

ARTICLE 12. ENERGY CODE.

§ 25-12-261 INTERNATIONAL ENERGY CONSERVATION CODE.

- (A) The International Energy Conservation Code, ~~2021-2024~~ Edition, published by the International Code Council ("~~2021-2024~~ International Energy Conservation Code"), and ~~Appendices CG, CH, CI, and CJ~~ ~~are~~ adopted and incorporated by reference into this section with the deletions and amendments in Subsections (B), (C), and (D) and Section 25-12-263 (*Local Amendments to the International Energy Conservation Code*).
- (B) The following commercial provisions of the ~~2021-2024~~ International Energy Conservation Code are deleted. A subsection contained within a deleted section or subsection is not deleted, unless specifically listed below:

C402.3 C201.3	C402.4.3 Table C405.13.2	C405.2 CI101.1
C402.4	C405.15.1	CI102.1
C402.5.3	CG101.2.1	Table CG101.2.1
CG101.2.2	CG101.2.5	

- (C) For purposes of commercial energy efficiency compliance with ASHRAE standards, as allowed under the ~~2021-2024~~ International Energy Conservation Code, the following provisions of the ~~2019~~ ~~2022~~ edition of ASHRAE standard 90.1 (ASHRAE 90.1-~~2019~~ ~~2022~~), published by the American Society of Heating, Refrigeration, and Air-Conditioning Engineers, are deleted. A subsection contained within a deleted section or subsection is not deleted, unless specifically listed below:

5.5.3.1.1 2.2	6.5.10 6.7.3.2	G2.4.2 9.4.1
5.5.4.1 4.2.1.1	9.4.1 7.7.3.2	10.5.1.1
5.5.3.1.4	7.9.1	10.7.3.1
5.5.4.1	8.4.3.1	G2.4.2
6.5.10	8.7.3.1	

- (D) The following residential provisions of the 2021 International Energy Conservation Code are deleted. A subsection contained within a deleted section or subsection is not deleted, unless specifically listed below:

R202 definition of "Residential Building"	R402.4.4	Table R405.4.2(1)
R402.1.2	R402.5	R406.2
R402.1.3	R403.3.5	R406.3.2
Table R402.1.2	R403.3.6	Table 406.5
Table R402.1.3	R403.9	
R402.4.1.2	R405.2	

§ 25-12-262 CITATIONS TO THE ENERGY CODE.

In the City Code, "Energy Code" means the ~~2021-2024~~ International Energy Conservation Code adopted by Section 25-12-261 (*International Energy Conservation Code*) and as amended by Section 25-12-263 (*Local Amendments to the International Energy Conservation Code*). In this article, "this code" means the Energy Code.

§ 25-12-263 LOCAL AMENDMENTS TO THE INTERNATIONAL ENERGY CONSERVATION CODE.

(A) The following provisions are local amendments to the commercial provisions of the 2021 International Conservation Code. Each provision in this subsection is a substitute for an identically numbered provision deleted by Section 25-12-261(B) or an addition to the 2021 International Energy Conservation Code.

C201.3 Terms defined in other codes. Terms not defined in this code that are defined in the Building Code, Electrical Code, Fire Code, Mechanical Code, Plumbing Code, Residential Code, and Chapter 25-12, Article 3 (*Flood Hazard Areas*) have the meaning ascribed to them in those codes.

C402.2.8 Insulation encapsulation requirement. Insulation (including but not limited to loose fill, spray applied cellular fiber insulation as well as other blanket and batts insulation) installed in assemblies more than 60 degrees from the horizontal must be in substantial contact with an *air barrier* on all sides.

Exception: Air impermeable insulation. Air impermeable insulation is defined as:

A material having an air permeance equal to or less than 0.02 L/s-m² at 75 Pa pressure differential tested according to ASTM E2178 or E283.

C402.3 C402.4 Roof solar reflectance and thermal emittance. *Low-sloped Low slope* roofs directly above cooled conditioned spaces in Climate Zones ~~1, 2 and 3~~ 0 through 3 shall comply with one or more of the options in **Table C402.3 C402.4**.

Exceptions: The following roofs and portions of roofs are exempt from the requirements of **Table C402.3 C402.4**:

1. Portions of the roof that include or are covered by the following:
 - 1.1. Photovoltaic systems or components.
 - 1.2. Solar air or water-heating systems or components.
 - 1.3. *Roof gardens Vegetative roofs* or landscaped roofs.
 - 1.4. Above-roof decks or walkways.
 - 1.5. Skylights.
 - 1.6. HVAC systems and components, and other opaque objects mounted above the roof.
 - 1.7. Repairs to roof surfaces when the repair does not exceed the lesser of 50% of the roof surface or 20 squares (2,000 sq. ft.).
2. Portions of the roof shaded during the peak sun angle on the summer solstice by permanent features of the *building* or by permanent features of adjacent *buildings*.
3. Portions of roofs that are ballasted with a minimum stone ballast of 17 pounds per square foot [74 kg/m²] or 23 psf [117 kg/m²] pavers.
4. Roofs where not less than 75 percent of the roof area complies with one or more of the exceptions to this section.

Roof surfaces with an incline greater than 2 units vertical in 12 units horizontal shall incorporate a roof material having a minimum reflectance of 0.35 or a minimum initial SRI of 29.

C402.4.3 C402.5.3 Maximum U-factor and SHGC. The maximum *U-factor* and *solar heat gain coefficient* (SHGC) for fenestration shall be as specified in **Table C402.4 C402.5**.

The window projection factor shall be determined in accordance with Equation 4-5 4-4.

$$PF = A/B$$

(Equation 4-5 4-4).

where:

PF = Projection factor (decimal).

Commented [A1]: Existing local amendment section retained as worded. Refers to local codes rather than model codes.

Commented [A2]: Existing local amendment section retained as worded. Provides for more thorough insulation installation.

Commented [A3]: Existing local amendment section retained with slight modifications to match model code numbering and language.

Commented [A4]: Existing amendment addresses roof repairs.

Commented [A5]: Existing amendment addresses high-sloped commercial roofs.

Commented [A6]: Existing local amendment section retained with slight modifications to match model code numberings.

A = Distance measured horizontally from the furthest continuous extremity of any overhang, eave or permanently attached shading device to the vertical surface of the glazing.

B = Distance measured vertically from the bottom of the glazing to the underside of the overhang, eave or permanently attached shading device.

Where different windows or glass doors have different PF values, they shall each be evaluated separately.

Exception: Where windows are required to comply with the *visible transmittance (VT)* requirement outlined in section 3.2.2.E, Glazing and Façade Relief on Building Facades, of the City of Austin's Subchapter E, Design Standards and Mixed Use ordinance, the solar heat gain coefficient (SHGC) requirement shall not apply. Instead, the window shall have a projection factor (PF) ≥ 0.5 .

C402.6 C402.8 Commercial Solar Ready (Mandatory). A designated zone must be identified on the construction documents as "Reserved for Future Solar Installation". This identified "Solar-Ready Zone" must be located within the Potential Solar Area (defined below), free from obstructions such as, but not limited to, vents, pipes, ducts, and other equipment and must comply with access, pathway, smoke ventilation, spacing, and other requirements of the City of Austin Land Development Code.

Exceptions:

1. Potential Solar Area of less than 2,000 square feet (185.8 square meters).
2. High hazard *buildings* (Group H).
3. *Buildings* located within the downtown network, as identified by Austin Energy.
4. *Buildings* equipped with on-site renewable energy *systems* in accordance with Section **C406.5 C405.15 or C406.3.1**.

C402.6.1 C402.8.1 Solar-Ready Zone area. The size of the Solar-Ready Zone must be at least half the Potential Solar Area. Potential Solar Area is calculated as the gross rooftop area minus the Affected Area. Affected Area means the following areas:

1. Areas of the roof that are shaded for at least 50% of annual daylight hours.
2. Areas of the roof that are not Low-Sloped Roof that are oriented from 300° northwest, north to 90° east.
3. Gross area of all skylights.
4. Area of rooftop equipment and required access paths.
5. Areas of roofs used for helicopter landing or for rooftop parking.
6. Green roofs and occupied rooftop areas.
7. Areas required by City Code to not contain solar equipment.

No part of the Solar-Ready Zone can be in an Affected Area. The designated Solar-Ready Zone and the Potential Solar Area can be made up of multiple non-contiguous areas. Each sub-area must be at least 80 square feet (7.432 square meters) and must be a rectangle the short side of which measures at least 6 feet (1.83 meters).

C402.6.2 C402.8.2 Structural loads. Areas of the roof that are part of the Solar-Ready Zone must have structural design loads for roof dead load and roof live load clearly indicated on the construction documents.

C402.6.3 C402.8.3 Equipment location and interconnection pathway. The construction documents must indicate a location for inverters and metering equipment and a pathway for routing of conduit from the Solar-Ready Zone to the point of interconnection with the electrical service.

C402.6.4 C402.8.4 Electrical distribution system. The *Building's* electrical service distribution system must have reserved space to allow for the future installation of solar electric and must be permanently marked as "For Future Solar Electric".

Commented [A7]: Existing amendment considers COA design and compatibility standards.

Commented [A8]: Existing local amendment section retained with slight modifications to numbering to accommodate model code. Provides for space and infrastructure to install solar PV systems in the future.

~~C403.7.8~~ **C403.7.10 Ventilation filtration and filtration of return air.** *Ventilation* systems shall incorporate filtration having a minimum efficiency reporting value (MERV) rating of 6 or greater. All return air as well as all air that is heated, cooled, or humidity controlled must be drawn through the air filtration system.

Commented [A9]: Existing local amendment section retained with slight modifications to numbering to accommodate model code. Provides for better air filtration as well as plenum sealing.

