouse gas emissions associated with building operational energy use shall be calculated in accordance with Section 4.2.6.3.

N4.2.2 Prescriptive Path (new Section 4.2.6.2)

New *buildings* and *additions* to *existing buildings* shall comply with Section 4.2.6.2.1 and either Section 4.2.6.2.2 or Section 4.2.6.2.3.

N4.2.2.1 Inclusion Criteria (new Section 4.2.6.2.1)

The following conditions shall be met:

a. The *building* or *addition* to an *existing building* consists of only one of the following building types:
   i. Office
   ii. Retail
   iii. School

   iv. Hotel or Lodging
   v. Multifamily
   vi. Warehouse with conditioned or semi-heated spaces

b. The *building* or *addition* to an *existing building* does not include any of the following features:
   i. Spaces required to meet any of the requirements of ASHRAE Standard 170.
   ii. Buildings with plug and process loads greater than values shown in Table 4.2.6.2.1.1
   iii. *Pools*
   iv. Commercial kitchens with total cooking capacity greater than 100,000 Btu/h
   v. Compressed air systems with total compressor motor power greater than 7.5kW (10HP)
   vi. Snow or ice melt systems with total system input power greater than 10kW (34.13kBtuh)
   vii. Humidifiers or dehumidifiers
   viii. Exhaust systems or hoods of any kind that result in total design outside air supply greater than the amount allowed by section 6.5.3.8
   ix. Commercial refrigeration equipment greater than 10kW of total power input
   x. *Computer rooms* with total connected load greater than 10kW
   xi. *Non-residential buildings* with a total number of showers greater than one shower per 10,000ft^2 or greater than a total quantity of 25 showers.

Table N4.2.2.1 (new Table 4.2.6.2.1) Maximum Allowed Plug and Process Loads

Building Type	W/ft2
Hotel/motel (≤75 rooms)	0.88
Hotel/motel (>75 rooms)	0.88
Office (≤5000 ft2)	0.63
Office (5000 to 50,000 ft2)	1.06
Office (>50,000 ft2)	1.06
Retail (stand alone)	0.48
Retail (strip mall)	0.40
School (primary)	1.60
School (secondary and university)	1.01
Warehouse (nonrefrigerated)	0.19
Midrise Multifamily	0.56
Highrise Multifamily	0.56

N4.2.2.2 Renewable Energy Supply Requirements (new Section 4.2.6.2.2)

Buildings shall procure electricity from *renewable energy resources* in accordance with the following:

$$\sum_{i=1}^{n} (RE_i * REPF_i) \geq RE_{HVAC} + RE_{SWH} + RA - (RD_{cool} + RD_{heat} + RD_{SWH})$$

Where:

RE_i = annual energy generation for the ith renewable energy generation or procurement method or class. Energy generation from on-site photovoltaic systems or photovoltaic systems that are part of a *direct-owned renewable energy facility* shall be calculated using Section 4.2.6.7.

n = the total number of renewable energy production and procurement methods or classes.

REPF$_i$	= renewable energy procurement factor for the ith renewable energy procurement method or class from Table 4.2.6.4.
RE$_{HVAC}$	= Base renewable energy required by HVAC system determined in accordance with 4.2.6.2.2.1
RE$_{SWH}$	= Base renewable energy required by SWH system determined in accordance with 4.2.6.2.2.2
RA	= Additional renewable energy required determined in accordance with 4.2.6.2.2.3
RD$_{cool}$	= Reduction in renewable energy required with improved space cooling equipment efficiency determined in accordance with 4.2.6.2.2.4
RD$_{heat}$	= Reduction in renewable energy required with improved space heating equipment efficiency determined in accordance with 4.2.6.2.2.5
RD$_{SWH}$	= Reduction in renewable energy required with improved service water heating equipment efficiency determined in accordance with 4.2.6.2.2.6

N4.2.2.2.1. Base Renewable Energy Requirements by HVAC System (new Section 4.2.6.2.2.1)

Base building renewable requirements by HVAC system shall be calculated as follows:

$$RE_{HVAC} = A_{HVAC\ type} \times \left(RE_{HVAC,elec} + RE_{HVAC,gas}\right)$$

Where:

RE$_{HVAC}$	= Base renewable energy required based on HVAC system type
A$_{HVAC\ type}$	= The conditioned floor area served by a covered system type from Section 6.1.2.1.
RE$_{HVAC,elec}$	= The renewable energy requirement based on site electricity consumption from Table 4.2.6.2.2.1(a).
RE$_{HVAC,gas}$	= For HVAC systems with a natural gas heating source, he renewable energy requirement based on site natural gas consumption from Table 4.2.6.2.2.1(b).

N4.2.2.2.2. Base Renewable Energy Requirements by SWH System (new Section 4.2.6.2.2.2)

Base building renewable requirements by SWH system shall be calculated as follows:

$$RE_{SWH} = A_{SWH\ type} \times \left(RE_{SWH,elec} + RE_{SWH,gas}\right)$$

Where:

RE$_{SWH}$	= Base renewable energy required based on service water heating system type
A$_{SWH\ type}$	= The conditioned floor area served by a covered system type from Section 7.5.4 or Section 7.5.5
RE$_{SWH,elec}$	= For electric water heating equipment, the renewable energy requirement based on site electricity consumption from Table 4.2.6.2.2.2(a).
RE$_{SWH,gas}$	= For SWH systems with a natural gas heating source, he renewable energy requirement based on site natural gas consumption from Table 4.2.6.2.2.2(b).

N4.2.2.2.3. Additional Renewable Energy Requirements (new Section 4.2.6.2.2.3)

Additional renewable energy associated enclosed parking garage ventilation, exterior lighting (including parking lots), covered parking lighting, and elevators shall be calculated as follows:

$$RA = RA_{GarageVent} + RA_{ExtLts} + RA_{PkgLts} + RA_{Elevator}$$

Where:

RA$_{GarageVent}$	= Additional renewable energy required for ventilated, unconditioned parking garages calculated by multiplying the total brake horsepower of all garage ventilation fans by the renewable energy requirement listed in Table 4.2.6.2.2.3(a)
RA$_{ExtLts}$	= Additional renewable energy required for exterior lighting, including uncovered

parking calculated by multiplying the total connected lighting power of all exterior lighting by the renewable energy requirement listed in Table 4.2.6.2.2.3(a)

RA_{PkgLts} = Additional renewable energy required for lighting in enclosed parking garages and covered parking calculated by multiplying the total connected lighting power of all lighting by the renewable energy requirement listed in Table 4.2.6.2.2.3(a)

$RA_{Elevator}$ = Additional renewable energy required for elevators as the sum of renewable energy required for each elevator car.

Renewable energy for each elevator car shall be calculated as follows:

$$RA_{ElevatorCar} = \left(kWh_{running} \times N_{car}\right) + kWh_{fixedstandby} \times f_{standby} + kWh_{varstandby} \times \left(C_{floor} - N_{car}\right)$$

Where:

$RA_{ElevatorCar}$ = Additional renewable energy required for an individual elevator car

$kWh_{running}$ = The running annual energy use per floor served by the elevator car listed in Table 4.2.6.2.2.3(b)

N_{car} = Number of floors served by an individual elevator car

$kWh_{fixedstandby}$ = The fixed standby annual energy use served by the elevator car listed in Table 4.2.6.2.2.3(b)

$f_{standby}$ = Adjustment factor for the number of floors equal to 2.041 for 2-floor elevators, 1.367 for 3-floor elevators and 1 for all others.

$kWh_{fvarstandby}$ = The variable standby annual energy use served by the elevator car listed in Table 4.2.6.2.2.3(b) . For $N_{car} \leq 4$, $kWh_{fvarstandby} = 0$.

C_{floor} = A constant based on building type listed in Table 4.2.6.2.2.3(b)

N4.2.2.2.4. Reduction in Renewable Energy Required with Improved Space Cooling Equipment Efficiency (new Section 4.2.6.2.2.4)

Reduction in renewable energy requirements associated with improved space cooling equipment efficiency shall be calculated as follows:

$$RD_{cool} = A_{HVAC\ type} \times RD_{cool,base} \times \frac{EI_{cool}}{0.30}$$

Where:

RD_{cool} = Reduction in renewable energy required associated with improved space cooling equipment efficiency

$A_{HVAC\ type}$ = The conditioned floor area served by a covered system type from Section 6.1.2.1.

$RD_{cool,base}$ = The maximum renewable energy requirement deduction from Table 4.2.6.2.2.4.

EI_{cool} = Lesser of the percentage improvement (as a fraction) above minimum cooling efficiency requirements or 30% (0.30). Where cooling equipment with different minimum 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 the annualized energy or part-load requirement. Meeting both part-load and full-load efficiencies is not required.

For metrics that increase as efficiency increases, EI_{cool} shall be calculated as follows:

$$EI_{cool} = \frac{CM_{des}}{CM_{min}} - 1$$

For metrics that decrease as efficiency increases, EI$_{cool}$ shall be calculated as follows:

$$EI_{cool} = \frac{CM_{min}}{CM_{des}} - 1$$

Where:

CM$_{min}$ = minimum required cooling efficiency metric, part-load or annualized where available from Section 6.8 or Informative Appendix F

CM$_{des}$ = design cooling efficiency metric, part-load or annualized where available

N4.2.2.2.5. Reduction in Renewable Energy Required with Improved Space Heating Equipment Efficiency (new Section 4.2.6.2.2.5)

Reduction in renewable energy requirements associated with improved space heating equipment efficiency shall be calculated as follows:

$$RD_{heat} = A_{HVAC\ type} \times RD_{heat,base} \times \frac{EI_{heat}}{0.30}$$

Where:

RD$_{heat}$ = Reduction in renewable energy required associated with improved space heating equipment efficiency

A$_{HVAC\ type}$ = The conditioned floor area served by a covered system type from Section 6.1.2.1.

RD$_{heat,base}$ = The maximum renewable energy requirement reduction from Table 4.2.6.2.2.5.

EI$_{heat}$ = Lesser of the percentage improvement (as a fraction) above minimum heating efficiency requirements or 30% (0.30). Where heating equipment with different minimum efficiencies are included in the building, a heating capacity weighted-average improvement shall be used. Where electric resistance primary heating is included in the building, it shall be included in the weighted-average improvement with an EI$_{heat}$ of 0. Supplemental electric heat for heat-pump systems shall be excluded from the weighted EI$_{heat}$. For heat pumps rated at multiple ambient temperatures, use the efficiency at 47°F.

For metrics that increase as efficiency increases, EI$_{heat}$ shall be calculated as follows:

$$EI_{heat} = \frac{HM_{des}}{HM_{min}} - 1$$

Where:

HM$_{min}$ = minimum required heating efficiency metric, part-load or annualized where available from Section 6.8.1 or Informative Appendix F

HM$_{des}$ = design heating efficiency metric, part-load or annualized where available

N4.2.2.2.6. Reduction in Renewable Energy Required with Improved Service Water Heating Equipment Efficiency (new Section 4.2.6.2.2.6)

Reduction in renewable energy requirements associated with improved service water heating equipment efficiency shall be calculated as follows:

$$RD_{SWH} = A_{SWH\ type} \times RD_{SWH,base} \times \frac{EI_{SWH}}{0.30}$$

Where:

RD$_{SWH}$ = Reduction in renewable energy required associated with improved service water heating equipment efficiency

A$_{SWH\ type}$ = The conditioned floor area served by a covered system type from Section 7.5.4

or 7.5.5

RD$_{SWH,base}$ = The maximum renewable energy requirement reduction for service heating equipment from Table 4.2.6.2.2.6(a) for electric water heating equipment or Table 4.2.6.2.2.6(b) for natural gas water heating equipment

EI$_{SWH}$ = Lesser of the percentage improvement (as a fraction) above minimum service water heating efficiency requirements or 30% (0.30). Where service water heating equipment with different minimum efficiencies are included in the building, a service water heating capacity weighted-average improvement shall be used.

For metrics that increase as efficiency increases, EI$_{SWH}$ shall be calculated as follows:

$$EI_{SWH} = \frac{SWHM_{des}}{SWHM_{min}} - 1$$

Where:

SWHM$_{min}$ = minimum required service water heating efficiency metric, part-load or annualized where available from Section 7.4.2 or Informative Appendix F

SWHM$_{des}$ = design service water heating efficiency metric, part-load or annualized where available

Table N4.2.2.2.1.1 (new Table 4.2.6.2.2.1(a))
Renewable Energy Requirements for All-Electric HVAC Systems and Electric HVAC Equipment
(KWh/ft² FLOOR AREA)

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled DX Clg + Electric Resistance Heat + Air Economizer	0A	7.7	9.53	9.71	- N/A -	- N/A -	11.65	11.12	19.78	19.5	- N/A -	- N/A -	3.29
	0B	7.46	9.02	9.2	- N/A -	- N/A -	11.07	10.79	17.91	19.04	- N/A -	- N/A -	4.68
	1A	6.52	8.24	8.39	- N/A -	- N/A -	9.62	9.15	15.62	17.26	- N/A -	- N/A -	2.66
	1B	6.8	8.46	8.62	- N/A -	- N/A -	10	9.62	15.82	17.25	- N/A -	- N/A -	4.04
	2A	6.02	7.66	7.8	- N/A -	- N/A -	8.73	8.25	14.17	16.03	- N/A -	- N/A -	2.47
	2B	6.05	7.47	7.63	- N/A -	- N/A -	8.16	8	13.28	15.34	- N/A -	- N/A -	3.65
Air Cooled DX Clg + Fuel Furnace + Air Economizer	0A	7.7	9.53	9.71	- N/A -	- N/A -	11.65	11.12	19.78	18.77	- N/A -	- N/A -	3.29
	0B	7.46	9.02	9.2	- N/A -	- N/A -	11.07	10.79	17.91	18.31	- N/A -	- N/A -	4.68
	1A	6.52	8.24	8.39	- N/A -	- N/A -	9.62	9.15	15.62	16.54	- N/A -	- N/A -	2.66
	1B	6.78	8.46	8.62	- N/A -	- N/A -	9.97	9.61	15.81	16.52	- N/A -	- N/A -	4.04
	2A	6	7.65	7.79	- N/A -	- N/A -	8.66	8.21	14.15	15.29	- N/A -	- N/A -	2.47
	2B	6.01	7.46	7.62	- N/A -	- N/A -	8.1	7.99	13.26	14.6	- N/A -	- N/A -	3.65

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Electric Resistance Backup Heat + Air Economizer	0A	7.7	9.53	9.71	- N/A -	- N/A -	11.65	11.12	19.54	18.74	- N/A -	- N/A -	3.24
	0B	7.46	9.02	9.2	- N/A -	- N/A -	11.07	10.79	17.86	18.31	- N/A -	- N/A -	4.68
	1A	6.52	8.24	8.39	- N/A -	- N/A -	9.62	9.15	15.61	16.54	- N/A -	- N/A -	2.66
	1B	6.79	8.46	8.62	- N/A -	- N/A -	9.98	9.61	15.82	16.52	- N/A -	- N/A -	4.02
	2A	6.01	7.65	7.8	- N/A -	- N/A -	8.68	8.22	14.16	15.3	- N/A -	- N/A -	2.47
	2B	6.02	7.46	7.63	- N/A -	- N/A -	8.12	8	13.25	14.59	- N/A -	- N/A -	3.51
	3A	5.29	6.75	6.89	- N/A -	- N/A -	7.29	7.07	10.91	12.64	- N/A -	- N/A -	2.82
	3B	5.29	6.8	6.96	- N/A -	- N/A -	7.21	6.72	10.98	12.42	- N/A -	- N/A -	2.37
	3C	4.66	6.04	6.16	- N/A -	- N/A -	5.89	6.14	10.48	11.99	- N/A -	- N/A -	1.86
	4A	5.39	6.7	6.88	- N/A -	- N/A -	7.36	7.14	9.95	11.69	- N/A -	- N/A -	4.67
	4B	5.14	6.53	6.73	- N/A -	- N/A -	6.85	7.01	10.26	11.81	- N/A -	- N/A -	2.68
	4C	4.75	5.86	6.01	- N/A -	- N/A -	6.16	6.46	8.4	10.31	- N/A -	- N/A -	2.54
	5A	5.83	6.76	6.93	- N/A -	- N/A -	7.19	7.49	9.12	11.83	- N/A -	- N/A -	5.97
	5B	5.47	6.51	6.7	- N/A -	- N/A -	7.33	7.33	9.23	11.26	- N/A -	- N/A -	3.88
	5C	4.72	5.67	5.81	- N/A -	- N/A -	6.26	6.46	7.91	9.83	- N/A -	- N/A -	2.31
	6A	6.69	7.51	7.74	- N/A -	- N/A -	8.34	7.59	9.59	13.02	- N/A -	- N/A -	8.91
	6B	5.87	6.77	7	- N/A -	- N/A -	7.13	6.48	8.54	11.29	- N/A -	- N/A -	5.84
	7	7.57	7.4	7.64	- N/A -	- N/A -	7.51	7.6	9.53	13.4	- N/A -	- N/A -	7.17
	8	9.75	8.69	9.1	- N/A -	- N/A -	8.23	7.93	11.15	15.03	- N/A -	- N/A -	7.31

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Fuel Backup Heat + Air Economizer	0A	7.7	9.53	9.71	- N/A -	- N/A -	11.65	11.12	19.54	18.74	- N/A -	- N/A -	3.24
	0B	7.46	9.02	9.2	- N/A -	- N/A -	11.07	10.79	17.86	18.31	- N/A -	- N/A -	4.68
	1A	6.52	8.24	8.39	- N/A -	- N/A -	9.62	9.15	15.61	16.54	- N/A -	- N/A -	2.66
	1B	6.79	8.46	8.62	- N/A -	- N/A -	9.98	9.61	15.81	16.51	- N/A -	- N/A -	4.02
	2A	6.01	7.65	7.8	- N/A -	- N/A -	8.68	8.23	14.15	15.29	- N/A -	- N/A -	2.47
	2B	6.02	7.46	7.63	- N/A -	- N/A -	8.12	8	13.24	14.58	- N/A -	- N/A -	3.51
	3A	5.28	6.75	6.89	- N/A -	- N/A -	7.29	7.12	10.87	12.61	- N/A -	- N/A -	2.82
	3B	5.29	6.8	6.96	- N/A -	- N/A -	7.21	6.73	10.95	12.4	- N/A -	- N/A -	2.37
	3C	4.66	6.04	6.16	- N/A -	- N/A -	5.89	6.14	10.47	11.99	- N/A -	- N/A -	1.86
	4A	5.34	6.69	6.87	- N/A -	- N/A -	7.37	7.3	9.85	11.63	- N/A -	- N/A -	4.67
	4B	5.13	6.53	6.73	- N/A -	- N/A -	6.85	7.05	10.21	11.78	- N/A -	- N/A -	2.68
	4C	4.75	5.86	6.01	- N/A -	- N/A -	6.16	6.56	8.33	10.26	- N/A -	- N/A -	2.54
	5A	5.54	6.71	6.89	- N/A -	- N/A -	7.23	7.81	8.89	11.69	- N/A -	- N/A -	5.95
	5B	5.31	6.42	6.61	- N/A -	- N/A -	7.52	7.63	9.11	11.15	- N/A -	- N/A -	3.85
	5C	4.72	5.67	5.81	- N/A -	- N/A -	6.26	6.59	7.82	9.78	- N/A -	- N/A -	2.31
	6A	5.75	6.88	7.08	- N/A -	- N/A -	9.77	9.23	9.1	12.4	- N/A -	- N/A -	8.82
	6B	5.25	6.33	6.53	- N/A -	- N/A -	8.24	7.78	8.26	10.91	- N/A -	- N/A -	5.79
	7	5.77	6.51	6.7	- N/A -	- N/A -	9.21	10.22	8.7	12.27	- N/A -	- N/A -	6.9
	8	6.07	6.65	6.9	- N/A -	- N/A -	12.18	13.62	8.84	12.55	- N/A -	- N/A -	6.84

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled DX Clg + Electric Resistance Heat + DOAS	0A	7.37	9.77	9.96	10.21	10.25	14.65	14.82	18.15	17.6	9.27	9.57	3.31
	0B	7.11	8.56	8.72	9.45	9.46	10.58	11.08	17.43	17.56	8.81	9.01	4.27
	1A	6.42	8.05	8.18	8.29	8.24	9.74	9.96	15.61	16.23	7.92	8.12	2.44
	1B	6.45	8.04	8.17	8.58	8.57	9.62	9.94	15.43	15.53	8.07	8.32	2.9
	2A	5.74	7.32	7.44	7.66	7.65	8.77	8.92	13.89	14.35	7.3	7.49	2.14
	2B	5.75	7.26	7.41	7.04	7.04	8.21	8.44	13.27	13.44	7.21	7.47	2.34
Air Cooled DX Clg + Fuel Furnace + DOAS	0A	7.37	9.77	9.96	- N/A -	- N/A -	14.65	14.82	18.15	16.88	9.27	9.57	3.31
	0B	7.11	8.56	8.72	- N/A -	- N/A -	10.58	11.08	17.42	16.84	8.81	9.01	4.27
	1A	6.42	8.05	8.18	- N/A -	- N/A -	9.74	9.96	15.61	15.51	7.92	8.12	2.44
	1B	6.44	8.03	8.17	- N/A -	- N/A -	9.58	9.89	15.4	14.79	8.06	8.3	2.9
	2A	5.73	7.32	7.43	- N/A -	- N/A -	8.71	8.84	13.86	13.61	7.27	7.46	2.14
	2B	5.71	7.25	7.4	- N/A -	- N/A -	8.12	8.33	13.21	12.69	7.19	7.43	2.33

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
mAir Cooled Heat Pump w/Electric Resistance Backup Heat + DOAS	0A	7.37	9.77	9.96	10.21	10.25	14.65	14.82	18.08	16.82	9.27	9.58	3.25
	0B	7.11	8.56	8.72	9.45	9.46	10.58	11.08	17.39	16.79	8.82	9.01	4.27
	1A	6.42	8.05	8.18	8.29	8.24	9.74	9.96	15.61	15.48	7.92	8.12	2.44
	1B	6.44	8.03	8.17	8.57	8.55	9.6	9.9	15.42	14.77	8.06	8.31	2.9
	2A	5.74	7.32	7.44	7.64	7.62	8.73	8.87	13.88	13.61	7.29	7.48	2.14
	2B	5.73	7.26	7.41	7.02	7	8.15	8.37	13.23	12.68	7.2	7.45	2.3
	3A	5	6.45	6.55	6.62	6.59	7.13	7.34	10.85	10.78	6.46	6.73	2.35
	3B	5.07	6.65	6.78	6.51	6.51	7.37	7.43	11.06	10.77	6.68	6.91	1.93
	3C	4.45	5.99	6.07	5.77	5.69	5.86	5.77	9.45	9.51	5.42	5.19	1.41
	4A	5.06	6.21	6.34	6.41	6.46	6.88	7.32	10.02	9.56	6.43	6.7	3.77
	4B	4.91	6.34	6.52	6.37	6.46	6.98	7	10.19	9.76	6.69	6.66	2.28
	4C	4.39	5.44	5.52	5.5	5.48	5.72	6.13	7.86	7.36	5.62	5.62	2.11
	5A	5.29	6.07	6.19	6.49	6.55	7.16	7.7	9.39	8.55	6.33	6.46	5.42
	5B	5.1	6.1	6.27	6.57	6.7	7.01	7.19	9.35	8.65	6.57	6.66	3.45
	5C	4.35	5.23	5.3	5.42	5.41	5.69	6.16	7.38	6.8	5.55	5.58	1.94
	6A	5.89	6.47	6.66	7.9	8.08	7.79	8.38	10.23	9.09	7.32	7.57	8.09
	6B	5.28	5.98	6.14	7.09	7.26	6.95	7.36	8.93	8.02	6.84	6.98	5.24
	7	6.51	6.53	6.71	8.88	9.13	8.31	9.03	10.55	8.95	7.74	8	6.82
	8	8.17	7.2	7.51	11.5	12.09	10.14	11.56	12.15	9.26	9.52	9.78	7.06

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Fuel Backup Heat + DOAS	0A	7.37	9.77	9.96	- N/A -	- N/A -	14.65	14.82	18.08	16.82	9.27	9.58	3.25
	0B	7.11	8.56	8.72	- N/A -	- N/A -	10.58	11.08	17.39	16.79	8.82	9.01	4.27
	1A	6.42	8.05	8.18	- N/A -	- N/A -	9.74	9.96	15.61	15.48	7.92	8.12	2.44
	1B	6.44	8.03	8.17	- N/A -	- N/A -	9.6	9.9	15.41	14.77	8.06	8.31	2.9
	2A	5.74	7.32	7.44	- N/A -	- N/A -	8.73	8.87	13.87	13.6	7.28	7.47	2.14
	2B	5.73	7.26	7.41	- N/A -	- N/A -	8.15	8.37	13.21	12.67	7.2	7.44	2.3
	3A	4.99	6.45	6.55	- N/A -	- N/A -	7.13	7.29	10.8	10.76	6.45	6.71	2.35
	3B	5.07	6.65	6.78	- N/A -	- N/A -	7.37	7.42	11.03	10.76	6.67	6.9	1.93
	3C	4.45	5.99	6.07	- N/A -	- N/A -	5.86	5.77	9.44	9.5	5.42	5.18	1.41
	4A	5.03	6.2	6.34	- N/A -	- N/A -	6.87	7.17	9.92	9.5	6.4	6.66	3.77
	4B	4.91	6.34	6.52	- N/A -	- N/A -	6.98	6.97	10.14	9.72	6.68	6.63	2.28
	4C	4.39	5.44	5.52	- N/A -	- N/A -	5.72	6.05	7.79	7.31	5.6	5.59	2.11
	5A	5.13	6.06	6.18	- N/A -	- N/A -	7.14	7.42	9.14	8.45	6.29	6.4	5.42
	5B	5	6.08	6.24	- N/A -	- N/A -	6.93	6.99	9.18	8.58	6.49	6.55	3.42
	5C	4.35	5.23	5.3	- N/A -	- N/A -	5.69	6.05	7.29	6.75	5.53	5.54	1.94
	6A	5.31	6.26	6.43	- N/A -	- N/A -	7.3	7.44	9.53	8.83	6.73	6.87	8.08
	6B	4.87	5.84	5.98	- N/A -	- N/A -	6.55	6.61	8.51	7.84	6.34	6.4	5.23
	7	5.37	6.16	6.31	- N/A -	- N/A -	7.38	7.45	9.36	8.51	6.68	6.81	6.8
	8	5.77	6.25	6.45	- N/A -	- N/A -	8.13	8	9.54	8.25	7.21	7.35	7.02

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled DX Clg + Electric Resistance Heat + Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	9.36	9.66	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	9	9.19	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	8.07	8.27	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	8.29	8.52	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.51	7.69	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.44	7.68	- N/A -
Air Cooled DX Clg + Fuel Furnace + Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	9.36	9.66	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	9	9.19	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	8.07	8.27	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	8.28	8.51	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.5	7.66	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.43	7.65	- N/A -

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Electric Resistance Backup Heat + Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	9.36	9.67	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	9	9.2	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	8.07	8.27	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	8.28	8.52	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.51	7.68	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.44	7.67	- N/A -
	3A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.7	6.93	- N/A -
	3B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.91	7.13	- N/A -
	3C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	5.42	5.19	- N/A -
	4A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.66	6.92	- N/A -
	4B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.92	6.89	- N/A -
	4C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	5.92	5.91	- N/A -
	5A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.57	6.68	- N/A -
	5B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.79	6.87	- N/A -
	5C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	5.83	5.85	- N/A -
	6A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.54	7.78	- N/A -
	6B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.05	7.19	- N/A -
	7	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.95	8.22	- N/A -
	8	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	9.72	9.99	- N/A -

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Fuel Backup Heat + Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	9.36	9.67	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	9	9.2	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	8.07	8.27	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	8.28	8.52	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.51	7.67	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.44	7.66	- N/A -
	3A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.69	6.91	- N/A -
	3B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.9	7.12	- N/A -
	3C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	5.42	5.18	- N/A -
	4A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.64	6.88	- N/A -
	4B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.91	6.87	- N/A -
	4C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	5.9	5.88	- N/A -
	5A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.52	6.62	- N/A -
	5B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.71	6.76	- N/A -
	5C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	5.81	5.81	- N/A -
	6A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.95	7.09	- N/A -
	6B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.55	6.61	- N/A -
	7	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.89	7.04	- N/A -
	8	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.42	7.57	- N/A -

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
VRF + DOAS	0A	7.01	8.83	9.02	8.5	8.44	11.58	11.84	21.64	18.75	9.03	9.48	2.64
	0B	6.99	8.62	8.82	8.45	8.43	10.58	11.46	20.88	18.35	8.91	9.21	2.84
	1A	5.94	7.79	7.93	7.75	7.66	9.94	10.03	17.67	15.96	8.12	8.44	2.2
	1B	6.33	8.04	8.2	7.94	7.89	9.57	10.11	18.28	16.38	8.2	8.51	2.47
	2A	5.43	7.37	7.5	7.37	7.32	9.15	9.1	15.72	14.66	7.51	7.68	1.96
	2B	5.55	7.41	7.56	7.25	7.23	8.54	8.66	16.38	15.46	7.56	7.79	2.2
	3A	4.8	6.63	6.76	6.77	6.72	7.64	7.64	12.3	12.02	6.72	6.95	2.22
	3B	4.85	6.83	6.98	6.87	6.85	7.65	7.62	13.18	12.79	7.01	7.2	1.87
	3C	4.29	6.23	6.34	6.26	6.19	6.2	6.04	10.85	11.52	5.81	5.41	1.47
	4A	4.85	6.47	6.65	6.53	6.55	7.51	7.7	11.33	10.98	6.64	6.91	3.63
	4B	4.7	6.75	6.96	6.8	6.85	7.52	7.22	12.33	12.64	7.05	7.02	2.23
	4C	4.32	5.92	6.06	6.07	6.05	6.26	6.49	9.26	9.74	6	5.95	2.09
	5A	5.02	6.36	6.53	6.35	6.39	7.69	8.09	10.66	10.58	6.62	6.75	5.17
	5B	4.91	6.58	6.81	6.78	6.87	7.72	7.61	11.56	11.72	6.97	7.11	3.29
	5C	4.28	5.8	5.93	5.93	5.91	6.26	6.55	8.63	9.25	5.88	5.89	1.92
	6A	5.68	6.89	7.15	7.06	7.22	8.49	8.93	11.63	11.22	7.71	7.96	7.77
	6B	5.16	6.59	6.84	6.86	7.02	7.62	7.79	10.88	10.99	7.29	7.46	5.07
	7	6.32	7.07	7.35	7.28	7.5	9.07	9.72	11.96	11.23	8.2	8.52	6.46
	8	7.96	8.08	8.55	8.3	8.84	10.99	12.1	13.37	11.63	10.05	10.41	6.53

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
GSHP + DOAS	0A	6.75	9.18	9.34	8.62	8.62	13.54	13.19	16.5	14.73	8.78	8.84	2.63
	0B	6.52	8.1	8.24	8.17	8.16	10.24	10.64	16.38	15	8.42	8.32	3.07
	1A	6.09	7.78	7.9	7.68	7.62	9.5	9.44	14.57	13.87	7.75	7.7	2.16
	1B	6.04	7.7	7.82	7.69	7.66	9.48	9.68	14.79	13.49	7.81	7.74	2.37
	2A	5.5	7.28	7.38	7.13	7.1	8.69	8.62	13.18	12.55	7.23	7.16	1.92
	2B	5.53	7.29	7.43	6.97	6.95	8.33	8.3	13.32	12.59	7.22	7.1	2.08
	3A	4.77	6.49	6.59	6.3	6.24	7.04	7.1	10.55	10.28	6.33	6.31	2.14
	3B	4.89	6.73	6.86	6.45	6.44	7.54	7.45	11.2	10.93	6.62	6.55	1.79
	3C	4.32	6.15	6.24	5.75	5.67	5.78	5.71	9.19	9.04	5.41	5.12	1.36
	4A	4.72	6.27	6.41	5.95	5.96	6.79	7.06	9.71	9.21	6.23	6.22	3.52
	4B	4.66	6.57	6.76	6.21	6.27	7.12	7.06	10.39	10.17	6.54	6.48	2.14
	4C	4.18	5.7	5.81	5.35	5.31	5.65	6.02	7.81	7.41	5.53	5.47	1.99
	5A	4.64	6.03	6.16	5.63	5.62	6.81	7.11	8.88	8.28	5.95	5.98	5
	5B	4.62	6.3	6.47	6.01	6.06	6.95	6.98	9.52	9.22	6.29	6.3	3.14
	5C	4.11	5.59	5.7	5.23	5.19	5.68	6.05	7.39	7.01	5.44	5.41	1.83
	6A	4.79	6.15	6.3	5.76	5.79	6.92	7.2	9.19	8.45	6.3	6.39	7.37
	6B	4.51	6.02	6.18	5.68	5.72	6.51	6.68	8.68	8.24	6.12	6.16	4.8
	7	4.91	6.02	6.15	5.56	5.59	7.02	7.38	9.07	8.11	6.26	6.41	6.04
	8	5.45	6.18	6.36	5.63	5.72	7.91	8.48	9.57	7.99	6.79	7.01	6.08

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
VRF + Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	9.12	9.57	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	9.08	9.41	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	8.27	8.58	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	8.44	8.77	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.74	7.93	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.81	8.05	- N/A -
	3A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.98	7.19	- N/A -
	3B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.25	7.45	- N/A -
	3C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	5.81	5.41	- N/A -
	4A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.86	7.15	- N/A -
	4B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.25	7.24	- N/A -
	4C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.29	6.27	- N/A -
	5A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.84	6.99	- N/A -
	5B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.15	7.3	- N/A -
	5C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.13	6.18	- N/A -
	6A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.92	8.19	- N/A -
	6B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.48	7.67	- N/A -
	7	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	8.38	8.73	- N/A -
	8	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	10.22	10.61	- N/A -

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
GSHP+Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	8.88	8.93	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	8.59	8.49	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.89	7.85	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	8.01	7.93	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.44	7.35	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	7.44	7.3	- N/A -
	3A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.56	6.5	- N/A -
	3B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.84	6.76	- N/A -
	3C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	5.41	5.12	- N/A -
	4A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.45	6.43	- N/A -
	4B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.77	6.71	- N/A -
	4C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	5.82	5.74	- N/A -
	5A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.19	6.2	- N/A -
	5B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.51	6.52	- N/A -
	5C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	5.71	5.68	- N/A -
	6A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.52	6.6	- N/A -
	6B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.33	6.36	- N/A -
	7	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.46	6.61	- N/A -
	8	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	6.97	7.18	- N/A -

Table N.4.2.2.2.1.2 (New Table 4.2.6.2.2.1(b))
Renewable Energy Requirements for Natural Gas Heating Components of HVAC Systems
(KWh/ft^2 FLOOR AREA)

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled DX Clg + Gas Furnace	1A	ERCT	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	1A	FRCC	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	2A	ERCT	0.08	0.04	0.04	- N/A -	- N/A -	0.25	0.13	0.07	0.03	- N/A -	- N/A -	0.01
	2A	FRCC	0.02	0.01	0.01	- N/A -	- N/A -	0.08	0.04	0.02	0.01	- N/A -	- N/A -	0
	2A	SRMV	0.02	0.01	0.01	- N/A -	- N/A -	0.06	0.03	0.02	0.01	- N/A -	- N/A -	0
	2A	SRSO	0.02	0.01	0.01	- N/A -	- N/A -	0.05	0.03	0.02	0.01	- N/A -	- N/A -	0
	2A	SRVC	0.03	0.02	0.02	- N/A -	- N/A -	0.11	0.06	0.03	0.02	- N/A -	- N/A -	0
	2B	AZNM	0.07	0.02	0.02	- N/A -	- N/A -	0.1	0.02	0.05	0.02	- N/A -	- N/A -	0.01
	2B	CAMX	0.34	0.09	0.1	- N/A -	- N/A -	0.47	0.08	0.24	0.1	- N/A -	- N/A -	0.04
	2B	ERCT	0.14	0.04	0.04	- N/A -	- N/A -	0.2	0.03	0.1	0.04	- N/A -	- N/A -	0.02

