STATE OF WASHINGTON

STATE BUILDING CODE COUNCIL

May 2018

Log No. _____

1. State Building Code to be Amended:

- ☒ International Building Code
- ☐ ICC ANSI A117.1 Accessibility Code
- ☐ International Existing Building Code
- ☐ International Residential Code
- ☐ International Fire Code
- ☐ Uniform Plumbing Code
- ☐ International Mechanical Code
- ☐ International Fuel Gas Code
- ☐ NFPA 54 National Fuel Gas Code
- ☐ NFPA 58 Liquefied Petroleum Gas Code
- ☐ Wildland Urban Interface Code

For the Washington State Energy Code, please see specialized energy code forms

Section(s):
427

Title:
Electric Vehicle Charging Infrastructure

2. Proponent Name (Specific local government, organization or individual):

Proponent: Kathleen Petrie
Title: Program Manager, Green Building Communitywide
Date: June 1, 2021

3. Designated Contact Person:

Proponent: Kathleen Petrie
Title: Program Manager, Green Building Communitywide
Address: 201 S. Jackson St, Suite 5701, Seattle WA 98104

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4. Proposed Code Amendment. Reproduce the section to be amended by underlining all added language, striking through all deleted language. Insert new sections in the appropriate place in the code in order to continue the established numbering system of the code. If more than one section is proposed for amendment or more than one page is needed for reproducing the affected section of the code additional pages may be attached. (Examples on the SBCC website)

Code(s) International Building Code **Section(s)** 427

Enforceable code language must be used; see an example by clicking here.
Amend section to read as follows:

427.1 Scope. The provisions of this section shall apply to the construction of new and substantially improved buildings, paved surface parking lots, and parking garages.

Exception:

1. Occupancies classified as Group R-3 or Group U.
2. ((~~2. Group A, Group E, or Group M occupancies, except where employee parking spaces are designated. The provisions of Section 427 shall apply only to those designated employee parking spaces.~~))

427.2 Required electric vehicle charging infrastructure. *Electric vehicle* charging infrastructure for off-street parking spaces shall be provided according to Table 427.2.1 and Table 427.2.2. For developments that have mixed residential and nonresidential uses, parking associated with residential uses shall meet the requirements of Table 427.2.1, and parking associated with nonresidential uses shall meet the requirements of Table 427.2.2((~~Where parking is provided, ten percent of parking spaces shall be provided with electric vehicle charging infrastructure in compliance with Sections 427.3, 427.4 and 427.5.~~)) When the calculation of percent served results in a fractional parking space, the applicant shall round up to the next whole number.

Exception: Parking spaces associated with R-1 and R-2 occupancies considered to be affordable by meeting one of the following conditions, shall comply with Table 427.2.3:

1. The building is owned by a public housing authority for the purpose of providing affordable housing; or
2. A regulatory agreement, covenant or other legal instrument is recorded on the property title for a minimum of 40 years that:
   a. Restricts at least 51 percent of the units to be occupied by and affordable to households earning no more than 60 percent of area median income; or
   b. Restricts initial and subsequent sales of at least 51 percent of the residential units to households with incomes no more than 80 percent of area median income.

TABLE 427.2.1
RESIDENTIAL ELECTRIC VEHICLE CHARGING INFRASTRUCTURE[c]

Occupancy	Number of EVSE Parking Spaces[a]	Number of EV-Ready Parking Spaces[b]
New Group R and I occupancy buildings	10% of total parking spaces	25% of total parking spaces
Existing Group R and I occupancy buildings undergoing substantial improvement	10% of total parking spaces	25% of total parking spaces

a. An electric vehicle supply equipment (EVSE) space is served by conductors, including the ungrounded, grounded, and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, personnel protection system, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and an electric vehicle.

b. An electric vehicle (EV) -ready space is a served by a minimum 208/240-volt dedicated branch circuit for electric vehicle supply equipment that is terminated at a receptacle, junction box or electric vehicle supply equipment within the parking space in order to allow for future installation of electric vehicle supply equipment.

c. An EVSE parking space does not count as an EV-ready parking space for the purposes of meeting the requirements of this section.