~~C403.15 Demand response.~~ When Direct Digital Control is utilized, the controls shall have the capability to remotely setup the operating cooling temperature set point in all non-critical zones in response to signals, based on OpenADR 2.0 or higher protocols, from a centralized contact or software point. Controls may be programmed to provide either an automatic or an operator adjustable degree of change for the temperature setup.

Commented [A10]: Local amendment section deleted. Now included in locally adopted appendix to model code.

~~C404.10 Electric water heater timers.~~ For Group R buildings electric resistance water heaters must be installed in conjunction with a preprogrammed water heater timer. The timer shall be preprogrammed to turn the water heater off between the hours of 3:00 p.m. and 7:00 p.m. from June 1 to September 30 and from 12:00 a.m. to 4:00 a.m. throughout the year. The timer shall have a readily accessible override, as defined by the building official in an administrative rule, capable of restoring power to the water heater for one hour when activated.

~~Exception:~~ Where approved water heater demand response capability has been installed.

Commented [A11]: Local amendment section deleted. Now included in locally adopted appendix to model code.

~~C405.2 Lighting controls.~~ Lighting systems shall be provided with controls that comply with one of the following:

- ~~1. Lighting controls as specified in Sections C405.2.1 through C405.2.9.~~
- ~~2. Luminaire level lighting controls (LLLC) and lighting controls as specified in Sections C405.2.1, C405.2.5 and C405.2.6. The LLLC luminaire shall be independently capable of:

 - ~~2.1 Monitoring occupant activity to brighten or dim lighting when occupied or unoccupied, respectively.~~
 - ~~2.2 Monitoring ambient light, both electric light and daylight, and brighten or dim artificial light to maintain desired light level.~~
 - ~~2.3 For each control strategy, configuration and reconfiguration of performance parameters including, bright and dim setpoints, timeouts, dimming fade rates, sensor sensitivity adjustments, and wireless zoning configurations.~~~~

~~Exceptions:~~ Lighting controls are not required for the following:

- ~~1. Areas designated as security or emergency areas that are required to be continuously lighted.~~
- ~~2. Interior exit stairways, interior exit ramps and exit passageways.~~
- ~~3. Emergency egress lighting that is normally off.~~

~~C405.2.8 Demand response.~~ For all buildings having central control of a) lighting levels or b) the ability to turn on and off individual lamps, the controls shall have the capability to reduce lighting level in response to signals, based on OpenADR 2.0 or higher protocols, from a centralized contact or software point. Controls may be programmed to provide either an automatic or an operator adjustable degree of lighting reduction.

Commented [A12]: Local amendment section deleted. Now included in locally adopted appendix to model code.

TABLE C405.13.2

ELECTRICAL ENERGY USE CATEGORIES

LOAD CATEGORY	DESCRIPTION OF ENERGY USE
Total HVAC system	Heating, cooling and ventilation, including but not limited to fans, pumps, boilers, chillers and water heating. Energy used by 120-volt equipment, or by 208/120-volt equipment that is located in a building where the main service is 480/277-volt power, is permitted to be excluded from total HVAC system energy use.
Interior lighting	Lighting systems located within the building.
Exterior lighting	Lighting systems located on the building site but not within the building.

Commented [A13]: New local amendment adds EV charging loads. The remainder of the code item is from the model code.

<u>Plug loads</u>	<u>Devices, appliances and equipment connected to convenience receptacle outlets.</u>
<u>Process load</u>	<u>Any single load that is not included in an HVAC, lighting or plug load category and that exceeds 5 percent of the peak connected load of the whole building, including but not limited to data centers, manufacturing equipment and commercial kitchens.</u>
<u>Electric vehicle charging</u>	<u>Electric vehicle charging loads that are powered through the building's electrical service.</u>
<u>Building operations and other miscellaneous loads</u>	<u>The remaining loads not included elsewhere in this table, including but not limited to vertical transportation systems, automatic doors, motorized shading systems, ornamental fountains, fireplaces, swimming pools, spas and snow-melt systems.</u>
<u>Electric hot water heating for uses other than space conditioning</u>	<u>Electricity used to generate hot water.</u> <u>Exception: Electric water heating with design capacity that is less than 10 percent of the building service rating.</u>

Commented [A14]: Amended to add EV charging loads.

C405.15.1 On-site renewable energy systems. Buildings shall be provided with on-site renewable electricity generation systems with a direct current (DC) nameplate power rating of not less than 0.75 watts per square foot (8.1 W/m²) multiplied by the sum of the gross conditioned floor area of all floors, not to exceed the combined gross conditioned floor area of the three largest floors.

Commented [A15]: New local amendment section adds exceptions to mirror those under C402.8 Commercial Solar Ready (Mandatory). The remainder of the code item is from the model code.

Exceptions: The following *buildings* or building sites shall comply with **Section C405.15.2**:

1. A building site located where an unshaded flat plate collector oriented toward the equator and tilted at an angle from horizontal equal to the latitude receives an annual daily average incident solar radiation less than 1.1 kBtu/ft² per day (3.5 kWh/m²/day).
2. A building where more than 80 percent of the roof area is covered by any combination of permanent obstructions such as, but not limited to, mechanical equipment, vegetated space, access pathways or occupied roof terrace.
3. Any building where more than 50 percent of the roof area is shaded from direct-beam sunlight by natural objects or by structures that are not part of the building for more than 2,500 annual hours between 8:00 a.m. and 4:00 p.m.
4. A building with gross conditioned floor area less than 5,000 square feet (465 m²).
5. Alterations.
6. A building with Potential Solar Area of less than 2,000 square feet (185.8 square meters).
7. High hazard buildings (Group H).
8. Buildings located within the downtown network, as identified by Austin Energy.

Commented [A16]: Amended to add exceptions that exist under C402.8 Commercial Solar Ready.

CG101.2.1 Quantity. The number of required electric vehicle (EV) spaces, EV capable spaces and EV ready spaces shall be determined in accordance with this section and Table CG101.2.1 based on the total number of automobile parking spaces and shall be rounded up to the nearest whole number. For R-2 buildings, the Table CG101.2.1 requirements shall be based on the total number of dwelling units or the total number of automobile parking spaces, whichever is less.

Commented [A17]: New local amendment section modifies the quantity of required EV parking to accommodate long term parking garages. The remainder of the section is from the model code.

1. Where more than one parking facility is provided on a building site, the number of required automobile parking spaces required to have EV power transfer infrastructure shall be calculated separately for each parking facility.
2. Where one shared parking facility serves multiple building occupancies, the required number of spaces shall be determined proportionally based on the floor area of each building occupancy.

3. Installed electric vehicle supply equipment installed spaces (EVSE spaces) that exceed the minimum requirements of this section may be used to meet the minimum requirements for EV ready spaces and EV capable spaces.
4. Installed EV ready spaces that exceed the minimum requirements of this section may be used to meet the minimum requirements for EV capable spaces.
5. Where the number of EV ready spaces allocated for R-2 occupancies is equal to the number of dwelling units or to the number of automobile parking spaces allocated to R-2 occupancies, whichever is less, requirements for EVSE spaces for R-2 occupancies shall not apply.
6. Requirements for a Group S-2 parking garage shall be determined by the occupancies served by that parking garage. Where new automobile spaces do not serve specific occupancies, the values for Group S-2 parking garage in Table CG101.2.1 shall be used.
7. Group S-2 parking garages with no less than 50% long term parking spaces shall provide no less than 10% EV capable spaces. Long term parking spaces are considered as parking spaces where users generally park for more than 8 hours at a time, including overnight, at places such as airports, transit hubs, etc.

Exception: Parking facilities serving occupancies other than R2 with fewer than 10 automobile parking spaces.

TABLE CG101.2.1

REQUIRED EV POWER TRANSFER INFRASTRUCTURE

OCCUPANCY	EVSE SPACES	EV READY SPACES	EV CAPABLE SPACES
<u>Group A</u>	<u>0%</u>	<u>0%</u>	<u>10%</u>
<u>Group B</u>	<u>0%</u>	<u>0%</u>	<u>30%</u>
<u>Group E</u>	<u>0%</u>	<u>0%</u>	<u>30%</u>
<u>Group F</u>	<u>0%</u>	<u>0%</u>	<u>5%</u>
<u>Group H</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>
<u>Group I</u>	<u>0%</u>	<u>0%</u>	<u>30%</u>
<u>Group M</u>	<u>0%</u>	<u>0%</u>	<u>30%</u>
<u>Group R-1</u>	<u>0%</u>	<u>5%</u>	<u>35%</u>
<u>Group R-2</u>	<u>0%</u>	<u>5%</u>	<u>35%</u>
<u>Group R-3 and R-4</u>	<u>0%</u>	<u>0%</u>	<u>5%</u>
<u>Group S exclusive of parking garages</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>
<u>Group S-2 parking garages</u>	<u>0%</u>	<u>0%</u>	<u>30%</u>

CG101.2.2 EV capable spaces. Each EV capable space used to meet the requirements of Section CG101.2.1 shall comply with the following:

1. A continuous raceway or cable assembly shall be installed between an enclosure or outlet located within 3 feet (914 mm) of the EV capable space and electrical distribution equipment.
2. Installed raceway or cable assembly shall be sized and rated to supply a minimum circuit capacity in accordance with Section CG101.2.5.
3. The electrical distribution equipment to which the raceway or cable assembly connects shall have dedicated overcurrent protection device space and electrical capacity to supply a calculated load in accordance with Section CG101.2.5.
4. The enclosure or outlet and the electrical distribution equipment directory shall be marked: "For electric vehicle supply equipment (EVSE)."

Exception: In Group S-2 parking garages, the conduit required for EV capable spaces may be omitted.

Commented [A18]: Amended to provide alternate EV space requirements for S-2 parking garages with long term parking. The percentage was adjusted to accommodate the mismatch in duration of parking in long term parking with the need and duration of EV charging in these facilities.