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat	1A	ERCT	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	1A	FRCC	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	2A	ERCT	0	0	0	- N/A -	- N/A -	0	0	0.04	0.03	- N/A -	- N/A -	0
	2A	FRCC	0	0	0	- N/A -	- N/A -	0	0	0.01	0.01	- N/A -	- N/A -	0
	2A	SRMV	0	0	0	- N/A -	- N/A -	0	0	0.01	0.01	- N/A -	- N/A -	0
	2A	SRSO	0	0	0	- N/A -	- N/A -	0	0	0.01	0.01	- N/A -	- N/A -	0
	2A	SRVC	0	0	0	- N/A -	- N/A -	0	0	0.02	0.01	- N/A -	- N/A -	0
	2B	AZNM	0	0	0	- N/A -	- N/A -	0	0	0.03	0.02	- N/A -	- N/A -	0
	2B	CAMX	0	0	0	- N/A -	- N/A -	0	0	0.14	0.09	- N/A -	- N/A -	0
	2B	ERCT	0	0	0	- N/A -	- N/A -	0	0	0.06	0.04	- N/A -	- N/A -	0
	3A	ERCT	0.02	0	0	- N/A -	- N/A -	0	0	0.16	0.1	- N/A -	- N/A -	0
	3A	RFCW	0	0	0	- N/A -	- N/A -	0	0	0.04	0.02	- N/A -	- N/A -	0
	3A	SPSO	0.01	0	0	- N/A -	- N/A -	0	0	0.07	0.05	- N/A -	- N/A -	0
	3A	SRMV	0.01	0	0	- N/A -	- N/A -	0	0	0.04	0.02	- N/A -	- N/A -	0
	3A	SRMW	0.01	0	0	- N/A -	- N/A -	0	0	0.06	0.04	- N/A -	- N/A -	0
	3A	SRSO	0	0	0	- N/A -	- N/A -	0	0	0.03	0.02	- N/A -	- N/A -	0
	3A	SRTV	0	0	0	- N/A -	- N/A -	0	0	0.03	0.02	- N/A -	- N/A -	0
	3A	SRVC	0.01	0	0	- N/A -	- N/A -	0	0	0.07	0.04	- N/A -	- N/A -	0

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat	3B	AZNM	0	0	0	- N/A -	- N/A -	0	0	0.05	0.03	- N/A -	- N/A -	0
	3B	CAMX	0	0	0	- N/A -	- N/A -	0	0	0.22	0.14	- N/A -	- N/A -	0
	3B	ERCT	0	0	0	- N/A -	- N/A -	0	0	0.09	0.06	- N/A -	- N/A -	0
	3B	NWPP	0	0	0	- N/A -	- N/A -	0	0	0.08	0.05	- N/A -	- N/A -	0
	3B	SPSO	0	0	0	- N/A -	- N/A -	0	0	0.04	0.03	- N/A -	- N/A -	0
	3C	CAMX	0	0	0	- N/A -	- N/A -	0	0	0.09	0.06	- N/A -	- N/A -	0
	4A	NYST	0.27	0.06	0.06	- N/A -	- N/A -	0	0	0.58	0.37	- N/A -	- N/A -	0.01
	4A	RFCE	0.04	0.01	0.01	- N/A -	- N/A -	0	0	0.09	0.06	- N/A -	- N/A -	0
	4A	RFCW	0.04	0.01	0.01	- N/A -	- N/A -	0	0	0.08	0.05	- N/A -	- N/A -	0
	4A	SPNO	0.09	0.02	0.02	- N/A -	- N/A -	0	0	0.19	0.12	- N/A -	- N/A -	0
	4A	SPSO	0.08	0.02	0.02	- N/A -	- N/A -	0	0	0.17	0.11	- N/A -	- N/A -	0
	4A	SRMV	0.04	0.01	0.01	- N/A -	- N/A -	0	0	0.08	0.05	- N/A -	- N/A -	0
	4A	SRMW	0.06	0.01	0.01	- N/A -	- N/A -	0	0	0.13	0.09	- N/A -	- N/A -	0
	4A	SRTV	0.03	0.01	0.01	- N/A -	- N/A -	0	0	0.07	0.04	- N/A -	- N/A -	0
	4A	SRVC	0.07	0.02	0.02	- N/A -	- N/A -	0	0	0.15	0.1	- N/A -	- N/A -	0
	4B	AZNM	0	0	0	- N/A -	- N/A -	0	0	0.08	0.05	- N/A -	- N/A -	0
	4B	CAMX	0	0	0	- N/A -	- N/A -	0	0	0.39	0.24	- N/A -	- N/A -	0
	4B	NWPP	0	0	0	- N/A -	- N/A -	0	0	0.13	0.08	- N/A -	- N/A -	0

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat	4B	RMPA	0	0	0	- N/A -	- N/A -	0	0	0.08	0.05	- N/A -	- N/A -	0
	4B	SPSO	0	0	0	- N/A -	- N/A -	0	0	0.08	0.05	- N/A -	- N/A -	0
	4C	CAMX	0.01	0	0	- N/A -	- N/A -	0	0	0.63	0.39	- N/A -	- N/A -	0
	4C	NWPP	0	0	0	- N/A -	- N/A -	0	0	0.22	0.13	- N/A -	- N/A -	0
	5A	MROE	0.35	0.05	0.06	- N/A -	- N/A -	0	0	0.27	0.17	- N/A -	- N/A -	0.02
	5A	MROW	0.54	0.08	0.09	- N/A -	- N/A -	0	0	0.41	0.26	- N/A -	- N/A -	0.03
	5A	NEWE	0.36	0.06	0.06	- N/A -	- N/A -	0	0	0.28	0.18	- N/A -	- N/A -	0.02
	5A	NYST	1.64	0.25	0.26	- N/A -	- N/A -	0	0	1.26	0.8	- N/A -	- N/A -	0.08
	5A	RFCE	0.24	0.04	0.04	- N/A -	- N/A -	0	0	0.19	0.12	- N/A -	- N/A -	0.01
	5A	RFCM	0.19	0.03	0.03	- N/A -	- N/A -	0	0	0.15	0.09	- N/A -	- N/A -	0.01
	5A	RFCW	0.23	0.04	0.04	- N/A -	- N/A -	0	0	0.17	0.11	- N/A -	- N/A -	0.01
	5A	RMPA	0.5	0.08	0.08	- N/A -	- N/A -	0	0	0.39	0.25	- N/A -	- N/A -	0.02
	5A	SPNO	0.54	0.08	0.09	- N/A -	- N/A -	0	0	0.41	0.26	- N/A -	- N/A -	0.03
	5A	SRMW	0.38	0.06	0.06	- N/A -	- N/A -	0	0	0.29	0.18	- N/A -	- N/A -	0.02
	5A	SRVC	0.44	0.07	0.07	- N/A -	- N/A -	0	0	0.34	0.21	- N/A -	- N/A -	0.02
	5B	AZNM	0.27	0.14	0.15	- N/A -	- N/A -	0	0	0.2	0.18	- N/A -	- N/A -	0.05
	5B	CAMX	1.31	0.68	0.72	- N/A -	- N/A -	0	0	0.97	0.87	- N/A -	- N/A -	0.26
	5B	NWPP	0.45	0.24	0.25	- N/A -	- N/A -	0	0	0.33	0.3	- N/A -	- N/A -	0.09

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat	5B	RMPA	0.27	0.14	0.15	- N/A -	- N/A -	0	0	0.2	0.18	- N/A -	- N/A -	0.05
	5C	NWPP	0	0	0	- N/A -	- N/A -	0	0	0.25	0.15	- N/A -	- N/A -	0
	6A	MROE	1.15	0.77	0.8	- N/A -	- N/A -	0	0	0.58	0.75	- N/A -	- N/A -	0.11
	6A	MROW	1.76	1.18	1.23	- N/A -	- N/A -	0	0	0.89	1.15	- N/A -	- N/A -	0.18
	6A	NEWE	1.18	0.79	0.83	- N/A -	- N/A -	0	0	0.6	0.77	- N/A -	- N/A -	0.12
	6A	NYST	5.37	3.59	3.75	- N/A -	- N/A -	0	0	2.73	3.51	- N/A -	- N/A -	0.54
	6A	RFCM	0.63	0.42	0.44	- N/A -	- N/A -	0	0	0.32	0.41	- N/A -	- N/A -	0.06
	6A	RFCW	0.74	0.5	0.52	- N/A -	- N/A -	0	0	0.38	0.49	- N/A -	- N/A -	0.07
	6A	RMPA	1.65	1.11	1.16	- N/A -	- N/A -	0	0	0.84	1.08	- N/A -	- N/A -	0.17
	6B	CAMX	5.17	3.69	3.95	- N/A -	- N/A -	0	0	2.3	3.1	- N/A -	- N/A -	0.48
	6B	MROW	1.15	0.82	0.88	- N/A -	- N/A -	0	0	0.51	0.69	- N/A -	- N/A -	0.11
	6B	NWPP	1.79	1.28	1.37	- N/A -	- N/A -	0	0	0.8	1.07	- N/A -	- N/A -	0.17
	6B	RMPA	1.08	0.77	0.83	- N/A -	- N/A -	0	0	0.48	0.65	- N/A -	- N/A -	0.1
	7	MROE	2.18	1.08	1.14	- N/A -	- N/A -	0	0	1	1.37	- N/A -	- N/A -	0.33
	7	MROW	3.34	1.66	1.74	- N/A -	- N/A -	0	0	1.53	2.1	- N/A -	- N/A -	0.51
	7	NEWE	2.25	1.12	1.17	- N/A -	- N/A -	0	0	1.03	1.41	- N/A -	- N/A -	0.35
	7	NWPP	5.2	2.58	2.71	- N/A -	- N/A -	0	0	2.38	3.26	- N/A -	- N/A -	0.8
	7	RMPA	3.14	1.56	1.64	- N/A -	- N/A -	0	0	1.44	1.97	- N/A -	- N/A -	0.48

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled DX Clg + Gas Furnace + DOAS	1A	ERCT	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	1A	FRCC	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	2A	ERCT	0.04	0.02	0.02	- N/A -	- N/A -	0.18	0.27	0.13	0.06	0.08	0.14	0.02
	2A	FRCC	0.01	0.01	0.01	- N/A -	- N/A -	0.06	0.08	0.04	0.02	0.02	0.04	0
	2A	SRMV	0.01	0	0.01	- N/A -	- N/A -	0.04	0.06	0.03	0.01	0.02	0.03	0
	2A	SRSO	0.01	0	0.01	- N/A -	- N/A -	0.04	0.06	0.03	0.01	0.02	0.03	0
	2A	SRVC	0.02	0.01	0.01	- N/A -	- N/A -	0.08	0.12	0.06	0.03	0.03	0.06	0.01
	2B	AZNM	0.06	0.01	0.02	- N/A -	- N/A -	0.15	0.18	0.09	0.04	0.04	0.07	0.03
	2B	CAMX	0.28	0.06	0.07	- N/A -	- N/A -	0.73	0.89	0.44	0.19	0.19	0.36	0.13
	2B	ERCT	0.12	0.03	0.03	- N/A -	- N/A -	0.31	0.37	0.19	0.08	0.08	0.15	0.05

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + DOAS	1A	ERCT	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	1A	FRCC	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	2A	ERCT	0	0	0	- N/A -	- N/A -	0	0.02	0.04	0.03	0.01	0.02	0
	2A	FRCC	0	0	0	- N/A -	- N/A -	0	0.01	0.01	0.01	0	0.01	0
	2A	SRMV	0	0	0	- N/A -	- N/A -	0	0	0.01	0.01	0	0.01	0
	2A	SRSO	0	0	0	- N/A -	- N/A -	0	0	0.01	0.01	0	0	0
	2A	SRVC	0	0	0	- N/A -	- N/A -	0	0.01	0.02	0.01	0	0.01	0
	2B	AZNM	0	0	0	- N/A -	- N/A -	0	0	0.03	0.02	0.01	0.01	0
	2B	CAMX	0	0	0	- N/A -	- N/A -	0	0	0.14	0.09	0.03	0.06	0
	2B	ERCT	0	0	0	- N/A -	- N/A -	0	0	0.06	0.04	0.01	0.03	0
	3A	ERCT	0.01	0	0	- N/A -	- N/A -	0	0.17	0.17	0.1	0.04	0.07	0
	3A	RFCW	0	0	0	- N/A -	- N/A -	0	0.04	0.04	0.02	0.01	0.02	0
	3A	SPSO	0.01	0	0	- N/A -	- N/A -	0	0.08	0.08	0.05	0.02	0.03	0
	3A	SRMV	0	0	0	- N/A -	- N/A -	0	0.04	0.04	0.02	0.01	0.02	0
	3A	SRMW	0	0	0	- N/A -	- N/A -	0	0.06	0.06	0.04	0.01	0.03	0
	3A	SRSO	0	0	0	- N/A -	- N/A -	0	0.04	0.04	0.02	0.01	0.01	0
	3A	SRTV	0	0	0	- N/A -	- N/A -	0	0.03	0.03	0.02	0.01	0.01	0
	3A	SRVC	0.01	0	0	- N/A -	- N/A -	0	0.07	0.07	0.04	0.02	0.03	0

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + DOAS	3B	AZNM	0	0	0	- N/A -	- N/A -	0	0.02	0.05	0.03	0.01	0.02	0
	3B	CAMX	0	0	0	- N/A -	- N/A -	0	0.07	0.23	0.15	0.04	0.1	0
	3B	ERCT	0	0	0	- N/A -	- N/A -	0	0.03	0.1	0.06	0.02	0.04	0
	3B	NWPP	0	0	0	- N/A -	- N/A -	0	0.03	0.08	0.05	0.01	0.03	0
	3B	SPSO	0	0	0	- N/A -	- N/A -	0	0.01	0.04	0.03	0.01	0.02	0
	3C	CAMX	0	0	0	- N/A -	- N/A -	0	0.01	0.09	0.06	0.01	0.04	0
	4A	NYST	0.17	0.02	0.02	- N/A -	- N/A -	0.03	0.8	0.6	0.34	0.13	0.23	0
	4A	RFCE	0.03	0	0	- N/A -	- N/A -	0	0.12	0.09	0.05	0.02	0.03	0
	4A	RFCW	0.02	0	0	- N/A -	- N/A -	0	0.11	0.08	0.05	0.02	0.03	0
	4A	SPNO	0.06	0.01	0.01	- N/A -	- N/A -	0.01	0.26	0.2	0.11	0.04	0.07	0
	4A	SPSO	0.05	0.01	0.01	- N/A -	- N/A -	0.01	0.23	0.17	0.1	0.04	0.07	0
	4A	SRMV	0.03	0	0	- N/A -	- N/A -	0	0.12	0.09	0.05	0.02	0.03	0
	4A	SRMW	0.04	0	0	- N/A -	- N/A -	0.01	0.18	0.14	0.08	0.03	0.05	0
	4A	SRTV	0.02	0	0	- N/A -	- N/A -	0	0.09	0.07	0.04	0.01	0.03	0
	4A	SRVC	0.05	0.01	0.01	- N/A -	- N/A -	0.01	0.21	0.16	0.09	0.03	0.06	0
	4B	AZNM	0	0	0	- N/A -	- N/A -	0	0.05	0.08	0.05	0.02	0.04	0
	4B	CAMX	0	0	0	- N/A -	- N/A -	0	0.22	0.39	0.25	0.08	0.18	0
	4B	NWPP	0	0	0	- N/A -	- N/A -	0	0.08	0.13	0.09	0.03	0.06	0

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + DOAS	4B	RMPA	0	0	0	- N/A -	- N/A -	0	0.05	0.08	0.05	0.02	0.04	0
	4B	SPSO	0	0	0	- N/A -	- N/A -	0	0.04	0.08	0.05	0.02	0.04	0
	4C	CAMX	0.01	0	0	- N/A -	- N/A -	0	0.65	0.64	0.4	0.13	0.26	0
	4C	NWPP	0	0	0	- N/A -	- N/A -	0	0.22	0.22	0.14	0.05	0.09	0
	5A	MROE	0.2	0.01	0.01	- N/A -	- N/A -	0.03	0.32	0.3	0.11	0.05	0.07	0.01
	5A	MROW	0.3	0.02	0.02	- N/A -	- N/A -	0.04	0.49	0.46	0.17	0.07	0.11	0.01
	5A	NEWE	0.2	0.01	0.01	- N/A -	- N/A -	0.03	0.33	0.31	0.11	0.05	0.07	0.01
	5A	NYST	0.92	0.05	0.06	- N/A -	- N/A -	0.14	1.5	1.41	0.51	0.23	0.33	0.03
	5A	RFCE	0.14	0.01	0.01	- N/A -	- N/A -	0.02	0.22	0.21	0.08	0.03	0.05	0
	5A	RFCM	0.11	0.01	0.01	- N/A -	- N/A -	0.02	0.18	0.17	0.06	0.03	0.04	0
	5A	RFCW	0.13	0.01	0.01	- N/A -	- N/A -	0.02	0.21	0.19	0.07	0.03	0.05	0
	5A	RMPA	0.28	0.02	0.02	- N/A -	- N/A -	0.04	0.46	0.43	0.16	0.07	0.1	0.01
	5A	SPNO	0.3	0.02	0.02	- N/A -	- N/A -	0.04	0.49	0.46	0.17	0.07	0.11	0.01
	5A	SRMW	0.21	0.01	0.01	- N/A -	- N/A -	0.03	0.35	0.32	0.12	0.05	0.08	0.01
	5A	SRVC	0.25	0.01	0.02	- N/A -	- N/A -	0.04	0.4	0.38	0.14	0.06	0.09	0.01
	5B	AZNM	0.17	0.05	0.05	- N/A -	- N/A -	0.13	0.34	0.29	0.12	0.14	0.19	0.06
	5B	CAMX	0.83	0.22	0.25	- N/A -	- N/A -	0.61	1.63	1.4	0.59	0.65	0.91	0.29
	5B	NWPP	0.29	0.08	0.09	- N/A -	- N/A -	0.21	0.56	0.49	0.2	0.23	0.32	0.1

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + DOAS	5B	RMPA	0.17	0.05	0.05	- N/A -	- N/A -	0.13	0.34	0.29	0.12	0.14	0.19	0.06
	5C	NWPP	0	0	0	- N/A -	- N/A -	0	0.29	0.25	0.16	0.05	0.1	0
	6A	MROE	0.7	0.25	0.27	- N/A -	- N/A -	0.59	1.1	0.84	0.31	0.72	0.85	0.01
	6A	MROW	1.07	0.38	0.42	- N/A -	- N/A -	0.91	1.69	1.29	0.48	1.1	1.3	0.02
	6A	NEWE	0.72	0.26	0.28	- N/A -	- N/A -	0.61	1.14	0.87	0.33	0.74	0.88	0.01
	6A	NYST	3.28	1.17	1.28	- N/A -	- N/A -	2.77	5.16	3.95	1.48	3.35	3.98	0.06
	6A	RFCM	0.39	0.14	0.15	- N/A -	- N/A -	0.33	0.61	0.46	0.17	0.39	0.47	0.01
	6A	RFCW	0.45	0.16	0.18	- N/A -	- N/A -	0.38	0.72	0.55	0.2	0.46	0.55	0.01
	6A	RMPA	1.01	0.36	0.39	- N/A -	- N/A -	0.85	1.59	1.22	0.45	1.03	1.22	0.02
	6B	CAMX	3.46	1.19	1.35	- N/A -	- N/A -	3.38	6.17	3.41	1.43	4.19	4.87	0.06
	6B	MROW	0.77	0.26	0.3	- N/A -	- N/A -	0.75	1.37	0.76	0.32	0.93	1.08	0.01
	6B	NWPP	1.2	0.41	0.47	- N/A -	- N/A -	1.17	2.13	1.18	0.49	1.45	1.68	0.02
	6B	RMPA	0.72	0.25	0.28	- N/A -	- N/A -	0.71	1.29	0.71	0.3	0.88	1.02	0.01
	7	MROE	1.39	0.46	0.49	- N/A -	- N/A -	1.13	1.87	1.44	0.53	1.28	1.44	0.02
	7	MROW	2.14	0.7	0.76	- N/A -	- N/A -	1.73	2.87	2.2	0.81	1.97	2.21	0.03
	7	NEWE	1.44	0.47	0.51	- N/A -	- N/A -	1.16	1.93	1.48	0.55	1.33	1.48	0.02
	7	NWPP	3.33	1.09	1.18	- N/A -	- N/A -	2.69	4.46	3.43	1.26	3.07	3.43	0.05
	7	RMPA	2.01	0.66	0.71	- N/A -	- N/A -	1.62	2.69	2.07	0.76	1.85	2.07	0.03

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled DX Clg + Gas Furnace + Heat Recovery	1A	ERCT	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	1A	FRCC	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2A	ERCT	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.06	0.09	- N/A -
	2A	FRCC	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.02	0.03	- N/A -
	2A	SRMV	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.02	- N/A -
	2A	SRSO	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.02	- N/A -
	2A	SRVC	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.03	0.04	- N/A -
	2B	AZNM	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.03	0.05	- N/A -
	2B	CAMX	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.15	0.26	- N/A -
	2B	ERCT	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.06	0.11	- N/A -

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + Heat Recovery	1A	ERCT	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	1A	FRCC	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2A	ERCT	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.02	- N/A -
	2A	FRCC	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0.01	- N/A -
	2A	SRMV	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0.01	- N/A -
	2A	SRSO	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2A	SRVC	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0.01	- N/A -
	2B	AZNM	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.01	- N/A -
	2B	CAMX	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.03	0.06	- N/A -
	2B	ERCT	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.03	- N/A -
	3A	ERCT	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.04	0.07	- N/A -
	3A	RFCW	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.02	- N/A -
	3A	SPSO	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.02	0.03	- N/A -
	3A	SRMV	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.02	- N/A -
	3A	SRMW	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.03	- N/A -
	3A	SRSO	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.01	- N/A -
	3A	SRTV	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.01	- N/A -
	3A	SRVC	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.02	0.03	- N/A -

BSR/ASHRAE/IES Addendum m to ANSI/ASHRAE Standard 90.1-2022, *Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings*
Review Draft

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + Heat Recovery	3B	AZNM	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.02	- N/A -
	3B	CAMX	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.04	0.1	- N/A -
	3B	ERCT	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.02	0.04	- N/A -
	3B	NWPP	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.03	- N/A -
	3B	SPSO	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.02	- N/A -
	3C	CAMX	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.04	- N/A -
	4A	NYST	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.13	0.23	- N/A -
	4A	RFCE	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.02	0.03	- N/A -
	4A	RFCW	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.02	0.03	- N/A -
	4A	SPNO	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.04	0.07	- N/A -
	4A	SPSO	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.04	0.07	- N/A -
	4A	SRMV	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.02	0.03	- N/A -
	4A	SRMW	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.03	0.05	- N/A -
	4A	SRTV	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.03	- N/A -
	4A	SRVC	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.03	0.06	- N/A -
	4B	AZNM	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.02	0.04	- N/A -
	4B	CAMX	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.08	0.18	- N/A -
	4B	NWPP	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.03	0.06	- N/A -

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + Heat Recovery	4B	RMPA	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.02	0.04	- N/A -
	4B	SPSO	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.02	0.04	- N/A -
	4C	CAMX	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.13	0.26	- N/A -
	4C	NWPP	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.04	0.09	- N/A -
	5A	MROE	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.05	0.07	- N/A -
	5A	MROW	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.07	0.11	- N/A -
	5A	NEWE	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.05	0.07	- N/A -
	5A	NYST	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.22	0.33	- N/A -
	5A	RFCE	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.03	0.05	- N/A -
	5A	RFCM	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.03	0.04	- N/A -
	5A	RFCW	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.03	0.05	- N/A -
	5A	RMPA	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.07	0.1	- N/A -
	5A	SPNO	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.07	0.11	- N/A -
	5A	SRMW	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.05	0.08	- N/A -
	5A	SRVC	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.06	0.09	- N/A -
	5B	AZNM	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.13	0.19	- N/A -
	5B	CAMX	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.65	0.91	- N/A -
	5B	NWPP	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.22	0.31	- N/A -

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + Heat Recovery	5B	RMPA	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.14	0.19	- N/A -
	5C	NWPP	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.05	0.1	- N/A -
	6A	MROE	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.71	0.85	- N/A -
	6A	MROW	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	1.09	1.3	- N/A -
	6A	NEWE	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.74	0.87	- N/A -
	6A	NYST	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	3.34	3.96	- N/A -
	6A	RFCM	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.39	0.47	- N/A -
	6A	RFCW	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.46	0.55	- N/A -
	6A	RMPA	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	1.03	1.22	- N/A -
	6B	CAMX	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	4.16	4.84	- N/A -
	6B	MROW	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.93	1.08	- N/A -
	6B	NWPP	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	1.44	1.68	- N/A -
	6B	RMPA	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.87	1.01	- N/A -
	7	MROE	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	1.28	1.43	- N/A -
	7	MROW	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	1.96	2.2	- N/A -
	7	NEWE	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	1.32	1.48	- N/A -
	7	NWPP	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	3.05	3.42	- N/A -
	7	RMPA	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	1.85	2.07	- N/A -

Table N4.2.2.2.2.1 (New Table 4.2.6.2.2.2(a))
Renewable Energy Requirements for All-Electric Service Water Heating Systems and Electric Service Water Heating Equipment
(KWh/ft² FLOOR AREA)

SWH System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Distributed Integral HPWH Storage	0A	- N/A -	- N/A -	- N/A -	2.14	2.15	- N/A -	- N/A -	0.17	0.16	1.31	1.19	- N/A -
	0B	- N/A -	- N/A -	- N/A -	2.14	2.14	- N/A -	- N/A -	0.17	0.16	1.32	1.2	- N/A -
	1A	- N/A -	- N/A -	- N/A -	2.36	2.36	- N/A -	- N/A -	0.17	0.17	1.43	1.28	- N/A -
	1B	- N/A -	- N/A -	- N/A -	2.35	2.35	- N/A -	- N/A -	0.17	0.17	1.44	1.29	- N/A -
	2A	- N/A -	- N/A -	- N/A -	2.56	2.56	- N/A -	- N/A -	0.18	0.18	1.56	1.38	- N/A -
	2B	- N/A -	- N/A -	- N/A -	2.56	2.56	- N/A -	- N/A -	0.18	0.18	1.57	1.39	- N/A -
	3A	- N/A -	- N/A -	- N/A -	2.88	2.88	- N/A -	- N/A -	0.19	0.2	1.81	1.61	- N/A -
	3B	- N/A -	- N/A -	- N/A -	2.8	2.8	- N/A -	- N/A -	0.19	0.2	1.74	1.55	- N/A -
	3C	- N/A -	- N/A -	- N/A -	2.96	2.96	- N/A -	- N/A -	0.19	0.2	1.82	1.6	- N/A -
	4A	- N/A -	- N/A -	- N/A -	3.1	3.1	- N/A -	- N/A -	0.21	0.22	2.03	1.82	- N/A -
	4B	- N/A -	- N/A -	- N/A -	3.03	3.04	- N/A -	- N/A -	0.2	0.22	1.96	1.75	- N/A -
	4C	- N/A -	- N/A -	- N/A -	3.2	3.2	- N/A -	- N/A -	0.21	0.23	2.09	1.86	- N/A -
	5A	- N/A -	- N/A -	- N/A -	3.27	3.27	- N/A -	- N/A -	0.22	0.25	2.22	2.01	- N/A -
	5B	- N/A -	- N/A -	- N/A -	3.2	3.2	- N/A -	- N/A -	0.22	0.24	2.15	1.94	- N/A -
	5C	- N/A -	- N/A -	- N/A -	3.28	3.28	- N/A -	- N/A -	0.21	0.24	2.2	1.98	- N/A -
	6A	- N/A -	- N/A -	- N/A -	3.34	3.34	- N/A -	- N/A -	0.23	0.27	2.35	2.16	- N/A -
	6B	- N/A -	- N/A -	- N/A -	3.32	3.32	- N/A -	- N/A -	0.23	0.26	2.31	2.11	- N/A -
	7	- N/A -	- N/A -	- N/A -	3.44	3.44	- N/A -	- N/A -	0.25	0.29	2.51	2.34	- N/A -
	8	- N/A -	- N/A -	- N/A -	3.57	3.57	- N/A -	- N/A -	0.27	0.33	2.76	2.62	- N/A -

SWH System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Central HPWH w/Electric Resistance Backup Heat+Electric Resistance Recirculation Heat	0A	- N/A -	- N/A -	- N/A -	1.67	1.67	- N/A -	- N/A -	0.12	0.14	1	0.86	- N/A -
	0B	- N/A -	- N/A -	- N/A -	1.66	1.66	- N/A -	- N/A -	0.12	0.14	1.01	0.87	- N/A -
	1A	- N/A -	- N/A -	- N/A -	1.88	1.88	- N/A -	- N/A -	0.13	0.15	1.12	0.95	- N/A -
	1B	- N/A -	- N/A -	- N/A -	1.87	1.87	- N/A -	- N/A -	0.13	0.15	1.13	0.96	- N/A -
	2A	- N/A -	- N/A -	- N/A -	2.08	2.08	- N/A -	- N/A -	0.14	0.16	1.25	1.06	- N/A -
	2B	- N/A -	- N/A -	- N/A -	2.08	2.08	- N/A -	- N/A -	0.14	0.16	1.26	1.07	- N/A -
	3A	- N/A -	- N/A -	- N/A -	2.41	2.41	- N/A -	- N/A -	0.15	0.18	1.5	1.28	- N/A -
	3B	- N/A -	- N/A -	- N/A -	2.33	2.33	- N/A -	- N/A -	0.15	0.18	1.43	1.22	- N/A -
	3C	- N/A -	- N/A -	- N/A -	2.49	2.49	- N/A -	- N/A -	0.15	0.18	1.51	1.27	- N/A -
	4A	- N/A -	- N/A -	- N/A -	2.62	2.62	- N/A -	- N/A -	0.16	0.2	1.72	1.49	- N/A -
	4B	- N/A -	- N/A -	- N/A -	2.56	2.56	- N/A -	- N/A -	0.16	0.2	1.65	1.43	- N/A -
	4C	- N/A -	- N/A -	- N/A -	2.73	2.73	- N/A -	- N/A -	0.16	0.21	1.78	1.54	- N/A -
	5A	- N/A -	- N/A -	- N/A -	2.79	2.79	- N/A -	- N/A -	0.18	0.23	1.91	1.69	- N/A -
	5B	- N/A -	- N/A -	- N/A -	2.72	2.72	- N/A -	- N/A -	0.17	0.22	1.84	1.61	- N/A -
	5C	- N/A -	- N/A -	- N/A -	2.8	2.8	- N/A -	- N/A -	0.17	0.22	1.89	1.65	- N/A -
	6A	- N/A -	- N/A -	- N/A -	2.87	2.87	- N/A -	- N/A -	0.19	0.25	2.04	1.83	- N/A -
	6B	- N/A -	- N/A -	- N/A -	2.84	2.84	- N/A -	- N/A -	0.19	0.24	2	1.79	- N/A -
	7	- N/A -	- N/A -	- N/A -	2.96	2.96	- N/A -	- N/A -	0.21	0.27	2.2	2.01	- N/A -
	8	- N/A -	- N/A -	- N/A -	3.09	3.09	- N/A -	- N/A -	0.23	0.31	2.45	2.29	- N/A -

SWH System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Central HPWH w/Fuel Backup Heat+Electric Resistance Recirculation Heat	0A	- N/A -	- N/A -	- N/A -	1.67	1.67	- N/A -	- N/A -	0.12	0.14	1	0.86	- N/A -
	0B	- N/A -	- N/A -	- N/A -	1.66	1.66	- N/A -	- N/A -	0.12	0.14	1.01	0.87	- N/A -
	1A	- N/A -	- N/A -	- N/A -	1.88	1.88	- N/A -	- N/A -	0.13	0.15	1.12	0.95	- N/A -
	1B	- N/A -	- N/A -	- N/A -	1.87	1.87	- N/A -	- N/A -	0.13	0.15	1.13	0.96	- N/A -
	2A	- N/A -	- N/A -	- N/A -	2.08	2.08	- N/A -	- N/A -	0.14	0.16	1.25	1.06	- N/A -
	2B	- N/A -	- N/A -	- N/A -	2.08	2.08	- N/A -	- N/A -	0.14	0.16	1.26	1.07	- N/A -
	3A	- N/A -	- N/A -	- N/A -	2.41	2.41	- N/A -	- N/A -	0.15	0.18	1.5	1.28	- N/A -
	3B	- N/A -	- N/A -	- N/A -	2.33	2.33	- N/A -	- N/A -	0.15	0.18	1.43	1.22	- N/A -
	3C	- N/A -	- N/A -	- N/A -	2.49	2.49	- N/A -	- N/A -	0.15	0.18	1.51	1.27	- N/A -
	4A	- N/A -	- N/A -	- N/A -	2.62	2.62	- N/A -	- N/A -	0.16	0.2	1.72	1.49	- N/A -
	4B	- N/A -	- N/A -	- N/A -	2.56	2.56	- N/A -	- N/A -	0.16	0.2	1.65	1.43	- N/A -
	4C	- N/A -	- N/A -	- N/A -	2.73	2.73	- N/A -	- N/A -	0.16	0.21	1.78	1.54	- N/A -
	5A	- N/A -	- N/A -	- N/A -	2.79	2.79	- N/A -	- N/A -	0.18	0.23	1.91	1.69	- N/A -
	5B	- N/A -	- N/A -	- N/A -	2.72	2.72	- N/A -	- N/A -	0.17	0.22	1.84	1.61	- N/A -
	5C	- N/A -	- N/A -	- N/A -	2.8	2.8	- N/A -	- N/A -	0.17	0.22	1.89	1.65	- N/A -
	6A	- N/A -	- N/A -	- N/A -	2.87	2.87	- N/A -	- N/A -	0.19	0.25	2.04	1.83	- N/A -
	6B	- N/A -	- N/A -	- N/A -	2.84	2.84	- N/A -	- N/A -	0.19	0.24	2	1.79	- N/A -
	7	- N/A -	- N/A -	- N/A -	2.96	2.96	- N/A -	- N/A -	0.21	0.27	2.2	2.01	- N/A -
	8	- N/A -	- N/A -	- N/A -	3.09	3.09	- N/A -	- N/A -	0.23	0.31	2.45	2.29	- N/A -