TABLE 427.2.2
NONRESIDENTIAL ELECTRIC VEHICLE CHARGING INFRASTRUCTURE[c]

Occupancy	Number of EVSE Parking Spaces[a]	Number of EV-Ready Parking Spaces[b]

New Group A, B, E, F, H, M, and S occupancy buildings	10% of total parking spaces	10% of total parking spaces
Existing Group A, B, E, F, H, M, and S occupancy buildings undergoing substantial improvements	10% of total parking spaces	10% of total parking spaces

a. An electric vehicle supply equipment (EVSE) space is served by conductors, including the ungrounded, grounded, and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, personnel protection system, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and an electric vehicle.

b. An electric vehicle (EV) -ready space is a served by a minimum 208/240-volt dedicated branch circuit for electric vehicle supply equipment that is terminated at a receptacle, junction box or electric vehicle supply equipment within the parking space in order to allow for future installation of electric vehicle supply equipment.

c. An EVSE parking space does not count as an EV-ready parking space for the purposes of meeting the requirements of this section.

TABLE 427.2.3

ELECTRIC VEHICLE CHARGING INFRASTRUCTURE FOR STRUCTURES CONSIDERED TO BE AFFORDABLE[c]

Occupancy	Number of EVSE Parking Spaces[a]	Number of EV-Ready Parking Spaces[b]
New buildings	5% of total parking spaces	25% of total parking spaces
Existing buildings undergoing substantial improvements	5% of total parking spaces	25% of total parking spaces

a. An electric vehicle supply equipment (EVSE) space is served by conductors, including the ungrounded, grounded, and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, personnel protection system, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and an electric vehicle.

b. An electric vehicle (EV) -ready space is a served by a minimum 208/240-volt dedicated branch circuit for electric vehicle supply equipment that is terminated at a receptacle, junction box or electric vehicle supply equipment within the parking space in order to allow for future installation of electric vehicle supply equipment.

c. An EVSE parking space does not count as an EV-ready parking space for the purposes of meeting the requirements of this section.

((**427.3 Electrical room(s).** Electrical room(s) serving buildings with on-site parking spaces must be sized to accommodate the potential for electrical equipment and distribution required to serve a minimum of 20 percent of the total parking spaces with 208/240 V 40-amp, circuit or equivalent electric vehicle charging infrastructure.))

427.3((**4**)) **Electric vehicle charging infrastructure.** ((Electric vehicle charging infrastructure shall meet the following requirements:

1. A minimum number of 208/240 V 40-amp circuit or equivalent electric vehicle charging stations required to serve the parking spaces specified in Section 427.2. The electric vehicle charging stations shall be located to serve spaces designated for parking and charging electric vehicles.
2. Additional service capacity, space for future meters, panel capacity or space for additional panels, and raceways for future installation of electric vehicle charging stations. The service capacity and raceway size shall be designed to accommodate the future installation of the number of 208/240 V 40-amp circuit or equivalent, electric vehicle charging stations specified in section 427.2. The raceway shall terminate at spaces designated for parking and charging electric vehicles in the future.))

Where designated electric vehicle charging locations serve exterior on-grade parking spaces that are located more than 4 feet from a building, raceways shall be extended below grade to a pull box in the vicinity of the designated future electric vehicle charging locations or stub above grade in the vicinity of the designated future electric vehicle charging locations, protected from vehicles by a curb or other device.

Exception: In lieu of surface-mounted raceway between the electrical panel and the designated electric vehicle charging locations, it is permitted to provide permanent markings indicating the pathway for future raceway, and one inch diameter capped sleeves through each wall and floor assembly that are penetrated along that route. This pathway and the locations of capped sleeves shall also be indicated on the electrical plans. Raceway shall be installed for any portion of the pathway located below slabs, below grade, or within floor, wall or roof assemblies.

Load management infrastructure may be used to adjust the size and capacity of the required building electric service equipment and circuits on the customer facilities, as well as electric utility owned infrastructure, as allowed by applicable local and national electrical code. Where an electric vehicle load management system is

installed, the maximum number of EVSE parking spaces that may be connected to the same electrical circuit in the building is as shown in Table 427.3.