Commented [A19]: New local amendment section modifies the EV space percentages per occupancy type listed in the table to support local market conditions. EV Ready or Capable Spaces percentages are retained to minimize demolition costs and to allow projects to install EVSE when demand supports them. 40% of parking spaces or dwelling units in R-1 and R-2 occupancies must either be EV Capable or Ready to mirror the requirement in the residential code. EV Ready Space percentages are retained to provide an EV charging option immediately.

Commented [A20]: New local amendment section adds an exception for EV capable space requirements. The remainder of the section is from the model code.

Commented [A21]: Amended to make installed conduit in parking garages optional. Because parking garage retrofits do not require retrenching, the conduit in EV capable spaces does not come with the same future avoided costs.

CG101.2.5 System and circuit capacity. The system and circuit capacity shall comply with Sections CG101.2.5.1 and CG101.2.5.2. Group S-2 parking garages providing at least 50% long term parking shall meet CG101.2.5.4. Long term parking is parking spaces where users generally park for more than 8 hours at a time, including overnight, at places such as airports, transit hubs, etc.

CG 101.2.5.4 Long-term parking garages system and circuit capacity. Provide a minimum electrical panel capacity of at least 1.8 kVA (120V/15A) per EV capable space.

CI101.1 Demand responsive controls. Electric heating and cooling systems shall be provided with demand responsive controls capable of executing the following actions in response to a demand response signal :

1. Automatically increasing the zone operating cooling setpoint by the following values: 1°F (0.5°C), 2°F (1°C), 3°F (1.5°C) and 4°F (2°C).
2. Automatically decreasing the zone operating heating setpoint by the following values: 1°F (0.5°C), 2°F (1°C), 3°F (1.5°C) and 4°F (2°C).

Where a demand response signal is not available, the heating and cooling system controls shall be capable of performing all other functions. Where thermostats are controlled by direct digital control including, but not limited to, an energy management system, the system shall be capable of demand responsive control and capable of adjusting all thermal setpoints to comply. The demand responsive controls shall comply with either Section CI101.1.1 or CI101.1.2.

Exceptions:

1. Group I occupancies.
2. Group H occupancies.
3. Controls serving data center systems .
4. Occupancies or applications requiring precision in indoor temperature control as approved by the code official .
5. Buildings that comply with Load Management measure G02 in Section C406.3.3.
6. Buildings with energy storage capacity for not less than a 25 percent load reduction at peak load for a period of not less than 3 hours.
7. Special occupancy or special applications where wide temperature ranges are not acceptable (such as retirement homes, process applications, museums, some areas of hospitals) and are approved by the authority having jurisdiction.

CI102.1 Demand responsive water heating. Electric storage water heaters with a rated water storage volume of 40 gallons (151 L) to 120 gallons (454 L) and a nameplate input rating equal to or less than 12 kW shall be provided with demand responsive controls in accordance with Table CI102.1.

Exceptions:

1. Water heaters that provide a hot water delivery temperature of 180°F (82°C) or greater.
2. Water heaters that comply with Section IV, Part HLW or Section X of the ASME Boiler and Pressure Vessel Code.
3. Water heaters that use three-phase electric power.
4. Water heaters for Group R buildings with a preprogrammed water heater timer. The timer shall be preprogrammed to turn the water heater off between the hours of 3:00 p.m. and 7:00 p.m. from June 1 to September 30 and from 12:00 a.m. to 4:00 a.m. throughout the year. The timer shall have a readily accessible override, as defined by the building official in an administrative rule, capable of restoring power to the water heater for one hour when activated.

Commented [A22]: New local amendment section provides alternative system and circuit capacity requirements for group S-2 parking garages providing long term parking. The remainder of the section is from the model code.

Commented [A23]: Amended to provide alternative system and circuit capacity requirements for group S-2 parking garages providing long term parking.

Commented [A24]: New local amendment section provides capacity requirements for long term parking garages. The speed of charging afforded by Lvl 2 charging stations is not needed in long term parking garages and so Lvl 1 infrastructure is allowed.

Commented [A25]: New local amendment section slightly modifies model code language to add an exception for special occupancy. The remainder of the section is from the model code.

Commented [A26]: Amended to add exception for special occupancy or special applications.

Commented [A27]: New local amendment section adds exceptions for water heater timers and special occupancy. The remainder of the code item is from the model code.

Commented [A28]: Amended to add exception for water heater timers that matches existing language about water heater timers.

5. Special occupancy or special applications where water temperature ranges are not acceptable (such as retirement homes, process applications, some areas of hospitals or other health care facilities) and are approved by the authority having jurisdiction.

Commented [A29]: Amended to add exception for special occupancy or special applications.

(B) For purposes of commercial energy efficiency compliance with ASHRAE standards, the following provisions are local amendments to ASHRAE 90.1-~~2019~~ 2022. Each provision in this subsection is a substitute for an identically numbered provision deleted by Section 25-12-261(C) or an addition to the Energy Code.

2.2 The provisions of this standard do not apply to:

- a. Single-family houses, multifamily structures of four stories or fewer above grade, manufactured houses (mobile homes), and manufactured houses (modular); or
- b. Buildings that use neither electricity nor fossil fuels.

Commented [A30]: Existing local amendment section retained as worded. Modifies definition to four stories.

Commented [A31]: Amended to four stories rather than three stories.

3.2 Definitions.

APPLIANCE. A device or apparatus that is manufactured and designed to utilize energy and for which this code provides specific requirements.

AUTOMOBILE PARKING SPACE. A space within a building or private or public parking lot, exclusive of driveways, ramps, columns, office and work areas, for the parking of an automobile.

COMBUSTION EQUIPMENT. Any equipment or appliance used for space heating, service water heating, cooking, clothes drying or lighting that uses a fossil fuel.

COMMERCIAL COOKING APPLIANCES. Commercial cooking appliances used in a commercial food service establishment for heating or cooking food and which produce grease vapors, steam, fumes, smoke or odors that are required to be removed through a local exhaust ventilation system. Such appliances include deep fat fryers, upright broilers, griddles, broilers, steam-jacketed kettles, hot-top ranges, under-fired broilers (charbroilers), ovens, barbecues, rotisseries and similar appliances.

ELECTRIC VEHICLE (EV). An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles and electric motorcycles, primarily powered by an electric motor that draws current from a building electrical service, electric vehicle supply equipment (EVSE), a rechargeable storage battery, a fuel cell, a photovoltaic array or another source of electric current.

ELECTRIC VEHICLE CAPABLE SPACE (EV CAPABLE SPACE). A designated automobile parking space that is provided with electrical infrastructure such as, but not limited to, raceways, cables, electrical capacity, a panelboard or other electrical distribution equipment space necessary for the future installation of an EVSE

ELECTRIC VEHICLE READY SPACE (EV READY SPACE). An automobile parking space that is provided with a branch circuit and an outlet, junction box or receptacle that will support an installed EVSE

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). Equipment for plug-in power transfer, including ungrounded, grounded and equipment grounding conductors; electric vehicle connectors; attached plugs; any personal protection system; and all other fittings, devices, power outlets or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle.

ELECTRIC VEHICLE SUPPLY EQUIPMENT INSTALLED SPACE (EVSE SPACE). An automobile parking space that is provided with a dedicated EVSE connection.

LOW-RISE RESIDENTIAL BUILDINGS: Single-family houses, multifamily structures of four stories or fewer above grade, manufactured houses (mobile homes), and manufactured houses (modular).

4.2.1.1 New Buildings. New buildings shall comply with Section 4.2.2 through 4.2.5 and either the provisions of 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

Commented [A32]: New local amendments add definitions. These definitions are included in IECC Appendices CG and CH. Since these provisions aren't currently included in ASHRAE, these definitions have to be added to support the addition of those provisions to ASHRAE.

Commented [A33]: Existing local amendment retained as worded. Modifies definition to four stories.

Commented [A34]: New local amendment section provides option to use carbon emissions metric rather than energy cost metric in performance method. The remainder of the section is from the model code.

- b. Section 12, "Energy Cost Budget Method," or
- c. Normative Appendix G, "Performance Rating Method," or
- d. Normative Appendix G, "Performance Rating Method" with the following modifications to substitute the carbon emissions metric for the *energy cost* metric:

1. Replace references to "annual energy cost" with "carbon emissions" in the definitions of *baseline building performance* and *proposed building performance* under Section 3.
2. Replace all references to "energy cost" in Section 4.2.1.1 with "carbon emissions," as appropriate, throughout.
3. Replace all references to "Performance Cost Index" in Section 4.2.1.1 with "Performance Index (Carbon Emissions)," as appropriate throughout.
4. Replace Table 4.2.1.1 with Table I3-2.
5. Replace references to "energy cost" with references to "carbon emissions" as appropriate in Sections G1.2.2, G1.3.2, G2.1, G2.4.2, and G2.5 section headings.
6. Replace Section G2.4.1 with the following:

Section G2.4.1 The *baseline building performance* and *proposed building performance* shall be determined using the conversion factors in Table G2.1.

TABLE G2.1

UNITS OF FUEL TO SITE ENERGY CONVERSION FACTORS

Building Project Energy Source	Units	Carbon Emissions CO₂e, lb/unit
Electricity	kWh	1.2
Natural gas	therm	19.96
Propane	therm	19.080
Distillate fuel oil	gal	28.330

Exception: Alternative conversion factors as appropriate for *building* location and as approved by the authority having jurisdiction are allowed.

When using Normative Appendix G, the Performance Cost Index (PCI) of new *buildings*, *additions to existing buildings*, and/or *alterations to existing buildings* shall be less than or equal to the Performance Cost Index Target (PCI_t) when calculated in accordance with the following:

$$PCI_t = [BBUEC + (BPF \times BBREC) - PRE] / BBP$$

where

PCI = Performance Cost Index calculated in accordance with Section G1.2.2

BBUEC = *baseline building unregulated energy cost*, the portion of the annual *energy cost* of a *baseline building design* that is due to *unregulated energy use*

BPF = *building performance factor* from Table 4.2.1.1. For *building area types* not listed in Table 4.2.1.1, 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*. Where a project includes an *existing building* and an *addition*, the required BPF shall be equal to the area-weighted average, based on the *gross floor area*, of the *existing building* BPF determined as described in Section 4.2.1.3 and the *addition* BPF from Table 4.2.1.1.