SWH System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Central HPWH w/Fuel Backup Heat+Fuel Recirculation Heat	0A	- N/A -	- N/A -	- N/A -	1.63	1.63	- N/A -	- N/A -	0.17	0.16	1.31	1.19	- N/A -
	0B	- N/A -	- N/A -	- N/A -	1.64	1.63	- N/A -	- N/A -	0.17	0.16	1.32	1.2	- N/A -
	1A	- N/A -	- N/A -	- N/A -	1.7	1.7	- N/A -	- N/A -	0.17	0.17	1.43	1.28	- N/A -
	1B	- N/A -	- N/A -	- N/A -	1.7	1.7	- N/A -	- N/A -	0.17	0.17	1.44	1.28	- N/A -
	2A	- N/A -	- N/A -	- N/A -	1.77	1.77	- N/A -	- N/A -	0.18	0.18	1.56	1.37	- N/A -
	2B	- N/A -	- N/A -	- N/A -	1.78	1.78	- N/A -	- N/A -	0.18	0.18	1.56	1.38	- N/A -
	3A	- N/A -	- N/A -	- N/A -	1.91	1.91	- N/A -	- N/A -	0.19	0.2	1.79	1.54	- N/A -
	3B	- N/A -	- N/A -	- N/A -	1.88	1.88	- N/A -	- N/A -	0.19	0.19	1.73	1.5	- N/A -
	3C	- N/A -	- N/A -	- N/A -	1.93	1.93	- N/A -	- N/A -	0.19	0.2	1.82	1.57	- N/A -
	4A	- N/A -	- N/A -	- N/A -	2.03	2.03	- N/A -	- N/A -	0.2	0.21	1.98	1.67	- N/A -
	4B	- N/A -	- N/A -	- N/A -	2	2	- N/A -	- N/A -	0.2	0.21	1.92	1.63	- N/A -
	4C	- N/A -	- N/A -	- N/A -	2.07	2.07	- N/A -	- N/A -	0.2	0.21	2.05	1.72	- N/A -
	5A	- N/A -	- N/A -	- N/A -	2.12	2.12	- N/A -	- N/A -	0.2	0.22	2.12	1.75	- N/A -
	5B	- N/A -	- N/A -	- N/A -	2.09	2.09	- N/A -	- N/A -	0.2	0.21	2.06	1.72	- N/A -
	5C	- N/A -	- N/A -	- N/A -	2.13	2.13	- N/A -	- N/A -	0.2	0.22	2.14	1.78	- N/A -
	6A	- N/A -	- N/A -	- N/A -	2.16	2.16	- N/A -	- N/A -	0.21	0.22	2.16	1.77	- N/A -
	6B	- N/A -	- N/A -	- N/A -	2.16	2.16	- N/A -	- N/A -	0.21	0.22	2.16	1.78	- N/A -
	7	- N/A -	- N/A -	- N/A -	2.21	2.21	- N/A -	- N/A -	0.21	0.23	2.24	1.81	- N/A -
	8	- N/A -	- N/A -	- N/A -	2.28	2.28	- N/A -	- N/A -	0.21	0.23	2.33	1.86	- N/A -

SWH System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Central HPWH w/Electric Resistance Backup Heat+HPWH Recirculation Heat	0A	- N/A -	- N/A -	- N/A -	0.66	0.66	- N/A -	- N/A -	0.08	0.12	0.68	0.52	- N/A -
	0B	- N/A -	- N/A -	- N/A -	0.66	0.66	- N/A -	- N/A -	0.08	0.12	0.68	0.53	- N/A -
	1A	- N/A -	- N/A -	- N/A -	0.72	0.72	- N/A -	- N/A -	0.08	0.13	0.79	0.61	- N/A -
	1B	- N/A -	- N/A -	- N/A -	0.73	0.73	- N/A -	- N/A -	0.08	0.13	0.8	0.62	- N/A -
	2A	- N/A -	- N/A -	- N/A -	0.8	0.8	- N/A -	- N/A -	0.09	0.14	0.92	0.71	- N/A -
	2B	- N/A -	- N/A -	- N/A -	0.81	0.81	- N/A -	- N/A -	0.09	0.14	0.93	0.71	- N/A -
	3A	- N/A -	- N/A -	- N/A -	0.94	0.94	- N/A -	- N/A -	0.1	0.16	1.15	0.87	- N/A -
	3B	- N/A -	- N/A -	- N/A -	0.9	0.9	- N/A -	- N/A -	0.1	0.15	1.1	0.83	- N/A -
	3C	- N/A -	- N/A -	- N/A -	0.96	0.96	- N/A -	- N/A -	0.1	0.16	1.18	0.91	- N/A -
	4A	- N/A -	- N/A -	- N/A -	1.06	1.06	- N/A -	- N/A -	0.11	0.17	1.34	1	- N/A -
	4B	- N/A -	- N/A -	- N/A -	1.02	1.02	- N/A -	- N/A -	0.11	0.17	1.28	0.96	- N/A -
	4C	- N/A -	- N/A -	- N/A -	1.1	1.1	- N/A -	- N/A -	0.11	0.17	1.41	1.06	- N/A -
	5A	- N/A -	- N/A -	- N/A -	1.15	1.15	- N/A -	- N/A -	0.11	0.18	1.48	1.09	- N/A -
	5B	- N/A -	- N/A -	- N/A -	1.12	1.12	- N/A -	- N/A -	0.11	0.18	1.43	1.05	- N/A -
	5C	- N/A -	- N/A -	- N/A -	1.16	1.16	- N/A -	- N/A -	0.11	0.18	1.51	1.11	- N/A -
	6A	- N/A -	- N/A -	- N/A -	1.19	1.19	- N/A -	- N/A -	0.12	0.18	1.52	1.11	- N/A -
	6B	- N/A -	- N/A -	- N/A -	1.18	1.18	- N/A -	- N/A -	0.12	0.18	1.52	1.11	- N/A -
	7	- N/A -	- N/A -	- N/A -	1.24	1.24	- N/A -	- N/A -	0.12	0.19	1.6	1.15	- N/A -
	8	- N/A -	- N/A -	- N/A -	1.31	1.31	- N/A -	- N/A -	0.12	0.19	1.69	1.19	- N/A -

SWH System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Central HPWH w/Fuel Backup Heat+HPWH Recirculation Heat	0A	- N/A -	- N/A -	- N/A -	1.15	1.15	- N/A -	- N/A -	0.12	0.14	1	0.86	- N/A -
	0B	- N/A -	- N/A -	- N/A -	1.16	1.16	- N/A -	- N/A -	0.12	0.14	1.01	0.87	- N/A -
	1A	- N/A -	- N/A -	- N/A -	1.22	1.22	- N/A -	- N/A -	0.13	0.15	1.12	0.95	- N/A -
	1B	- N/A -	- N/A -	- N/A -	1.23	1.23	- N/A -	- N/A -	0.13	0.15	1.13	0.96	- N/A -
	2A	- N/A -	- N/A -	- N/A -	1.3	1.3	- N/A -	- N/A -	0.14	0.16	1.24	1.05	- N/A -
	2B	- N/A -	- N/A -	- N/A -	1.3	1.3	- N/A -	- N/A -	0.14	0.16	1.25	1.05	- N/A -
	3A	- N/A -	- N/A -	- N/A -	1.44	1.44	- N/A -	- N/A -	0.15	0.18	1.48	1.21	- N/A -
	3B	- N/A -	- N/A -	- N/A -	1.4	1.4	- N/A -	- N/A -	0.14	0.17	1.42	1.17	- N/A -
	3C	- N/A -	- N/A -	- N/A -	1.45	1.45	- N/A -	- N/A -	0.15	0.18	1.51	1.24	- N/A -
	4A	- N/A -	- N/A -	- N/A -	1.56	1.56	- N/A -	- N/A -	0.15	0.19	1.67	1.34	- N/A -
	4B	- N/A -	- N/A -	- N/A -	1.52	1.52	- N/A -	- N/A -	0.15	0.19	1.61	1.3	- N/A -
	4C	- N/A -	- N/A -	- N/A -	1.6	1.6	- N/A -	- N/A -	0.16	0.19	1.74	1.39	- N/A -
	5A	- N/A -	- N/A -	- N/A -	1.65	1.65	- N/A -	- N/A -	0.16	0.2	1.8	1.43	- N/A -
	5B	- N/A -	- N/A -	- N/A -	1.61	1.61	- N/A -	- N/A -	0.16	0.2	1.75	1.39	- N/A -
	5C	- N/A -	- N/A -	- N/A -	1.66	1.66	- N/A -	- N/A -	0.16	0.2	1.83	1.45	- N/A -
	6A	- N/A -	- N/A -	- N/A -	1.68	1.68	- N/A -	- N/A -	0.16	0.2	1.85	1.45	- N/A -
	6B	- N/A -	- N/A -	- N/A -	1.68	1.68	- N/A -	- N/A -	0.16	0.2	1.85	1.45	- N/A -
	7	- N/A -	- N/A -	- N/A -	1.74	1.74	- N/A -	- N/A -	0.17	0.21	1.92	1.49	- N/A -
	8	- N/A -	- N/A -	- N/A -	1.81	1.81	- N/A -	- N/A -	0.17	0.21	2.02	1.53	- N/A -

SWH System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Central HPWH w/Electric Resistance Backup Heat+No Recirculation Heat	0A	- N/A -	- N/A -	- N/A -	1.15	1.15	- N/A -	- N/A -	0.12	0.14	1	0.86	- N/A -
	0B	- N/A -	- N/A -	- N/A -	1.16	1.16	- N/A -	- N/A -	0.12	0.14	1.01	0.87	- N/A -
	1A	- N/A -	- N/A -	- N/A -	1.22	1.22	- N/A -	- N/A -	0.13	0.15	1.12	0.95	- N/A -
	1B	- N/A -	- N/A -	- N/A -	1.23	1.23	- N/A -	- N/A -	0.13	0.15	1.13	0.96	- N/A -
	2A	- N/A -	- N/A -	- N/A -	1.3	1.3	- N/A -	- N/A -	0.14	0.16	1.24	1.05	- N/A -
	2B	- N/A -	- N/A -	- N/A -	1.3	1.3	- N/A -	- N/A -	0.14	0.16	1.25	1.05	- N/A -
	3A	- N/A -	- N/A -	- N/A -	1.44	1.44	- N/A -	- N/A -	0.15	0.18	1.48	1.21	- N/A -
	3B	- N/A -	- N/A -	- N/A -	1.4	1.4	- N/A -	- N/A -	0.14	0.17	1.42	1.17	- N/A -
	3C	- N/A -	- N/A -	- N/A -	1.45	1.45	- N/A -	- N/A -	0.15	0.18	1.51	1.24	- N/A -
	4A	- N/A -	- N/A -	- N/A -	1.56	1.56	- N/A -	- N/A -	0.15	0.19	1.67	1.34	- N/A -
	4B	- N/A -	- N/A -	- N/A -	1.52	1.52	- N/A -	- N/A -	0.15	0.19	1.61	1.3	- N/A -
	4C	- N/A -	- N/A -	- N/A -	1.6	1.6	- N/A -	- N/A -	0.16	0.19	1.74	1.39	- N/A -
	5A	- N/A -	- N/A -	- N/A -	1.65	1.65	- N/A -	- N/A -	0.16	0.2	1.8	1.43	- N/A -
	5B	- N/A -	- N/A -	- N/A -	1.61	1.61	- N/A -	- N/A -	0.16	0.2	1.75	1.39	- N/A -
	5C	- N/A -	- N/A -	- N/A -	1.66	1.66	- N/A -	- N/A -	0.16	0.2	1.83	1.45	- N/A -
	6A	- N/A -	- N/A -	- N/A -	1.68	1.68	- N/A -	- N/A -	0.16	0.2	1.85	1.45	- N/A -
	6B	- N/A -	- N/A -	- N/A -	1.68	1.68	- N/A -	- N/A -	0.16	0.2	1.85	1.45	- N/A -
	7	- N/A -	- N/A -	- N/A -	1.74	1.74	- N/A -	- N/A -	0.17	0.21	1.92	1.49	- N/A -
	8	- N/A -	- N/A -	- N/A -	1.81	1.81	- N/A -	- N/A -	0.17	0.21	2.02	1.53	- N/A -

SWH System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Central HPWH w/Fuel Backup Heat+No Recirculation Heat	0A	0.98	0.07	0.07	0.56	0.56	0.61	0.13	0.02	0.05	1.48	0.79	0.1
	0B	0.99	0.07	0.07	0.57	0.57	0.61	0.13	0.02	0.05	1.49	0.8	0.1
	1A	0.99	0.07	0.07	0.59	0.59	0.62	0.13	0.02	0.06	1.53	0.84	0.1
	1B	0.99	0.07	0.07	0.6	0.6	0.62	0.13	0.02	0.06	1.55	0.86	0.1
	2A	1	0.07	0.07	0.62	0.62	0.62	0.13	0.02	0.06	1.58	0.9	0.1
	2B	1	0.07	0.07	0.68	0.68	0.64	0.14	0.02	0.07	1.69	1	0.1
	3A	1.01	0.07	0.07	0.69	0.69	0.65	0.15	0.02	0.08	1.72	1.03	0.1
	3B	1.01	0.07	0.07	0.71	0.71	0.65	0.15	0.02	0.07	1.76	1.07	0.1
	3C	1.01	0.07	0.07	0.69	0.69	0.64	0.14	0.02	0.07	1.7	1.02	0.1
	4A	1.02	0.07	0.07	0.74	0.74	0.67	0.16	0.02	0.09	1.81	1.12	0.1
	4B	1.02	0.08	0.08	0.77	0.77	0.68	0.16	0.02	0.08	1.87	1.18	0.11
	4C	1.02	0.07	0.07	0.75	0.75	0.67	0.16	0.02	0.09	1.82	1.14	0.1
	5A	1.03	0.08	0.08	0.8	0.8	0.68	0.17	0.02	0.09	1.93	1.24	0.11
	5B	1.03	0.08	0.08	0.81	0.81	0.69	0.17	0.02	0.09	1.96	1.27	0.11
	5C	1.02	0.07	0.07	0.77	0.77	0.68	0.16	0.02	0.09	1.86	1.17	0.11
	6A	1.04	0.08	0.08	0.87	0.87	0.7	0.18	0.03	0.11	2.05	1.36	0.11
	6B	1.04	0.08	0.08	0.88	0.88	0.71	0.18	0.02	0.1	2.07	1.39	0.11
	7	1.05	0.08	0.08	0.96	0.96	0.72	0.2	0.03	0.11	2.2	1.52	0.11
	8	1.08	0.08	0.08	1.11	1.11	0.75	0.22	0.03	0.13	2.48	1.8	0.12

Table N4.2.2.2.2.2 (New Table 4.2.6.2.2.2(b))
Renewable Energy Requirements for Natural Gas Service Water Heating Systems and Equipment
(KWh/ft² FLOOR AREA)

SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Backup Heat	1A	ERCT	- N/A -	- N/A -	- N/A -	2.29	2.29	- N/A -	- N/A -	0	0	0	0	- N/A -
	1A	FRCC	- N/A -	- N/A -	- N/A -	0.7	0.7	- N/A -	- N/A -	0	0	0	0	- N/A -
	2A	ERCT	- N/A -	- N/A -	- N/A -	2.73	2.73	- N/A -	- N/A -	0	0	0	0.03	- N/A -
	2A	FRCC	- N/A -	- N/A -	- N/A -	0.84	0.84	- N/A -	- N/A -	0	0	0	0.01	- N/A -
	2A	SRMV	- N/A -	- N/A -	- N/A -	0.65	0.65	- N/A -	- N/A -	0	0	0	0.01	- N/A -
	2A	SRSO	- N/A -	- N/A -	- N/A -	0.58	0.58	- N/A -	- N/A -	0	0	0	0.01	- N/A -
	2A	SRVC	- N/A -	- N/A -	- N/A -	1.18	1.18	- N/A -	- N/A -	0	0	0	0.01	- N/A -
	2B	AZNM	- N/A -	- N/A -	- N/A -	1.34	1.34	- N/A -	- N/A -	0	0	0	0.03	- N/A -
	2B	CAMX	- N/A -	- N/A -	- N/A -	6.43	6.43	- N/A -	- N/A -	0	0.01	0.02	0.14	- N/A -
	2B	ERCT	- N/A -	- N/A -	- N/A -	2.71	2.71	- N/A -	- N/A -	0	0.01	0.01	0.06	- N/A -
	3A	ERCT	- N/A -	- N/A -	- N/A -	3.36	3.36	- N/A -	- N/A -	0.01	0.02	0.07	0.24	- N/A -
	3A	RFCW	- N/A -	- N/A -	- N/A -	0.75	0.75	- N/A -	- N/A -	0	0	0.01	0.05	- N/A -
	3A	SPSO	- N/A -	- N/A -	- N/A -	1.58	1.57	- N/A -	- N/A -	0	0.01	0.03	0.11	- N/A -
	3A	SRMV	- N/A -	- N/A -	- N/A -	0.8	0.8	- N/A -	- N/A -	0	0.01	0.02	0.06	- N/A -
	3A	SRMW	- N/A -	- N/A -	- N/A -	1.25	1.25	- N/A -	- N/A -	0	0.01	0.02	0.09	- N/A -
	3A	SRSO	- N/A -	- N/A -	- N/A -	0.71	0.71	- N/A -	- N/A -	0	0	0.01	0.05	- N/A -
	3A	SRTV	- N/A -	- N/A -	- N/A -	0.62	0.62	- N/A -	- N/A -	0	0	0.01	0.04	- N/A -
	3A	SRVC	- N/A -	- N/A -	- N/A -	1.45	1.45	- N/A -	- N/A -	0	0.01	0.03	0.11	- N/A -

SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Backup Heat	3B	AZNM	- N/A -	- N/A -	- N/A -	1.58	1.58	- N/A -	- N/A -	0	0.01	0.02	0.09	- N/A -
	3B	CAMX	- N/A -	- N/A -	- N/A -	7.62	7.62	- N/A -	- N/A -	0.01	0.03	0.09	0.43	- N/A -
	3B	ERCT	- N/A -	- N/A -	- N/A -	3.21	3.21	- N/A -	- N/A -	0.01	0.01	0.04	0.18	- N/A -
	3B	NWPP	- N/A -	- N/A -	- N/A -	2.64	2.64	- N/A -	- N/A -	0.01	0.01	0.03	0.15	- N/A -
	3B	SPSO	- N/A -	- N/A -	- N/A -	1.5	1.5	- N/A -	- N/A -	0	0.01	0.02	0.08	- N/A -
	3C	CAMX	- N/A -	- N/A -	- N/A -	8.51	8.51	- N/A -	- N/A -	0.01	0.02	0.04	0.23	- N/A -
	4A	NYST	- N/A -	- N/A -	- N/A -	5.95	5.95	- N/A -	- N/A -	0.05	0.09	0.29	0.85	- N/A -
	4A	RFCE	- N/A -	- N/A -	- N/A -	0.89	0.89	- N/A -	- N/A -	0.01	0.01	0.04	0.13	- N/A -
	4A	RFCW	- N/A -	- N/A -	- N/A -	0.82	0.82	- N/A -	- N/A -	0.01	0.01	0.04	0.12	- N/A -
	4A	SPNO	- N/A -	- N/A -	- N/A -	1.96	1.96	- N/A -	- N/A -	0.02	0.03	0.1	0.28	- N/A -
	4A	SPSO	- N/A -	- N/A -	- N/A -	1.73	1.73	- N/A -	- N/A -	0.01	0.03	0.09	0.25	- N/A -
	4A	SRMV	- N/A -	- N/A -	- N/A -	0.88	0.88	- N/A -	- N/A -	0.01	0.01	0.04	0.12	- N/A -
	4A	SRMW	- N/A -	- N/A -	- N/A -	1.37	1.37	- N/A -	- N/A -	0.01	0.02	0.07	0.2	- N/A -
	4A	SRTV	- N/A -	- N/A -	- N/A -	0.68	0.68	- N/A -	- N/A -	0.01	0.01	0.03	0.1	- N/A -
	4A	SRVC	- N/A -	- N/A -	- N/A -	1.6	1.6	- N/A -	- N/A -	0.01	0.02	0.08	0.23	- N/A -
	4B	AZNM	- N/A -	- N/A -	- N/A -	1.77	1.77	- N/A -	- N/A -	0.01	0.02	0.07	0.22	- N/A -
	4B	CAMX	- N/A -	- N/A -	- N/A -	8.53	8.53	- N/A -	- N/A -	0.05	0.11	0.35	1.05	- N/A -
	4B	NWPP	- N/A -	- N/A -	- N/A -	2.95	2.95	- N/A -	- N/A -	0.02	0.04	0.12	0.36	- N/A -

SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Backup Heat	4B	RMPA	- N/A -	- N/A -	- N/A -	1.78	1.79	- N/A -	- N/A -	0.01	0.02	0.07	0.22	- N/A -
	4B	SPSO	- N/A -	- N/A -	- N/A -	1.68	1.68	- N/A -	- N/A -	0.01	0.02	0.07	0.21	- N/A -
	4C	CAMX	- N/A -	- N/A -	- N/A -	9.28	9.28	- N/A -	- N/A -	0.06	0.14	0.31	1.19	- N/A -
	4C	NWPP	- N/A -	- N/A -	- N/A -	3.21	3.21	- N/A -	- N/A -	0.02	0.05	0.11	0.41	- N/A -
	5A	MROE	- N/A -	- N/A -	- N/A -	1.36	1.36	- N/A -	- N/A -	0.02	0.04	0.12	0.31	- N/A -
	5A	MROW	- N/A -	- N/A -	- N/A -	2.09	2.09	- N/A -	- N/A -	0.03	0.05	0.19	0.47	- N/A -
	5A	NEWE	- N/A -	- N/A -	- N/A -	1.41	1.41	- N/A -	- N/A -	0.02	0.04	0.13	0.32	- N/A -
	5A	NYST	- N/A -	- N/A -	- N/A -	6.38	6.38	- N/A -	- N/A -	0.09	0.17	0.58	1.44	- N/A -
	5A	RFCE	- N/A -	- N/A -	- N/A -	0.95	0.95	- N/A -	- N/A -	0.01	0.02	0.09	0.21	- N/A -
	5A	RFCM	- N/A -	- N/A -	- N/A -	0.75	0.75	- N/A -	- N/A -	0.01	0.02	0.07	0.17	- N/A -
	5A	RFCW	- N/A -	- N/A -	- N/A -	0.88	0.88	- N/A -	- N/A -	0.01	0.02	0.08	0.2	- N/A -
	5A	RMPA	- N/A -	- N/A -	- N/A -	1.96	1.97	- N/A -	- N/A -	0.03	0.05	0.18	0.44	- N/A -
	5A	SPNO	- N/A -	- N/A -	- N/A -	2.09	2.1	- N/A -	- N/A -	0.03	0.05	0.19	0.47	- N/A -
	5A	SRMW	- N/A -	- N/A -	- N/A -	1.47	1.47	- N/A -	- N/A -	0.02	0.04	0.13	0.33	- N/A -
	5A	SRVC	- N/A -	- N/A -	- N/A -	1.71	1.71	- N/A -	- N/A -	0.02	0.04	0.16	0.39	- N/A -
	5B	AZNM	- N/A -	- N/A -	- N/A -	1.9	1.9	- N/A -	- N/A -	0.02	0.04	0.15	0.38	- N/A -
	5B	CAMX	- N/A -	- N/A -	- N/A -	9.14	9.14	- N/A -	- N/A -	0.11	0.2	0.7	1.81	- N/A -
	5B	NWPP	- N/A -	- N/A -	- N/A -	3.16	3.16	- N/A -	- N/A -	0.04	0.07	0.24	0.63	- N/A -

SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Backup Heat	5B	RMPA	- N/A -	- N/A -	- N/A -	1.91	1.91	- N/A -	- N/A -	0.02	0.04	0.15	0.38	- N/A -
	5C	NWPP	- N/A -	- N/A -	- N/A -	3.26	3.26	- N/A -	- N/A -	0.03	0.06	0.16	0.57	- N/A -
	6A	MROE	- N/A -	- N/A -	- N/A -	1.41	1.41	- N/A -	- N/A -	0.03	0.06	0.23	0.46	- N/A -
	6A	MROW	- N/A -	- N/A -	- N/A -	2.17	2.17	- N/A -	- N/A -	0.05	0.09	0.35	0.71	- N/A -
	6A	NEWE	- N/A -	- N/A -	- N/A -	1.46	1.46	- N/A -	- N/A -	0.03	0.06	0.23	0.47	- N/A -
	6A	NYST	- N/A -	- N/A -	- N/A -	6.62	6.62	- N/A -	- N/A -	0.16	0.26	1.06	2.15	- N/A -
	6A	RFCM	- N/A -	- N/A -	- N/A -	0.78	0.78	- N/A -	- N/A -	0.02	0.03	0.12	0.25	- N/A -
	6A	RFCW	- N/A -	- N/A -	- N/A -	0.92	0.92	- N/A -	- N/A -	0.02	0.04	0.15	0.3	- N/A -
	6A	RMPA	- N/A -	- N/A -	- N/A -	2.04	2.04	- N/A -	- N/A -	0.05	0.08	0.33	0.66	- N/A -
	6B	CAMX	- N/A -	- N/A -	- N/A -	9.58	9.59	- N/A -	- N/A -	0.19	0.33	1.23	2.76	- N/A -
	6B	MROW	- N/A -	- N/A -	- N/A -	2.13	2.13	- N/A -	- N/A -	0.04	0.07	0.27	0.62	- N/A -
	6B	NWPP	- N/A -	- N/A -	- N/A -	3.32	3.32	- N/A -	- N/A -	0.07	0.11	0.43	0.96	- N/A -
	6B	RMPA	- N/A -	- N/A -	- N/A -	2	2.01	- N/A -	- N/A -	0.04	0.07	0.26	0.58	- N/A -
	7	MROE	- N/A -	- N/A -	- N/A -	1.46	1.46	- N/A -	- N/A -	0.05	0.08	0.33	0.62	- N/A -
	7	MROW	- N/A -	- N/A -	- N/A -	2.24	2.25	- N/A -	- N/A -	0.07	0.12	0.51	0.96	- N/A -
	7	NEWE	- N/A -	- N/A -	- N/A -	1.51	1.51	- N/A -	- N/A -	0.05	0.08	0.34	0.65	- N/A -
	7	NWPP	- N/A -	- N/A -	- N/A -	3.49	3.49	- N/A -	- N/A -	0.11	0.18	0.79	1.49	- N/A -
	7	RMPA	- N/A -	- N/A -	- N/A -	2.11	2.11	- N/A -	- N/A -	0.07	0.11	0.48	0.9	- N/A -

SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Backup + Gas Recirculation Heat	1A	ERCT	- N/A -	- N/A -	- N/A -	4.53	4.54	- N/A -	- N/A -	0.21	0.09	1.47	1.54	- N/A -
	1A	FRCC	- N/A -	- N/A -	- N/A -	1.39	1.39	- N/A -	- N/A -	0.06	0.03	0.45	0.47	- N/A -
	2A	ERCT	- N/A -	- N/A -	- N/A -	4.98	4.98	- N/A -	- N/A -	0.21	0.1	1.47	1.57	- N/A -
	2A	FRCC	- N/A -	- N/A -	- N/A -	1.52	1.52	- N/A -	- N/A -	0.06	0.03	0.45	0.48	- N/A -
	2A	SRMV	- N/A -	- N/A -	- N/A -	1.18	1.18	- N/A -	- N/A -	0.05	0.02	0.35	0.37	- N/A -
	2A	SRSO	- N/A -	- N/A -	- N/A -	1.06	1.06	- N/A -	- N/A -	0.04	0.02	0.31	0.33	- N/A -
	2A	SRVC	- N/A -	- N/A -	- N/A -	2.15	2.15	- N/A -	- N/A -	0.09	0.04	0.64	0.68	- N/A -
	2B	AZNM	- N/A -	- N/A -	- N/A -	2.44	2.44	- N/A -	- N/A -	0.1	0.05	0.73	0.79	- N/A -
	2B	CAMX	- N/A -	- N/A -	- N/A -	11.76	11.77	- N/A -	- N/A -	0.5	0.23	3.51	3.78	- N/A -
	2B	ERCT	- N/A -	- N/A -	- N/A -	4.96	4.96	- N/A -	- N/A -	0.21	0.1	1.48	1.59	- N/A -
	3A	ERCT	- N/A -	- N/A -	- N/A -	5.61	5.61	- N/A -	- N/A -	0.22	0.11	1.54	1.78	- N/A -
	3A	RFCW	- N/A -	- N/A -	- N/A -	1.25	1.25	- N/A -	- N/A -	0.05	0.03	0.34	0.4	- N/A -
	3A	SPSO	- N/A -	- N/A -	- N/A -	2.63	2.63	- N/A -	- N/A -	0.1	0.05	0.72	0.83	- N/A -
	3A	SRMV	- N/A -	- N/A -	- N/A -	1.33	1.33	- N/A -	- N/A -	0.05	0.03	0.36	0.42	- N/A -
	3A	SRMW	- N/A -	- N/A -	- N/A -	2.09	2.08	- N/A -	- N/A -	0.08	0.04	0.57	0.66	- N/A -
	3A	SRSO	- N/A -	- N/A -	- N/A -	1.19	1.19	- N/A -	- N/A -	0.05	0.02	0.33	0.38	- N/A -
	3A	SRTV	- N/A -	- N/A -	- N/A -	1.03	1.03	- N/A -	- N/A -	0.04	0.02	0.28	0.33	- N/A -
	3A	SRVC	- N/A -	- N/A -	- N/A -	2.42	2.42	- N/A -	- N/A -	0.09	0.05	0.66	0.77	- N/A -

SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Backup + Gas Recirculation Heat	3B	AZNM	- N/A -	- N/A -	- N/A -	2.69	2.69	- N/A -	- N/A -	0.11	0.05	0.74	0.85	- N/A -
	3B	CAMX	- N/A -	- N/A -	- N/A -	12.95	12.96	- N/A -	- N/A -	0.51	0.25	3.58	4.08	- N/A -
	3B	ERCT	- N/A -	- N/A -	- N/A -	5.46	5.46	- N/A -	- N/A -	0.21	0.1	1.51	1.72	- N/A -
	3B	NWPP	- N/A -	- N/A -	- N/A -	4.48	4.48	- N/A -	- N/A -	0.18	0.09	1.24	1.41	- N/A -
	3B	SPSO	- N/A -	- N/A -	- N/A -	2.56	2.56	- N/A -	- N/A -	0.1	0.05	0.71	0.8	- N/A -
	3C	CAMX	- N/A -	- N/A -	- N/A -	13.85	13.84	- N/A -	- N/A -	0.51	0.24	3.52	3.88	- N/A -
	4A	NYST	- N/A -	- N/A -	- N/A -	9.57	9.57	- N/A -	- N/A -	0.38	0.24	2.66	3.32	- N/A -
	4A	RFCE	- N/A -	- N/A -	- N/A -	1.42	1.42	- N/A -	- N/A -	0.06	0.04	0.4	0.49	- N/A -
	4A	RFCW	- N/A -	- N/A -	- N/A -	1.33	1.33	- N/A -	- N/A -	0.05	0.03	0.37	0.46	- N/A -
	4A	SPNO	- N/A -	- N/A -	- N/A -	3.14	3.14	- N/A -	- N/A -	0.13	0.08	0.87	1.09	- N/A -
	4A	SPSO	- N/A -	- N/A -	- N/A -	2.78	2.78	- N/A -	- N/A -	0.11	0.07	0.77	0.97	- N/A -
	4A	SRMV	- N/A -	- N/A -	- N/A -	1.41	1.41	- N/A -	- N/A -	0.06	0.04	0.39	0.49	- N/A -
	4A	SRMW	- N/A -	- N/A -	- N/A -	2.21	2.21	- N/A -	- N/A -	0.09	0.05	0.61	0.77	- N/A -
	4A	SRTV	- N/A -	- N/A -	- N/A -	1.09	1.09	- N/A -	- N/A -	0.04	0.03	0.3	0.38	- N/A -
	4A	SRVC	- N/A -	- N/A -	- N/A -	2.57	2.57	- N/A -	- N/A -	0.1	0.06	0.71	0.89	- N/A -
	4B	AZNM	- N/A -	- N/A -	- N/A -	2.88	2.88	- N/A -	- N/A -	0.11	0.07	0.8	0.97	- N/A -
	4B	CAMX	- N/A -	- N/A -	- N/A -	13.87	13.87	- N/A -	- N/A -	0.55	0.32	3.83	4.69	- N/A -
	4B	NWPP	- N/A -	- N/A -	- N/A -	4.8	4.8	- N/A -	- N/A -	0.19	0.11	1.33	1.62	- N/A -

SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Backup + Gas Recirculation Heat	4B	RMPA	- N/A -	- N/A -	- N/A -	2.9	2.9	- N/A -	- N/A -	0.11	0.07	0.8	0.98	- N/A -
	4B	SPSO	- N/A -	- N/A -	- N/A -	2.74	2.74	- N/A -	- N/A -	0.11	0.06	0.76	0.93	- N/A -
	4C	CAMX	- N/A -	- N/A -	- N/A -	14.61	14.62	- N/A -	- N/A -	0.56	0.35	3.8	4.83	- N/A -
	4C	NWPP	- N/A -	- N/A -	- N/A -	5.06	5.06	- N/A -	- N/A -	0.19	0.12	1.32	1.67	- N/A -
	5A	MROE	- N/A -	- N/A -	- N/A -	2.13	2.13	- N/A -	- N/A -	0.09	0.07	0.63	0.83	- N/A -
	5A	MROW	- N/A -	- N/A -	- N/A -	3.28	3.28	- N/A -	- N/A -	0.14	0.1	0.97	1.28	- N/A -
	5A	NEWE	- N/A -	- N/A -	- N/A -	2.2	2.2	- N/A -	- N/A -	0.09	0.07	0.65	0.86	- N/A -
	5A	NYST	- N/A -	- N/A -	- N/A -	10	10	- N/A -	- N/A -	0.43	0.31	2.95	3.91	- N/A -
	5A	RFCE	- N/A -	- N/A -	- N/A -	1.49	1.49	- N/A -	- N/A -	0.06	0.05	0.44	0.58	- N/A -
	5A	RFCM	- N/A -	- N/A -	- N/A -	1.18	1.18	- N/A -	- N/A -	0.05	0.04	0.35	0.46	- N/A -
	5A	RFCW	- N/A -	- N/A -	- N/A -	1.39	1.39	- N/A -	- N/A -	0.06	0.04	0.41	0.54	- N/A -
	5A	RMPA	- N/A -	- N/A -	- N/A -	3.08	3.08	- N/A -	- N/A -	0.13	0.1	0.91	1.21	- N/A -
	5A	SPNO	- N/A -	- N/A -	- N/A -	3.28	3.28	- N/A -	- N/A -	0.14	0.1	0.97	1.28	- N/A -
	5A	SRMW	- N/A -	- N/A -	- N/A -	2.31	2.31	- N/A -	- N/A -	0.1	0.07	0.68	0.9	- N/A -
	5A	SRVC	- N/A -	- N/A -	- N/A -	2.68	2.68	- N/A -	- N/A -	0.11	0.08	0.79	1.05	- N/A -
	5B	AZNM	- N/A -	- N/A -	- N/A -	3.01	3.01	- N/A -	- N/A -	0.12	0.09	0.87	1.13	- N/A -
	5B	CAMX	- N/A -	- N/A -	- N/A -	14.47	14.47	- N/A -	- N/A -	0.6	0.41	4.19	5.46	- N/A -
	5B	NWPP	- N/A -	- N/A -	- N/A -	5.01	5.01	- N/A -	- N/A -	0.21	0.14	1.45	1.89	- N/A -

SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Backup + Gas Recirculation Heat	5B	RMPA	- N/A -	- N/A -	- N/A -	3.03	3.03	- N/A -	- N/A -	0.13	0.09	0.88	1.14	- N/A -
	5C	NWPP	- N/A -	- N/A -	- N/A -	5.11	5.11	- N/A -	- N/A -	0.2	0.14	1.37	1.83	- N/A -
	6A	MROE	- N/A -	- N/A -	- N/A -	2.18	2.19	- N/A -	- N/A -	0.1	0.09	0.73	0.99	- N/A -
	6A	MROW	- N/A -	- N/A -	- N/A -	3.35	3.36	- N/A -	- N/A -	0.16	0.13	1.12	1.52	- N/A -
	6A	NEWE	- N/A -	- N/A -	- N/A -	2.26	2.26	- N/A -	- N/A -	0.11	0.09	0.76	1.02	- N/A -
	6A	NYST	- N/A -	- N/A -	- N/A -	10.24	10.24	- N/A -	- N/A -	0.49	0.41	3.43	4.63	- N/A -
	6A	RFCM	- N/A -	- N/A -	- N/A -	1.2	1.2	- N/A -	- N/A -	0.06	0.05	0.4	0.54	- N/A -
	6A	RFCW	- N/A -	- N/A -	- N/A -	1.42	1.42	- N/A -	- N/A -	0.07	0.06	0.48	0.64	- N/A -
	6A	RMPA	- N/A -	- N/A -	- N/A -	3.15	3.15	- N/A -	- N/A -	0.15	0.13	1.06	1.43	- N/A -
	6B	CAMX	- N/A -	- N/A -	- N/A -	14.92	14.92	- N/A -	- N/A -	0.68	0.55	4.72	6.41	- N/A -
	6B	MROW	- N/A -	- N/A -	- N/A -	3.32	3.32	- N/A -	- N/A -	0.15	0.12	1.05	1.43	- N/A -
	6B	NWPP	- N/A -	- N/A -	- N/A -	5.16	5.16	- N/A -	- N/A -	0.24	0.19	1.63	2.22	- N/A -
	6B	RMPA	- N/A -	- N/A -	- N/A -	3.12	3.12	- N/A -	- N/A -	0.14	0.11	0.99	1.34	- N/A -
	7	MROE	- N/A -	- N/A -	- N/A -	2.23	2.23	- N/A -	- N/A -	0.12	0.11	0.83	1.15	- N/A -
	7	MROW	- N/A -	- N/A -	- N/A -	3.43	3.43	- N/A -	- N/A -	0.18	0.17	1.28	1.77	- N/A -
	7	NEWE	- N/A -	- N/A -	- N/A -	2.31	2.31	- N/A -	- N/A -	0.12	0.11	0.86	1.19	- N/A -
	7	NWPP	- N/A -	- N/A -	- N/A -	5.34	5.34	- N/A -	- N/A -	0.28	0.26	1.99	2.75	- N/A -
	7	RMPA	- N/A -	- N/A -	- N/A -	3.23	3.23	- N/A -	- N/A -	0.17	0.16	1.21	1.66	- N/A -

Table N4.2.2.2.3.1 (New Table 4.2.6.2.2.3(a))
Renewable Energy Requirements for Additional End Uses
(Based on Building Type, Climate Zone)
(KWh/ft^2/installed unit as listed)

End Use	Exterior Lighting (including site parking lighting)	Parking Garage Lighting	Parking Garage Ventilation
Normalizing Units	kWh/W of lighting power	kWh/W of lighting power	kWh/BHP of total fan power
Hotel/motel (≤75 rooms)	2.37	6.96	2.51
Hotel/motel (>75 rooms)	2.37	7.92	2.42
Office (≤5000 ft2)	2.73	3.29	2.75
Office (5000 to 50,000 ft2)	2.73	5.86	2.56
Office (>50,000 ft2)	2.73	7.84	2.85
Retail (stand alone)	1.35	4.64	3.12
Retail (strip mall)	1.35	5.7	3.43
School (primary)	2.37	5.23	1.9
School (secondary and university)	2.37	6.52	1.45
Warehouse (nonrefrigerated)	1.00	5.82	3.33
Midrise Multifamily	2.37	3.44	2.26
Highrise Multifamily	2.37	6.8	2.14

Table N4.2.2.2.3.2 (New Table 4.2.6.2.2.3(b))
Values for Calculating Renewable Energy Requirements for Elevators

Building Type	Inputs to Calculation			
	$kWh_{running}$	$kWh_{fixedstandby}$	$kWh_{varstandby}$	C_{floor}
Hotel/motel (≤75 rooms)	935	6,561	55	4
Hotel/motel (>75 rooms)	2,698	6,060	32	10
Office (≤5000 ft2)	113	6,954	6	4
Office (5000 to 50,000 ft2)	878	6,637	52	4
Office (>50,000 ft2)	2,533	6,259	22	10
Retail (stand alone)	1,869	6,340	110	4
Retail (strip mall)	1,589	6,406	94	4
School (primary)	366	6,853	22	4
School (secondary and university)	366	6,853	22	4
Warehouse (nonrefrigerated)	315	6,905	18	4
Midrise Multifamily	935	6,560	55	4
Highrise Multifamily	2,698	6,008	32	10

Table N4.2.2.2.4 (New Table 4.2.6.2.2.4)
Deductions to Renewable Energy Requirements for Space Cooling Equipment
(KWh/ft^2 FLOOR AREA)

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled DX Clg + Air Economizer	0A	0.47	0.54	0.56	- N/A -	- N/A -	0.9	0.84	1.05	0.98	- N/A -	- N/A -	0.15
	0B	0.43	0.5	0.51	- N/A -	- N/A -	0.8	0.78	0.94	0.94	- N/A -	- N/A -	0.19
	1A	0.33	0.39	0.4	- N/A -	- N/A -	0.63	0.58	0.73	0.8	- N/A -	- N/A -	0.09
	1B	0.34	0.41	0.42	- N/A -	- N/A -	0.65	0.63	0.77	0.79	- N/A -	- N/A -	0.14
	2A	0.26	0.31	0.32	- N/A -	- N/A -	0.48	0.45	0.6	0.65	- N/A -	- N/A -	0.07
	2B	0.23	0.26	0.27	- N/A -	- N/A -	0.38	0.37	0.5	0.52	- N/A -	- N/A -	0.09
	3A	0.14	0.18	0.19	- N/A -	- N/A -	0.27	0.24	0.35	0.4	- N/A -	- N/A -	0.04
	3B	0.15	0.19	0.2	- N/A -	- N/A -	0.27	0.25	0.35	0.38	- N/A -	- N/A -	0.04
	3C	0.09	0.09	0.1	- N/A -	- N/A -	0.12	0.09	0.29	0.3	- N/A -	- N/A -	0.01
	4A	0.1	0.13	0.14	- N/A -	- N/A -	0.18	0.17	0.25	0.28	- N/A -	- N/A -	0.03
	4B	0.11	0.14	0.15	- N/A -	- N/A -	0.19	0.18	0.26	0.27	- N/A -	- N/A -	0.02
	4C	0.04	0.04	0.04	- N/A -	- N/A -	0.05	0.05	0.12	0.11	- N/A -	- N/A -	0
	5A	0.06	0.08	0.08	- N/A -	- N/A -	0.11	0.1	0.17	0.18	- N/A -	- N/A -	0.01
	5B	0.08	0.1	0.11	- N/A -	- N/A -	0.13	0.13	0.19	0.2	- N/A -	- N/A -	0.02
	5C	0.03	0.02	0.02	- N/A -	- N/A -	0.02	0.02	0.09	0.07	- N/A -	- N/A -	0
	6A	0.06	0.09	0.1	- N/A -	- N/A -	0.12	0.11	0.18	0.2	- N/A -	- N/A -	0.01
	6B	0.05	0.07	0.07	- N/A -	- N/A -	0.08	0.08	0.12	0.13	- N/A -	- N/A -	0.01
	7	0.05	0.06	0.07	- N/A -	- N/A -	0.08	0.07	0.13	0.15	- N/A -	- N/A -	0.01
	8	0.03	0.03	0.03	- N/A -	- N/A -	0.03	0.03	0.07	0.07	- N/A -	- N/A -	0

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/any Backup Heat + Air Economizer	0A	0.47	0.54	0.55	- N/A -	- N/A -	0.88	0.83	1.03	0.97	- N/A -	- N/A -	0.15
	0B	0.42	0.49	0.51	- N/A -	- N/A -	0.79	0.77	0.92	0.93	- N/A -	- N/A -	0.18
	1A	0.32	0.39	0.4	- N/A -	- N/A -	0.62	0.58	0.72	0.79	- N/A -	- N/A -	0.09
	1B	0.34	0.41	0.42	- N/A -	- N/A -	0.64	0.62	0.76	0.78	- N/A -	- N/A -	0.14
	2A	0.25	0.31	0.31	- N/A -	- N/A -	0.48	0.45	0.59	0.64	- N/A -	- N/A -	0.07
	2B	0.23	0.26	0.27	- N/A -	- N/A -	0.37	0.36	0.5	0.51	- N/A -	- N/A -	0.09
	3A	0.15	0.18	0.19	- N/A -	- N/A -	0.26	0.25	0.34	0.39	- N/A -	- N/A -	0.04
	3B	0.15	0.18	0.19	- N/A -	- N/A -	0.26	0.25	0.35	0.37	- N/A -	- N/A -	0.04
	3C	0.09	0.09	0.1	- N/A -	- N/A -	0.12	0.09	0.29	0.3	- N/A -	- N/A -	0.02
	4A	0.15	0.15	0.16	- N/A -	- N/A -	0.26	0.26	0.24	0.27	- N/A -	- N/A -	0.03
	4B	0.13	0.14	0.15	- N/A -	- N/A -	0.21	0.19	0.26	0.27	- N/A -	- N/A -	0.03
	4C	0.08	0.05	0.05	- N/A -	- N/A -	0.1	0.11	0.12	0.11	- N/A -	- N/A -	0.01
	5A	0.14	0.12	0.13	- N/A -	- N/A -	0.18	0.26	0.17	0.2	- N/A -	- N/A -	0.02
	5B	0.13	0.12	0.12	- N/A -	- N/A -	0.2	0.2	0.19	0.2	- N/A -	- N/A -	0.03
	5C	0.07	0.03	0.03	- N/A -	- N/A -	0.08	0.09	0.08	0.07	- N/A -	- N/A -	0.01
	6A	0.15	0.13	0.14	- N/A -	- N/A -	0.25	0.28	0.18	0.22	- N/A -	- N/A -	0.02
	6B	0.11	0.09	0.09	- N/A -	- N/A -	0.17	0.18	0.13	0.14	- N/A -	- N/A -	0.01
	7	0.14	0.1	0.1	- N/A -	- N/A -	0.16	0.26	0.14	0.18	- N/A -	- N/A -	0.02
	8	0.15	0.07	0.08	- N/A -	- N/A -	0.14	0.24	0.08	0.11	- N/A -	- N/A -	0.02

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled DX Clg + DOAS	0A	0.41	0.51	0.52	0.74	0.76	0.97	0.94	0.87	0.79	0.53	0.51	0.15
	0B	0.38	0.43	0.44	0.65	0.67	0.68	0.69	0.84	0.8	0.48	0.44	0.18
	1A	0.3	0.35	0.36	0.5	0.52	0.56	0.52	0.67	0.68	0.38	0.34	0.09
	1B	0.3	0.35	0.37	0.54	0.55	0.55	0.54	0.68	0.66	0.39	0.36	0.11
	2A	0.23	0.27	0.28	0.43	0.45	0.42	0.4	0.54	0.55	0.31	0.27	0.07
	2B	0.21	0.25	0.26	0.34	0.36	0.35	0.34	0.47	0.48	0.29	0.25	0.07
	3A	0.12	0.17	0.18	0.28	0.29	0.25	0.22	0.31	0.35	0.19	0.16	0.04
	3B	0.14	0.19	0.2	0.28	0.29	0.27	0.23	0.33	0.37	0.23	0.2	0.04
	3C	0.08	0.12	0.13	0.19	0.2	0.13	0.09	0.2	0.28	0.11	0.05	0.02
	4A	0.09	0.13	0.14	0.22	0.24	0.18	0.16	0.22	0.25	0.17	0.13	0.02
	4B	0.11	0.15	0.17	0.24	0.26	0.2	0.17	0.24	0.28	0.22	0.18	0.02
	4C	0.04	0.05	0.06	0.14	0.15	0.06	0.04	0.07	0.11	0.1	0.06	0
	5A	0.05	0.09	0.1	0.16	0.17	0.12	0.1	0.13	0.17	0.12	0.08	0.01
	5B	0.07	0.12	0.13	0.2	0.22	0.14	0.12	0.17	0.2	0.18	0.14	0.01
	5C	0.03	0.03	0.04	0.13	0.14	0.03	0.02	0.04	0.07	0.09	0.05	0
	6A	0.06	0.11	0.12	0.17	0.18	0.12	0.12	0.14	0.18	0.13	0.09	0.01
	6B	0.05	0.08	0.09	0.16	0.17	0.09	0.08	0.1	0.13	0.14	0.1	0.01
	7	0.04	0.08	0.09	0.14	0.15	0.09	0.08	0.1	0.14	0.11	0.08	0
	8	0.03	0.04	0.04	0.1	0.12	0.04	0.03	0.04	0.07	0.09	0.07	0

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/any Backup Heat + DOAS	0A	0.4	0.5	0.52	0.73	0.75	0.95	0.93	0.85	0.78	0.55	0.52	0.15
	0B	0.37	0.42	0.43	0.64	0.66	0.67	0.68	0.83	0.79	0.48	0.44	0.18
	1A	0.29	0.35	0.36	0.5	0.51	0.56	0.52	0.67	0.67	0.38	0.34	0.09
	1B	0.3	0.35	0.36	0.53	0.54	0.55	0.54	0.68	0.65	0.39	0.35	0.11
	2A	0.22	0.27	0.28	0.43	0.44	0.42	0.4	0.53	0.54	0.3	0.27	0.07
	2B	0.21	0.25	0.26	0.34	0.35	0.35	0.33	0.47	0.48	0.28	0.25	0.07
	3A	0.13	0.17	0.18	0.26	0.27	0.25	0.23	0.31	0.35	0.2	0.16	0.04
	3B	0.14	0.19	0.2	0.27	0.28	0.26	0.23	0.33	0.36	0.23	0.2	0.04
	3C	0.08	0.13	0.13	0.19	0.2	0.14	0.09	0.21	0.29	0.11	0.05	0.02
	4A	0.13	0.14	0.15	0.19	0.2	0.21	0.22	0.22	0.25	0.18	0.14	0.04
	4B	0.12	0.15	0.16	0.23	0.24	0.21	0.18	0.25	0.28	0.22	0.18	0.03
	4C	0.06	0.06	0.06	0.13	0.13	0.09	0.1	0.08	0.11	0.1	0.06	0.01
	5A	0.12	0.11	0.12	0.1	0.1	0.17	0.21	0.15	0.18	0.16	0.11	0.03
	5B	0.11	0.12	0.13	0.17	0.18	0.18	0.17	0.17	0.2	0.19	0.16	0.03
	5C	0.06	0.03	0.04	0.11	0.11	0.06	0.08	0.05	0.07	0.1	0.07	0.01
	6A	0.12	0.13	0.14	0.1	0.1	0.17	0.21	0.16	0.19	0.18	0.13	0.02
	6B	0.09	0.08	0.09	0.12	0.13	0.13	0.14	0.11	0.14	0.16	0.12	0.01
	7	0.11	0.1	0.11	0.06	0.07	0.15	0.19	0.12	0.15	0.16	0.12	0.01
	8	0.12	0.07	0.08	0.01	0.01	0.12	0.19	0.06	0.08	0.18	0.12	0.01

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled DX Clg + Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.53	0.51	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.49	0.45	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.39	0.35	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.41	0.37	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.32	0.28	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.3	0.27	- N/A -
	3A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.21	0.17	- N/A -
	3B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.25	0.21	- N/A -
	3C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.11	0.05	- N/A -
	4A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.19	0.15	- N/A -
	4B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.24	0.2	- N/A -
	4C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.12	0.08	- N/A -
	5A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.13	0.09	- N/A -
	5B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.19	0.16	- N/A -
	5C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.11	0.07	- N/A -
	6A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.15	0.11	- N/A -
	6B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.15	0.11	- N/A -
	7	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.13	0.1	- N/A -
	8	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.11	0.08	- N/A -

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/any Backup Heat + Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.55	0.52	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.49	0.45	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.38	0.35	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.4	0.37	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.32	0.28	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.3	0.26	- N/A -
	3A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.21	0.17	- N/A -
	3B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.24	0.21	- N/A -
	3C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.11	0.05	- N/A -
	4A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.19	0.15	- N/A -
	4B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.24	0.2	- N/A -
	4C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.12	0.08	- N/A -
	5A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.17	0.13	- N/A -
	5B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.21	0.17	- N/A -
	5C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.12	0.09	- N/A -
	6A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.2	0.15	- N/A -
	6B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.17	0.13	- N/A -
	7	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.18	0.13	- N/A -
	8	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.19	0.14	- N/A -

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
VRF + DOAS	0A	0.32	0.36	0.37	0.42	0.43	0.6	0.62	0.94	0.78	0.4	0.4	0.08
	0B	0.32	0.35	0.36	0.42	0.43	0.5	0.59	0.87	0.72	0.39	0.37	0.09
	1A	0.21	0.26	0.27	0.35	0.36	0.43	0.44	0.63	0.53	0.33	0.31	0.05
	1B	0.25	0.28	0.3	0.37	0.37	0.4	0.45	0.69	0.6	0.32	0.3	0.07
	2A	0.17	0.23	0.24	0.32	0.33	0.36	0.36	0.53	0.47	0.27	0.23	0.04
	2B	0.17	0.22	0.23	0.29	0.3	0.27	0.28	0.48	0.45	0.25	0.23	0.05
	3A	0.07	0.15	0.16	0.25	0.25	0.19	0.17	0.3	0.31	0.16	0.12	0.02
	3B	0.1	0.17	0.19	0.26	0.27	0.19	0.19	0.33	0.33	0.21	0.17	0.03
	3C	0.06	0.12	0.13	0.2	0.21	0.12	0.09	0.21	0.24	0.13	0.05	0.02
	4A	0.02	0.12	0.13	0.21	0.21	0.1	0.07	0.2	0.25	0.13	0.08	0
	4B	0.06	0.16	0.18	0.25	0.26	0.17	0.15	0.26	0.29	0.21	0.16	0.01
	4C	0	0.08	0.09	0.18	0.19	0.03	0	0.11	0.19	0.09	0.04	0
	5A	0	0.07	0.08	0.15	0.15	0.01	0	0.1	0.2	0.05	0	0
	5B	0	0.12	0.14	0.21	0.21	0.09	0.06	0.17	0.24	0.14	0.1	0
	5C	0	0.07	0.08	0.17	0.18	0.01	0	0.08	0.16	0.09	0.05	0
	6A	0	0.04	0.05	0.1	0.09	0	0	0.05	0.18	0	0	0
	6B	0	0.07	0.08	0.14	0.14	0	0	0.09	0.19	0.04	0	0
	7	0	0	0	0.03	0.01	0	0	0	0.13	0	0	0
	8	0	0	0	0	0	0	0	0	0	0	0	0

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HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
GSHP + DOAS	0A	0.32	0.42	0.43	0.51	0.52	0.73	0.69	0.67	0.59	0.46	0.44	0.09
	0B	0.31	0.35	0.37	0.47	0.48	0.55	0.58	0.7	0.63	0.42	0.38	0.1
	1A	0.26	0.31	0.33	0.41	0.42	0.45	0.44	0.54	0.53	0.35	0.32	0.07
	1B	0.25	0.31	0.32	0.41	0.42	0.46	0.48	0.59	0.54	0.35	0.32	0.07
	2A	0.21	0.27	0.28	0.36	0.37	0.38	0.36	0.46	0.46	0.3	0.26	0.05
	2B	0.2	0.26	0.27	0.33	0.34	0.32	0.31	0.43	0.42	0.28	0.25	0.05
	3A	0.12	0.18	0.19	0.25	0.26	0.22	0.2	0.27	0.31	0.19	0.15	0.03
	3B	0.14	0.21	0.22	0.27	0.28	0.25	0.24	0.33	0.36	0.22	0.18	0.04
	3C	0.08	0.15	0.16	0.19	0.2	0.12	0.09	0.2	0.24	0.11	0.05	0.02
	4A	0.1	0.16	0.17	0.2	0.21	0.19	0.19	0.2	0.24	0.16	0.12	0.02
	4B	0.11	0.19	0.21	0.23	0.25	0.21	0.19	0.26	0.3	0.21	0.17	0.03
	4C	0.05	0.1	0.11	0.14	0.15	0.09	0.08	0.09	0.13	0.1	0.05	0.01
	5A	0.08	0.12	0.14	0.16	0.17	0.15	0.15	0.14	0.18	0.13	0.09	0.02
	5B	0.09	0.16	0.18	0.2	0.22	0.18	0.16	0.19	0.24	0.18	0.15	0.02
	5C	0.04	0.09	0.1	0.13	0.14	0.06	0.06	0.06	0.11	0.09	0.06	0.01
	6A	0.08	0.13	0.14	0.16	0.18	0.15	0.16	0.14	0.17	0.14	0.11	0.02
	6B	0.07	0.12	0.14	0.16	0.17	0.12	0.13	0.13	0.17	0.14	0.11	0.01
	7	0.07	0.1	0.11	0.13	0.14	0.14	0.15	0.11	0.13	0.12	0.1	0.01
	8	0.08	0.08	0.09	0.1	0.11	0.15	0.18	0.09	0.09	0.11	0.1	0.02

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
VRF + Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.4	0.4	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.4	0.38	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.33	0.31	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.34	0.32	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.28	0.25	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.27	0.24	- N/A -
	3A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.18	0.14	- N/A -
	3B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.22	0.19	- N/A -
	3C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.13	0.05	- N/A -
	4A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.14	0.09	- N/A -
	4B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.22	0.18	- N/A -
	4C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.11	0.06	- N/A -
	5A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.07	0.01	- N/A -
	5B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.15	0.11	- N/A -
	5C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.1	0.06	- N/A -
	6A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	6B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.05	0	- N/A -
	7	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	8	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
GSHP+Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.46	0.44	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.43	0.39	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.36	0.32	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.36	0.33	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.31	0.27	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.3	0.26	- N/A -
	3A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.2	0.16	- N/A -
	3B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.24	0.2	- N/A -
	3C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.11	0.05	- N/A -
	4A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.18	0.14	- N/A -
	4B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.23	0.19	- N/A -
	4C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.12	0.08	- N/A -
	5A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.14	0.11	- N/A -
	5B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.19	0.16	- N/A -
	5C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.11	0.08	- N/A -
	6A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.15	0.12	- N/A -
	6B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.15	0.12	- N/A -
	7	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.13	0.11	- N/A -
	8	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.12	0.11	- N/A -

Table N4.2.2.2.5.1 (New Table 4.2.6.2.2.5(a))
Deductions to Renewable Energy Requirements for Electric Space Heating Equipment
(KWh/ft^2 FLOOR AREA)

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/any Backup Heat	0A	0.49	0.49	0.5	- N/A -	- N/A -	0.02	0.44	0.58	0.2	- N/A -	- N/A -	0.02
	0B	0.32	0.28	0.29	- N/A -	- N/A -	0	0.41	0.5	0.12	- N/A -	- N/A -	0.01
	1A	0.24	0.23	0.24	- N/A -	- N/A -	0.01	0.31	0.4	0.15	- N/A -	- N/A -	0.05
	1B	0.25	0.24	0.25	- N/A -	- N/A -	0	0.33	0.41	0.11	- N/A -	- N/A -	0.01
	2A	0.19	0.18	0.19	- N/A -	- N/A -	0.01	0.24	0.33	0.11	- N/A -	- N/A -	0.05
	2B	0.17	0.15	0.16	- N/A -	- N/A -	0.01	0.22	0.24	0.1	- N/A -	- N/A -	0.01
	3A	0.13	0.12	0.13	- N/A -	- N/A -	0.06	0.19	0.19	0.07	- N/A -	- N/A -	0.04
	3B	0.12	0.11	0.12	- N/A -	- N/A -	0.02	0.15	0.16	0.08	- N/A -	- N/A -	0.04
	3C	0.07	0.05	0.06	- N/A -	- N/A -	0	0.03	0.16	0.05	- N/A -	- N/A -	0.01
	4A	0.15	0.12	0.12	- N/A -	- N/A -	0.08	0.17	0.14	0.07	- N/A -	- N/A -	0.02
	4B	0.07	0.04	0.05	- N/A -	- N/A -	0.06	0.13	0.14	0.04	- N/A -	- N/A -	0.03
	4C	0.08	0.04	0.05	- N/A -	- N/A -	0.09	0.11	0.03	0	- N/A -	- N/A -	0.02
	5A	0.19	0.16	0.17	- N/A -	- N/A -	0.12	0.29	0.11	0.09	- N/A -	- N/A -	0.05
	5B	0.13	0.09	0.1	- N/A -	- N/A -	0.14	0.18	0.03	0	- N/A -	- N/A -	0.03
	5C	0.09	0.03	0.03	- N/A -	- N/A -	0.11	0.1	0.02	0	- N/A -	- N/A -	0.01
	6A	0.2	0.18	0.19	- N/A -	- N/A -	0.22	0.27	0.11	0.1	- N/A -	- N/A -	0.04
	6B	0.13	0.08	0.09	- N/A -	- N/A -	0.14	0.16	0.03	0	- N/A -	- N/A -	0.03
	7	0.18	0.1	0.1	- N/A -	- N/A -	0.15	0.31	0.08	0.11	- N/A -	- N/A -	0.05
	8	0.19	0.1	0.11	- N/A -	- N/A -	0.18	0.31	0.06	0.14	- N/A -	- N/A -	0.05

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/any Backup Heat + DOAS	0A	0.42	0.46	0.47	0	0	0.06	0.64	0.53	0.23	0.41	0.39	0.1
	0B	0.28	0.24	0.25	0	0	0.01	0.4	0.49	0.2	0.36	0.33	0.01
	1A	0.22	0.21	0.21	0	0	0.02	0.35	0.41	0.17	0.28	0.25	0.05
	1B	0.22	0.21	0.22	0	0	0.01	0.34	0.42	0.18	0.29	0.26	0.08
	2A	0.17	0.17	0.17	0	0	0.03	0.28	0.33	0.13	0.23	0.2	0.05
	2B	0.16	0.16	0.16	0	0	0.02	0.23	0.29	0.11	0.21	0.19	0.05
	3A	0.11	0.11	0.11	0	0	0.03	0.18	0.2	0.08	0.09	0.09	0.05
	3B	0.11	0.12	0.13	0	0	0.02	0.17	0.2	0.09	0.1	0.08	0.04
	3C	0.06	0.08	0.09	0	0	0	0.04	0.14	0.06	0.05	0.02	0.02
	4A	0.12	0.09	0.1	0	0	0	0.13	0.15	0.06	0.15	0.14	0.05
	4B	0.06	0.04	0.05	0	0	0.03	0.12	0.15	0.06	0.1	0.08	0.04
	4C	0.07	0.04	0.05	0	0	0.05	0.1	0.04	0	0.05	0.05	0.02
	5A	0.15	0.12	0.12	0	0	0.11	0.21	0.13	0.06	0.15	0.14	0.06
	5B	0.11	0.08	0.09	0	0	0.06	0.13	0.06	0	0.1	0.09	0.04
	5C	0.07	0.02	0.03	0	0	0.05	0.08	0.03	0	0.05	0.04	0.02
	6A	0.16	0.13	0.14	0	0	0.05	0.17	0.13	0.06	0.13	0.14	0.06
	6B	0.1	0.06	0.07	0	0	0.03	0.09	0.05	0	0.09	0.09	0.04
	7	0.14	0.08	0.09	0	0	0.13	0.21	0.1	0.06	0.12	0.12	0.05
	8	0.16	0.07	0.08	0.04	0.05	0.15	0.23	0.07	0.06	0.16	0.16	0.05

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/any Backup Heat + Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.41	0.39	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.37	0.33	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.28	0.26	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.3	0.27	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.24	0.21	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.22	0.2	- N/A -
	3A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.1	0.09	- N/A -
	3B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.1	0.09	- N/A -
	3C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.05	0.02	- N/A -
	4A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.16	0.15	- N/A -
	4B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.1	0.09	- N/A -
	4C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.06	0.05	- N/A -
	5A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.16	0.15	- N/A -
	5B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.1	0.1	- N/A -
	5C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.06	0.05	- N/A -
	6A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.14	0.14	- N/A -
	6B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.1	0.09	- N/A -
	7	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.13	0.13	- N/A -
	8	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.17	0.17	- N/A -

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
VRF + DOAS	0A	0	0	0	0	0	0	0	0	0	0	0	0
	0B	0	0	0	0	0	0	0	0	0	0	0	0
	1A	0	0	0	0	0	0	0	0	0	0	0	0
	1B	0	0	0	0	0	0	0	0	0	0	0	0
	2A	0	0	0	0	0	0	0	0	0	0	0	0
	2B	0	0	0	0	0	0	0	0	0	0	0	0
	3A	0	0	0	0	0	0	0	0	0	0	0	0
	3B	0	0	0	0	0	0	0	0	0	0	0	0
	3C	0	0	0	0	0	0	0	0	0	0	0	0
	4A	0.05	0	0	0	0	0.05	0.08	0	0	0	0.03	0.02
	4B	0	0	0	0	0	0	0	0	0	0	0	0
	4C	0.05	0	0	0	0	0.05	0.09	0	0	0	0.02	0.01
	5A	0.12	0.02	0.02	0	0	0.13	0.19	0.05	0	0.06	0.11	0.03
	5B	0.08	0	0	0	0	0.05	0.06	0	0	0	0.03	0.02
	5C	0.06	0	0	0	0	0.06	0.11	0	0	0	0.01	0.01
	6A	0.22	0.07	0.08	0.08	0.11	0.24	0.31	0.14	0	0.2	0.25	0.07
	6B	0.15	0.03	0.03	0.02	0.04	0.15	0.2	0.06	0	0.12	0.16	0.05
	7	0.33	0.13	0.15	0.16	0.2	0.36	0.46	0.26	0.06	0.3	0.35	0.09
	8	0.59	0.31	0.36	0.36	0.45	0.62	0.81	0.51	0.21	0.6	0.65	0.1
GSHP + DOAS	0A	0.21	0.47	0.48	0.32	0.33	0.6	0.55	0.55	0.49	0.29	0.26	0.09
	0B	0.17	0.29	0.3	0.32	0.33	0.46	0.47	0.58	0.52	0.32	0.3	0.1
	1A	0.09	0.26	0.27	0.26	0.26	0.37	0.36	0.45	0.44	0.26	0.22	0.05
	1B	0.14	0.25	0.26	0.28	0.29	0.39	0.39	0.49	0.45	0.26	0.25	0.07

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
	2A	0.07	0.22	0.23	0.23	0.24	0.31	0.3	0.38	0.38	0.2	0.16	0.05
	2B	0.07	0.21	0.22	0.21	0.22	0.27	0.26	0.36	0.35	0.21	0.15	0.05
	3A	0.06	0.15	0.16	0.09	0.09	0.2	0.19	0.24	0.26	0.09	0.06	0.04
	3B	0.05	0.17	0.18	0.09	0.1	0.22	0.2	0.27	0.3	0.09	0.05	0.04
	3C	0.03	0.13	0.13	0.06	0.07	0.07	0.05	0.16	0.2	0.04	0.01	0.02
	4A	0.08	0.14	0.15	0.08	0.09	0.14	0.14	0.19	0.2	0.14	0.11	0.03
	4B	0.02	0.09	0.1	0.08	0.09	0.19	0.16	0.22	0.25	0.09	0.06	0.03
	4C	0.05	0.09	0.1	0.06	0.06	0.1	0.11	0.06	0.07	0.05	0.04	0.01
	5A	0.12	0.15	0.17	0.08	0.09	0.17	0.19	0.16	0.16	0.13	0.12	0.04
	5B	0.08	0.14	0.15	0.08	0.09	0.17	0.16	0.12	0.13	0.09	0.07	0.03
	5C	0.06	0.07	0.08	0.05	0.06	0.08	0.09	0.05	0.06	0.04	0.03	0.01
	6A	0.15	0.17	0.18	0.1	0.11	0.15	0.18	0.18	0.17	0.13	0.15	0.04
	6B	0.1	0.11	0.13	0.08	0.1	0.11	0.12	0.1	0.1	0.1	0.1	0.03
	7	0.16	0.12	0.14	0.1	0.12	0.19	0.23	0.17	0.15	0.15	0.16	0.04
	8	0.23	0.13	0.15	0.13	0.16	0.25	0.33	0.22	0.16	0.23	0.25	0.05

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
VRF + Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0.02	- N/A -
	4B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0.01	- N/A -
	5A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.06	0.1	- N/A -
	5B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0.02	- N/A -
	5C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	6A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.19	0.25	- N/A -
	6B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.11	0.16	- N/A -
	7	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.3	0.35	- N/A -
	8	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.6	0.64	- N/A -

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
GSHP+Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.29	0.26	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.32	0.31	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.26	0.22	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.27	0.26	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.21	0.16	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.22	0.16	- N/A -
	3A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.09	0.06	- N/A -
	3B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.1	0.06	- N/A -
	3C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.04	0.01	- N/A -
	4A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.15	0.12	- N/A -
	4B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.1	0.06	- N/A -
	4C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.06	0.05	- N/A -
	5A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.14	0.13	- N/A -
	5B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.1	0.07	- N/A -
	5C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.05	0.03	- N/A -
	6A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.14	0.15	- N/A -
	6B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -
	7	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.15	0.16	- N/A -
	8	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.23	0.25	- N/A -

Table N4.2.2.2.5.2 (New Table 4.2.6.2.2.5(b))
Deductions to Renewable Energy Requirements for Natural Gas Heating Equipment
(KWh/ft² FLOOR AREA)

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Primary Gas Furnace	1A	ERCT	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	1A	FRCC	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	2A	ERCT	0.01	0	0.01	0	0	0.04	0.02	0	0	- N/A -	- N/A -	0
	2A	FRCC	0	0	0	0	0	0.01	0.01	0	0	- N/A -	- N/A -	0
	2A	SRMV	0	0	0	0	0	0.01	0	0	0	- N/A -	- N/A -	0
	2A	SRSO	0	0	0	0	0	0.01	0	0	0	- N/A -	- N/A -	0
	2A	SRVC	0.01	0	0	0	0	0.02	0.01	0	0	- N/A -	- N/A -	0
	2B	AZNM	0.01	0	0	0	0	0.02	0	0	0	- N/A -	- N/A -	0
	2B	CAMX	0.06	0.01	0.01	0	0	0.08	0.01	0.02	0	- N/A -	- N/A -	0.01
	2B	ERCT	0.02	0	0	0	0	0.03	0.01	0.01	0	- N/A -	- N/A -	0