Commented [A35]: Amended to provide modifications to allow for use of carbon emissions metric. Language based on methodology presented in Informative Appendix I.

BBREC = baseline building regulated energy cost, the portion of the annual energy cost of a baseline building design that is due to regulated energy use

PRE = $PBP_{pre} - PBP_{pre}$

PBP = proposed building performance, including the reduced, annual purchased energy cost associated with all on-site renewable energy generation systems

PBP_{pre} = proposed building performance without any credit for reduced annual energy costs from onsite renewable energy generation systems

PBP_{pre} = proposed building performance, excluding any renewable energy system in the proposed design and including an on-site renewable energy system that meets but does not exceed the requirements of Section 10.5.1.1 modeled following the requirements for a budget building design in Table 12.5.1, row 15

BBP = baseline building performance

Regulated energy cost shall be calculated by multiplying the total energy cost by the ratio of regulated energy use to total energy use for each fuel type. Unregulated energy cost shall be calculated by subtracting regulated energy cost from total energy cost.

When $(PBP_{pre} - PBP)/BBP > 0.05$, new buildings, additions to existing buildings, and/or alterations to existing buildings shall comply with the following:

$PCI + [(PBP_{pre} - PBP)/BBP] - 0.05 < PCI$

Informative Notes:

1. PBP_{pre} = proposed building performance, no renewable energy.
2. PBP_{pre} = proposed building performance, prescriptive renewable energy.
3. PRE = prescriptive renewable energy.
4. See Informative Appendix I for using other metrics, including site energy, source energy, and carbon emissions, in conjunction with the Normative Appendix G Performance Rating Method when approved by the rating authority.

5.4.4 Roof Solar Reflectance and Thermal Emittance. Roofs in Climate Zones 4 through 3 with a slope less than or equal to 2 units vertical in 12 units horizontal shall have one of the following:

- a. A minimum three-year-aged solar reflectance of 0.55 and a minimum three-year-aged thermal emittance of 0.75 when tested in accordance with CRRC-1 Standard S100.
- b. A minimum Solar Reflectance Index of 64 when determined in accordance with the Solar Reflectance Index method in ASTM E1980 using a convection coefficient of 2.1 Btu/h-ft²·°F, based on three-year-aged solar reflectance and three-year-aged thermal emittance tested in accordance with CRRC-1 Standard S100.

Exceptions:

1. Ballasted roofs with a minimum stone ballast of 17 lb/ft² or 23 lb/ft² pavers.
2. Vegetated roof systems that contain a minimum thickness of 2.5 inches of growing medium and covering a minimum of 75% of the roof area with durable plantings.
3. Roofs where a minimum of 75% of the roof area:
 - a. is shaded during the peak sun angle on June 21 by permanent components or features of the building;
 - b. is covered by offset photovoltaic arrays, building-integrated photovoltaic arrays, or solar air or water collectors; or
 - c. is permitted to be interpolated using a combination of subsections 1 and 2 above.

Commented [A36]: Existing local amendment section retained with slight modifications. Addresses repairs and high sloped commercial roofs, and moves section to Mandatory Provisions. Slight modifications to match model code language.

Commented [A37]: Existing amendment to separately address high- and low-sloped roofs.

Commented [A38]: Amended to update referenced standard.

4. Repairs to roof surfaces when the repair does not exceed the lesser of 50% of the roof surface or 20 squares (2,000 sq. ft.).
5. Roofs over semi-heated spaces, or roofs over conditioned spaces that are not cooled spaces.

The values for three-year-aged solar reflectance and three-year-aged thermal emittance shall be determined by a laboratory accredited by a nationally recognized accreditation organization and shall be labeled and certified by the manufacturer.

Roof surfaces with an incline greater than 2 units vertical in 12 units horizontal shall incorporate a roof material having a minimum reflectance of 0.35 or a minimum initial SRI of 29.

5.4.5 Insulation encapsulation requirement. Insulation (including but not limited to loose fill, spray applied cellular fiber insulation as well as other blanket and batts insulation) installed in assemblies more than 60 degrees from the horizontal must be in substantial contact with an air barrier on all sides.

Exception: Air impermeable insulation. Air impermeable insulation is defined as:

A material having an air permeance equal to or less than 0.02 L/s-m² at 75 Pa pressure differential tested according to ASTM E2178 or E283.

5.4.6 Commercial Solar Ready (Mandatory). A designated zone must be identified on the construction documents as "Reserved for Future Solar Installation". This identified "Solar-Ready Zone" must be located within the Potential Solar Area (defined below), free from obstructions such as, but not limited to, vents, pipes, ducts, and other equipment and must comply with access, pathway, smoke ventilation, spacing, and other requirements of the City of Austin Land Development Code.

Exceptions:

1. Potential Solar Area of less than 2,000 square feet (185.8 square meters).
2. High hazard buildings (Group H).
3. Buildings located within the downtown network, as identified by Austin Energy.
4. Buildings equipped with on-site renewable energy in accordance with Section 406.5 10.5.1 or 11.5.2.6.

5.4.6.1 Solar-Ready Zone area. The size of the Solar-Ready Zone must be at least half the Potential Solar Area. Potential Solar Area is calculated as the gross rooftop area minus the Affected Area. Affected Area means the following areas:

1. Areas of the roof that are shaded for at least 50% of annual daylight hours.
2. Areas of the roof that are not Low-Sloped Roof that are oriented from 300° northwest, north to 90° east.
3. Gross area of all skylights.
4. Area of rooftop equipment and required access paths.
5. Areas of roofs used for helicopter landing or for rooftop parking.

6. Green roofs and occupied rooftop areas.

7. Areas required by City Code to not contain solar equipment.

No part of the Solar Ready Zone can be in an Affected Area. The designated Solar-Ready Zone and the Potential Solar Area can be made up of multiple non-contiguous areas. Each sub-area must be at least 80 square feet (7.432 square meters) and must be a rectangle the short side of which measures at least 6 feet (1.83 meters).

5.4.6.2 Structural loads. Areas of the roof that are part of the Solar-Ready Zone must have structural design loads for roof dead load and roof live load clearly indicated on the construction documents.

Commented [A39]: Existing amendment addresses repairs.

Commented [A40]: Existing amendment addresses high-sloped roofs.

Commented [A41]: Existing local amendment section retained as worded. Provides for more thorough insulation installation.

Commented [A42]: Existing local amendment section retained with slight modifications. Provides for space and infrastructure to install solar PV systems in the future.

Commented [A43]: Amended to refer to sections within ASHRAE standard rather than IECC.

Commented [A44]: Amended to add definitions to Affected Area that were included in the IECC section but not the ASHRAE section of the previous code.

5.4.6.3 Equipment location and interconnection pathway. The construction documents must indicate a location for inverters and metering equipment and a pathway for routing of conduit from the Solar-Ready Zone to the point of interconnection with the electrical service.

5.4.6.4 Electrical distribution system. The *building's* electrical service distribution system must have reserved space to allow for the future installation of solar electric and must be permanently marked as "For Future Solar Electric".

5.5.4.1 General. Compliance with *U-factors*, *SHGC*, and *VT/SHGC* shall be demonstrated for the overall *fenestration* product. *Gross wall areas* and *gross roof areas* shall be calculated separately for each *space-conditioning category* for the purposes of determining compliance.

Exceptions:

1. If there are multiple assemblies within a single *class of construction* for a single *space-conditioning category*, it shall be permitted to demonstrate compliance based on an area weighted average *U-factor*, *SHGC*, *VT/SHGC*, or *LSG*. The area-weighted average across multiple *classes of construction* or multiple *space conditioning categories* shall not be permitted for use to demonstrate compliance.
2. *Vertical fenestration* shall be permitted to demonstrate compliance based on an area-weighted average *U-factor*, *SHGC*, *VT/SHGC*, or *LSG* across multiple *classes of construction* for a single *space conditioning category*, but not across multiple *space conditioning categories*.
3. Where windows are required to comply with the *visible transmittance (VT)* requirement outlined in Section 3.2.2.E, Glazing and Façade Relief on Building Facades, of the City of Austin's Subchapter E, Design Standards and Mixed Use ordinance, the *solar heat gain coefficient (SHGC)* requirement shall not apply. Instead, the window shall have a *projection factor (PF)* ≥ 0.5 .

~~6.4.3.10.4 Demand response.~~ When DDC is utilized, the controls shall have the capability to remotely setup the operating cooling temperature set point in all non-critical zones in response to signals, based on OpenADR 2.0 or higher protocols, from a centralized contact or software point. Controls may be programmed to provide either an automatic or an operator adjustable degree of change for the temperature setup.

6.4.3.1.3 Demand responsive controls. Electric heating and cooling systems shall be provided with demand responsive controls capable of executing the following actions in response to a demand response signal:

1. Automatically increasing the zone operating cooling setpoint by the following values: 1°F (0.5°C), 2°F (1°C), 3°F (1.5°C) and 4°F (2°C).
2. Automatically decreasing the zone operating heating setpoint by the following values: 1°F (0.5°C), 2°F (1°C), 3°F (1.5°C) and 4°F (2°C).

Where a demand response signal is not available, the heating and cooling system controls shall be capable of performing all other functions. Where thermostats are controlled by direct digital control including, but not limited to, an energy management system, the system shall be capable of demand responsive control and capable of adjusting all thermal setpoints to comply. The demand responsive controls shall comply with either Section 6.4.3.1.3.1 or 6.4.3.1.3.2.