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat	1A	ERCT	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	1A	FRCC	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	2A	ERCT	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	2A	FRCC	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	2A	SRMV	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	2A	SRSO	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	2A	SRVC	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	2B	AZNM	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	2B	CAMX	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	2B	ERCT	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	3A	ERCT	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	3A	RFCW	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	3A	SPSO	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	3A	SRMV	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	3A	SRMW	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	3A	SRSO	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	3A	SRTV	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	3A	SRVC	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat	3B	AZNM	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	3B	CAMX	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	3B	ERCT	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	3B	NWPP	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	3B	SPSO	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	3C	CAMX	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	4A	NYST	0.04	0.01	0.01	0	0	0	0	0.02	0.01	- N/A -	- N/A -	0
	4A	RFCE	0.01	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	4A	RFCW	0.01	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	4A	SPNO	0.01	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	4A	SPSO	0.01	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	4A	SRMV	0.01	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	4A	SRMW	0.01	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	4A	SRTV	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	4A	SRVC	0.01	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	4B	AZNM	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	4B	CAMX	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	4B	NWPP	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat	4B	RMPA	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	4B	SPSO	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	4C	CAMX	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	4C	NWPP	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	5A	MROE	0.06	0.01	0.01	0	0	0	0	0.02	0.01	- N/A -	- N/A -	0
	5A	MROW	0.09	0.01	0.01	0	0	0	0	0.03	0.02	- N/A -	- N/A -	0
	5A	NEWE	0.06	0.01	0.01	0	0	0	0	0.02	0.01	- N/A -	- N/A -	0
	5A	NYST	0.26	0.04	0.04	0	0	0	0	0.09	0.06	- N/A -	- N/A -	0.01
	5A	RFCE	0.04	0.01	0.01	0	0	0	0	0.01	0.01	- N/A -	- N/A -	0
	5A	RFCM	0.03	0	0.01	0	0	0	0	0.01	0.01	- N/A -	- N/A -	0
	5A	RFCW	0.04	0.01	0.01	0	0	0	0	0.01	0.01	- N/A -	- N/A -	0
	5A	RMPA	0.08	0.01	0.01	0	0	0	0	0.03	0.02	- N/A -	- N/A -	0
	5A	SPNO	0.09	0.01	0.01	0	0	0	0	0.03	0.02	- N/A -	- N/A -	0
	5A	SRMW	0.06	0.01	0.01	0	0	0	0	0.02	0.01	- N/A -	- N/A -	0
	5A	SRVC	0.07	0.01	0.01	0	0	0	0	0.02	0.02	- N/A -	- N/A -	0
	5B	AZNM	0.04	0.02	0.03	0	0	0	0	0.01	0.01	- N/A -	- N/A -	0.01
	5B	CAMX	0.21	0.11	0.12	0	0	0	0	0.04	0.07	- N/A -	- N/A -	0.04
	5B	NWPP	0.07	0.04	0.04	0	0	0	0	0.01	0.02	- N/A -	- N/A -	0.01

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat	5B	RMPA	0.04	0.02	0.03	0	0	0	0	0.01	0.01	- N/A -	- N/A -	0.01
	5C	NWPP	0	0	0	0	0	0	0	0	0	- N/A -	- N/A -	0
	6A	MROE	0.19	0.13	0.13	0	0	0	0	0.06	0.1	- N/A -	- N/A -	0.02
	6A	MROW	0.29	0.2	0.2	0	0	0	0	0.1	0.16	- N/A -	- N/A -	0.03
	6A	NEWE	0.19	0.13	0.14	0	0	0	0	0.06	0.11	- N/A -	- N/A -	0.02
	6A	NYST	0.88	0.6	0.63	0	0	0	0	0.29	0.48	- N/A -	- N/A -	0.09
	6A	RFCM	0.1	0.07	0.07	0	0	0	0	0.03	0.06	- N/A -	- N/A -	0.01
	6A	RFCW	0.12	0.08	0.09	0	0	0	0	0.04	0.07	- N/A -	- N/A -	0.01
	6A	RMPA	0.27	0.18	0.19	0	0	0	0	0.09	0.15	- N/A -	- N/A -	0.03
	6B	CAMX	0.84	0.62	0.66	0	0	0	0	0.19	0.39	- N/A -	- N/A -	0.08
	6B	MROW	0.19	0.14	0.15	0	0	0	0	0.04	0.09	- N/A -	- N/A -	0.02
	6B	NWPP	0.29	0.21	0.23	0	0	0	0	0.06	0.14	- N/A -	- N/A -	0.03
	6B	RMPA	0.18	0.13	0.14	0	0	0	0	0.04	0.08	- N/A -	- N/A -	0.02
	7	MROE	0.36	0.18	0.19	0	0	0	0	0.12	0.2	- N/A -	- N/A -	0.06
	7	MROW	0.55	0.28	0.29	0	0	0	0	0.19	0.31	- N/A -	- N/A -	0.09
	7	NEWE	0.37	0.19	0.2	0	0	0	0	0.13	0.21	- N/A -	- N/A -	0.06
	7	NWPP	0.85	0.43	0.45	0	0	0	0	0.29	0.48	- N/A -	- N/A -	0.13
	7	RMPA	0.51	0.26	0.27	0	0	0	0	0.18	0.29	- N/A -	- N/A -	0.08

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Primary Gas Furnace + DOAS	1A	ERCT	0	0	0	0	0	0	0	0	0	0	0	0
	1A	FRCC	0	0	0	0	0	0	0	0	0	0	0	0
	2A	ERCT	0.01	0	0	0	0	0.03	0.04	0.01	0.01	0.01	0.02	0
	2A	FRCC	0	0	0	0	0	0.01	0.01	0	0	0	0.01	0
	2A	SRMV	0	0	0	0	0	0.01	0.01	0	0	0	0	0
	2A	SRSO	0	0	0	0	0	0.01	0.01	0	0	0	0	0
	2A	SRVC	0	0	0	0	0	0.01	0.02	0.01	0	0.01	0.01	0
	2B	AZNM	0.01	0	0	0	0	0.03	0.03	0.01	0	0.01	0.01	0
	2B	CAMX	0.05	0.01	0.01	0	0	0.12	0.15	0.05	0.02	0.03	0.05	0.02
	2B	ERCT	0.02	0	0	0	0	0.05	0.06	0.02	0.01	0.01	0.02	0.01

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + DOAS	1A	ERCT	0	0	0	0	0	0	0	0	0	0	0	0
	1A	FRCC	0	0	0	0	0	0	0	0	0	0	0	0
	2A	ERCT	0	0	0	0	0	0	0	0	0	0	0	0
	2A	FRCC	0	0	0	0	0	0	0	0	0	0	0	0
	2A	SRMV	0	0	0	0	0	0	0	0	0	0	0	0
	2A	SRSO	0	0	0	0	0	0	0	0	0	0	0	0
	2A	SRVC	0	0	0	0	0	0	0	0	0	0	0	0
	2B	AZNM	0	0	0	0	0	0	0	0	0	0	0	0
	2B	CAMX	0	0	0	0	0	0	0	0	0	0	0	0
	2B	ERCT	0	0	0	0	0	0	0	0	0	0	0	0
	3A	ERCT	0	0	0	0	0	0	0	0	0	0	0	0
	3A	RFCW	0	0	0	0	0	0	0	0	0	0	0	0
	3A	SPSO	0	0	0	0	0	0	0	0	0	0	0	0
	3A	SRMV	0	0	0	0	0	0	0	0	0	0	0	0
	3A	SRMW	0	0	0	0	0	0	0	0	0	0	0	0
	3A	SRSO	0	0	0	0	0	0	0	0	0	0	0	0
	3A	SRTV	0	0	0	0	0	0	0	0	0	0	0	0
	3A	SRVC	0	0	0	0	0	0	0	0	0	0	0	0

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + DOAS	3B	AZNM	0	0	0	0	0	0	0	0	0	0	0	0
	3B	CAMX	0	0	0	0	0	0	0	0	0	0	0	0
	3B	ERCT	0	0	0	0	0	0	0	0	0	0	0	0
	3B	NWPP	0	0	0	0	0	0	0	0	0	0	0	0
	3B	SPSO	0	0	0	0	0	0	0	0	0	0	0	0
	3C	CAMX	0	0	0	0	0	0	0	0	0	0	0	0
	4A	NYST	0.03	0	0	0	0	0	0.01	0.02	0	0	0	0
	4A	RFCE	0	0	0	0	0	0	0	0	0	0	0	0
	4A	RFCW	0	0	0	0	0	0	0	0	0	0	0	0
	4A	SPNO	0.01	0	0	0	0	0	0	0.01	0	0	0	0
	4A	SPSO	0.01	0	0	0	0	0	0	0.01	0	0	0	0
	4A	SRMV	0	0	0	0	0	0	0	0	0	0	0	0
	4A	SRMW	0.01	0	0	0	0	0	0	0	0	0	0	0
	4A	SRTV	0	0	0	0	0	0	0	0	0	0	0	0
	4A	SRVC	0.01	0	0	0	0	0	0	0	0	0	0	0
	4B	AZNM	0	0	0	0	0	0	0	0	0	0	0	0
	4B	CAMX	0	0	0	0	0	0	0	0	0	0	0	0
	4B	NWPP	0	0	0	0	0	0	0	0	0	0	0	0

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + DOAS	4B	RMPA	0	0	0	0	0	0	0	0	0	0	0	0
	4B	SPSO	0	0	0	0	0	0	0	0	0	0	0	0
	4C	CAMX	0	0	0	0	0	0	0	0	0	0	0	0
	4C	NWPP	0	0	0	0	0	0	0	0	0	0	0	0
	5A	MROE	0.03	0	0	0	0	0	0.01	0.02	0	0	0	0
	5A	MROW	0.05	0	0	0	0	0.01	0.01	0.04	0	0	0	0
	5A	NEWE	0.03	0	0	0	0	0	0.01	0.03	0	0	0	0
	5A	NYST	0.14	0.01	0.01	0	0	0.02	0.03	0.11	0.01	0	0	0
	5A	RFCE	0.02	0	0	0	0	0	0.01	0.02	0	0	0	0
	5A	RFCM	0.02	0	0	0	0	0	0	0.01	0	0	0	0
	5A	RFCW	0.02	0	0	0	0	0	0	0.02	0	0	0	0
	5A	RMPA	0.04	0	0	0	0	0.01	0.01	0.03	0	0	0	0
	5A	SPNO	0.05	0	0	0	0	0.01	0.01	0.04	0	0	0	0
	5A	SRMW	0.03	0	0	0	0	0.01	0.01	0.03	0	0	0	0
	5A	SRVC	0.04	0	0	0	0	0.01	0.01	0.03	0	0	0	0
	5B	AZNM	0.03	0.01	0.01	0	0	0.02	0.02	0.02	0	0.02	0.02	0.01
	5B	CAMX	0.13	0.04	0.04	0	0	0.1	0.11	0.11	0.02	0.08	0.1	0.05
	5B	NWPP	0.05	0.01	0.01	0	0	0.03	0.04	0.04	0.01	0.03	0.03	0.02

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + DOAS	5B	RMPA	0.03	0.01	0.01	0	0	0.02	0.02	0.02	0	0.02	0.02	0.01
	5C	NWPP	0	0	0	0	0	0	0	0	0	0	0	0
	6A	MROE	0.11	0.04	0.05	0	0	0.1	0.12	0.11	0.03	0.11	0.13	0
	6A	MROW	0.17	0.06	0.07	0	0	0.15	0.18	0.16	0.05	0.17	0.19	0
	6A	NEWE	0.12	0.04	0.05	0	0	0.1	0.12	0.11	0.03	0.11	0.13	0
	6A	NYST	0.53	0.2	0.21	0	0	0.46	0.56	0.5	0.14	0.51	0.59	0.01
	6A	RFCM	0.06	0.02	0.03	0	0	0.05	0.07	0.06	0.02	0.06	0.07	0
	6A	RFCW	0.07	0.03	0.03	0	0	0.06	0.08	0.07	0.02	0.07	0.08	0
	6A	RMPA	0.16	0.06	0.07	0	0	0.14	0.17	0.15	0.04	0.16	0.18	0
	6B	CAMX	0.56	0.2	0.23	0	0	0.56	0.72	0.37	0.11	0.64	0.72	0.01
	6B	MROW	0.12	0.04	0.05	0	0	0.13	0.16	0.08	0.02	0.14	0.16	0
	6B	NWPP	0.19	0.07	0.08	0	0	0.2	0.25	0.13	0.04	0.22	0.25	0
	6B	RMPA	0.12	0.04	0.05	0	0	0.12	0.15	0.08	0.02	0.13	0.15	0
	7	MROE	0.23	0.08	0.08	0	0	0.19	0.22	0.2	0.06	0.2	0.22	0
	7	MROW	0.35	0.12	0.13	0	0	0.29	0.34	0.3	0.09	0.31	0.34	0.01
	7	NEWE	0.23	0.08	0.09	0	0	0.19	0.23	0.2	0.06	0.21	0.23	0
	7	NWPP	0.54	0.18	0.2	0	0	0.45	0.53	0.47	0.14	0.48	0.53	0.01
	7	RMPA	0.33	0.11	0.12	0	0	0.27	0.32	0.28	0.09	0.29	0.32	0

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Primary Gas Furnace + Heat Recovery	1A	ERCT	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	1A	FRCC	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2A	ERCT	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.01	- N/A -
	2A	FRCC	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2A	SRMV	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2A	SRSO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2A	SRVC	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2B	AZNM	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0.01	- N/A -
	2B	CAMX	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.02	0.03	- N/A -
	2B	ERCT	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.01	- N/A -

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + Heat Recovery	1A	ERCT	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	1A	FRCC	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2A	ERCT	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2A	FRCC	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2A	SRMV	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2A	SRSO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2A	SRVC	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2B	AZNM	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2B	CAMX	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2B	ERCT	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3A	ERCT	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3A	RFCW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3A	SPSO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3A	SRMV	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3A	SRMW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3A	SRSO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3A	SRTV	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3A	SRVC	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + Heat Recovery	3B	AZNM	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3B	CAMX	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3B	ERCT	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3B	NWPP	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3B	SPSO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3C	CAMX	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4A	NYST	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4A	RFCE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4A	RFCW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4A	SPNO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4A	SPSO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4A	SRMV	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4A	SRMW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4A	SRTV	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4A	SRVC	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4B	AZNM	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4B	CAMX	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4B	NWPP	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + Heat Recovery	4B	RMPA	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4B	SPSO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4C	CAMX	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4C	NWPP	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	5A	MROE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	5A	MROW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	5A	NEWE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	5A	NYST	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	5A	RFCE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	5A	RFCM	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	5A	RFCW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	5A	RMPA	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	5A	SPNO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	5A	SRMW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	5A	SRVC	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	5B	AZNM	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.02	0.02	- N/A -
	5B	CAMX	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.08	0.1	- N/A -
	5B	NWPP	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.03	0.03	- N/A -

BSR/ASHRAE/IES Addendum m to ANSI/ASHRAE Standard 90.1-2022, *Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings*
Review Draft

HVAC System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Gas Backup Heat + Heat Recovery	5B	RMPA	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.02	0.02	- N/A -
	5C	NWPP	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	6A	MROE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.11	0.13	- N/A -
	6A	MROW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.17	0.19	- N/A -
	6A	NEWE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.11	0.13	- N/A -
	6A	NYST	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.51	0.59	- N/A -
	6A	RFCM	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.06	0.07	- N/A -
	6A	RFCW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.07	0.08	- N/A -
	6A	RMPA	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.16	0.18	- N/A -
	6B	CAMX	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.64	0.72	- N/A -
	6B	MROW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.14	0.16	- N/A -
	6B	NWPP	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.22	0.25	- N/A -
	6B	RMPA	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.13	0.15	- N/A -
	7	MROE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.2	0.22	- N/A -
	7	MROW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.31	0.34	- N/A -
	7	NEWE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.21	0.23	- N/A -
	7	NWPP	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.48	0.52	- N/A -
	7	RMPA	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	- N/A -	- N/A -	0.29	0.32	- N/A -

Table N4.2.2.2.6.1 (New Table 4.2.6.2.2.6(a))
Deductions to Renewable Energy Requirements for All-Electric Service Water Heating Equipment
(KWh/ft^2 FLOOR AREA)

SWH System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Distributed Integral HPWH Storage	0A	0.02	0.01	0.01	0.13	0.13	0.02	0.01	0	0.01	0.19	0.19	0
	0B	0.02	0.01	0.01	0.14	0.14	0.02	0.01	0	0.01	0.19	0.19	0
	1A	0.02	0.01	0.01	0.14	0.14	0.02	0.01	0	0.01	0.2	0.2	0
	1B	0.02	0.01	0.01	0.14	0.14	0.02	0.02	0	0.01	0.2	0.2	0
	2A	0.02	0.01	0.01	0.15	0.15	0.02	0.02	0	0.01	0.21	0.21	0
	2B	0.02	0.01	0.01	0.16	0.16	0.02	0.02	0	0.01	0.23	0.24	0
	3A	0.02	0.01	0.01	0.16	0.16	0.02	0.02	0	0.01	0.24	0.24	0
	3B	0.02	0.01	0.01	0.17	0.17	0.02	0.02	0	0.01	0.25	0.25	0.01
	3C	0.02	0.01	0.01	0.16	0.16	0.02	0.02	0	0.01	0.24	0.24	0
	4A	0.03	0.01	0.01	0.18	0.18	0.02	0.02	0	0.01	0.26	0.27	0.01
	4B	0.03	0.01	0.01	0.18	0.18	0.02	0.02	0	0.01	0.28	0.28	0.01
	4C	0.03	0.01	0.01	0.18	0.18	0.02	0.02	0	0.01	0.27	0.27	0.01
	5A	0.03	0.01	0.01	0.18	0.18	0.02	0.02	0	0.01	0.28	0.28	0.01
	5B	0.03	0.01	0.01	0.19	0.19	0.02	0.02	0	0.01	0.29	0.3	0.01
	5C	0.03	0.01	0.01	0.18	0.18	0.02	0.02	0	0.01	0.27	0.28	0.01
	6A	0.03	0.01	0.01	0.19	0.19	0.02	0.02	0	0.01	0.29	0.29	0.01
	6B	0.03	0.01	0.01	0.2	0.2	0.02	0.02	0	0.01	0.3	0.31	0.01
	7	0.03	0.01	0.01	0.2	0.2	0.02	0.02	0	0.01	0.3	0.3	0.01
	8	0.03	0.01	0.01	0.21	0.21	0.02	0.02	0	0.01	0.32	0.32	0.01

SWH System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Primary Central HPWH	0A	- N/A -	- N/A -	- N/A -	0.16	0.16	- N/A -	- N/A -	0.02	0.03	0.16	0.12	- N/A -
	0B	- N/A -	- N/A -	- N/A -	0.16	0.16	- N/A -	- N/A -	0.02	0.03	0.16	0.13	- N/A -
	1A	- N/A -	- N/A -	- N/A -	0.17	0.17	- N/A -	- N/A -	0.02	0.03	0.19	0.14	- N/A -
	1B	- N/A -	- N/A -	- N/A -	0.17	0.17	- N/A -	- N/A -	0.02	0.03	0.19	0.15	- N/A -
	2A	- N/A -	- N/A -	- N/A -	0.19	0.19	- N/A -	- N/A -	0.02	0.03	0.22	0.17	- N/A -
	2B	- N/A -	- N/A -	- N/A -	0.19	0.19	- N/A -	- N/A -	0.02	0.03	0.22	0.17	- N/A -
	3A	- N/A -	- N/A -	- N/A -	0.22	0.22	- N/A -	- N/A -	0.02	0.04	0.27	0.21	- N/A -
	3B	- N/A -	- N/A -	- N/A -	0.21	0.21	- N/A -	- N/A -	0.02	0.04	0.26	0.2	- N/A -
	3C	- N/A -	- N/A -	- N/A -	0.23	0.23	- N/A -	- N/A -	0.02	0.04	0.28	0.21	- N/A -
	4A	- N/A -	- N/A -	- N/A -	0.25	0.25	- N/A -	- N/A -	0.03	0.04	0.31	0.24	- N/A -
	4B	- N/A -	- N/A -	- N/A -	0.24	0.24	- N/A -	- N/A -	0.03	0.04	0.3	0.23	- N/A -
	4C	- N/A -	- N/A -	- N/A -	0.26	0.26	- N/A -	- N/A -	0.03	0.04	0.33	0.25	- N/A -
	5A	- N/A -	- N/A -	- N/A -	0.27	0.27	- N/A -	- N/A -	0.03	0.04	0.35	0.26	- N/A -
	5B	- N/A -	- N/A -	- N/A -	0.26	0.26	- N/A -	- N/A -	0.03	0.04	0.33	0.25	- N/A -
	5C	- N/A -	- N/A -	- N/A -	0.27	0.27	- N/A -	- N/A -	0.03	0.04	0.35	0.26	- N/A -
	6A	- N/A -	- N/A -	- N/A -	0.28	0.28	- N/A -	- N/A -	0.03	0.04	0.36	0.26	- N/A -
	6B	- N/A -	- N/A -	- N/A -	0.28	0.28	- N/A -	- N/A -	0.03	0.04	0.36	0.26	- N/A -
	7	- N/A -	- N/A -	- N/A -	0.29	0.29	- N/A -	- N/A -	0.03	0.04	0.38	0.27	- N/A -
	8	- N/A -	- N/A -	- N/A -	0.31	0.31	- N/A -	- N/A -	0.03	0.05	0.4	0.28	- N/A -

SWH System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Central HPWH Recirculation	0A	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	0B	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	1A	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	1B	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	2A	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	2B	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	3A	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	3B	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	3C	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	4A	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	4B	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	4C	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	5A	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	5B	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	5C	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	6A	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	6B	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	7	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -
	8	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0.01	0	0.07	0.08	- N/A -

Table N4.2.2.2.6.2 (New Table 4.2.6.2.2.6(b))
Deductions to Renewable Energy Requirements for Natural Gas Primary and Supplemental Service Water Heating Components
(KWh/ft^2 FLOOR AREA)

SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Backup Heat	1A	ERCT	- N/A -	- N/A -	- N/A -	0.38	0.38	- N/A -	- N/A -	0	0	0	0	- N/A -
	1A	FRCC	- N/A -	- N/A -	- N/A -	0.12	0.12	- N/A -	- N/A -	0	0	0	0	- N/A -
	2A	ERCT	- N/A -	- N/A -	- N/A -	0.46	0.46	- N/A -	- N/A -	0	0	0	0.01	- N/A -
	2A	FRCC	- N/A -	- N/A -	- N/A -	0.14	0.14	- N/A -	- N/A -	0	0	0	0	- N/A -
	2A	SRMV	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0	0	0	0	- N/A -
	2A	SRSO	- N/A -	- N/A -	- N/A -	0.1	0.1	- N/A -	- N/A -	0	0	0	0	- N/A -
	2A	SRVC	- N/A -	- N/A -	- N/A -	0.2	0.2	- N/A -	- N/A -	0	0	0	0	- N/A -
	2B	AZNM	- N/A -	- N/A -	- N/A -	0.22	0.22	- N/A -	- N/A -	0	0	0	0	- N/A -
	2B	CAMX	- N/A -	- N/A -	- N/A -	1.07	1.07	- N/A -	- N/A -	0	0	0	0.02	- N/A -
	2B	ERCT	- N/A -	- N/A -	- N/A -	0.45	0.45	- N/A -	- N/A -	0	0	0	0.01	- N/A -
	3A	ERCT	- N/A -	- N/A -	- N/A -	0.56	0.56	- N/A -	- N/A -	0	0	0.01	0.04	- N/A -
	3A	RFCW	- N/A -	- N/A -	- N/A -	0.13	0.13	- N/A -	- N/A -	0	0	0	0.01	- N/A -
	3A	SPSO	- N/A -	- N/A -	- N/A -	0.26	0.26	- N/A -	- N/A -	0	0	0.01	0.02	- N/A -
	3A	SRMV	- N/A -	- N/A -	- N/A -	0.13	0.13	- N/A -	- N/A -	0	0	0	0.01	- N/A -
	3A	SRMW	- N/A -	- N/A -	- N/A -	0.21	0.21	- N/A -	- N/A -	0	0	0	0.02	- N/A -
	3A	SRSO	- N/A -	- N/A -	- N/A -	0.12	0.12	- N/A -	- N/A -	0	0	0	0.01	- N/A -
	3A	SRTV	- N/A -	- N/A -	- N/A -	0.1	0.1	- N/A -	- N/A -	0	0	0	0.01	- N/A -
	3A	SRVC	- N/A -	- N/A -	- N/A -	0.24	0.24	- N/A -	- N/A -	0	0	0	0.02	- N/A -

SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Backup Heat	3B	AZNM	- N/A -	- N/A -	- N/A -	0.26	0.26	- N/A -	- N/A -	0	0	0	0.01	- N/A -
	3B	CAMX	- N/A -	- N/A -	- N/A -	1.27	1.27	- N/A -	- N/A -	0	0.01	0.01	0.07	- N/A -
	3B	ERCT	- N/A -	- N/A -	- N/A -	0.53	0.54	- N/A -	- N/A -	0	0	0.01	0.03	- N/A -
	3B	NWPP	- N/A -	- N/A -	- N/A -	0.44	0.44	- N/A -	- N/A -	0	0	0.01	0.02	- N/A -
	3B	SPSO	- N/A -	- N/A -	- N/A -	0.25	0.25	- N/A -	- N/A -	0	0	0	0.01	- N/A -
	3C	CAMX	- N/A -	- N/A -	- N/A -	1.42	1.42	- N/A -	- N/A -	0	0	0.01	0.04	- N/A -
	4A	NYST	- N/A -	- N/A -	- N/A -	0.99	0.99	- N/A -	- N/A -	0.01	0.02	0.05	0.14	- N/A -
	4A	RFCE	- N/A -	- N/A -	- N/A -	0.15	0.15	- N/A -	- N/A -	0	0	0.01	0.02	- N/A -
	4A	RFCW	- N/A -	- N/A -	- N/A -	0.14	0.14	- N/A -	- N/A -	0	0	0.01	0.02	- N/A -
	4A	SPNO	- N/A -	- N/A -	- N/A -	0.33	0.33	- N/A -	- N/A -	0	0	0.02	0.05	- N/A -
	4A	SPSO	- N/A -	- N/A -	- N/A -	0.29	0.29	- N/A -	- N/A -	0	0	0.01	0.04	- N/A -
	4A	SRMV	- N/A -	- N/A -	- N/A -	0.15	0.15	- N/A -	- N/A -	0	0	0.01	0.02	- N/A -
	4A	SRMW	- N/A -	- N/A -	- N/A -	0.23	0.23	- N/A -	- N/A -	0	0	0.01	0.03	- N/A -
	4A	SRTV	- N/A -	- N/A -	- N/A -	0.11	0.11	- N/A -	- N/A -	0	0	0.01	0.02	- N/A -
	4A	SRVC	- N/A -	- N/A -	- N/A -	0.27	0.27	- N/A -	- N/A -	0	0	0.01	0.04	- N/A -
	4B	AZNM	- N/A -	- N/A -	- N/A -	0.3	0.3	- N/A -	- N/A -	0	0	0.01	0.04	- N/A -
	4B	CAMX	- N/A -	- N/A -	- N/A -	1.42	1.42	- N/A -	- N/A -	0.01	0.02	0.06	0.17	- N/A -
	4B	NWPP	- N/A -	- N/A -	- N/A -	0.49	0.49	- N/A -	- N/A -	0	0.01	0.02	0.06	- N/A -

SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Backup Heat	4B	RMPA	- N/A -	- N/A -	- N/A -	0.3	0.3	- N/A -	- N/A -	0	0	0.01	0.04	- N/A -
	4B	SPSO	- N/A -	- N/A -	- N/A -	0.28	0.28	- N/A -	- N/A -	0	0	0.01	0.03	- N/A -
	4C	CAMX	- N/A -	- N/A -	- N/A -	1.55	1.55	- N/A -	- N/A -	0.01	0.02	0.05	0.2	- N/A -
	4C	NWPP	- N/A -	- N/A -	- N/A -	0.54	0.54	- N/A -	- N/A -	0	0.01	0.02	0.07	- N/A -
	5A	MROE	- N/A -	- N/A -	- N/A -	0.23	0.23	- N/A -	- N/A -	0	0.01	0.02	0.05	- N/A -
	5A	MROW	- N/A -	- N/A -	- N/A -	0.35	0.35	- N/A -	- N/A -	0	0.01	0.03	0.08	- N/A -
	5A	NEWE	- N/A -	- N/A -	- N/A -	0.23	0.23	- N/A -	- N/A -	0	0.01	0.02	0.05	- N/A -
	5A	NYST	- N/A -	- N/A -	- N/A -	1.06	1.06	- N/A -	- N/A -	0.02	0.03	0.1	0.24	- N/A -
	5A	RFCE	- N/A -	- N/A -	- N/A -	0.16	0.16	- N/A -	- N/A -	0	0	0.01	0.04	- N/A -
	5A	RFCM	- N/A -	- N/A -	- N/A -	0.12	0.12	- N/A -	- N/A -	0	0	0.01	0.03	- N/A -
	5A	RFCW	- N/A -	- N/A -	- N/A -	0.15	0.15	- N/A -	- N/A -	0	0	0.01	0.03	- N/A -
	5A	RMPA	- N/A -	- N/A -	- N/A -	0.33	0.33	- N/A -	- N/A -	0	0.01	0.03	0.07	- N/A -
	5A	SPNO	- N/A -	- N/A -	- N/A -	0.35	0.35	- N/A -	- N/A -	0.01	0.01	0.03	0.08	- N/A -
	5A	SRMW	- N/A -	- N/A -	- N/A -	0.25	0.25	- N/A -	- N/A -	0	0.01	0.02	0.06	- N/A -
	5A	SRVC	- N/A -	- N/A -	- N/A -	0.28	0.28	- N/A -	- N/A -	0	0.01	0.03	0.06	- N/A -
	5B	AZNM	- N/A -	- N/A -	- N/A -	0.32	0.32	- N/A -	- N/A -	0	0.01	0.02	0.06	- N/A -
	5B	CAMX	- N/A -	- N/A -	- N/A -	1.52	1.52	- N/A -	- N/A -	0.02	0.03	0.12	0.3	- N/A -
	5B	NWPP	- N/A -	- N/A -	- N/A -	0.53	0.53	- N/A -	- N/A -	0.01	0.01	0.04	0.1	- N/A -

SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Backup Heat	5B	RMPA	- N/A -	- N/A -	- N/A -	0.32	0.32	- N/A -	- N/A -	0	0.01	0.02	0.06	- N/A -
	5C	NWPP	- N/A -	- N/A -	- N/A -	0.54	0.54	- N/A -	- N/A -	0.01	0.01	0.03	0.09	- N/A -
	6A	MROE	- N/A -	- N/A -	- N/A -	0.24	0.24	- N/A -	- N/A -	0.01	0.01	0.04	0.08	- N/A -
	6A	MROW	- N/A -	- N/A -	- N/A -	0.36	0.36	- N/A -	- N/A -	0.01	0.01	0.06	0.12	- N/A -
	6A	NEWE	- N/A -	- N/A -	- N/A -	0.24	0.24	- N/A -	- N/A -	0.01	0.01	0.04	0.08	- N/A -
	6A	NYST	- N/A -	- N/A -	- N/A -	1.1	1.1	- N/A -	- N/A -	0.03	0.04	0.18	0.36	- N/A -
	6A	RFCM	- N/A -	- N/A -	- N/A -	0.13	0.13	- N/A -	- N/A -	0	0.01	0.02	0.04	- N/A -
	6A	RFCW	- N/A -	- N/A -	- N/A -	0.15	0.15	- N/A -	- N/A -	0	0.01	0.02	0.05	- N/A -
	6A	RMPA	- N/A -	- N/A -	- N/A -	0.34	0.34	- N/A -	- N/A -	0.01	0.01	0.05	0.11	- N/A -
	6B	CAMX	- N/A -	- N/A -	- N/A -	1.6	1.6	- N/A -	- N/A -	0.03	0.06	0.21	0.46	- N/A -
	6B	MROW	- N/A -	- N/A -	- N/A -	0.36	0.36	- N/A -	- N/A -	0.01	0.01	0.05	0.1	- N/A -
	6B	NWPP	- N/A -	- N/A -	- N/A -	0.55	0.55	- N/A -	- N/A -	0.01	0.02	0.07	0.16	- N/A -
	6B	RMPA	- N/A -	- N/A -	- N/A -	0.33	0.33	- N/A -	- N/A -	0.01	0.01	0.04	0.1	- N/A -
	7	MROE	- N/A -	- N/A -	- N/A -	0.24	0.24	- N/A -	- N/A -	0.01	0.01	0.05	0.1	- N/A -
	7	MROW	- N/A -	- N/A -	- N/A -	0.37	0.37	- N/A -	- N/A -	0.01	0.02	0.08	0.16	- N/A -
	7	NEWE	- N/A -	- N/A -	- N/A -	0.25	0.25	- N/A -	- N/A -	0.01	0.01	0.06	0.11	- N/A -
	7	NWPP	- N/A -	- N/A -	- N/A -	0.58	0.58	- N/A -	- N/A -	0.02	0.03	0.13	0.25	- N/A -
	7	RMPA	- N/A -	- N/A -	- N/A -	0.35	0.35	- N/A -	- N/A -	0.01	0.02	0.08	0.15	- N/A -

SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Recirculation Heat	1A	ERCT	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	1A	FRCC	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	2A	ERCT	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	2A	FRCC	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	2A	SRMV	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	2A	SRSO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	2A	SRVC	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	2B	AZNM	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	2B	CAMX	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	2B	ERCT	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3A	ERCT	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3A	RFCW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3A	SPSO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3A	SRMV	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3A	SRMW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3A	SRSO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3A	SRTV	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3A	SRVC	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -

SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Recirculation Heat	3B	AZNM	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3B	CAMX	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3B	ERCT	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3B	NWPP	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3B	SPSO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3C	CAMX	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4A	NYST	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4A	RFCE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4A	RFCW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4A	SPNO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4A	SPSO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4A	SRMV	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4A	SRMW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4A	SRTV	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4A	SRVC	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4B	AZNM	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4B	CAMX	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4B	NWPP	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -

SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Recirculation Heat	4B	RMPA	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4B	SPSO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4C	CAMX	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4C	NWPP	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5A	MROE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5A	MROW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5A	NEWE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5A	NYST	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5A	RFCE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5A	RFCM	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5A	RFCW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5A	RMPA	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5A	SPNO	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5A	SRMW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5A	SRVC	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5B	AZNM	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5B	CAMX	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5B	NWPP	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -

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SWH System Type	Climate Zone	eGRID Region	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Recirculation Heat	5B	RMPA	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5C	NWPP	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	6A	MROE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	6A	MROW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	6A	NEWE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	6A	NYST	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	6A	RFCM	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	6A	RFCW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	6A	RMPA	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	6B	CAMX	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	6B	MROW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	6B	NWPP	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	6B	RMPA	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	7	MROE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	7	MROW	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	7	NEWE	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	7	NWPP	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	7	RMPA	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -

N4.2.2.3 Greenhouse Gas Emissions Calculation (new Section 4.2.6.2.3)

Greenhouse gas emissions associated with building operational energy use shall be calculated in accordance with Section 4.2.6.3 and shall comply with the following:

$$PBGEU_{CO2e} \leq AE$$

Where:

PBGEU$_{CO2e}$ = the gross greenhouse gas emissions associated with the proposed building site energy use, excluding the emission reductions associated with on-site renewable energy production and off-site renewable energy procurement, calculated in accordance with Section 4.2.6.2.3.1, 4.2.6.2.3.2 and 4.2.6.2.3.3.

AE = the avoided emissions from onsite renewable energy production and off-site renewable energy procured, calculated in accordance with Section 4.2.6.2.3.4

N4.2.2.3.1 Proposed Greenhouse Gas Emissions (new Section 4.2.6.2.3.1)

The gross greenhouse gas emissions associated with the proposed building site energy use, excluding the emission reductions associated with on-site renewable energy production and off-site renewable energy procurement, shall be calculated as follows:

$$PBGEU_{C02e} = EF_{elec} \times (SE_{eHVAC} + SE_{eSWH} + SA - SR_{cool} - SR_{eheat} - SR_{eSHW})$$
$$+ EF_{fHVAC} \times (SE_{fHVAC} - SR_{fheat}) + EF_{fSWH} \times (SE_{fSWH} - SR_{fSWH})$$

Where:

PBGEU$_{CO2e}$ = the gross greenhouse gas emissions associated with the proposed building site energy use, excluding the emission reductions associated with on-site renewable energy production and off-site renewable energy procurement.

EF$_{elec}$ = the electricity emissions factor determined in accordance with Section 4.2.1.1.

SE$_{eHVAC}$ = the base site electricity use calculated by multiplying the occupied floor area by the value from Table 4.2.6.2.2.1(a).

SE$_{eSWH}$ = the site service water heating electricity use calculated by multiplying the occupied floor area by the value from Table 4.2.6.2.2.2(a)

SA = additional site electricity use calculated according to Section 4.2.6.2.3.2.

SR$_{cool}$ = reduction in site electricity use considering increased space cooling equipment efficiency determined in accordance with 4.2.6.2.2.4.

SR$_{eheat}$ = reduction in site electricity use considering increased space heating equipment efficiency determined in accordance with 4.2.6.2.2.5.

SR$_{eSWH}$ = reduction in site electricity use considering increased service water heating equipment efficiency determined in accordance with 4.2.6.2.2.6.

EF$_{fuel,HVAC}$ = the space heating site fuel emissions factor determined in accordance with Section 4.2.1.1.

SE$_{fHVAC}$ = the site fuel energy use due to fuel burning space heating equipment calculated by multiplying the occupied floor area by the site EUI from Table 4.2.6.2.3.1(a)

SR$_{fheat}$ = reduction in site fuel energy use considering increased efficiency of fuel burning space heating equipment calculated in accordance with 4.2.6.2.3.3

EF$_{fSWH}$ = the service water heating site fuel emissions factor determined in accordance with Section 4.2.1.1.

SE_{fSWH}	=	the site fuel energy use due to fuel burning service water heating equipment calculated by multiplying the occupied floor area by the site EUI from Table 4.2.6.2.3.1(b)
SR_{fSWH}	=	reduction in site fuel energy use considering increased efficiency of fuel burning service water heating equipment calculated in accordance with 4.2.6.2.3.4

N4.2.2.3.2. Additional Site Electricity Use (new Section 4.2.6.2.3.2)

Additional site electricity shall be calculated when the building includes: enclosed parking garage ventilation; exterior lighting (including parking lots); covered parking including enclosed parking garages; or elevators. Additional site electricity use, shall be calculated as follows:

$$SA = SA_{GarageVent} + SA_{ExtLts} + SA_{PkgLts} + SA_{Elevator}$$

Where:

$SA_{GarageVent}$	=	Additional electricity use for ventilated, unconditioned parking garages calculated by multiplying the total brake horsepower of all garage ventilation fans by the renewable energy requirement listed in Table 4.2.6.2.2.3
SA_{ExtLts}	=	Additional electricity use exterior lighting, including uncovered parking calculated by multiplying the total connected lighting power of all exterior lighting by the renewable energy requirement listed in Table 4.2.6.2.2.3
SA_{PkgLts}	=	Additional electricity use for lighting in enclosed parking garages and covered parking calculated by multiplying the total connected lighting power of all lighting by the renewable energy requirement listed in Table 4.2.6.2.2.3
$SA_{Elevator}$	=	Additional electricity use for elevators calculated by multiplying the product of the number of elevators and number of floors by the renewable energy requirement listed in Table 4.2.6.2.2.3

N4.2.2.3.3 Reductions to Site Fuel Energy Use Requirements with Increased Space Heating Efficiency (new Section 4.2.6.2.3.3)

Reduction in site fuel energy use associated with improved space heating equipment efficiency shall be calculated as follows:

$$SR_{fheat} = A_{HVAC\ type} \times SR_{fheat,base} \times \frac{EI_{fheat}}{0.30}$$

Where:

SR_{fheat}	=	Reduction in site fuel energy use considering increased space heating equipment efficiency
$A_{HVAC\ type}$	=	The conditioned floor area served by a covered system type from Section 6.1.2.1.
$SR_{fheat,base}$	=	The maximum site fuel energy use reduction due to increased efficiency of fuel fired space heating equipment from Table 4.2.6.2.3.3.
EI_{fheat}	=	Lesser of the percentage improvement (as a fraction) above minimum heating efficiency requirements or 30% (0.30). Where heating equipment with different minimum efficiencies are included in the building, a heating capacity weighted-average improvement shall be used.

For metrics that increase as efficiency increases, EIf_{heat} shall be calculated as follows:

$$EI_{fheat} = \frac{HM_{des}}{HM_{min}} - 1$$

Where:

HM_{min}	=	minimum required heating efficiency metric, part-load or annualized where available from Section 6.8.1 or Informative Appendix F
HM_{des}	=	design heating efficiency metric, part-load or annualized where available

N4.2.2.3.4 Reductions to Site Fuel Energy Use Requirements (Service Water Heating Efficiency) (new Section 4.2.6.2.3.4)

Reduction in site fuel energy use associated with improved service water heating equipment efficiency shall be calculated as follows:

$$SR_{fSWH} = A_{sWH\ type} \times \left(SR_{fSWH,base} \times \frac{EI_{fSWH}}{0.30} \right)$$

Where:

SR_{fSWH}	=	recuctions in site fuel energy use considering increased efficiency of fuel fired service water heating equipment.
$A_{SWH\ type}$	=	The occupied floor area served by a covered service water heating system type from Section 7.4.2.
$SR_{fSWH,base}$	=	The maximum site fuel energy use reduction due to increased efficiency of fuel fired service water heating equipment from Table 4.2.6.2.3.4
EI_{fSWH}	=	Lesser of the percentage improvement (as a fraction) above minimum service water heating efficiency requirements or 30% (0.30). Where heating equipment with different minimum efficiencies are included in the building, a heating capacity weighted-average improvement shall be used.

For metrics that increase as efficiency increases, EI_{SWH} shall be calculated as follows:

$$EI_{fSWH} = \frac{SWHM_{des}}{SWHM_{min}} - 1$$

Where:

$SWHM_{min}$	=	minimum required service water heating efficiency metric, part-load or annualized where available from Section 7.4.2 or Informative Appendix F
$SWHM_{des}$	=	design service water heating efficiency metric, part-load or annualized where available

Table N4.2.2.3.1.1 (new Table 4.2.6.2.3.1(a)) **Site Fuel Energy Use for HVAC Systems with Fuel Fired Space Heating Equipment (kBtu/ft^2)**

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Primary Fuel Furnace	0A	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	0B	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	1A	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	1B	0.06	0.02	0.02	- N/A -	- N/A -	0.16	0.06	0.05	0.02	- N/A -	- N/A -	0.01
	2A	0.09	0.04	0.05	- N/A -	- N/A -	0.31	0.16	0.09	0.04	- N/A -	- N/A -	0.01
	2B	0.17	0.04	0.05	- N/A -	- N/A -	0.24	0.04	0.12	0.05	- N/A -	- N/A -	0.02

BSR/ASHRAE/IES Addendum m to ANSI/ASHRAE Standard 90.1-2022, *Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings*
Review Draft

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Fuel Backup Heat	0A	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	0B	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	1A	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	1B	0	0	0	- N/A -	- N/A -	0	0	0.03	0.02	- N/A -	- N/A -	0
	2A	0	0	0	- N/A -	- N/A -	0	0	0.05	0.03	- N/A -	- N/A -	0
	2B	0	0	0	- N/A -	- N/A -	0	0	0.07	0.04	- N/A -	- N/A -	0
	3A	0.03	0	0	- N/A -	- N/A -	0	0	0.19	0.12	- N/A -	- N/A -	0
	3B	0	0	0	- N/A -	- N/A -	0	0	0.11	0.07	- N/A -	- N/A -	0
	3C	0	0	0	- N/A -	- N/A -	0	0	0.05	0.03	- N/A -	- N/A -	0
	4A	0.2	0.05	0.05	- N/A -	- N/A -	0	0	0.43	0.28	- N/A -	- N/A -	0.01
	4B	0	0	0	- N/A -	- N/A -	0	0	0.2	0.12	- N/A -	- N/A -	0
	4C	0.01	0	0	- N/A -	- N/A -	0	0	0.32	0.2	- N/A -	- N/A -	0
	5A	1.23	0.19	0.2	- N/A -	- N/A -	0	0	0.94	0.6	- N/A -	- N/A -	0.06
	5B	0.66	0.35	0.37	- N/A -	- N/A -	0	0	0.49	0.44	- N/A -	- N/A -	0.13
	5C	0.01	0	0	- N/A -	- N/A -	0	0	0.37	0.23	- N/A -	- N/A -	0
	6A	4.02	2.69	2.81	- N/A -	- N/A -	0	0	2.04	2.63	- N/A -	- N/A -	0.4
	6B	2.63	1.88	2.01	- N/A -	- N/A -	0	0	1.17	1.58	- N/A -	- N/A -	0.24
	7	7.63	3.79	3.98	- N/A -	- N/A -	0	0	3.49	4.79	- N/A -	- N/A -	1.17
	8	15.66	8.69	9.38	- N/A -	- N/A -	0	0	9.77	10.51	- N/A -	- N/A -	2.02
Primary Fuel Furnace + DOAS	0A	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	0B	0	0	0	- N/A -	- N/A -	0	0	0.01	0	0	0	0
	1A	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	1B	0.05	0.01	0.01	- N/A -	- N/A -	0.16	0.23	0.11	0.05	0.04	0.08	0.02
	2A	0.05	0.02	0.03	- N/A -	- N/A -	0.22	0.33	0.16	0.07	0.1	0.16	0.02
	2B	0.14	0.03	0.04	- N/A -	- N/A -	0.37	0.45	0.22	0.1	0.1	0.18	0.06

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Fuel Backup Heat + DOAS	0A	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	0B	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	1A	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	1B	0	0	0	- N/A -	- N/A -	0	0	0.03	0.02	0	0.01	0
	2A	0	0	0	- N/A -	- N/A -	0	0.02	0.05	0.03	0.01	0.03	0
	2B	0	0	0	- N/A -	- N/A -	0	0	0.07	0.05	0.02	0.03	0
	3A	0.02	0	0	- N/A -	- N/A -	0	0.2	0.2	0.12	0.04	0.08	0
	3B	0	0	0	- N/A -	- N/A -	0	0.04	0.11	0.08	0.02	0.05	0
	3C	0	0	0	- N/A -	- N/A -	0	0	0.05	0.03	0.01	0.02	0
	4A	0.13	0.01	0.01	- N/A -	- N/A -	0.02	0.6	0.45	0.25	0.1	0.17	0
	4B	0	0	0	- N/A -	- N/A -	0	0.11	0.2	0.13	0.04	0.09	0
	4C	0.01	0	0	- N/A -	- N/A -	0	0.33	0.32	0.2	0.07	0.13	0
	5A	0.69	0.04	0.05	- N/A -	- N/A -	0.1	1.12	1.05	0.38	0.17	0.25	0.02
	5B	0.42	0.11	0.13	- N/A -	- N/A -	0.31	0.83	0.71	0.3	0.33	0.46	0.15
	5C	0.01	0	0	- N/A -	- N/A -	0	0.43	0.37	0.23	0.07	0.15	0
	6A	2.45	0.88	0.96	- N/A -	- N/A -	2.07	3.86	2.96	1.1	2.51	2.97	0.05
	6B	1.76	0.6	0.69	- N/A -	- N/A -	1.72	3.13	1.73	0.73	2.13	2.47	0.03
	7	4.89	1.6	1.73	- N/A -	- N/A -	3.95	6.55	5.03	1.86	4.51	5.04	0.07
	8	10.19	4.08	4.52	- N/A -	- N/A -	8.56	14.91	11.06	4.25	9.84	10.33	0.16
Primary Fuel Furnace + Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.02	0.05	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.07	0.11	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.07	0.13	- N/A -

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Fuel Backup Heat + Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0.01	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.03	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.03	- N/A -
	3A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.04	0.08	- N/A -
	3B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.02	0.05	- N/A -
	3C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.02	- N/A -
	4A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.1	0.17	- N/A -
	4B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.04	0.09	- N/A -
	4C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.07	0.13	- N/A -
	5A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.17	0.25	- N/A -
	5B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.33	0.46	- N/A -
	5C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.07	0.15	- N/A -
	6A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	2.5	2.96	- N/A -
	6B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	2.12	2.46	- N/A -
	7	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	4.49	5.02	- N/A -
	8	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	9.81	10.3	- N/A -

Table N4.2.2.3.1.2 (new Table 4.2.6.2.3.1(b)) **Maximum Site Energy Use Savings for Increased Efficiency of Fuel Fired Space Heating Equipment (kBtu/ft^2)**

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Primary Fuel Furnace	0A	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	0B	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	1A	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	1B	0.01	0	0	- N/A -	- N/A -	0.03	0.01	0	0	- N/A -	- N/A -	0
	2A	0.02	0.01	0.01	- N/A -	- N/A -	0.05	0.02	0.01	0	- N/A -	- N/A -	0
	2B	0.03	0	0.01	- N/A -	- N/A -	0.04	0.01	0.01	0	- N/A -	- N/A -	0

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Fuel Backup Heat	0A	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	0B	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	1A	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	1B	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	2A	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	2B	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	3A	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	3B	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	3C	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	4A	0.03	0.01	0.01	- N/A -	- N/A -	0	0	0.01	0.01	- N/A -	- N/A -	0
	4B	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	4C	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	5A	0.2	0.03	0.03	- N/A -	- N/A -	0	0	0.07	0.04	- N/A -	- N/A -	0.01
	5B	0.11	0.06	0.06	- N/A -	- N/A -	0	0	0.02	0.03	- N/A -	- N/A -	0.02
	5C	0	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -	- N/A -	0
	6A	0.66	0.45	0.47	- N/A -	- N/A -	0	0	0.22	0.36	- N/A -	- N/A -	0.07
	6B	0.43	0.31	0.33	- N/A -	- N/A -	0	0	0.09	0.2	- N/A -	- N/A -	0.04
	7	1.25	0.63	0.66	- N/A -	- N/A -	0	0	0.43	0.7	- N/A -	- N/A -	0.2
	8	2.57	1.45	1.56	- N/A -	- N/A -	0	0	1.41	1.61	- N/A -	- N/A -	0.34
Primary Fuel Furnace + DOAS	0A	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	0B	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	1A	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	1B	0.01	0	0	- N/A -	- N/A -	0.03	0.04	0.01	0	0.01	0.01	0
	2A	0.01	0	0	- N/A -	- N/A -	0.03	0.05	0.02	0.01	0.01	0.02	0
	2B	0.02	0	0	- N/A -	- N/A -	0.06	0.07	0.03	0.01	0.01	0.02	0.01

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Fuel Backup Heat + DOAS	0A	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	0B	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	1A	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	1B	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	2A	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	2B	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	3A	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	3B	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	3C	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	4A	0.02	0	0	- N/A -	- N/A -	0	0	0.01	0	0	0	0
	4B	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	4C	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	5A	0.11	0.01	0.01	- N/A -	- N/A -	0.02	0.03	0.08	0.01	0	0	0
	5B	0.07	0.02	0.02	- N/A -	- N/A -	0.05	0.05	0.06	0.01	0.04	0.05	0.02
	5C	0	0	0	- N/A -	- N/A -	0	0	0	0	0	0	0
	6A	0.39	0.15	0.16	- N/A -	- N/A -	0.35	0.42	0.37	0.11	0.38	0.44	0.01
	6B	0.28	0.1	0.11	- N/A -	- N/A -	0.29	0.36	0.19	0.06	0.33	0.37	0
	7	0.79	0.27	0.29	- N/A -	- N/A -	0.66	0.78	0.68	0.21	0.7	0.77	0.01
	8	1.65	0.68	0.75	- N/A -	- N/A -	1.43	2.01	1.62	0.57	1.57	1.63	0.03
Primary Fuel Furnace + Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0.01	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.01	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.01	0.02	- N/A -

HVAC System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Air Cooled Heat Pump w/Fuel Backup Heat + Heat Recovery	0A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	0B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	1A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	1B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	2B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	3C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	4C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	5A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	5B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.04	0.05	- N/A -
	5C	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0	0	- N/A -
	6A	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.38	0.44	- N/A -
	6B	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.33	0.37	- N/A -
	7	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	0.7	0.77	- N/A -
	8	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	- N/A -	1.56	1.62	- N/A -

Table N4.2.2.3.3 (new Table 4.2.6.2.3.3) **Site Energy Use for Service Water Heating Systems with Fuel Fired Equipment (kBtu/ft^2)**

SWH System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Backup Heat	0A	- N/A -	- N/A -	- N/A -	2.15	2.16	- N/A -	- N/A -	0	0	0	0	- N/A -
	0B	- N/A -	- N/A -	- N/A -	2.09	2.1	- N/A -	- N/A -	0	0	0	0	- N/A -
	1A	- N/A -	- N/A -	- N/A -	2.76	2.76	- N/A -	- N/A -	0	0	0	0	- N/A -
	1B	- N/A -	- N/A -	- N/A -	2.69	2.69	- N/A -	- N/A -	0	0	0	0.03	- N/A -
	2A	- N/A -	- N/A -	- N/A -	3.3	3.3	- N/A -	- N/A -	0	0.01	0.01	0.04	- N/A -
	2B	- N/A -	- N/A -	- N/A -	3.27	3.27	- N/A -	- N/A -	0	0.01	0.01	0.07	- N/A -
	3A	- N/A -	- N/A -	- N/A -	4.05	4.05	- N/A -	- N/A -	0.01	0.03	0.08	0.29	- N/A -
	3B	- N/A -	- N/A -	- N/A -	3.87	3.87	- N/A -	- N/A -	0.01	0.02	0.05	0.22	- N/A -
	3C	- N/A -	- N/A -	- N/A -	4.33	4.32	- N/A -	- N/A -	0.01	0.01	0.02	0.12	- N/A -
	4A	- N/A -	- N/A -	- N/A -	4.45	4.45	- N/A -	- N/A -	0.04	0.07	0.22	0.63	- N/A -
	4B	- N/A -	- N/A -	- N/A -	4.34	4.34	- N/A -	- N/A -	0.03	0.05	0.18	0.53	- N/A -
	4C	- N/A -	- N/A -	- N/A -	4.72	4.72	- N/A -	- N/A -	0.03	0.07	0.16	0.6	- N/A -
	5A	- N/A -	- N/A -	- N/A -	4.77	4.77	- N/A -	- N/A -	0.07	0.12	0.43	1.08	- N/A -
	5B	- N/A -	- N/A -	- N/A -	4.64	4.64	- N/A -	- N/A -	0.05	0.1	0.36	0.92	- N/A -
	5C	- N/A -	- N/A -	- N/A -	4.79	4.79	- N/A -	- N/A -	0.05	0.09	0.24	0.84	- N/A -
	6A	- N/A -	- N/A -	- N/A -	4.95	4.95	- N/A -	- N/A -	0.12	0.2	0.79	1.61	- N/A -
	6B	- N/A -	- N/A -	- N/A -	4.87	4.87	- N/A -	- N/A -	0.1	0.17	0.63	1.4	- N/A -
	7	- N/A -	- N/A -	- N/A -	5.13	5.13	- N/A -	- N/A -	0.16	0.27	1.16	2.19	- N/A -
	8	- N/A -	- N/A -	- N/A -	5.37	5.37	- N/A -	- N/A -	0.24	0.4	1.8	3.17	- N/A -

SWH System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Backup + Gas Recirculation Heat	0A	- N/A -	- N/A -	- N/A -	4.86	4.87	- N/A -	- N/A -	0.25	0.11	1.77	1.85	- N/A -
	0B	- N/A -	- N/A -	- N/A -	4.8	4.81	- N/A -	- N/A -	0.25	0.11	1.77	1.85	- N/A -
	1A	- N/A -	- N/A -	- N/A -	5.47	5.47	- N/A -	- N/A -	0.25	0.11	1.77	1.85	- N/A -
	1B	- N/A -	- N/A -	- N/A -	5.4	5.4	- N/A -	- N/A -	0.25	0.11	1.78	1.88	- N/A -
	2A	- N/A -	- N/A -	- N/A -	6.01	6.01	- N/A -	- N/A -	0.25	0.12	1.78	1.89	- N/A -
	2B	- N/A -	- N/A -	- N/A -	5.98	5.98	- N/A -	- N/A -	0.25	0.12	1.78	1.92	- N/A -
	3A	- N/A -	- N/A -	- N/A -	6.76	6.76	- N/A -	- N/A -	0.26	0.14	1.85	2.15	- N/A -
	3B	- N/A -	- N/A -	- N/A -	6.58	6.58	- N/A -	- N/A -	0.26	0.13	1.82	2.07	- N/A -
	3C	- N/A -	- N/A -	- N/A -	7.04	7.03	- N/A -	- N/A -	0.26	0.12	1.79	1.97	- N/A -
	4A	- N/A -	- N/A -	- N/A -	7.16	7.16	- N/A -	- N/A -	0.29	0.18	1.99	2.49	- N/A -
	4B	- N/A -	- N/A -	- N/A -	7.05	7.05	- N/A -	- N/A -	0.28	0.16	1.95	2.38	- N/A -
	4C	- N/A -	- N/A -	- N/A -	7.43	7.43	- N/A -	- N/A -	0.28	0.18	1.93	2.46	- N/A -
	5A	- N/A -	- N/A -	- N/A -	7.48	7.48	- N/A -	- N/A -	0.32	0.23	2.21	2.93	- N/A -
	5B	- N/A -	- N/A -	- N/A -	7.35	7.35	- N/A -	- N/A -	0.31	0.21	2.13	2.77	- N/A -
	5C	- N/A -	- N/A -	- N/A -	7.5	7.5	- N/A -	- N/A -	0.3	0.2	2.01	2.69	- N/A -
	6A	- N/A -	- N/A -	- N/A -	7.66	7.66	- N/A -	- N/A -	0.37	0.31	2.57	3.46	- N/A -
	6B	- N/A -	- N/A -	- N/A -	7.58	7.58	- N/A -	- N/A -	0.35	0.28	2.4	3.26	- N/A -
	7	- N/A -	- N/A -	- N/A -	7.84	7.84	- N/A -	- N/A -	0.41	0.38	2.93	4.04	- N/A -
	8	- N/A -	- N/A -	- N/A -	8.08	8.08	- N/A -	- N/A -	0.5	0.51	3.57	5.02	- N/A -

Table N4.2.2.3.4 (new Table 4.2.6.2.3.4) **Maximum Site Energy Use Savings for Increased Efficiency of Fuel Fired Service Water Heating Equipment (kBtu/ft^2)**

SWH System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Backup	0A	- N/A -	- N/A -	- N/A -	0.36	0.36	- N/A -	- N/A -	0	0	0	0	- N/A -
	0B	- N/A -	- N/A -	- N/A -	0.35	0.35	- N/A -	- N/A -	0	0	0	0	- N/A -
	1A	- N/A -	- N/A -	- N/A -	0.46	0.46	- N/A -	- N/A -	0	0	0	0	- N/A -
	1B	- N/A -	- N/A -	- N/A -	0.45	0.45	- N/A -	- N/A -	0	0	0	0	- N/A -
	2A	- N/A -	- N/A -	- N/A -	0.55	0.55	- N/A -	- N/A -	0	0	0	0.01	- N/A -
	2B	- N/A -	- N/A -	- N/A -	0.54	0.54	- N/A -	- N/A -	0	0	0	0.01	- N/A -
	3A	- N/A -	- N/A -	- N/A -	0.68	0.68	- N/A -	- N/A -	0	0	0.01	0.05	- N/A -
	3B	- N/A -	- N/A -	- N/A -	0.65	0.65	- N/A -	- N/A -	0	0	0.01	0.04	- N/A -
	3C	- N/A -	- N/A -	- N/A -	0.72	0.72	- N/A -	- N/A -	0	0	0	0.02	- N/A -
	4A	- N/A -	- N/A -	- N/A -	0.74	0.74	- N/A -	- N/A -	0.01	0.01	0.04	0.11	- N/A -
	4B	- N/A -	- N/A -	- N/A -	0.72	0.72	- N/A -	- N/A -	0	0.01	0.03	0.09	- N/A -
	4C	- N/A -	- N/A -	- N/A -	0.79	0.79	- N/A -	- N/A -	0.01	0.01	0.03	0.1	- N/A -
	5A	- N/A -	- N/A -	- N/A -	0.8	0.8	- N/A -	- N/A -	0.01	0.02	0.07	0.18	- N/A -
	5B	- N/A -	- N/A -	- N/A -	0.77	0.77	- N/A -	- N/A -	0.01	0.02	0.06	0.15	- N/A -
	5C	- N/A -	- N/A -	- N/A -	0.8	0.8	- N/A -	- N/A -	0.01	0.02	0.04	0.14	- N/A -
	6A	- N/A -	- N/A -	- N/A -	0.83	0.83	- N/A -	- N/A -	0.02	0.03	0.13	0.27	- N/A -
	6B	- N/A -	- N/A -	- N/A -	0.81	0.81	- N/A -	- N/A -	0.02	0.03	0.1	0.23	- N/A -
	7	- N/A -	- N/A -	- N/A -	0.85	0.85	- N/A -	- N/A -	0.03	0.05	0.19	0.37	- N/A -
	8	- N/A -	- N/A -	- N/A -	0.89	0.89	- N/A -	- N/A -	0.04	0.07	0.3	0.53	- N/A -

SWH System Type	Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
Gas Recirculaton Heat	0A	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	0B	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	1A	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	1B	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	2A	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	2B	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3A	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3B	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	3C	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4A	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4B	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	4C	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5A	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5B	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	5C	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	6A	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	6B	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	7	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -
	8	- N/A -	- N/A -	- N/A -	0	0	- N/A -	- N/A -	0	0	0	0	- N/A -

N4.2.2.3.5 Avoided Emissions (new Section 4.2.6.2.3.5)

Avoided emissions from onsite renewable energy production and off-site renewable energy shall be calculated using equation ###.6.

$$AE = \sum_{i=1}^{n} RE_i * REPF_i * GHG_i$$

Where:

AE	=	the avoided emissions from onsite renewable energy production and off-site renewable energy procured in accordance with Section 4.2.6.2.3.5
RE_i	=	annual energy generation for the ith renewable energy generation or procurement method or class. Energy generation from on-site photovoltaic systems or photovoltaic systems that are part of a *direct-owned renewable energy facility* shall be calculated using Section 4.2.6.7.
n	=	the total number of renewable energy production and procurement methods or classes.
$REPF_i$	=	renewable energy procurement factor for the ith renewable energy procurement method or class from Table 4.2.6.4
GHG_i	=	greenhouse gas emission conversion factor from Table 4.2.6.3(1) and Table 4.2.6.3(2). For renewable electricity resources for projects within the continental U.S., select the value corresponding to the property's eGRID subregion or use locally derived values approved by the *authority having jurisdiction*.

N4.2.3 Greenhouse Gas Emissions Factors (new Section 4.2.6.3)

The greenhouse gas emissions associated with building operational energy use shall be calculated using the emission factors provided in Table 4.2.6.3(1) and Table 4.2.6.3(2).

N4.2.3.1 Electricity Emissions Factor Start Year (new Section 4.2.6.3.1)

The electricity emission factor from Table 4.2.6.3(2) shall correspond to the property's eGRID subregion and to two years after the project permit application year or 2030, whichever is earlier.

N4.2.3.2 Lower-Carbon Fuels Emissions Factors (new Section 4.2.6.3.2)

Emissions factors other than those in Table 4.2.6.3(1) shall be permitted for *lower-carbon fuels* where approved by the *authority having jurisdiction* and where all the following conditions are met:

a. emissions factors are calculated in accordance with the California Air Resources Board Low Carbon Fuel Standard or the U.S. Environmental Protection Agency Renewable Fuel Standard, and
b. lower-carbon fuels are delivered to the building site under an energy contract with a duration of not less than 15 years and structured to survive a partial or full transfer of ownership of the building property.

N4.2.3.3 Other Fossil Fuel or Electricity Emissions Factors (new Section 4.2.6.3.3)

Fossil fuel or electricity emissions factors other than those in Tables 4.2.6.3(1) and Table 4.2.6.3(2), including hourly values, shall be permitted where approved by the *authority having jurisdiction* and including all of the following:

a. combustion greenhouse gas emissions associated with the burning of a fuel, either within the building or site or to generate electricity, steam, hot water or chilled water used within the building or site;

b. precombustion greenhouse gas emissions associated with fuel extraction, processing, and transport, including fugitive emissions, prior to combustion within the building or site or to generate electricity or thermal energy used within the building or site;
c. carbon dioxide (CO2), nitrous oxide (N2O) and methane (CH4);
d. where converted to carbon dioxide equivalent (CO2e), a 20-year global warming potential basis;
e. where applicable, transmission and distribution losses.

N4.2.3.4 Other Distributed Thermal Energy Emissions Factors (new Section 4.2.6.3.4)

Distributed thermal energy emission factors other than those in Table 4.2.6.3(1) shall be permitted where approved the *authority having jurisdiction* and accounting for all of the following:

a. Input fuel emissions factors in accordance with Table 4.2.6.3(1), Section 4.2.6.3.2 and Section 4.2.6.3.3.
b. Electricity emissions factors in accordance with Table 4.2.6.3(2), Section 4.2.6.3.1 and Section 4.2.6.3.3.
c. Conversion efficiency of the heating or cooling plant;
d. Auxiliary equipment and distribution losses associated with delivery of thermal energy to the *building*.

Table N4.2.3.1 Greenhouse Gas Emission Factors (new Table 4.2.6.3(1))

Greenhouse gas emissions associated with site energy usage	CO_2e GWP-20 Emissions	
	(lb/MWh)	**(kg/MWh)**
Fuels Delivered to Buildings		
Natural gas	611	277
LPG or propane	650	295
Fuel oil (residual)	737	334
Fuel oil (distillate)	714	324
Coal	842	382
Gasoline	742	337
Lower-carbon fuels	Calculated in accordance with Section 4.2.1.1(b)(ii)	
Other fuels not specified in this table	842	382

Table N4.2.3.2 Electricity Greenhouse Gas Emission Factors (new Table 4.2.6.3(2))*

eGRID Subregion	CO2e Emissions (lb/MWh)						
	20-Year Analysis Start Year**						
	2024	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
AZNMc	458	439	438	438	446	454	465
CAMXc	132	106	91	75	67	59	53
ERCTc	258	230	216	199	197	195	197
FRCCc	684	691	706	723	747	772	793
MROEc	639	628	628	628	633	638	645
MROWc	420	407	409	412	423	433	442
NEWEc	648	625	608	590	577	565	556
NWPPc	317	283	263	243	235	227	227
NYSTc	210	169	134	99	76	53	40
RFCEc	909	902	901	900	906	912	918
RFCMc	1141	1140	1140	1138	1137	1136	1135
RFCWc	990	977	967	955	947	939	933
RMPAc	485	454	435	417	412	407	410
SPNOc	432	411	408	406	418	431	442
SPSOc	498	472	461	450	452	454	464
SRMVc	964	935	910	881	859	837	816
SRMWc	629	599	581	556	541	527	518
SRSOc	999	1003	1018	1027	1043	1058	1064
SRTVc	1151	1162	1173	1179	1183	1188	1184
SRVCc	548	518	500	479	465	452	438

* The total (combined combustion and pre-combustion) greenhouse gas emissions factors (associated with CO_2, CH_4, and N_2O) are listed in Table 4.2.2(1) for fossil fuels and Table 4.2.2(2) for the production of electricity. The delivered fossil fuel factors are U.S. averages based on 2019 EIA and EPA data and a 20-year greenhouse gas global warming potential. The electricity conversion factors are 2022 Cambium long-run marginal emission rates based on 20-year greenhouse gas global warming potential. The electricity data are site end-use values for the Cambium mid-case scenario, based on a 20-year levelized analysis period, zero discount rate, and a 20-year greenhouse gas global warming period. The Cambium eGRID subregions are based on balancing area and do not completely align with EPA eGRID subregions, which are based on utility service territory. Look up tables that indicate eGRID$_c$ subregions by zip code or county are included in the published Cambium 2022 LRMER workbooks available at .https://data.nrel.gov/submissions/206. More details on the Cambium input assumptions and methodology are described in the documentation report, available at https://www.nrel.gov/docs/fy23osti/84916.pdf.

** The analysis start year corresponds to the year that is two years after the project permit application.

Informative Notes:

Table 4.2.6.3(1) and Table 4.2.6.3(2) list aggregate annual emissions of GHGs using standard CO_2 equivalent (CO_{2e}) emission metrics for CO_2, CH_4, and N_2O for a 20-year GWP emissions rate period.

When comparing or combining CO_{2e} emission values, care should be taken to ensure that the values have been computed for a consistent GWP time horizon.

N4.2.4 Renewable Energy Procurement Factors (new Section 4.2.6.4)

The procurement factors in Table 4.2.6.4 shall be applied to all renewable energy supplied to the *building*.

Table N4.2.4 Renewable Energy Procurement Factors (new Table 4.2.6.4)

Class	Procurement Factor	Classification
1	1.0	On-site production Off-site procurement - *Community Renewable Energy Facility*
2	1.0	Off-site procurement – In buildings that: 1. Include *equipment* for *on-site renewable energy* with a rated capacity of not less than 0.75 W/ft2 of roof area, or 2. Meets exception 1, 2, or 3 to 10.5.1.1
3	0.75	Off-site procurement – Other

N4.2.5 Off-site Renewable Energy Procurement (new Section 4.2.6.5)

 The *building* owner shall procure and be credited for the total amount of off-site renewable energy using one or more of the following:
1. A *physical renewable energy purchase agreement.*
2. A *financial renewable energy purchase agreement.*
3. A *community renewable energy facility*.
4. Off-site *directly-owned renewable energy facility*.

The renewable energy source shall be located where the energy can be delivered to the building *site* by any of the following:
1. Direct connection to the off-site renewable energy facility
2. The local utility or distribution entity
3. An interconnected electrical or pipeline network where energy delivery capacity between the generator and the building *site* is available

The total off-site renewable energy shall be delivered or credited to the *building site* under an energy contract with a duration of not less than 15 years. The contract shall be structured to survive a partial or full transfer of ownership of the building property.

The property owner or owner's authorized agent shall demonstrate that for an on-site or off-site renewable energy system required to comply this appendix, no RECs or EACS are associated with the renewable energy system or the following provisions for RECS and EACS shall be met:
1. The RECS and EACS are retained and retired by or on behalf of the property owner or tenant for a period of not less than 15 years;
2. The RECS and EACS are created within a 12-month period of the use of the REC; and
3. The RECS and EACS are from an asset placed in service no more than 5 years before the issuance of the certificate of occupancy.

N4.2.6 Off-site Renewable Energy contract terms. (new Section 4.2.6.6)

The total off-site renewable energy shall be delivered or credited to the *building site* under an energy contract with a duration of not less than 15 years. The contract shall be structured to survive a partial or full transfer of ownership of the building property.

N4.2.7 On-Site Photovoltaic Electricity Production (new Section 4.2.6.7)
The capacity of on-site photovoltaic generation systems shall be calculated using the values in Table 4.2.2.7.

Table N4.2.7 On-Site Photovoltaic Capacity Requirement (new Table 4.2.6.7)

Climate Zone	Annual On-Site Photovoltaic Electricity Production, kWh/W
1A, 2B, 3B, 4B, 5B and 3C	1.75
0A, 0B, 1B, 2A, 3A and 6B	1.55
4A, 4C, 5A, 5C, 6A, and 7	1.35

N4.2.8 Renewable energy certificate documentation (new Section 4.2.6.8)
The property owner or owner's authorized agent shall demonstrate that any RECs or EACs used to comply with this standard shall meet all of the following:
1. The RECs and EACs are retained and retired by or on behalf of the property owner or tenant for a period of not less than 15 years;
2. The RECs and EACs are created within a 12-month period of the use of the RECs and EACs; and
3. The RECs and EACs are from an asset placed in service no more than 5 years before the issuance of the certificate of occupancy.