Exceptions:

1. Group I occupancies.
2. Group H occupancies.
3. Controls serving data center systems.
4. Occupancies or applications requiring precision in indoor temperature control as approved by the code official.
5. Buildings that comply with Load Management measure G02 in Section 11.5.2.8.

Commented [A45]: Existing local amendment section retained as worded.

Commented [A46]: Existing amendment considers COA design and compatibility standards.

Commented [A47]: Existing local amendment deleted. Now included in locally adopted IECC Appendix CI in model code.

Commented [A48]: New local amendment section adds demand responsive controls section with language taken from IECC Appendix CI, with amendments to refer to ASHRAE sections rather than IECC sections. The remainder of the code item is from the model code.

6. Buildings with energy storage capacity for not less than a 25 percent load reduction at peak load for a period of not less than 3 hours.

7. Special occupancy or special applications where wide temperature ranges are not acceptable (such as retirement homes, process applications, museums, some areas of hospitals) and are approved by the authority having jurisdiction.

6.4.3.1.3.1 Air conditioners and heat pumps with two or more stages of control and cooling capacity of less than 65,000 Btu/h. Thermostats for air conditioners and heat pumps with two or more stages of control and a cooling capacity less than 65,000 Btu/h (19 kW) shall be provided with a demand responsive control that complies with the communication and performance requirements of AHRI 1380.

6.4.3.1.3.2 All other heating and cooling systems. Thermostats for heating and cooling systems shall be provided with a demand responsive control that complies with one of the following:

1. Certified OpenADR 2.0a VEN, as specified under Clause 11, Conformance.
2. Certified OpenADR 2.0b VEN, as specified under Clause 11, Conformance.
3. Certified by the manufacturer as being capable of responding to a demand response signal from a certified OpenADR 2.0b VEN by automatically implementing the control functions requested by the VEN for the equipment it controls.
4. IEC 62746-10-1.

6.4.4.2.3 Ventilation filtration and filtration of return air. Ventilation systems shall incorporate filtration having a minimum efficiency reporting value (MERV) rating of 6 or greater. All return air as well as all air that is heated, cooled, or humidity controlled must be drawn through the air filtration system.

6.4.8 Hydronic heating design requirements. For all hydronic space heating systems, the design entering water temperature for coils, radiant panels, radiant floor systems, radiators, baseboard heaters and any other device that uses hot water to provide heat to a space shall be not more than 130°F (54°C).

6.5.10 Door Switches. Any conditioned space with a door, including doors with more than one-half glass, opening to the outdoors shall be provided with controls that, when any such door is open:

- a. disable mechanical heating or reset the heating setpoint to 55°F or lower within five minutes of the door opening; and
- b. disable mechanical cooling or reset the cooling set point to 90°F or greater within five minutes of the door opening. Mechanical cooling may remain enabled if outdoor air temperature is below space temperature.

Exceptions:

1. Building entries with automatic closing devices.
2. Any space without a thermostat.
3. Alterations to existing buildings.
4. Loading docks.
5. Radiant heating systems.
6. Where HVAC equipment must remain on for safety, sanitation, or other health related reasons.

6.7.3.2 Manuals. Construction documents shall require that an operating manual and a maintenance manual be provided to the building owner or the designated representative of the building owner within 90 days after the date of system acceptance. These manuals shall be in accordance with industry-accepted standards (see Informative Appendix E) and shall include, at a minimum, the following:

- a. Submittal data stating equipment size and fuel type, and selected options for each piece of equipment requiring maintenance.

Commented [A49]: Existing local amendment section retained as worded.

Commented [A50]: New local amendment section adds design temperature requirement for hydronic systems to support additional electric infrastructure. Language taken from 2024 IECC Section CH103.2. These requirements were adopted as part of the appendix in IECC. Since there is no appendix for ASHRAE, these requirements have to be added to their relevant section.

Commented [A51]: Existing local amendment section retained as worded.

Commented [A52]: New local amendment section adds information manuals shall provide to support Demand response controls and Additional electric infrastructure sections. These requirements were adopted as part of the appendix in IECC. Since there is no appendix for ASHRAE, these requirements have to be added to their relevant section.

Commented [A53]: Amended to provide fuel source information.

b. Operation manuals and maintenance manuals for each piece of equipment and system requiring maintenance, except equipment not furnished as part of the project. Required routine maintenance actions shall be clearly identified.

c. Names and addresses of at least one service agency.

d. HVAC controls system maintenance and calibration information, including wiring diagrams, schematics, and control sequence descriptions. Desired or field-determined set points and demand response set points shall be permanently recorded on control drawings at control devices or, for digital control systems, in programming comments.

e. A complete narrative of how each system is intended to operate, including suggested set points and demand response set points.

7.4.4.5 Electric water heater timers. For Group R buildings electric resistance water heaters must be installed in conjunction with a preprogrammed water heater timer. The timer shall be preprogrammed to turn the water heater off between the hours of 3:00 p.m. and 7:00 p.m. from June 1 to September 30 and from 12:00 a.m. to 4:00 a.m. throughout the year. The timer shall have a readily accessible override, as defined by the building official administrative rule, capable of restoring power to the water heater for one hour when activated.

Exception: Where approved water heater demand response capability has been installed, Demand responsive water heating. Electric storage water heaters with a rated water storage volume of 40 gallons (151 L) to 120 gallons (454 L) and a nameplate input rating equal to or less than 12 kW shall be provided with demand responsive controls in accordance with Table 7.4-3.

Exceptions:

1. Water heaters that provide a hot water delivery temperature of 180°F (82°C) or greater.
2. Water heaters that comply with Section IV, Part HLW or Section X of the ASME Boiler and Pressure Vessel Code.
3. Water heaters that use three-phase electric power.
4. Water heaters for Group R buildings with a preprogrammed water heater timer. The timer shall be preprogrammed to turn the water heater off between the hours of 3:00 p.m. and 7:00 p.m. from June 1 to September 30 and from 12:00 a.m. to 4:00 a.m. throughout the year. The timer shall have a readily accessible override, as defined by the building official in an administrative rule, capable of restoring power to the water heater for one hour when activated.
5. Special occupancy or special applications where water temperature ranges are not acceptable (such as retirement homes, process applications, some areas of hospitals or other health care facilities) and are approved by the authority having jurisdiction.

Commented [A54]: Amended to add demand response information.

Commented [A55]: Amended to add demand response information.

Commented [A56]: Existing local amendment language deleted. Now included in locally adopted IECC Appendix C1 in model code.

Commented [A57]: New language for local amendment section adds demand responsive water heating language from IECC Appendix C1. Modified slightly to refer to ASHRAE tables rather than IECC tables, and to add exceptions. The remainder of the code item is from the model code.

Commented [A58]: Amended to add exception for water heater timers that matches existing language about water heater timers.

Commented [A59]: Amended to add exception for special occupancy or special applications.

TABLE 7.4-3

DEMAND RESPONSIVE CONTROLS FOR WATER HEATING

EQUIPMENT TYPE	CONTROLS	
	Manufactured before 7/1/2025	Manufactured on or after 7/1/2025
Electric storage water heaters	AHRI Standard 1430 or ANSI/CTA-2045-B Level 1 and also capable of initiating water heating to meet the temperature setpoint in response to a demand response signal	AHRI Standard 1430

7.7.3.2 Manuals. Construction documents shall require that an operating manual and a maintenance manual be provided to the building owner, or the designated representative of the building owner, within 90 days after the date of system acceptance. These manuals shall be in accordance with industry-accepted standards and shall include, at a minimum, information on water heating fuel type, operation manuals and maintenance manuals for each component of the system requiring maintenance, except components not furnished as part of the project. Required routine maintenance actions shall be clearly identified. Automated demand response sequences and controls shall be clearly identified.

7.9.1 Verification and Testing. Service hot-water controls shall be verified and tested in accordance with this section and Section 4.2.5.1. Testing shall verify that systems and controls are configured and operating in accordance with applicable requirements of

a. service water heating system temperature controls (Sections 7.4.4.1, 7.4.4.3, and 7.4.4.5),

b. recirculation pump or heat trace controls (Section 7.4.4.2), or

c. pool time switch controls (Section 7.4.5.3).

Verification and FPT documentation shall comply with Section 4.2.5.1.2.

8.4.3.1 Monitoring. Measurement devices shall be installed in new buildings to monitor the electrical energy use for each of the following separately:

a. Total electrical energy

b. HVAC systems

c. Interior lighting

d. Exterior lighting

e. Receptacle circuits

f. Refrigeration systems

g. Electric vehicle charging

For buildings with tenants, these systems shall be separately monitored for the total building and (excluding shared systems) for each individual tenant.

Exception to 8.4.3.1: Where the design load of any of the categories (b) through (g) are less than 10% of the whole-building load, these categories shall be allowed to be combined with other categories.

8.4.5 Additional electric infrastructure. Electric infrastructure in buildings that contain combustion equipment shall be installed in accordance with this section.

8.4.5.1 Combustion space heating. Spaces containing combustion equipment for space heating shall comply with Sections 8.4.5.1.1, 8.4.5.1.2 and 8.4.5.1.3

8.4.5.1.1 Designated exterior locations for future electric space-heating equipment. Spaces containing combustion equipment for space heating shall be provided with designated exterior location(s) shown on the plans and of sufficient size for outdoor space-heating heat pump equipment, with a chase that is sized to accommodate refrigerant lines between the exterior location and the interior location of the space heating equipment, and with natural drainage for condensate from heating operation or a condensate drain located within 3 feet (914 mm) of the location of the future exterior space-heating heat pump equipment.