N5 Changes to Section 5
   a. Replace Section 5.2, in its entirety, with the language in Section N5.2
   b. Modify Section 5.4.3 as edited in Section N5.4
   c. Modify Section 5.6.1 as edited in Section N5.6

N5.1 (Reserved)

N5.2 Compliance Paths (New Section 5.2)
The building envelope shall comply with Sections 5.1, "General"; 5.4, "Mandatory Provisions", Section 5.6, "Building Envelope Trade-Off Compliance Path", 5.7, "Submittals"; 5.8, "Product Information and Installation Requirements"; and 5.9, "Verification, Testing, and Commissioning."

N5.3 (Reserved)

N5.4 Whole Building Air Leakage (modifications to Section 5.4.3.1)
5.4.3.1.1   *New buildings* and *additions* ~~less than 10,000 ft2 of *gross conditioned floor area*~~ shall comply with measured *air leakage* requirements in Section 5.4.3.1.4.
5.4.3.1.2   (Reserved) ~~*New buildings* not less than 10,000 ft2 of *gross conditioned floor area* shall comply with one of the following:~~
   ~~a.   Measured *air leakage* requirements in Section 5.4.3.1.4~~
   ~~b.   A *continuous air barrier* design and installation verification program performed in accordance with Section 5.9.1.2~~
5.4.3.1.3   In *alterations* ~~and *additions*~~ to an *existing building* where portions of the *continuous air barrier* are impacted, those portions shall be installed or reinstalled and comply with one of the following:
   a.   Measured *air leakage* requirements in Section 5.4.3.1.4
   b.   A *continuous air barrier* design and installation verification program performed in accordance with Section 5.9.1.2

5.4.3.1.4 Measured Air Leakage. ~~Where measured air leakage is used for compliance, t~~The rate of *air leakage* of the *building envelope* shall not exceed ~~0.35~~0.25 cfm/ft2 under a pressure differential of 75 Pa (0.30 in. of water), with this air leakage rate normalized by the sum of the *above-grade* and *below-grade building envelope* areas of the *conditioned space* and *semiheated space* and in accordance with this section.

    a. Whole-*building* pressurization testing shall be conducted in accordance with ASTM E3158. For buildings less than 10,000 ft2 of *gross conditioned floor area*, and that contain no more than *one single-zone system*, *air leakage* testing may be conducted in accordance with ASTM E779, ASTM E1827, or ASTM E3158. Testing shall be conducted excluding HVAC related elements and be performed by an independent third- party verification and testing provider in accordance with Section 4.2.5.1.

    b. Where a building contains both *conditioned space* and *semiheated space*, compliance shall be shown using one of the following as applicable:

        1. Separately for the *conditioned space* and for the *semiheated space*, with the *air leakage* rate for the *conditioned space* normalized by the exterior building envelope area of the *conditioned space* and the *air leaka*ge rate for the *semiheated space* normalized by the *semiexterior building envelope* area of the *semiheated space*

        2. For the *conditioned space* and for the *semiheated space* together, with the *air leakage* rate for the overall *space* normalized by the sum of the *exterior building envelope* area and the *semiexterior building envelope* area minus the *semiexterior building envelope* area that separates the *conditioned space* from the *semiheated space*

    c. Reserved ~~Where the measured *air leakage* rate exceeds 0.35 cfm/ft2 but does not exceed 0.45 cfm/ft2, a diagnostic evaluation, such as a smoke tracer or infrared imaging, shall be conducted while the building is pressurized, and any leaks noted shall be sealed if such sealing can be made without destruction of *existing building* components. In addition, a visual inspection of the air barrier shall be conducted, and any leaks noted shall be sealed if such sealing can be made without destruction of *existing building* components.~~

~~An additional report identifying the corrective actions taken to seal leaks shall be submitted to the *code official* and the *building* owner and shall be deemed to satisfy the requirements of this section.~~

    d. Reserved ~~Where the measured *air leakage* rate exceeds 0.45 cfm/ft2, corrective actions must be made to the *envelope* and an additional test completed where results are 0.45 cfm/ft2 or less in order to demonstrate compliance.~~

    <u>c</u>. Reporting shall be in compliance with Section 4.2.5.1.2.

N5.6 Building Envelope Trade-Off (modifications to Section 5.6)

5.6.1   The building envelope complies with the standard if

    a. the proposed design satisfies the provisions of Sections 5.1, 5.4, 5.7, 5.8, and 5.9 and

    b. the <u>ratio of the *proposed* envelope</u> performance factor of the *proposed design* <u>to the</u> ~~is less than or equal to the proposed~~ *envelope* performance factor of the *base design* <u>is less than or equal to the value shown in Table 5.6.1.1 for the *building* type and *climate zone*</u>.

Table 5.6.1.1 Maximum Ratio of Proposed to Base Envelope Performance Factor

Climate Zone	Small Office	Medium Office	Large Office	Small Hotel	Large Hotel	Retail (stand alone)	Retail (strip mall)	School (primary)	School (secondary)	Multifamily (mid-rise)	Multifamily (high-rise)	Warehouse
0A	0.98	0.95	0.95	0.98	0.98	0.96	0.95	0.97	0.97	0.94	0.93	0.95
0B	0.97	0.95	0.96	0.98	0.98	0.96	0.96	0.96	0.97	0.93	0.92	0.95
1A	0.97	0.95	0.96	0.99	0.99	0.95	0.95	0.97	0.98	0.95	0.95	0.94
2A	0.99	0.96	0.97	0.99	0.98	0.98	0.97	0.99	0.99	0.95	0.93	0.97
2B	1.00	0.95	0.96	0.98	0.97	0.98	0.97	0.97	0.98	0.94	0.91	0.97
3A	0.92	0.93	0.95	0.99	0.98	0.91	0.89	0.96	1.00	0.87	0.80	0.86
3B	0.94	0.97	0.99	1.00	1.00	0.96	0.97	0.99	1.00	0.94	0.88	0.86
3C	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.82	0.94
4A	1.00	0.96	0.96	0.98	0.96	0.93	0.91	0.97	1.00	0.82	0.78	0.91
4B	1.00	1.00	1.00	1.00	0.99	0.97	0.99	1.00	1.00	0.94	0.92	0.91
4C	1.00	0.97	0.97	1.00	0.99	0.91	0.89	1.00	1.00	0.83	0.78	0.90
5A	0.98	0.86	0.86	0.93	0.89	0.89	0.86	0.90	0.96	0.75	0.72	0.91
5B	0.99	0.94	0.94	0.97	0.95	0.93	0.92	0.95	1.00	0.83	0.80	0.90
5C	0.99	0.94	0.93	1.00	0.97	0.89	0.82	1.00	1.00	0.82	0.76	0.88
6A	0.81	0.75	0.74	0.88	0.84	0.70	0.69	0.68	0.79	0.78	0.77	0.86
6B	0.79	0.77	0.76	0.92	0.88	0.70	0.68	0.71	0.84	0.80	0.78	0.84
7	0.89	0.75	0.75	0.88	0.85	0.74	0.74	0.71	0.78	0.82	0.82	0.86
8	0.96	0.82	0.81	0.91	0.90	0.77	0.81	0.71	0.68	0.90	0.91	0.88

5.6.1.1 All components of the building envelope shown on architectural drawings or installed in existing buildings shall be modeled in the proposed design. The simulation program model fenestration and opaque building envelope types and area shall be consistent with the construction documents. Any building envelope assembly not subject to the provisions of Section 5.5.5 that covers less than 5% of the total area of that assembly type (e.g., exterior walls) need not be separately described, provided it is similar to an assembly being modeled. If not separately described, the area of a building envelope assembly shall be added to the area of an assembly of that same type with the same orientation and thermal properties.

5.6.1.2 Reserved ~~Trade-Offs Limited to Building Permit. When the building permit being sought applies to less than the whole building, parameters relating to unmodified existing conditions or to future building components shall be identical for both the proposed envelope performance factor and the base envelope performance factor. Future building components shall meet the prescriptive requirements of Section 5.5.~~

5.6.1.3 Envelope performance factor shall be calculated using the procedures of Normative Appendix C.

N6 Changes to Section 6
   a.   Modify Section 6.2.1 as edited in Section N6.1
   b.   Replace Section 6.2.2, in its entirety, with the language in Section N6.2
   c.   Replace Section 6.3, in its entirety, with the language in Section N6.3
   d.   Modify Section 6.4.3 as edited in Section N6.4.1
   e.   Modify Section 6.4.3.4.1 as edited in Section N6.4.2
   f.   Modify Section 6.4.3.4.5 as edited in Section N6.4.3

g. Modify Section 6.4.3.9 as edited in Section N6.4.4
h. Modify Section 6.4.3.10 as edited in Section N6.4.5
i. Modify Section 6.4.4.1.2 as edited in Section N6.4.6
j. Replace Section 6.5.1, in its entirety, with the language in Section N6.5.1
k. Modify Section 6.5.2.1 as edited in Section N6.5.2
l. Replace Section 6.5.3.1, in its entirety, with language in Section N6.5.3
m. Modify Section 6.5.3.8 as edited in Section N6.5.4
n. Modify Section 6.5.4.5.2 as edited in Section 6.5.5
o. Modify Section 6.5.6.1.1 as edited in Section 6.5.6
p. Add new Section 6.5.12, using the language in Section N6.5.8

N6.1 Requirements for all Compliance Paths. Mechanical *equipment* and *systems* shall comply with all of the following:

a. Section 6.1, "General"

b. Section 6.4, "Mandatory Provisions"

c. Section 6.5, "Prescriptive Compliance Path"

~~c~~d. Section 6.7, "Submittals"

~~d~~e. Section 6.8, "Minimum Equipment Efficiency Tables"

N6.2 Allowed HVAC Systems and Equipment (replaces Section 6.2.2)

HVAC Systems and equipment shall meet all of the following criteria:
a. The system serves a single HVAC zone.
b. Cooling (if any) shall be provided by any of the following:
    i. Unitary packaged or split-system air conditioner that is either air cooled or evaporatively cooled and covered by the efficiency requirements shown in
        (1) Table 6.8.1-1 (air conditioners)
        (2) Table 6.8.1-2 (heat pumps)
    ii. Air cooled variable-variable-refrigerant flow heat pumps covered by the efficiency requirements shown in Table 6.8.1-9.
    iii. Water-to-air, ground loop heat pumps covered by the efficiency requirements shown in Table 6.8.1-15.
    iv. Dedicated outdoor air supply units with mechanical cooling covered by the efficiency requirements shown in Table 6.8.1-15 or 6.8.1-14 and Subcategory or Rating Condition limited to:
        (1) [none/air cooled/air source]
        (2) cooling tower condenser water
        (3) ground source, closed loop
c. Heating (if any) shall be provided by any of the following:
    i. Unitary packaged or split-system heat pump covered by the applicable efficiency requirements shown in Table 6.8.1-2 (heat pumps)
    ii. Fuel-fired furnace and duct heaters covered by the applicable efficiency requirements shown in Table 6.8.1-5 and used solely as secondary heating to heat pump primary systems in accordance with Section 6.5.12.1.2.
    iii. Air cooled variable-variable-refrigerant flow heat pumps covered by the efficiency requirements shown in Table 6.8.1-9
    iv. Water-to-air, ground loop heat pumps covered by the efficiency requirements shown in Table 6.8.1-15
    v. Electric resistance heaters used solely as secondary heating to heat pump primary systems in accordance with Section 6.5.12.1.2.
    vi. Dedicated outdoor air supply units with mechanical heating covered by the efficiency requirements shown in Table 6.8.1.15 or 6.8.1-14 and Subcategory or Rating Condition limited to:
        (1) air source
        (2) ground source, closed loop

vii. Fuel-fired furnace and duct heaters covered by the applicable efficiency requirements shown in Table 6.8.1-5 installed as primary heating sources, provided those units are installed in only climate zones 0A, 0B, 1A, 1B, 2A or 2B.

viii. Electric resistance heaters installed as primary heating sources, provided those units are installed in only climate zones 0A, 0B, 1A, 1B, 2A or 2B.

d. Circulation loops connected to water to air heat pumps shall be connected only to a ground source heat exchanger and shall not include supplement heating or heat rejection equipment.

Informative Note: Dedicated outside air supply units without mechanical cooling or without mechanical heating are allowed provided the system meets Section 6.5.1 Exception 1.

N6.3 Simplified Approach Building Compliance Path for HVAC Systems (replaces Section 6.3)

(reserved)

N6.4.1 Off-Hour Controls (modifications to Section 6.4.3.3)

HVAC systems shall have the off-hour controls required by Sections 6.1.3.1.1 through 6.4.3.3.5.

Exceptions to 6.4.3.3: HVAC systems intended to operate continuously.

1. HVAC systems intended to operate continuously.

2. HVAC systems not serving residential spaces and having a design heating capacity and cooling capacity less than 7000 Btu/h that are equipped with readily accessible manual on/off controls.

N6.4.2 Shutoff Damper Controls (modifications to Section 6.4.3.4.2)

All outdoor air intake and exhaust systems shall be equipped with motorized dampers that will automatically shut when the systems or spaces served are not in use. Out- door air and exhaust/relief dampers shall be capable of and configured to automatically shut off during pre- occupancy building warm-up, cooldown, and setback, except when the supply of outdoor air reduces energy costs or when outdoor air must be supplied to meet code requirements.

Exceptions to 6.4.3.4.2:

1. Nonmotorized (gravity backdraft) dampers are acceptable for exhaust and relief in buildings less than three stories in height and for outdoor air intakes and exhaust and relief dampers in buildings of any height located in Climate Zones 0, 1, 2, and 3. Nonmotorized dampers for out- door air intakes must be protected from direct exposure to wind.

2. Nonmotorized dampers are acceptable in systems with a design outdoor air intake or exhaust capacity of 300 cfm or less.

32. Dampers are not required in ventilation or exhaust systems serving unconditioned spaces.

43. Dampers are not required in exhaust systems serving Type 1 kitchen exhaust hoods.

54. Dampers are not required in systems intended to operate continuously.

N6.4.3 Parking Garage Ventilation Systems (modifications to Section 6.4.3.4.5)

Parking garage ventilation systems shall meet all of the following:

a. Separate ventilation systems and control systems shall be provided for each parking garage section.

b. Control systems for each parking garage section shall automatically detect and control contaminant levels and shall be capable of and configured to reduce airflow to 20% or less of design capacity.

c. The ventilation system for each parking garage section shall have controls and devices that result

in fan motor demand of no more than 30% of design wattage at 50% of the design airflow.

~~Exception to 6.4.3.4.5: Garage ventilation systems serving a single parking garage section having a total ventilation system motor nameplate horsepower not exceeding 5 hp at fan system design conditions and where the parking garage section has no mechanical cooling or mechanical heating.~~

N6.4.4 Direct Digital Control (DDC) Requirements (modifications to Section 6.4.3.4.9)

Heating systems for vestibules and air curtain units with integral heating shall include automatic controls capable of and configured to shut off the heating system when outdoor air temperatures are above 45°F. Vestibule heating and cooling systems shall be controlled by a thermostat in the vestibule capable of and configured to limit heating to a maximum of 60°F and cooling to a minimum of 85°F.

~~Exception to 6.4.3.9: Heating or cooling provided by site-recovered energy or by transfer air that would otherwise be exhausted.~~

N6.4.5 Heated or Cooled Vestibules or Air Curtains with Integral Heating (modifications to Section 6.4.3.4.10)

DDC shall be provided in the applications and qualifications listed in Table 6.4.3.10.1.

~~Exception to 6.4.3.10.1: DDC is not required for systems using the simplified approach to compliance in accordance with Section 6.3.~~

N6.4.6 Duct and Plenum Insulation (modifications to Section 6.4.4.1.2)

All supply and return ducts and plenums installed as part of an HVAC air distribution system shall be thermally insulated in accordance with Table 6.8.2.

Exceptions to 6.4.4.1.2:

1. Factory-installed plenums, casings, or ductwork furnished as a part of HVAC equipment tested and rated in accordance with Section 6.4.1.

2. Ducts or plenums located in heated spaces, semiheated spaces, or cooled spaces.

3. ~~For runouts less than 10 ft in length to air terminals or air outlets, the rated R-value of insulation need not exceed R-3.5.~~

4. ~~Backs of air outlets and outlet plenums exposed to unconditioned space or indirectly conditioned space with face areas exceeding 5 ft2 need not exceed R-2; those 5 ft2 or smaller need not be insulated.~~

N6.5.1 Economizers (modifications to Section 6.5.1)

Each cooling system shall include an *air economizer* meeting the requirements of Sections 6.5.1.1 through 6.5.1.5.

Exceptions to 6.5.1:

1. Economizers are not required for Individual cooling systems serving zones that are also served with a dedicated outdoor air system and the following additional requirements are met:

    a. Zone controls shall cycle the heating/cooling-unit fans off when not providing required heating and cooling and shall limit fan power to 0.12 W/cfm of air delivered to the zone by the unit.

    b. Outdoor air shall be supplied by an independent ventilation system designed to provide no more than 110% of the minimum outdoor air to each individual occupied space as specified by Standard 62.1.

    c. The ventilation system shall have energy recovery with an enthalpy recovery ratio (ERR)

of 65% or more at heating design conditions in Climate Zones 3 through 8 and an ERR of 65% or more at cooling design conditions in Climate Zones 0, 1, 2, 3A, 3B, 4A, 4B, 5A, and 6A. In "A" climate zones, energy recovery shall include latent recovery.

d.   Where the ventilation system serves multiple zones, partial economizer cooling through an outdoor air bypass shall automatically reset the energy recovery leaving air temperature at 55F or 100% outdoor air bypass when a majority of zones require cooling and outdoor air temperature is below 70F. Recovery-wheel speed control or other means are permitted to allow partial economizer cooling. Partial economizer cooling is not required in a latent recovery outdoor air dehumidification mode.

2.   Economizers are not required for individual systems that serve residential spaces where the following additional requirements are met:

a.   Individual *system* cooling capacity is less than 65,000 Btu/h

b.   The ventilation system shall have energy recovery with an enthalpy recovery ratio (ERR) of 65% or more at heating design conditions in Climate Zones 3 through 8 and an ERR of 65% or more at cooling design conditions in Climate Zones 0, 1, 2, 3A, 3B, 4A, 4B, 5A, and 6A. In "A" climate zones, energy recovery shall include latent recovery.

N6.5.2 Zone Controls (modifications to Section 6.5.1.5)

Zone thermostatic control shall prevent

a.   reheating;

b.   recooling;

c.   mixing or simultaneously supplying air that has been previously mechanically heated and air that has been previously cooled, either by mechanical cooling or by economizer systems; and

d.   other simultaneous operation of heating and cooling systems to the same zone.

~~Exceptions to 6.5.2.1:~~

~~1.   Zones for which the volume of air that is reheated, recooled, or mixed is less than the larger of the following:~~

~~a.   For systems without DDC, 30% of the zone design peak supply.~~

~~b.   For systems with DDC, the minimum primary airflow rate required to meet the Simplified Procedure ventilation requirements of ASHRAE Standard 62.1 for the zone, permitted to be the average airflow rate as allowed by ASHRAE Standard 62.1.~~

~~c.   Any higher rate that can be demonstrated to the satisfaction of the authority having jurisdiction to reduce overall system annual energy use by offsetting reheat/recool energy losses through a reduction in outdoor air intake for the system.~~

~~d.   The airflow rate required to comply with applicable codes or accreditation standards, such as pressure relationships or minimum air change rates.~~

~~2.   Zones with DDC that comply with all of the following:~~

~~a.   The airflow rate in dead band between heating and cooling does not exceed the larger of the following:~~

~~i.   The minimum primary airflow rate required to meet the Simplified Procedure ventilation requirements of ASHRAE Standard 62.1 for the zone, permitted to be the average airflow rate as allowed by ASHRAE Standard 62.1.~~

~~ii.   Any higher rate that can be demonstrated, to the satisfaction of the authority having juris- diction, to reduce overall system annual energy use by offsetting reheat/recool energy losses through a reduction in outdoor air intake.~~

~~iii.   The airflow rate required to comply with applicable codes or accreditation~~

N6.5.3 Fan System Power and Efficiency (new Section 6.5.3.1)

6.5.3.1.1 Maximum Total Fan Fan System Power. Each fan system that includes at least one *fan* or *fan array* shall not exceed the limit shown in Table 6.5.3.1.1.

Table 6.5.3.1.1 Fan Power Limits by System Type (W/cfm)

	Fan System Airflow cfm		
HVAC System Type	<5000	5000-10000	10000
Heat Pumps/VRF/GSHP w/economizer	0.655	0.620	0.567
AC+Electric w/Economizer	0.704	0.662	0.605
Heat Pumps/VRF/GSHP w/o Economizer	0.389	0.392	0.360
AC+Electric w/o Economizer	0.438	0.434	0.398
DOAS w/ERV	0.684	0.643	0.589

6.5.3.1.2 Calculation of the Fan System Electrical Input Power. The fan system electrical input power is the sum of the fan electrical input power of each fan or fan array included in the fan system other than fans with fan electrical input power <1 kW. If variable-speed drives are used, their efficiency losses shall be included. Fan system input power shall be calculated with midlife filter pressure drop, which is the mean of the clean filter pressure drop and design final filter pressure drop. The fan electrical input power for each fan or fan array shall be determined using one of the following methods. There is no requirement to use the same method for all fans in a fan system:

a.   Use the default fan electrical input power in Table 6.5.3.1.2 for one or more of the fans.

b.   Use the fan electrical input power at fan system design conditions provided by the manufacturer of the fan, fan array, or equipment that includes the fan or fan array, calculated per a test procedure included in 10 CFR Part 430, 10 CFR Part 431, ANSI/AMCA Standard 210, ASHRAE Standard 51, AHRI Standard 430, AHRI Standard 440, or ISO 5801.

c.   Use the fan electrical input power provided by the manufacturer, calculated at fan system design conditions per one of the methods listed in ANSI/AMCA 208, Section 5.3.

d.   Use the fan nameplate electrical input power.

Table 6.5.3.1.2 Default Values for Fan Electrical Input Power Based on Motor Nameplate Horsepower

Motor Nameplate Horsepower	Variable-Speed Drive, kW	Without Variable-Speed Drive,kW
<1.0	0.96	0.89
>1.0 and ≤1.5	1.38	1.29
>1.5 and ≤2	1.84	1.72
>2 and ≤3	2.73	2.57
>3 and ≤5	4.38	4.17
>5 and ≤7.5	6.43	6.15
>7.5 and ≤10	8.46	8.13
>10 and ≤15	12.47	12.03
>15 and ≤20	16.55	16.04
>20 and ≤25	20.58	19.92
>25 and ≤30	24.59	23.77
>30 and ≤40	32.74	31.7
>40 and ≤50	40.71	39.46
>50 and ≤60	48.5	47.1
>60 and ≤75	60.45	58.87
>75 and ≤100	80.4	78.17

N6.5.4 Ventilation Design (modifications to Section 6.5.3.8)
The required minimum outdoor air rate is the larger of the minimum outdoor air rate or the minimum exhaust air rate required by Standard 62.1, Standard 62.2, Standard 170, or applicable codes or accreditation standards. Outdoor air ventilation systems shall comply with one of the following:

a. Design minimum system outdoor air provided shall not exceed 135% of the required minimum outdoor air rate.
b. Dampers, ductwork, and controls shall be provided that allow the system to supply no more than the required minimum outdoor air rate with a single set-point adjustment.
c. The system includes exhaust air energy recovery complying with Section 6.5.6.1

N6.5.5 Hydronic (Water Loop) Heat Pumps and Water-Cooled Unitary Air Conditioners (modifications to Section 6.5.4.5.2)
Hydronic heat pumps and water-cooled unitary air conditioners having a total pump system power exceeding 5 hp shall have controls and/or devices (such as variable-speed control) that will result in pump motor demand of no more than 30% of design wattage at 50% of design water flow.

N6.5.6 Nontransient Dwelling Units (modifications to Section 6.5.6.1.1)
Each fan system serving spaces other than nontransient dwelling units shall have an energy recovery system where the design supply fan airflow rate exceeds the value listed in Tables 6.5.6.1.2-1 and 6.5.6.1.2-2, based on the climate zone and percentage of outdoor air at design airflow conditions. Table 6.5.6.1.2-1 shall be used for all ventilation systems that operate less than 8000 hours per year, and Table 6.5.6.1.2-2 shall be used for all ventilation systems that operate 8000 or more hours per year.

Exceptions to 6.5.6.1.2:
1. Laboratory systems meeting Section 6.5.7.3.
2. Systems serving spaces that are not cooled and that are heated to less than 60°F.
3. Heating energy recovery where more than 60% of the outdoor air heating energy is

~~provided from site-recovered energy or on-site renewable energy in Climate Zones 5 through 8.~~

4~~3~~. Enthalpy recovery ratio requirements at heating design condition in Climate Zones 0, 1, and 2.

5~~4~~. Enthalpy recovery ratio requirements at cooling design condition in Climate Zones 3C, 4C, 5B, 5C, 6B, 7, and 8.

~~6.   Where the sum of the airflow rates exhausted and relieved within 20 ft of each other is less than 75% of the design outdoor airflow rate, excluding exhaust air that is~~

   ~~a.   used for another energy recovery system,~~
   ~~b.   not allowed by ASHRAE/ASHE Standard 170 for use in energy recovery systems with leak- age potential, or~~
   ~~c.   of Class 4 as defined in ASHRAE Standard 62.1.~~

7~~5~~. Systems in Climate Zones 0 through 4 requiring dehumidification that employ series energy recovery and have a minimum SERR of 0.40.

~~8.   Systems expected to operate less than 20 hours per week at the outdoor air percentage covered by Table 6.5.6.1.2-1.~~

9~~6~~. Indoor pool dehumidifiers meeting Section 6.5.6.4.

N6.5.7 Electric Heat Pumps (new Section 6.5.12)

6.5.12.1.1 Heat Pump Sizing for Space Heating. Electric heat pump space heating systems shall be sized to meet not less than the following:
1. The heating system design load or
2. The building heating load at 17F (-9.4°C) outdoor air temperature.

6.5.12.1.2 Heat Pump Secondary Heat. Secondary space heating by electric resistance or fuels shall be permitted where installed with heat pumps sized in accordance with Section 6.5.12.1.1 and where operated only when an electric heat pump, *on-site renewable energy* or *site-recovered energy* cannot provide the necessary heating energy to satisfy the thermostat setting.

N7 Changes to Section 7

   a. Add new Section 7.5.4, using the language in Section N7.1
   b. Add new Section 7.5.5, using the language in Section N7.2
   c. Add new Section 7.5.6, using the language in Section N7.3
   d. Add new Section 7.5.7 using the language in Section N7.4
   e. Add new Table 7.5.7 using the value in Table N7.4

N7.1 Use of Gas and Oil Water Heating Equipment. (new Section 7.5.4)
The use of gas and oil water heating equipment shall be limited to secondary and supplemental water heating according to Section 7.5.5.2.

N7.2 Heat Pump Water Heating Systems (new Section 7.5.5)

7.5.5.1 Heat Pump Sizing. Primary heat pump equipment shall be sized to meet no less than 100% of design end-use *service water heating* requirements at an ambient condition of 67.5°F db and no less than 50% of design end-use *service water heating* requirements at an ambient condition of 30°F db.

7.5.5.2 Non-heat pump water heating. Secondary water heating by electric resistance or fuels with a total output capacity no greater than the total electric heat pump output capacity shall be permitted where installed with heat pumps sized in accordance with Section 7.5.5.1 for the following uses:
   a. Temperature maintenance of heated-water circulation systems
   b. Defrost of compressor coils
   c. Heat tracing of piping for freeze protection or for temperature maintenance in lieu of recirculation of hot water.

d. Where an electric heat pump, *on-site renewable energy* or *site-recovered energy* cannot provide the necessary heating to meet the system load, provided the secondary heating and electric heat pump heating operate concurrently above an ambient temperature of 30°F.

N7.3 Recirculating Heat Pump Water Heating Systems (new Section 7.5.6)

Recirculating heat pump water heating systems shall comply with Sections 7.5.6.1 through 7.5.6.3

7.5.6.1 Primary Storage Tanks. The primary storage tank temperature setpoint shall be at least 135°F.

7.5.6.2 Recirculation Loop Tanks. The recirculation loop tank temperature setpoint shall be at least 10°F lower than the primary thermal storage tank temperature setpoint.

7.5.6.3 Single Pass Systems. For systems served by single pass primary heat pump(s), hot water return from a recirculation loop shall connect to a recirculation loop tank and shall not directly connect to the primary heat pump water heater inlet or the primary thermal storage tanks.

N7.4 Performance Requirements for Electric Water-Heating Equipment (new Section 7.5.7)

All primary water-heating equipment shall meet the criteria listed in Table 7.5.7.

Table N7.4 Performance Requirements for Electric Water-Heating Equipment (new Table 7.5.7)

Equipment Type	Size Category (Input)	Draw Pattern	Uniform Energy Factor (UEF) or Coefficient of Performance (COP)	Test Procedure
Air Source Heat Pump Water Heater	≤ 12 kW	Very small	$UEF = 1.9236 - (0.0011 \times V_r)$	10 CFR 430 Appendix E
		Low	$UEF = 2.0440 - (0.0011 \times V_r)$	
		Medium	$UEF = 2.1171 - (0.0011 \times V_r)$	
		High	$UEF = 2.2418 - (0.0011 \times V_r)$	
	> 12 kW	All	3.6 COP	10 CFR 431 Appendix E

a. V_r is the rated storage volume (in gallons), as determined pursuant to 10 CFR 429.17.

N8. CHANGES TO SECTION 8
   a. Modify Section 8.4.3.2 as edited in Section N8.1.1.1

   N8.1.1.1 Recording and Reporting. (modifies Section 8.4.3.2)

   The electrical energy use for all loads specified in Section 8.4.3.1 shall be recorded a minimum of every 15 minutes and reported at least hourly, daily, monthly, and annually. The data for each tenant space shall be made available to that tenant. In buildings with a digital control sys- tem installed to comply with Section 6.4.3.10, the energy use data shall be transmitted to the digital control system and graphically displayed. The system shall be capable of maintaining all data collected for a mini- mum of 36 months.

   Exceptions to 8.4.3.1 and 8.4.3.2:
   1. ~~Building less than 25,000 ft2.~~
   2. ~~Individual tenant spaces less than 10,000 ft2.~~
   3. Dwelling units.
   4. ~~Residential buildings with less than 10,000 ft2 of common area.~~
   5. Critical equipment and life-safety branches of NFPA 70, Article 517.

N9 Lighting. CHANGES TO SECTION 9
  a.   Replace Section 9.2, in its entirety, with the language in Section N9.1
  b.   Replace Section 9.3, in its entirety, with the language in Section N9.2

N9.1 Compliance Paths. (replaces Section 9.2)
Lighting systems and *equipment* shall comply with Sections 9.1 "General"; 9.7 "Submittals"; 9.9 "Verification, Testing and Commissioning"; and:
(a). Section 9.3, "Zero-Net Operational Carbon Building Method Compliance Path".
(b). Section 9.4, "Mandatory Provisions," and Normative Appendix G, "Performance Rating Method."

N9.2 Zero-Net Operational Carbon Building Lighting Compliance Path (replaced section 9.3)
The Zero-Net Operational Carbon Building Lighting Compliance Method contains the requirements for interior lighting in Section N9.2.1 and exterior lighting in Section N9.2.2. Interior and exterior wattage allowances shall be calculated and complied with separately.
N9.2.1 Zero-Net Operational Carbon Building Method of Calculating Interior Lighting Power Allowance. (replaces Section 9.3.1)

Buildings (new and *alterations*) shall comply with the *interior lighting power allowance* and control requirements of Table N9.2.1-1, Table N9.2.1-2, Table N9.2.1-3, Table N9.2.1-4, Table N9.2.1-5, and Table N9.2.1-6.

The *interior lighting allowance* using the Zero-Net Operational Carbon Building Method shall be determined as follows.
  a.   Determine the applicable *building* type from Table N9.2.1-1, Table N9.2.1-2, Table N9.2.1-3, Table N9.2.1-4, Table N9.2.1-5, and Table N9.2.1-6 and corresponding *LPD* value for each space type.
  b.   Determine the *gross lighted floor area* in ft^2 (m^2) of the *building* interior space.
  c.   Multiply the *gross lighted floor area* in ft^2 (m^2) of the *building* interior space times the *LPD* value to determine the *interior lighting power allowance* for the *building* interior space.
  d.   Multiply the *gross lighted floor area* in ft^2 (m^2) of the parking garage times the *LPD* value to determine the *interior lighting power allowance* for the parking garage.
  e.   *Building* interior space and parking garage *interior lighting power allowances* shall not be combined or traded between space types.

Table N9.2.1-1 Zero-Net Operational Carbon Building Method for Office Buildings (replaces Table 9.3.1-1)

Interior office LPD: 0.53 W/ft^2 (5.7 W/m^2)	
Interior Space Type	**Controls**
All *spaces* in office *buildings*	All lighting shall be *automatically* controlled to turn off when individual *spaces* are either unoccupied or scheduled to be unoccupied. *General lighting* shall be *automatically* reduced via *continuous dimming* in response to available daylight where total *general lighting* power in any *space* is greater than 75 W for any of the daylight area types: *primary sidelighted area, secondary sidelighted area, daylight area under skylights,* or *daylight area under roof monitors.* (**Exception:** Lighting load not exceeding 0.02 W/ft^2 multiplied by the gross lighted area of the *space* shall be permitted to operate at all

times.)	
Office *spaces* ≤150 ft^2, classrooms, conference rooms, meeting rooms, training rooms, storage rooms, and break rooms	These *spaces* shall be controlled by *manual*-ON *occupant sensors*.
Office *spaces* >150 ft^2 and restrooms	These *spaces* shall be controlled by *occupancy sensors*.
Stairwells and corridors in office *buildings*	These *spaces* shall be controlled by *occupancy sensors* that reduce the lighting power by a minimum of 50% when no activity is detected for not longer than 15 minutes and be controlled to turn off when the *building* is either unoccupied or scheduled to be unoccupied.
All other *spaces* in office *buildings*	Each *space* shall have a *manual control* device that allows the occupant to reduce lighting power by a minimum of 50% and to turn the lighting off.
Parking garages *LPD*: 0.12 W/ft^2 (1.3 W/m^2) for the interior parking floors. Uncovered floors of a garage shall comply with the requirements of Table N9.2.2-1 for parking lots.	All lighting shall be controlled by *occupancy sensors*. Controls shall reduce the power by a minimum of 50% when no activity is detected for not longer than 15 minutes. No device shall *control* more than 3600 ft^2 (334 m^2). The power to any *luminaire* within 20 ft (6 m) of perimeter *wall* openings totaling at least 24 ft^2 (2.2 m^2) shall be *automatically* reduced through *continuous dimming* in response to available daylight.