8.4.5.1.2 Dedicated branch circuits for future electric space-heating equipment. Spaces containing combustion space-heating equipment with a capacity not more than 65,000 Btu/h (19 kW) shall be provided with a dedicated 240-volt branch circuit with ampacity of not less than 50. The branch circuit shall terminate within 6 feet (1829 mm) of the space heating equipment and be in a location with ready access. Both ends of the branch circuit shall be labeled with the words "For Future Electric Space Heating Equipment" and be electrically isolated. Spaces containing combustion equipment for space heating with a capacity of not less than 65,000 Btu/h (19 kW) shall be

Commented [A60]: New local amendment section adds information manuals shall provide to support Demand Response Controls and Additional Electric Infrastructure sections. These requirements were adopted as part of the appendix in IECC. Since there is no appendix for ASHRAE, these requirements have to be added to their relevant section.

Commented [A61]: Amended to provide fuel source information.

Commented [A62]: Amended to add demand response information.

Commented [A63]: New local amendment section adds verification and test procedures to support Demand response controls section. These requirements were adopted as part of the appendix in IECC. Since there is no appendix for ASHRAE, these requirements have to be added to their relevant section.

Commented [A64]: Amended to support demand response.

Commented [A65]: New local amendment section supports Electric vehicle power transfer infrastructure section.

Commented [A66]: Amended to support Electric vehicle power transfer infrastructure section.

Commented [A67]: Amended to support Electric vehicle power transfer infrastructure section.

Commented [A68]: New local amendment section adds Additional electric infrastructure section with language from IECC Appendix CH, with amendments to refer to ASHRAE sections rather than IECC sections.

provided with a dedicated branch circuit rated and sized in accordance with **Section 8.4.5.1.3**, and terminating in a junction box within 3 feet (914 mm) of the location the space heating equipment in a location with ready access. Both ends of the branch circuit shall be labeled "For Future Electric Space Heating Equipment."

Exceptions:

1. Where a branch circuit provides electricity to the space heating combustion equipment and is rated and sized in accordance with **Section 8.4.5.1.3**.
2. Where a branch circuit provides electricity to space cooling equipment and is rated and sized in accordance with **Section 8.4.5.1.3**.
3. Where future electric space heating equipment would require three-phase power and the space containing combustion equipment for space heating is provided with an electrical panel with a label stating "For Future Electric Space Heating Equipment" and a bus bar rated and sized in accordance with **Section 8.4.5.1.3**.
4. Buildings where the 99.6 percent design heating temperature is not less than 50°F (10°C).

**TABLE 8.4.5.1
ALTERNATE ELECTRIC SPACE HEATING EQUIPMENT CONVERSION FACTORS (VA/kBtu/h)**

99.6% HEATING DESIGN TEMPERATURE		P _s VA/kBtu/h
Greater Than (°F)	Not Greater Than	
50	N/A	N/A
45	50	94
40	45	100
35	40	107
30	35	115
25	30	124
20	25	135
15	20	149
10	15	164
5	10	184
0	5	210
-5	0	243
-10	-5	289
-15	-10	293

For SI: °C = [(°F) – 32]/1.8, 1 British thermal unit per hour = 0.2931 kW.

8.4.5.1.3 Additional space heating electric infrastructure sizing. Electric infrastructure for future electric space heating equipment shall be sized to accommodate not less than one of the following:

1. An electrical capacity not less than the nameplate space heating combustion equipment heating capacity multiplied by the value in **Table 8.4.5.1**, in accordance with **Equation 8.4.5.1**.

$VA_s = Q_{com} \times P_s$
where

Equation 8.4.5.1

VA_s = The required electrical capacity of the electrical infrastructure in volt-amperes.

Q_{com} = The nameplate heating capacity of the combustion equipment in kBtu/h.

P_s = The VA per kBtu/h from **Table 8.4.5.1** in VA/kBtu/h.

2. An electrical capacity not less than the peak space heating load of the building areas served by the space heating combustion equipment, calculated in accordance with Section 6.4.2.1, multiplied by the value for the 99.6 percent design heating temperature in Table 8.4.5.1, in accordance with Equation 8.4.5.2.

$$VA_s = Q_{design} \times P_s \quad \text{Equation 8.4.5.2}$$

where

VA_s = The required electrical capacity of the electrical infrastructure in volt-amps.

Q_{design} = The 99.6 percent design heating load of the spaces served by the combustion equipment in kBtu/h.

P_s = The VA per kBtu/h from **Table 8.4.5.1** in VA/kBtu/h.

8.4.5.2 Combustion service water heating Spaces containing combustion equipment for *service water heating* shall comply with **Sections 8.4.5.2.1, 8.4.5.2.2 and 8.4.5.2.3.**

8.4.5.2.1 Combustion service water heating electrical infrastructure. For each piece of combustion equipment for water heating with an input capacity of not more than 75,000 Btu/h (22 kW), the following electrical infrastructure is required:

1. An individual 240-volt branch circuit with an ampacity of not less than 30 shall be provided and terminate within 6 feet (1829 mm) of the water heater and shall be in a location with ready access.
2. The branch circuit overcurrent protection device and the termination of the branch circuit shall be labeled "For future electric water heater."
3. The space for containing the future water heater shall include the space occupied by the combustion equipment and shall have a height of not less than 7 feet (2134 mm), a width of not less than 3 feet (914 mm), a depth of not less than 3 feet (914 mm) and with a volume of not less than 700 cubic feet (20 m³).

Exception: Where the space containing the water heater provides for air circulation sufficient for the operation of a heat pump water heater, the minimum room volume shall not be required.

8.4.5.2.2 Designated locations for future electric heat pump water heating equipment. Designated locations for future electric heat pump water heating equipment shall be in accordance with one of the following:

1. Designated exterior location(s) shown on the plans, of sufficient size for outdoor water heating heat pump equipment and with a chase that is sized to accommodate refrigerant lines between the exterior location and the interior location of the water heating equipment.
2. An interior location with a minimum volume the greater of 700 cubic feet (19 822 L) or 7 cubic feet (198 L) per 1,000 Btu/h (293 W) combustion equipment water heating capacity. The interior location shall include the space occupied by the combustion equipment.
3. An interior location with sufficient airflow to exhaust cool air from future water heating heat pump equipment provided by not fewer than one 16-inch (406 mm) by 24-inch (610 mm) grill to a heated space and one 8-inch (203 mm) duct of not more than 10 feet (3048 mm) in length for cool exhaust air.

8.4.5.2.3 Dedicated branch circuits for future electric heat pump water heating equipment. Spaces containing combustion equipment for water heating with a capacity of greater than 75,000 Btu/h (21 980 W) shall be provided with a dedicated branch circuit rated and sized in accordance with **Section 8.4.5.2.4** and terminating in a junction box within 3 feet (914 mm) of the location the water heating equipment in a location with ready access. Both ends of the branch circuit shall be labeled "For Future Electric Water Heating Equipment."

Exception: Where future electric water heating equipment would require three-phase power and the main electrical service panel has a reserved space for a bus bar rated and sized in accordance with **Section 8.4.5.2.4** and labeled "For Future Electric Water Heating Equipment."

8.4.5.2.4 Additional water heating electric infrastructure sizing. Electric infrastructure water heating equipment with a capacity of greater than 75,000 Btu/h (21 980 W) shall be sized to accommodate one of the following:

1. An electrical capacity not less than the combustion equipment water heating capacity multiplied by the value in **Table 8.4.5.2** plus electrical capacity to serve recirculating loads as shown in **Equation 8.4.5.3**.

$$VA_w = (Q_{\text{capacity}} \times P_w) + [Q_{\text{recirc}} \times 293 \text{ (VA/(Btu/h))}] \quad \text{Equation 8.4.5.3}$$

where

VA_w = The required electrical capacity of the electrical infrastructure for water heating in volt-amps

Q_{capacity} = The water heating capacity of the combustion equipment in kBtu/h

P_w = The VA per kBtu/h from **Table 8.4.5.2** in VA/kBtu/h

Q_{recirc} = The capacity required for temperature

e maintenance by recirculation, if applicable, in Btu/h

2. An alternate design that complies with this code, is approved by the authority having jurisdiction and uses no energy source other than electricity or on-site renewable energy .

TABLE 8.4.5.2
ALTERNATE ELECTRIC WATER HEATING EQUIPMENT CONVERSION FACTORS (VA/kBtu/h)

99.6% HEATING DESIGN TEMPERATURE		Ps
Greater Than (°F)	Not Greater Than	VA/kBtu/h
<u>55</u>	<u>60</u>	<u>118</u>
<u>50</u>	<u>55</u>	<u>123</u>
<u>45</u>	<u>50</u>	<u>129</u>
<u>40</u>	<u>45</u>	<u>136</u>
<u>35</u>	<u>40</u>	<u>144</u>
<u>30</u>	<u>35</u>	<u>152</u>
<u>25</u>	<u>30</u>	<u>162</u>
<u>20</u>	<u>25</u>	<u>173</u>
<u>15</u>	<u>20</u>	<u>185</u>
<u>10</u>	<u>15</u>	<u>293</u>
<u>5</u>	<u>10</u>	<u>293</u>
<u>0</u>	<u>5</u>	<u>293</u>
<u>Less than 0°F</u>		<u>293</u>

For SI: °C = [(°F) – 32]/1.8, 1 British thermal unit per hour = 0.2931 kW.

8.4.5.3 Combustion cooking. Spaces containing combustion equipment for cooking shall comply with **Section 8.4.5.3.1** or **8.4.5.3.2**.

8.4.5.3.1 Commercial cooking. Spaces containing commercial cooking appliances shall be provided with a dedicated branch circuit with a minimum electrical capacity in accordance with **Table 8.4.5.3.1** based on the appliance in the space. The branch circuit shall terminate within 3 feet (914 mm) of the appliance in a location with ready access . Both ends of the branch circuit shall be *labeled* with the words “For Future Electric Cooking Equipment” and be electrically isolated.

8.4.5.3.2 All other cooking. Spaces containing all other cooking equipment not designated as commercial cooking appliances shall be provided with a dedicated branch circuit in compliance with **NFPA 70 Section 422.10**. The

branch circuit shall terminate within 6 feet (1829 mm) of fossil fuel ranges, cooktops and ovens and be in a location with ready access. Both ends of the branch circuit shall be labeled with the words "For Future Electric Cooking Equipment" and be electrically isolated.

**TABLE 8.4.5.3.1
COMMERCIAL COOKING MINIMUM BRANCH CIRCUIT CAPACITY**

COMMERCIAL COOKING APPLIANCE	MINIMUM BRANCH CIRCUIT CAPACITY
Range	469 VA/kBtu/h
Steamer	114 VA/kBtu/h
Fryer	200 VA/kBtu/h
Oven	266 VA/kBtu/h
Griddle	195 VA/kBtu/h
All other commercial cooking appliances	114 VA/kBtu/h

For SI: 1 British thermal unit per hour = 0.2931 kW.

8.4.5.4 Combustion clothes drying. Spaces containing combustion equipment for clothes drying shall comply with Section 8.4.5.4.1 or 8.4.5.4.2.

8.4.5.4.1 Commercial drying. Spaces containing clothes drying equipment and end uses for commercial laundry applications shall be provided with conduit that is continuous between a junction box located within 3 feet (914 mm) of the equipment and an electrical panel. The junction box, conduit and bus bar in the electrical panel shall be rated and sized to accommodate a branch circuit with sufficient capacity for equivalent electric equipment with equivalent equipment capacity. The electrical junction box and electrical panel shall have labels stating, "For Future Electric Clothes Drying Equipment."

8.4.5.4.2 Residential drying. Spaces containing clothes drying equipment, appliances and end uses serving multiple dwelling units or sleeping areas with a capacity less than or equal to 9.2 cubic feet (0.26 m3) shall be provided with a dedicated 240-volt branch circuit with a minimum capacity of 30 amperes, shall terminate within 6 feet (1829 mm) of fossil fuel clothes dryers and shall be in a location with ready access. Both ends of the branch circuit shall be labeled with the words "For Future Electric Clothes Drying Equipment" and be electrically isolated.

8.4.6 On-site transformers. Enclosed spaces and underground vaults containing onsite electric transformers on the building side of the electric utility meter shall have sufficient space to accommodate transformers sized to serve the additional electric loads identified in Sections 8.4.5.1, 8.4.5.2, 8.4.5.3 and 8.4.5.4.

8.7.3.1 Record Documents. Construction documents shall require that within 90 days after the date of system acceptance, record documents shall be provided to the property owner, including

- a. a single-line diagram of the property electrical distribution system,
- b. floor plans indicating location and area served for all distribution,
- c. site plans indicating location and area served for all distribution, and
- d. details for additional electric infrastructure, including branch circuits, conduit, prewiring, panel capacity and electrical service capacity for heating, water heating, cooking and clothes drying equipment, as well as interior and exterior spaces designated for future electric equipment.

9.4.1 Lighting Control. Building lighting controls shall be installed to meet the provisions of Sections 9.4.1.1, 9.4.1.2, 9.4.1.3, 9.4.1.4, and 9.4.1.5.

9.4.1.5 Demand response. For all buildings having central control of a) lighting levels and/or b) the ability to turn on and off individual lamps, the controls shall have the capability to reduce lighting level in response to signals,

Commented [A69]: New local amendment section adds documentation of additional electric infrastructure. The remainder of the section is from the model code. These requirements were adopted as part of the appendix in IECC. Since there is no appendix for ASHRAE, these requirements have to be added to their relevant section.

Commented [A70]: Amended to add documentation of additional electric infrastructure. Language taken from 2024 IECC Section CH103.3.

based on OpenADR 2.0 or higher protocols, from a centralized contact or software point. Controls may be programmed to provide either an automatic or an operator adjustable degree of lighting reduction. **Demand responsive lighting controls.** Interior general lighting in Group B, E, M and S occupancies shall have demand responsive controls complying with **Section 9.4.1.5.1** in not less than 75 percent of the interior floor area.

Exceptions:

1. Where the combined interior floor area of Group B, E, M and S occupancies is less than 10,000 square feet (929 m²).
2. Buildings where a *demand response signal* is not available from a controlling entity other than the owner.
3. Parking garages.
4. Ambulatory care facilities.
5. Outpatient clinics.
6. Physician or dental offices.

9.4.1.5.1 Demand responsive lighting controls function. Demand responsive controls for lighting shall be capable of the following:

1. Automatically reducing the output of controlled lighting to 80 percent or less of full power or light output upon receipt of a *demand response signal*.
2. Where high-end trim has been set, automatically reducing the output of controlled lighting to 80 percent or less of the high-end trim setpoint upon receipt of a *demand response signal*.
3. Dimming controlled lights gradually and continuously over a period of not longer than 15 minutes to achieve their demand response setpoint.
4. Returning controlled lighting to its normal operational settings at the end of the demand response period.

Exception: Storage rooms and warehouse storage areas shall be permitted to switch off 25 percent or more of general lighting power rather than dimming.

10.4.9 Electrical energy storage system. Buildings shall comply with **Section 10.4.9.1** or **10.4.9.2**.

10.4.9.1 Electrical energy storage system (ESS) capacity. Each building shall have one or more ESS with a total rated energy capacity and rated power capacity as follows:

1. ESS-rated energy capacity (kWh) $\geq 1.0 \times$ installed on-site renewable electric energy system rated power (kWDC).
2. ESS-rated power capacity (kW) $\geq 0.25 \times$ installed on-site renewable electric energy system rated power (kWDC).

Where installed, DC-coupled battery systems shall meet the requirements for rated energy capacity alone.

10.4.9.2 Electrical energy storage system (ESS) ready. Each building shall have one or more reserved ESS-ready areas to accommodate future electrical storage in accordance with **Sections 10.4.9.2.1** through **10.4.9.2.4**.

10.4.9.2.1 ESS-ready location. Each ESS-ready area shall be located in accordance with Section 1207 of the *International Fire Code*.

10.4.9.2.2 ESS-ready minimum area requirements. Each ESS-ready area shall be sized in accordance with the spacing requirements of Section 1207 of the *International Fire Code* and the UL 9540 or UL 9540A designated rating of the planned system. Where rated to UL 9540A, the area shall be sized in accordance with the *manufacturer's* instructions.

10.4.9.2.3 Electrical distribution equipment. The on-site electrical distribution equipment shall have sufficient capacity, rating and space to allow the installation of overcurrent devices and circuit wiring in accordance with NFPA 70 for future electrical ESS complying with the capacity criteria of **Section 10.4.9.2.4**.

Commented [A71]: Existing local amendment section language deleted. Now included in locally adopted IECC Appendix CI in model code.

Commented [A72]: New local amendment section language adds Demand responsive water heating section with language from IECC Appendix CI, with amendments to refer to ASHRAE sections rather than IECC sections.

Commented [A73]: New local amendment section adds Electrical energy storage system section with language from IECC Appendix CJ, with amendments to refer to ASHRAE sections rather than IECC sections.

10.4.9.2.4 ESS-ready minimum system capacity. Compliance with ESS-ready requirements in Sections 10.4.9.2.1 through 10.4.9.2.3 shall be based on a minimum total energy capacity and minimum rated power capacity as follows:

1. ESS-rated energy capacity (kWh) \geq gross conditioned floor area of the three largest floors (ft²) \times 0.0008 kWh/ft².
2. ESS-rated power capacity (kW) \geq gross conditioned floor area of the three largest floors (ft²) \times 0.0002 kW/ft².

10.4.10 Electric vehicle power transfer infrastructure. Parking facilities shall be provided with electric vehicle power transfer infrastructure in accordance with Sections 10.4.10.1 through 10.4.10.6.

10.4.10.1 Quantity. The number of required electric vehicle (EV) spaces, *EV capable spaces* and *EV ready spaces* shall be determined in accordance with this section and Table 10.4.10-1 based on the total number of *automobile parking spaces* and shall be rounded up to the nearest whole number. For R-2 buildings, the Table 10.4.10-1 requirements shall be based on the total number of *dwelling units* or the total number of *automobile parking spaces*, whichever is less.

1. Where more than one parking facility is provided on a building site, the number of required *automobile parking spaces* required to have EV power transfer infrastructure shall be calculated separately for each parking facility.
2. Where one shared parking facility serves multiple building occupancies, the required number of spaces shall be determined proportionally based on the floor area of each building occupancy.
3. Installed electric vehicle supply equipment installed spaces (*EVSE spaces*) that exceed the minimum requirements of this section may be used to meet the minimum requirements for *EV ready spaces* and *EV capable spaces*.
4. Installed *EV ready spaces* that exceed the minimum requirements of this section may be used to meet the minimum requirements for *EV capable spaces*.
5. Where the number of EV ready spaces allocated for R-2 occupancies is equal to the number of *dwelling units* or to the number of *automobile parking spaces* allocated to R-2 occupancies, whichever is less, requirements for *EVSE spaces* for R-2 occupancies shall not apply.
6. Requirements for a Group S-2 parking garage shall be determined by the occupancies served by that parking garage. Where new automobile spaces do not serve specific occupancies, the values for Group S-2 parking garage in Table 10.4.10.1 shall be used.
7. Group S-2 parking garages with no less than 50% long term parking spaces shall provide no less than 10% EV capable spaces. Long term parking spaces are considered as parking spaces where users generally park for more than 8 hours at a time, including overnight, at places such as airports, transit hubs, etc.

Exception: Parking facilities serving occupancies other than R2 with fewer than 10 automobile parking spaces.

**TABLE 10.4.10-1
REQUIRED EV POWER TRANSFER INFRASTRUCTURE**

OCCUPANCY	EVSE SPACES	EV READY SPACES	EV CAPABLE SPACES
Group A	0%	0%	10%
Group B	0%	0%	30%
Group E	0%	0%	30%
Group F	0%	0%	5%

Commented [A74]: New local amendment section adds Electric vehicle power transfer infrastructure section with language from IECC Appendix CG, with amendments to refer to ASHRAE sections rather than IECC sections and to accommodate long term parking garages.