Table N9.2.1-2 Zero-Net Operational Carbon Building Method for Retail Buildings (replaces Table 9.3.1-2)

Interior Retail *LPD* 0.66 W/ft² (7.1 W/m²)	
Interior Space Type	**Controls**
All *spaces* in retail *buildings except sales areas and parking garages*	All lighting shall be *automatically* controlled to turn off when individual *spaces* are either unoccupied or scheduled to be unoccupied. *General lighting* shall be *automatically* reduced via *continuous dimming* in response to available daylight where total *general lighting* power in any *space* is greater than 75 W for any of the daylight area types: *primary sidelighted area, secondary sidelighted area, daylight area under skylights,* or *daylight area under roof monitors.* (**Exception:** Lighting load not exceeding 0.02 W/ft² multiplied by the gross lighted area of the *space* shall be permitted to operate at all times.)
Sales area	These *spaces* shall be *automatically* controlled to • reduce the *general lighting* power by a minimum of 75% during nonbusiness hours, • to turn off all lighting other than *general lighting* during nonbusiness hours, and • by *continuous daylight dimming* controls in *spaces* with *toplighting.*
Stock rooms, dressing/fitting rooms, locker rooms, and restrooms	These *spaces* shall be controlled by; auto-ON or *manual*-ON *occupancy sensors.*
Office *spaces*, conference rooms, meeting rooms, training rooms, storage rooms, break rooms, and utility *spaces*	These *spaces* shall be controlled by; *manual*-ON *occupancy sensors.*
Stairwells and corridors in retail *buildings*	These *spaces* shall be controlled by *occupancy sensors* that reduce the lighting power by a minimum of 50% when no activity is detected for not longer than 15 minutes and be controlled to turn off when the *building* is either unoccupied or scheduled to be unoccupied.
All other *spaces* in retail *buildings*	Each *space* shall have a *manual control device* that allows the occupant to reduce lighting power by a minimum of 50% and to turn the lighting off.
Parking garages *LPD*: 0.12 W/ft² (1.3 W/m²) for the interior parking floors. Uncovered floors of a garage shall comply with the requirements of Table N9.2.2-1 for parking lots.	All lighting shall be controlled by *occupant sensors*. Controls shall reduce the power by a minimum of 50% when no activity is detected for not longer than 15 minutes. No device shall *control* a more than 3600 ft² (334 m²). The power to any *luminaire* within 20 ft (6 m) of perimeter *wall* openings totaling at least 24 ft² (2.2 m²) shall be *automatically* reduced through *continuous dimming* in response to available daylight.

Table N9.2.1-3 Zero-Net Operational Carbon Building Method for School Buildings (Replaces Table 9.3.1-3)

Interior School *LPD*: 0.60 W/ft^2 (6.5 W/m^2)	
Interior Space Type	**Control*s***
All *spaces* in school *buildings* except parking garages	All lighting shall be *automatically* controlled to turn off when individual *spaces* are either unoccupied or scheduled to be unoccupied. *General lighting* shall be *automatically* reduced via *continuous dimming* in response to available daylight where total *general lighting* power in any *space* is greater than 75 W for any of the daylight area types: *primary sidelighted area, secondary sidelighted area, daylight area under skylights,* or *daylight area under roof monitors*. (**Exception:** Lighting load not exceeding 0.02 W/ft^2 multiplied by the gross lighted area of the *space* shall be permitted to operate at all times.)
Classrooms, offices *spaces*, conference rooms, meeting rooms, library, storage rooms, and break rooms	These *spaces* shall be controlled by *manual*-ON *occupancy sensors*.
Gymnasiums and cafeterias	These *spaces* shall be controlled by *occupancy sensors*.
Restrooms	These *spaces* shall be controlled by *occupancy sensors*.
All other *spaces* in school *buildings*	Each *space* shall have a *manual control device* that allows the occupant to reduce lighting power by a minimum of 50% and to turn the lighting off.
Stairwells and corridors in school *buildings* and parking garages	These *spaces* shall be controlled by *occupancy sensors* that reduce the lighting power by a minimum of 50% when no activity is detected for not longer than 15 minutes and be controlled to turn off when the *building* is either unoccupied or scheduled to be unoccupied.
Parking garages *LPD*: 0.12 W/ft^2 (1.3 W/m^2) for the interior parking floors. Uncovered floors of a garage shall comply with the requirements of Table N9.2.2-1 for parking lots.	All lighting shall be controlled by *occupancy sensors*. Controls shall reduce the power by a minimum of 50% when no activity is detected for not longer than 15 minutes. No device shall *control* a more than 3600 ft^2 (334 m^2). The power to any *luminaire* within 20 ft (6 m) of perimeter *wall* openings totaling at least 24 ft^2 (2.2 m^2) shall be *automatically* reduced through *continuous dimming* in response to available daylight.

Table N9.2.1-4 Zero-Net Operational Carbon Building Method for Hotel Buildings (not including guest rooms)

Interior multi-family LPD: 0.44 W/ft^2 (4.7 W/m^2)	
Interior Space Type	**Controls**
All *spaces* in hotel *buildings* except *parking garages*	All lighting shall be *automatically* controlled to turn off when individual *spaces* are either unoccupied or scheduled to be unoccupied. *General lighting* shall be *automatically* reduced via *continuous dimming* in response to available daylight where total *general lighting* power in any *space* is greater than 75 W for any of the daylight area types: *primary sidelighted area, secondary sidelighted area, daylight area under skylights,* or *daylight area under roof monitors.* (**Exception:** Lighting load not exceeding 0.02 W/ft^2 multiplied by the gross lighted area of the *space* shall be permitted to operate at all times.)
Office *spaces* ≤150 ft^2, conference rooms, meeting rooms, training rooms, storage rooms, and break rooms	These *spaces* shall be controlled by *manual*-ON *occupant sensors*.
Restrooms	These *spaces* shall be controlled by *occupant sensors*.
Stairwells and corridors in hotel *buildings*	These *spaces* shall be controlled by *occupant sensors* that reduce the lighting power by a minimum of 50% when no activity is detected for not longer than 15 minutes and be controlled to turn off when the *building* is either unoccupied or scheduled to be unoccupied.
All other *spaces* in hotel *buildings*	Each *space* shall have a *manual control* device that allows the occupant to reduce lighting power by a minimum of 50% and to turn the lighting off. *General lighting* shall be *automatically* reduced via *continuous dimming* in response to available daylight where total *general lighting* power in any *space* is greater than 75 W for any of the daylight area types: *primary sidelighted area, secondary sidelighted area, daylight area under skylights,* or *daylight area under roof monitors.*
Parking garages *LPD*: 0.12 W/ft^2 (1.3 W/m^2) for the interior parking floors. Uncovered floors of a garage shall comply with the requirements of Table N9.2.2-1 for parking lots.	All lighting shall be controlled by *occupant sensors*. Controls shall reduce the power by a minimum of 50% when no activity is detected for not longer than 15 minutes. No device shall *control* more than 3600 ft^2 (334 m^2). The power to any *luminaire* within 20 ft (6 m) of perimeter *wall* openings totaling at least 24 ft^2 (2.2 m^2) shall be *automatically* reduced through *continuous dimming* in response to available daylight.

Table N9.2.1-5 Zero-Net Operational Carbon Building Method for Multi-Family Buildings

Interior multi-family LPD: 0.39 W/ft^2 (4.2 W/m^2)	
Interior Space Type	**Controls**
All *spaces* in multi-family *buildings* except *dwelling units*	All lighting shall be *automatically* controlled to turn off when individual *spaces* are either unoccupied or scheduled to be unoccupied. (**Exception:** Lighting load not exceeding 0.02 W/ft^2 multiplied by the gross lighted area of the *space* shall be permitted to operate at all times.)
Office *spaces* ≤150 ft^2, conference rooms, meeting rooms, training rooms, storage rooms, and break rooms	These *spaces* shall be controlled by *manual*-ON *occupant sensors*.
Office *spaces* >150 ft^2 and restrooms	These *spaces* shall be controlled by *occupant sensors*.
Stairwells and corridors in multi-family *buildings*	These *spaces* shall be controlled by *occupant sensors* that reduce the lighting power by a minimum of 50% when no activity is detected for not longer than 15 minutes and be controlled to turn off when the *building* is either unoccupied or scheduled to be unoccupied.
Dwelling Units Lamp and Luminaire Efficacy. At least 75% of the permanently installed luminaires shall use lamps with an efficacy of at least 90 lm/W or have a total luminaire efficacy of at least 75 lm/W.	Interior Lighting Controls. Fifty percent (50%) of permanently installed interior luminaires shall be controlled with dimmers or shall automatically be shut off within 20 minutes of all occupants leaving.
All other *spaces* in multi-family *buildings* except parking garages	Each space shall have a manual control device that allows the occupant to reduce lighting power by a minimum of 50% and to turn the lighting off. *General lighting* shall be *automatically* reduced via *continuous dimming* in response to available daylight where total *general lighting* power in any *space* is greater than 75 W for any of the daylight area types: *primary sidelighted area, secondary sidelighted area, daylight area under skylights,* or *daylight area under roof monitors*.
Parking garages *LPD*: 0.13 W/ft^2 (1.3 W/m^2) for the interior parking floors. Uncovered floors of a garage shall comply with the requirements of Table N9.2.2-1 for parking lots.	All lighting shall be controlled by *occupant sensors*. Controls shall reduce the power by a minimum of 50% when no activity is detected for not longer than 15 minutes. No device shall *control* more than 3600 ft^2 (334 m^2). The power to any *luminaire* within 20 ft (6 m) of perimeter *wall* openings totaling at least 24 ft^2 (2.2 m^2) shall be *automatically* reduced through *continuous dimming* in response to available daylight.

Table N9.2.1-6 Zero-Net Operational Carbon Building Method for Warehouse Buildings

Interior warehouse LPD: 0.47 W/ft^2 (5.1 W/m^2)	
Interior Space Type	**Controls**
All *spaces* in warehouse *buildings* except *parking garages*	All lighting shall be *automatically* controlled to turn off when individual *spaces* are either unoccupied or scheduled to be unoccupied. (**Exception:** Lighting load not exceeding 0.02 W/ft^2 multiplied by the gross lighted area of the *space* shall be permitted to operate at all times.)
Office *spaces* ≤150 ft^2, conference rooms, meeting rooms, training rooms, small storage rooms, and break rooms	These *spaces* shall be controlled by *manual*-ON *occupancy sensors*.
Office *spaces* >150 ft^2 and restrooms	These *spaces* shall be controlled by *occupancy sensors*.
Warehouse / bulk storage *spaces* in warehouse *buildings*	These *spaces* shall be controlled to: • reduce lighting by a minimum of 50% when not activity is detected for not longer than 15 minutes, and • by *continuous daylight dimming* controls in *spaces* with toplighting or sidelighting.
Stairwells and corridors in warehouse *buildings*	These *spaces* shall be controlled by *occupancy sensors* that reduce the lighting power by a minimum of 50% when no activity is detected for not longer than 15 minutes and be controlled to turn off when the *building* is either unoccupied or scheduled to be unoccupied.
All other *spaces* in warehouse *buildings*	Each *space* shall have a *manual control* device that allows the occupant to reduce lighting power by a minimum of 50% and to turn the lighting off.
Parking garages *LPD*: 0.12 W/ft^2 (1.3 W/m^2) for the interior parking floors. Uncovered floors of a garage shall comply with the requirements of Table N9.2.2-1 for parking lots.	All lighting shall be controlled by *occupancy sensors*. Controls shall reduce the power by a minimum of 50% when no activity is detected for not longer than 15 minutes. No device shall *control* more than 3600 ft^2 (334 m^2). The power to any *luminaire* within 20 ft (6 m) of perimeter *wall* openings totaling at least 24 ft^2 (2.2 m^2) shall be *automatically* reduced through *continuous dimming* in response to available daylight.

N9.2.2 Zero-Net Operational Carbon Building Method of Calculating Exterior Lighting Power Allowance. (replaces Section 9.3.2)

For all *building* types listed in Section N9.2, exterior areas shall comply with *exterior lighting power allowance* and control requirements of Table N9.2.2-1.

The *exterior lighting allowance* using the Zero-Net Operational Carbon Building Method shall be determined as follows.
   a. Determine the applicable simplified exterior area(s) type from Table N9.2.2-1 and corresponding *LPD* value.

b. The exterior area in ft² (m²) is the area designed to be illuminated.
c. Multiply each exterior area in ft² times the *LPD* value to determine the ex*terior lighting power allowance* of each area.
d. The total *exterior lighting power allowance* for all exterior *building* applications is the sum of the base allowance and all individual area lighting power allowances.

Table N9.2.2-1 Zero-Net Operational Carbon Building Method for Building Exteriors (replaces Table 9.3.2)

Exterior Area Type	Exterior Lighting Power Allowance [a]	Controls
All exterior areas		All lighting shall be *automatically* controlled to shut off the lighting when daylight is available.
Base allowance of 200 W which may be used in any exterior area in addition to the *exterior lighting power allowance*		*Luminaires* shall be turned off or the power reduced by a minimum of 75% during nonoperating hours.
Parking lots and drives	0.028 W/ft²	*Luminaires* shall be turned off or the power reduced by a minimum of 75% during nonoperating hours.
Parking lots with canopies	0.028 W/ft²	*Luminaires* shall be controlled to reduce the power by at least 50% when no activity is detected for not longer than 15 minutes.
Façade lighting	0.11 W/ft²	*Luminaires* shall be turned off or the power reduced by a minimum of 75% during nonoperating hours.
Walkways and ramps	0.42 W/linear ft	*Luminaires* shall be turned off or the power reduced by a minimum of 75% during nonoperating hours.
Roof terraces, special feature areas, and plazas	0.07 W/ft²	*Luminaires* shall be turned off or the power reduced by a minimum of 75% during nonoperating hours.
Landscape	0.028 W/ft²	*Luminaires* shall be turned off or the power reduced by a minimum of 75% during nonoperating hours.
Entry doors	10 W/linear ft	*Luminaires* shall be turned off or the power reduced by a minimum of 75% during nonoperating hours.
Stairs	Exempt	No additional controls required.
All other areas not listed	0.10 W/ft²	*Luminaires* shall be turned off or the power reduced by a minimum of 75% during nonoperating hours.

a. For *buildings* in Lighting Zone 1, as defined in Table 9.5.3-1, multiply *exterior lighting power allowance* by 0.4.
   For *buildings* in Lighting Zone 2, as defined in Table 9.5.3-1, multiply *exterior lighting power allowance* by 0.7.
   For *buildings* in Lighting Zone 4, as defined in Table 9.5.3-1, multiply *exterior lighting power allowance* by 1.4.

N10 Other Equipment. Changes to Section 10

(reserved)

N11 Changes to Section 11
    a.   Replace Section 11.5.1, in its entirety, with the language in Section N11.1

N11.1 Prescriptive Compliance Paths. (replaces Section 11.5.1)
    a.   *Buildings achieve at least 12 credits from* 11.5.2.8.

N13 Changes to Section 13 (add to Section 13)

Reference		Section
California Air Resources Board		
LCFS 22-02	Low Carbon Fuel Standard	4.2.1.1
U.S. Environmental Protection Agency		
40 CFR Part 80 - 2023	Renewable Fuel Standard	4.2.1.1

N14 Changes to Appendix C
    a.   Add a new Section, Section C1.1, with the language in Section N14.1
    b.   Replace Section C1.5, in its entirety, with the language in Section N14.2
    c.   Modify Section C1.2.7 as edited in Section N14.3
    d.   Replace Section C2.9, in its entirety, with the language in Section N14.4
    e.   Replace Section C3.3, in its entirety, with the language in Section N14.5
    f.   Modify Section C3.4 as edited in Section N14.6
    g.   Modify Section C3.5.3 as edited in Section N14.7
    h.   Modify Section C3.5.5.3 as edited in Section N14.8
    i.   Replace Section C3.5.5.4, in its entirety, with the language in Section N14.9
    j.   Modify Section C3.5.7 as edited in Section N14.10
    k.   Replace Section C3.6, in its entirety, with the language in Section N14.11
    l.   Add new tables, Tables C3.6.1, C3.6.2 and C3.6.3, according to Tables N14.11.1, N14.11.2 and N14.11.3

N14.1 At Space Level (replaces Section C1.1.1)
Within each *building* area type, the total area required to have minimum skylight fenestration area according to Section 5.5.4.2.3

N14.2 For Continuous Air Barriers (replaces Section C1.5)
The *air leakage* rate of the *building envelope* ($I_{75}Pa$) at a pressure differential of 75 Pa (0.30 in. of water).

N14.3 For Thermal Bridges Identified in Section 5.5.5 (modifies Section C1.2.7)
Thermal bridge inputs and specifications shall be individually identified for the *thermal bridges* indicated in Section 5.5.5, including the class, lineal distance and *psi-factor* of *linear thermal bridges* and class, quantity and *chi-factor* of *point thermal bridges*. and according to one of the following:
    a.   Where the *thermal bridge* complies with one of the requirements of Sections 5.5.5.1 through 5.5.5.5, no additional inputs shall be required.
    b.   Where the *thermal bridge* does not comply with one or more of the requirements of Sections 5.5.5.1 through 5.5.5.5, the *linear thermal bridge* type or *point thermal bridge* type,

~~length or count, the assembly interrupted by this *thermal bridge*, and the *psi-factor* or *chi-factor* shall be specified. The input shall be a user-defined value or one of the unmitigated values from Table A10.1.~~
~~Where Section 5.5.5 and Sections 5.5.5.1 through 5.5.5.5, including exceptions, are not applicable to the *thermal bridge,* no additional inputs shall be required.~~

N14.4 (replaces Section C2.9)
List the *thermal bridges*, the proposed *psi-factors*, proposed *chi-factors*, and source information.

N14.5 (replaces Section C3.3)
(reserved)

N14.6 Compliance Calculations (modifies Section C3.4)
The *proposed envelope performance factor* and *base envelope performance factor* shall be calculated using the same
   a.   *simulation program,* and
   b.   climatic data~~, and~~
   ~~c.   purchased energy rates~~

N14.7 Daylight Area and Photosensor Location (modifies Section C3.5.3)
Daylight areas and photosensors shall not be modeled in residential zones. In each nonresidential zone, where daylighting is required by Section 9.2, daylight areas and photosensor locations shall be modeled in accordance with the following:
a.   For each nonresidential zone associated with vertical fenestration, the daylight area shall be modeled as directly adjacent to the vertical fenestration with a width equal to the width of the vertical fenestration and a depth equal to the head height of the vertical fenestration.
b.   In each nonresidential zone associated with skylights, the daylight area under skylights shall be modeled as bounded, in each direction, by the edge of the skylight area plus 10 ft or the distance to the edge of the zone, whichever is less.
c.   For each daylight area associated with vertical fenestration, a photosensor shall be modeled as located at the center of the width of the daylight area, at the depth of the daylight area and at a height of 3 ft.
d.   For each daylight area associated with a skylight, a photosensor shall be modeled as located at the center of the horizontal plane of the skylight and at a height of 5 ft.

N14.8 Air Leakage (modifies Section C3.5.5.3)
The *air leakage* rate of the *building envelope* (I_{75Pa}) at a pressure differential of 75 Pa (0.30 in. of water) shall be modeled in units of ~~0.35~~ cfm/ft^2 of *building envelope* area.~~ when *air leakage* compliance is based on whole-*building* pressurization testing and shall be 0.45 cfm/ft^2 of *building envelope* area when *air leakage* compliance is based on verification.~~ The *air leakage* of the *building envelope* shall be converted to the appropriate units to describe the *air leakage* as a function of the area of *walls* that separate *conditioned spaces* and *semiheated spaces* from the exterior as follows:

$$I_{AGW} = 0.112 \times I_{75Pa} \times S/A_{AGW}$$

   where
   I_{75Pa} =   *air leakage* rate of the *building envelope* (cfm/ft^2) at a fixed *building* pressure differential of 75 Pa (0.30 in. of water)
   S =   total area of the *building envelope* (ft^2) including the lowest *floor*, any *below-grade walls* or *above-grade walls*, and *roof* (including *vertical fenestration* and *skylights*)
   I_{AGW} =   adjusted *air leakage* rate of the *building envelope* (cfm/ft^2) at a reference wind speed of 10 mph and relative to the area of the *above-grade walls*
   A_{AGW} =   the total area of *above-grade walls* that comprise the *building envelope*, ft^2

Exception to C3.5.5.3: If the *simulation program* cannot simulate *air leakage* as a function of the area of *walls* that separate *conditioned spaces* and *semiheated spaces* from the exterior, the *air leakage* of the *building envelope* shall be converted to the appropriate units to describe the *air leakage* as a function of *gross floor area* as follows:

$$I_{FLR} = 0.112 \times I_{75Pa} \times S/A_{FLR}$$

where

I_{FLR} = adjusted *air leakage* rate of the *building envelope* (cfm/ft^2) at a reference wind speed of 10 mph and relative to the *gross floor area*

A_{FLR} = *gross floor area*, ft^2

N14.9 Thermal Bridges (replaces Section C3.5.5.4)
Linear and *point thermal bridges* in the *proposed design* shall be entered as individual *thermal bridge* inputs of length or count. *Thermal bridge* psi factors and chi factors shall be specified utilizing values calculated in accordance with Appendix A or shall be the unmitigated values from Table A10.1.

N14.10 Lighting (modifies Section 3.5.7)
The modeled lighting power shall be determined using the *lighting power density* allowances in ~~Table 9.5.1~~ Section 9.2 for the applicable *building* area type. The modeled lighting power shall be adjusted in accordance with the lighting schedule in the *building envelope trade-off schedules and loads* for the applicable *building* area type. Fifty percent (50%) of lighting in *daylight areas* shall be modeled with *continuous daylight dimming* controls such that when sufficient daylight is available at the corresponding *photosensor*, lighting power is reduced to maintain a minimum 50 fc for *conditioned spaces* and 30 fc for *semiheated spaces*. The minimum light output for the *continuous daylight dimming* shall be 6% of peak light output. Power input shall be modeled as 20% of lighting power at the minimum light output and scaled linearly to 100% of lighting power at peak light output.

N14.11 Calculation of Base Envelope Performance Factor. (replaces Section C3.6)The simulation model for calculating the *base envelope performance factor* shall modify the simulation model for calculating the *proposed envelope performance* factor as follows:

a. All *opaque* assemblies shall conform with assemblies detailed in Normative Appendix A and shall match the appropriate assembly maximum *U*-factors specified in Section 5.5.3. Assembly types shall be as follows:

    i.   *Roofs* with insulation entirely above deck (A2.2).
    ii. *Above-grade walls—steel-framed* (A3.3).
    i.   *Below-grade walls*—concrete block (A4).
    iv. *Floors—steel-joist* (A5.3).
    v.   *Slab-on-grade floors* shall match the *F-factor* for unheated slabs from the same tables (A6).
    vi. *Opaque doors* shall conform to the U-factor requirements for the corresponding construction types (A7)

b. All *thermal bridges* shall be modeled in the base building either as individual assemblies conforming with Appendix A10.1 or using methods detailed in Normative Appendix A10.2. *Psi-factors* for *Conditioned Spaces* in *Climate Zones* 4 through 8 and *Semiconditioned Spaces* in *Climate Zones* 7 and 8 shall be equal to the default values listed in Table A10.1. *Psi-factors* for *Conditioned Spaces* in *Climate Zones* 0 through 3 and *Semiconditioned Spaces* in *Climate Zones* 0 through 6 shall be equal to the unmitigated values listed in Table A10.1.

    i.   *Psi-Factors* of *linear thermal bridges* listed below shall shall have be modeled using the same lineal distance as the *proposed building*. Assembly types shall be as listed below for each *thermal bridge* in the *proposed building*:

        (1) *Roofs* edges as described in Section 5.5.5.1.1—*Steel framed* and *metal buildings:*roof edge
        (2) Parapet as described in Section 5.5.5.1.2—*Steel framed* and *metal buildings:*Parapet
        (3) Intermediate floor to *wall* intersection as described in Section 5.5.5.2.1—*Steel framed* and *metal buildings:*Intermediate floor to *wall* intersection

(4) Intermediate floor balcony to opaque *wall* intersection as described in Section 5.5.5.2.2—*Steel framed* and *metal buildings:*Intermediate floor to *wall* intersection

(5) Intermediate floor balcony in contact with *vertical* fenestration as described in Section 5.5.5.2.2—*Steel framed* and *metal buildings:*Intermediate floor to *wall* intersection

ii. *Psi-factors* of *linear thermal bridges* and *chi-factors* of *point thermal bridges* listed below shall be modeled according to the allowances listed in Table C3.6.1. Allowances shall be distributed uniformly across all opaque surfaces. Assembly types shall be as listed below::

(1) Cladding support as described in Section 5.5.5.3—*Steel framed* and *metal buildings:*Cladding support

(2) *Wall* to *vertical fenestration* intersection as described in Section 5.5.5.4—*Steel framed* and *metal buildings:Wall* to *vertical fenestration* intersections

iii. Individual *point thermal bridges* and *linear thermal bridges* covered by Section 5.5.5.5 shall be modeled according to the following:

(1) For *roofs* of *conditioned spaces* in *climate zones* 4 through 8 and *semiconditioned spaces* in *climate zones* 7 and 8:

$$TB_{roof} = 347\ Btu \cdot in/(ft^2 \cdot h \cdot °F) \times 0.003\% \times gross\ roof\ area/T_{roof}$$

Where
TB_{roof} = the *base* overall *thermal bridge* allowance for *roofs*
T_{roof} = the overall thickness of the *base roof* assembly calculated using component thickness assumptions in Appendix A and assuming a continuous insulation performance of R-4 per inch.

(2) For *above grade walls* of *conditioned spaces* in *climate zones* 4 through 8 and *semiconditioned spaces* in *climate zones* 7 and 8:

$$TB_{wall} = 347\ Btu \cdot in/(ft^2 \cdot h \cdot °F) \times 0.003\% \times gross\ above\ grade\ wall\ area/T_{wall}$$

Where
TB_{wall} = the *base* overall *thermal bridge* allowance for *above grade walls*
T_{wall} = the overall thickness of the *base wall* assembly calculated using component thickness assumptions in Appendix A and assuming a continuous insulation performance of R-4 per inch.

(3) For *roofs* of *conditioned spaces* in *climate zones* 0 through 3 and *semiconditioned spaces* in *climate zones* 0 through 6:

$$TB_{roof} = \frac{\chi_u}{\chi_d} \times 347\ Btu \cdot in/(ft^2 \cdot h \cdot °F) \times 0.003\% \times gross\ roof\ area/T_{roof}$$

Where
TB_{roof} = the *base* overall *thermal bridge* allowance for *roofs*
χ_u = the unmitigated *chi-factor* from Table A10.1 for the category of *Steel framed* and *metal buildings:*Other element and assembly intersections.
X_d = the default *chi-factor* from Table A10.1 for the category of *Steel framed* and *metal buildings:*Other element and assembly intersections.
T_{wall} = the overall thickness of the *base roof* assembly calculated using component thickness assumptions in Appendix A and assuming a continuous insulation performance of R-4 per inch.

(4) For *above grade walls* of *conditioned spaces* in *climate zones* 0 through 3 and *semiconditioned spaces* in *climate zones* 0 through 6:

$$TB_{wall} = \frac{\chi_u}{\chi_d} \times 347 \; Btu \cdot in/(ft^2 \cdot h \cdot °F) \times 0.003\% \times gross \; above \; grade \; wall \; area/T_{wall}$$

Where

TB_{wall}	= the *base* overall *thermal bridge* allowance for *above grade walls*
χ_u	= the unmitigated *chi-factor* from Table A10.1 for the category of *Steel framed* and *metal buildings:*Other element and assembly intersections.
χ_d	= the default *chi-factor* from Table A10.1 for the category of *Steel framed* and *metal buildings:*Other element and assembly intersections.
T_{wall}	= the overall thickness of the *base wall* assembly calculated using component thickness assumptions in Appendix A and assuming a continuous insulation performance of R-4 per inch.

Table N14.11.1 (new Table C3.6.1) **Base Building Allowances for Thermal Bridges**

Building Type	Type of *Thermal Bridge*	
	Wall to *vertical fenestration* intersection (lineal ft per ft² of above grade wall)	Cladding Support: (lineal ft per ft² of above grade wall)
Hotel/motel (≤75 rooms)	0.096	0.008
Hotel/motel (>75 rooms)	0.078	0.004
Office (≤5000 ft2)	0.145	0
Office (5000 to 50,000 ft2)	0.159	0.015
Office (>50,000 ft2)	0.159	0.008
Retail (stand alone)	0.036	0
Retail (strip mall)	0.045	0
School (primary)	0.159	0
School (secondary and university)	0.16	0.014
Warehouse (nonrefrigerated)	0.004	0
Midrise Multifamily	0.127	0.017
Highrise Multifamily	0.193	0.019
All Other	0.159	0.015

c. The exterior *roof* surfaces shall be modeled with a solar reflectance and thermal emittance as required in Section 5.5.3.1.4(a), without use of exceptions. All other *roofs* shall be modeled be modeled with a reflectance of 0.30 and a thermal *emittance* of 0.90. The *above-grade wall* surfaces of *buildings* shall be modeled with a solar reflectance and thermal *emittance* as required in Section 5.5.3.2.2 and Section 5.5.3.2.2(a), with use of exceptions. All other *above-grade walls* shall be modeled with a solar reflectance of 0.25 and a thermal *emittance* of 0.90.

d. *Fenestration* shall be assumed to be flush with the *wall* or roof. *Fenestration U-factor* and *SHGC* shall be the maximum allowed for the appropriate *class of construction, space conditioning category,* and climate zone in accordance with Section 5.5.4. Where there is no *SHGC* requirement, the *SHGC* shall be equal to 0.40 for all *vertical fenestration* and 0.55 for *skylights*. The *VT* for *fenestration* in the base envelope design shall be equal to 1.10 times the *SHGC*. *Vertical fenestration area* shall be modeled according to Table C3.6.2 and shall be distributed in equal proportions across all above grade walls. *Skylights* shall only be modeled in the base envelope design as required by Section 5.5.4.2.3.

e. Manually operated interior shades shall be modeled on all *vertical fenestration* as described in Section C3.5.5.1. Permanent shading devices, such as fins and overhangs, shall not be modeled.

f. *Daylight areas* and *photosensor* locations shall be modeled as described in Section C3.5.3.

g. The *air leakage* rate of the *building envelope* ($I_{75}Pa$) at a fixed *building* pressure differential of 75 Pa (0.30 in. of water) shall be 0.35 cfm/ft^2 and shall be converted to units for the *energy* model using the same method as the *proposed envelope performance factor*.

h. Opaque door area shall be modeled according to Table C3.6.3 and shall be distributed in equal proportions across all above grade walls.

i. The base building performance shall be generated by simulating the building with its actual orientation and again after rotating the entire building 90, 180, and 270 degrees, then averaging the results of the four simulations.

Table N14.11.2 (new Table C3.6.2) **Base Building Envelope *Vertical Fenestration* Area**

Building Area Types	Base Building Vertical Fenestration Area as a Percentage of Gross Above-Grade-Wall Area		
	Fixed	Operable	Total
Hotel/motel (≤75 rooms)	22.1%	1.9%	24%
Hotel/motel (>75 rooms)	31.3%	2.7%	34%
Office (≤5000 ft^2)	18.4%	0.6%	19%
Office (5000 to 50,000 ft^2)	30.0%	1.0%	31%
Office (>50,000 ft^2)	38.8%	1.2%	40%
Retail (stand alone)	10.8%	0.2%	11%
Retail (strip mall)	19.6%	0.4%	20%
School (primary)	19.7%	2.3%	22%
School (secondary and university)	19.7%	2.3%	22%
Warehouse (nonrefrigerated)	5.8%	0.2%	6%
Midrise Multifamily	30.2%	9.8%	40%
Highrise Multifamily	30.2%	9.8%	40%
All Others	37.4%	2.6%	40%

Table N14.11.3 (new Table C3.6.3) **Base Building *Opaque Door* Area**

Building Area Types	Base Building Opaque Door Area as a Percentage of Gross Above-Grade-Wall Area of the Lowest Above Grade Floor		
	Swinging	Non-Swinging	Total
Hotel/motel (≤75 rooms)	1.2%	0.0%	1.2%
Hotel/motel (>75 rooms)	1.1%	0.9%	2.0%
Office (≤5000 ft^2)	1.4%	0.0%	1.4%
Office (5000 to 50,000 ft^2)	1.8%	0.0%	1.8%
Office (>50,000 ft^2)	2.4%	0.0%	2.4%
Retail (stand alone)	1.3%	3.2%	4.5%
Retail (strip mall)	4.0%	0.0%	4.0%
School (primary)	1.9%	0.0%	1.9%
School (secondary and university)	1.8%	0.0%	1.8%
Warehouse (nonrefrigerated)	0.8%	5.7%	6.4%
Midrise Multifamily	1.2%	0.0%	1.2%
Highrise Multifamily	1.2%	0.0%	1.2%
All Others	1.2%	0.0%	1.2%

N15. CHANGES TO NORMATIVE APPENDIX G

a. Replace Section G1.2.2, in its entirety, with the language in N15.1

b. Add a new section, Section G1.2.2.1 Site Performance Energy Index Calculation, using the language in N15.2

c. Add a new section, Section G1.2.2.2 Greenhouse Gas Performance Emissions Index Calculation, using the language in N15.3

d. Replace Section G1.3.2 item n, in its entirety, with "Greenhouse gas emission conversion factors used to calculate the *proposed design* greenhouse gas emissions."

e. Append Section G1.3.2 item q to include, "production and off-site renewable energy procurement", after the term *on-site renewable energy.*

N15.1 Performance Rating Calculation (replaces Section G1.2.2)

The performance of the *proposed design* is calculated in accordance with provisions of this appendix using the formulas provided in Section G1.2.2.1 and Section G1.2.2.2.

Both the *proposed building performance* and the *baseline building performance* shall include all end-use load components within and associated with the building when calculating the Performance Site Energy Index and the Performance Emissions Index Greenhouse Gas.

Exception to G1.2.2:

Energy used to recharge or refuel vehicles that are used for off-*site* transportation purposes shall not be modeled in the *baseline building performance* or the *proposed building performance*.

N15.2 Site Performance Energy Index Calculation (new Section G.1.2.2.1)

$$PEI_{site} = \frac{PBGEU_{site}}{BBEU_{site}}$$

Where:

PEI*site* = Site Performance Energy Index.

PBGEUsite = Proposed building gross site energy use, the regulated and unregulated site energy use of the *proposed design,* calculated in accordance with Appendix G, excluding the contribution of *on-site renewable energy* production and off-site renewable energy procurement.

BBEUsite = *baseline building design* site energy use is the regulated and *unregulated energy use* of the *baseline building design* calculated in accordance with Section G1.2

N15.3 Greenhouse Gas Performance Emissions Index Calculation (new Section G.1.2.2.2)

If PBGEUCO2e > 0

$$PEI_{CO2e} = \frac{PBNEU_{CO2e}}{PBGEU_{CO2e}}$$

If PBGEU$_{CO2e}$ = 0 or PBNEU$_{CO2e}$ = 0

$$PEICO2e = 0$$

Where:

PEI*CO2e* = Greenhouse Gas Performance Emissions Index

PBNEUCO2e = the *proposed design* emissions associated with the proposed building net site energy including the emission reductions associated with on-site renewable energy production and off-site renewable energy procurement, based on the greenhouse gas emission factors in accordance with Section 4.2.6.3.

PBGEU,CO2e = the *proposed design* gross greenhouse gas emissions associated with the proposed building site energy use, excluding the emission reductions associated with on-site renewable energy production and off-site renewable energy procurement, based on greenhouse gas emission factors provided in accordance with Section 4.2.6.3.

And:

$$PBNEU_{CO2e} = PBGEU_{CO2e} - AE$$

$$AE = \sum_{i=1}^{n} RE_i * REPF_i * GHG_i$$

Where:

AE = the avoided emissions from onsite renewable energy production and off-site renewable energy procured in accordance with Section 4.2.6.5.

RE_i = annual energy generation for the ith renewable energy procurement method or class.

n = the total number of renewable energy production and procurement methods or classes.

$REPF_i$ = renewable energy procurement factor for the ith renewable energy procurement method or class from Table 4.2.6.4.

GHG_i = greenhouse gas emission conversion factor from Tables 4.2.6.3(1) and 4.2.6.3(2). For renewable electricity resources for projects within the continental U.S., select the value corresponding to the property's eGRID subregion or use locally derived values approved by the rating authority.