Commented [A75]: Amended to provide alternate EV space requirements for S-2 parking garages with long term parking. The percentage was adjusted to accommodate the mismatch in duration of parking in long term parking with the need and duration of EV charging in these facilities.

Commented [A76]: Amendment modifies the EV space percentages per occupancy type listed in the table to support local market conditions. EV Ready or Capable Spaces percentages are retained to minimize demolition costs and to allow projects to install EVSE when demand supports them. 40% of parking spaces or dwelling units in R-1 and R-2 occupancies must either be EV Capable or Ready to mirror the requirement in the residential code. EV Ready Space percentages are retained to provide an EV charging option immediately.

<u>Group H</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>
<u>Group I</u>	<u>0%</u>	<u>0%</u>	<u>30%</u>
<u>Group M</u>	<u>0%</u>	<u>0%</u>	<u>30%</u>
<u>Group R-1</u>	<u>0%</u>	<u>5%</u>	<u>35%</u>
<u>Group R-2</u>	<u>0%</u>	<u>5%</u>	<u>35%</u>
<u>Group R-3 and R-4</u>	<u>0%</u>	<u>0%</u>	<u>5%</u>
<u>Group S exclusive of parking garages</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>
<u>Group S-2 parking garages</u>	<u>0%</u>	<u>0%</u>	<u>30%</u>

10.4.10.2 EV capable spaces. Each *EV capable space* used to meet the requirements of **Section 10.4.10.1** shall comply with the following:

1. A continuous raceway or cable assembly shall be installed between an enclosure or outlet located within 3 feet (914 mm) of the *EV capable space* and electrical distribution equipment.
2. Installed raceway or cable assembly shall be sized and rated to supply a minimum circuit capacity in accordance with **Section 10.4.10.5**.
3. The electrical distribution equipment to which the raceway or cable assembly connects shall have dedicated overcurrent protection device space and electrical capacity to supply a calculated load in accordance with **Section 10.4.10.5**.
4. The enclosure or outlet and the electrical distribution equipment directory shall be marked: "For electric vehicle supply equipment (EVSE)."

Exception: In Group S-2 parking garages, the conduit required for *EV capable spaces* may be omitted.

Commented [A77]: Amended to make installed conduit in parking garages optional. Because parking garage retrofits do not require retrenching, the conduit in EV capable spaces does not come with the same future avoided costs.

10.4.10.3 EV ready spaces. Each branch circuit serving *EV ready spaces* used to meet the requirements of **Section 10.4.10.1** shall comply with the following:

1. Terminate at an outlet or enclosure located within 3 feet (914 mm) of each *EV ready space* it serves.
2. Have a minimum system and circuit capacity in accordance with **Section 10.4.10.5**.
3. The electrical distribution equipment directory shall designate the branch circuit as "For electric vehicle supply equipment (EVSE)" and the outlet or enclosure shall be marked "For electric vehicle supply equipment (EVSE)."

10.4.10.4 EVSE spaces. An installed EVSE with multiple output connections shall be permitted to serve multiple *EVSE spaces*. Each EVSE installed to meet the requirements of **Section 10.4.10.1**, serving either a single *EVSE space* or multiple *EVSE spaces*, shall comply with the following:

1. Have a minimum system and circuit capacity in accordance with **Section 10.4.10.5**.
2. Have a nameplate rating not less than 6.2 kW.
3. Be located within 3 feet (914 mm) of each *EVSE space* it serves.
4. Be installed in accordance with **Section 10.4.10.6**.

10.4.10.5 System and circuit capacity. The system and circuit capacity shall comply with **Sections 10.4.10.5.1** and **10.4.10.5.2**. Group S-2 parking garages with no less than 50% long term parking spaces shall meet **Section 10.4.10.5.4**. Long term parking spaces are considered as parking spaces where users generally park for more than 8 hours at a time, including overnight, at places such as airports, transit hubs, etc.

Commented [A78]: Amended to provide alternative system and circuit capacity requirements for group S-2 parking garages providing long term parking.

10.4.10.5.1 System capacity. The electrical distribution equipment supplying the branch circuit(s) serving each *EV capable space, EV ready space* and *EVSE space* shall comply with one of the following:

1. Have a calculated load of 7.2 kVA or the nameplate rating of the equipment, whichever is larger, for each *EV capable space, EV ready space* and *EVSE space*.
2. Meets the requirements of **Section 10.4.10.5.3.1**.

10.4.10.5.2 Circuit capacity. The branch circuit serving each *EV capable space, EV ready space* and *EVSE space* shall comply with one of the following:

1. Have a rated capacity not less than 50 amperes or the nameplate rating of the equipment, whichever is larger.
2. Meets the requirements of **Section 10.4.10.5.3.2**.

10.4.10.5.3 System and circuit capacity management. Where system and circuit capacity management is selected in **Section 10.4.10.5.1** or **10.4.10.5.2**, the installation shall comply with **Sections 10.4.10.5.3.1** and **10.4.10.5.3.2**.

10.4.10.5.3.1 System capacity management. The maximum equipment load on the electrical distribution equipment supplying the branch circuits(s) serving *EV capable spaces, EV ready spaces* and *EVSE spaces* controlled by an energy management system shall be the maximum load permitted by the energy management system, but not less than 3.3 kVA per space.

10.4.10.5.3.2 Circuit capacity management. Each branch circuit serving multiple *EVSE spaces, EV ready spaces* or *EV capable spaces* controlled by an energy management system shall comply with one of the following:

1. Have a minimum capacity of 25 amperes per space.
2. Have a minimum capacity of 20 amperes per space for R-2 occupancies where all *automobile parking spaces* are *EV ready spaces* or *EVSE spaces*.

10.4.10.5.4 Long-term parking garages system and circuit capacity. Provide a minimum electrical panel capacity of at least 1.8 kVA (120V/15A) per *EV capable space*.

10.4.10.6 EVSE installation. *EVSE* shall be installed in accordance with **NFPA 70** and shall be *listed and labeled* in accordance with **UL 2202** or **UL 2594**. *EVSE* shall be accessible in accordance with **Section 1107** of the *International Building Code*.

10.5.1.1 On-Site Renewable Energy. The *building* site shall have equipment for on-site renewable energy with a rated capacity of not less than 0.50 W/ft² or 1.7 Btu/ft² multiplied by the sum of the *gross conditioned floor area* for all floors up to the three largest floors.

Exceptions to 10.5.1.1:

1. Any *building* located where an unshaded flat plate collector oriented toward the equator and tilted at an angle from horizontal equal to the latitude receives an annual daily average incident solar radiation less than 1.1 kBtu/ft²-day.
2. Any *building* where more than 80% of the *roof area* is covered by any combination of equipment other than for *on-site renewable energy systems, planters, vegetated space, skylights, or occupied roof deck*.
3. Any *building* where more than 50% of *roof area* is shaded from direct-beam sunlight by natural objects or by structures that are not part of the *building* for more than 2500 annual hours between 8:00 a.m. and 4:00 p.m.
4. New construction or additions in which the sum of the *gross conditioned floor area* of the three largest floors of the new construction or addition is less than 10,000 ft².
5. Alterations.
6. A *building* with Potential Solar Area of less than 2,000 square feet (185.8 square meters).

Commented [A79]: Amended to provide capacity requirements for long term parking garages. The speed of charging afforded by Lvl 2 charging stations is not needed in long term parking garages and so Lvl 1 infrastructure is allowed.

Commented [A80]: New local amendment section slightly modifies model code language to add additional exceptions. The remainder of the code item is from the model code.

7. High hazard buildings (Group H).

8. Buildings located within the downtown network, as identified by Austin Energy.

10.7.3.1 Record Documents. Construction documents shall require that within 90 days after the date of system acceptance, record documents shall be provided to the building owner. Record documents shall include, as a minimum, the location of pathways for routing of raceways or cable from the renewable energy system to the electrical service panel and electrical energy storage system area, location and layout of a designated area for electrical energy storage system, and location of designated EVSE spaces, EV-Ready spaces, and EV-Capable spaces in parking facilities.

G2.4.2 Annual Energy Costs. The design energy cost and baseline energy cost shall be determined using actual rates for purchased energy. Where on-site renewable energy or site-recovered energy is used, the baseline building design shall be based on the energy source used as the backup energy source or the baseline system energy source in that category if no backup energy source has been specified. Where the proposed design includes on-site electricity generation systems other than on-site renewable energy systems, the baseline design shall include the same generation systems excluding its site-recovered energy.

G2.4.2.1 The design energy cost and baseline energy cost shall be determined using actual rates for purchased energy.

G2.4.2.2 Where on-site renewable energy or site-recovered energy is used, the baseline building design shall be based on the energy source used as the backup energy source, or the baseline system energy source in that category if no backup energy source has been specified, except where the baseline energy source is prescribed in Tables G3.1.1-2 and G3.1.1-3. Where the proposed design includes onsite electricity generation systems other than on-site renewable energy systems, the baseline design shall include the same generation systems excluding its site-recovered energy.

Informative Note: The above provision allows users to gain credit for features that yield load management benefits.

Commented [A81]: Amended to add exceptions from 5.4.6 Commercial Solar Ready (Mandatory).

Commented [A82]: New local amendment section to support On-Site Renewable Energy, Electric vehicle power transfer infrastructure, and Electrical energy storage system sections. The remainder of the code item is from the model code.

Commented [A83]: Amended to support On-Site Renewable Energy, Electric vehicle power transfer infrastructure, and Electrical energy storage system sections. These requirements were adopted as part of the appendix in IECC. Since there is no appendix for ASHRAE, these requirements have to be added to their relevant section.

Commented [A84]: Existing local amendment section modified slightly to incorporate additional sections and to update to current model code language.