TABLE 427.3 MAXIMUM NUMBER OF EVSE PER CIRCUIT BREAKER RATING

Minimum Circuit Breaker Rating (AMPS)	Maximum number of EVSE per Circuit
20	1
30	2
40	4
50	5
60	6
70	7
80	8
90	10
100	11
125	14
150	17

427.4((~~5~~)) Electric vehicle charging infrastructure for accessible parking spaces. When electric vehicle charging infrastructure is required, ten percent of accessible parking space, rounded to the next whole number, shall be provided with electric vehicle charging infrastructure. The electric vehicle charging infrastructure may also serve adjacent parking spaces not designated as accessible parking. A maximum of ten percent, rounded to the next whole number, of the accessible parking spaces are allowed to be included in the total number of EV parking spaces required under Section 427.2.

427.5. Identification requirements. For electric vehicle--ready parking spaces, the branch circuit shall be identified as "Electric Vehicle Ready" in the service panel or subpanel directory, and the termination location shall be marked as "Electric Vehicle Ready".

5. **Briefly explain your proposed amendment, including the purpose, benefits and problems addressed.** Specifically note any impacts or benefits to business, and specify construction types, industries and services that would be affected. Finally, please note any potential impact on enforcement such as special reporting requirements or additional inspections required.

This proposal uses the amended WSR 16-03-064 text, filed 1/19/16 by the SBCC. The proposed amendments reflect an EV Code that was developed by jurisdictions of the Regional Code Collaboration in 2020, and have been adopted (with some local modifications) by the City of Issaquah; King County is currently transmitting their EV Code to Council for approval.

The proposed amendments attempt to provide clarity to the current requirements in the following ways:

- The building code does not regulate employee parking, so the exception for Group A, E & M occupancies has been deleted.
- Washington is a zero-emission vehicle state (ZEV) which will require automakers derive up to 8% of sales of EV's by 2025. The addition of the EV-ready requirement will allow buildings to increase the amount of installed EV's as demand increases without heavy alteration infrastructure costs – just the cost of the actual charging unit.
- The proposal reduces the EV installed requirement by 50% for affordable housing projects, thereby reducing the cost burden for these projects.
- The requirements for existing Sections 427.3 & 427.4 have been incorporated into the new tables.
- At the 5/21/21 SBCC meeting, members were unable to find acceptable language to help ensure that vehicle load management systems work the way they are intended. Proposed Table 427.3 was developed by Engineers in Canada and has been used in the City of Saanich's EV Code (See page 4: https://saanich.ca.granicus.com/MetaViewer.php?view_id=1&clip_id=312&meta_id=19499). By

regulating the amount of parking stalls are attached to each size circuit, you mitigate the potential of under sourcing the energy to a group of spaces.

- New Section 427.5 requires labeling in the panel mimics the solar-ready requirements currently in the IBC and IRC.

6. **Specify what criteria this proposal meets.** You may select more than one.
   - ☐ The amendment is needed to address a critical life/safety need.
   - ☒ The amendment clarifies the intent or application of the code.
   - ☐ The amendment is needed to address a specific state policy or statute.
   - ☐ The amendment is needed for consistency with state or federal regulations.
   - ☐ The amendment is needed to address a unique character of the state.
   - ☐ The amendment corrects errors and omissions.

7. **Is there an economic impact:** ☐ Yes ☒ No

   Explain:

   The new cost element in this proposal is to require EV-ready parking spaces in addition to the current EVSE installed parking spaces. Cost impacts associated with multifamily and commercial development is not static due to variations in parking lot configuration, design, and development size. A City of Oakland study estimated the cost of an EV-Ready space at $1,330 for surface parking and $1,380 for enclosed parking. In contrast, EV readiness retrofit costs are up to eight times greater than new construction, adding between $900 to over $5,000 additional expense per space.

   If there is an economic impact, use the tool below to estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. If preferred, you may submit an alternate cost benefit analysis.

   Provide your best estimate of the construction cost (or cost savings) of your code change proposal? (See OFM Life Cycle Cost **Analysis tool** and **Instructions;** use these **Inputs**. **Webinars on the tool can be found Here and Here**)

   $Click here to enter text./square foot (For residential projects, also provide $Click here to enter text./ dwelling unit)

   Show calculations here, and list sources for costs/savings, or attach backup data pages

   List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application:

   No additional plan review or inspection effort required.

Please send your completed proposal to: sbcc@des.wa.gov

All questions must be answered to be considered complete. Incomplete proposals will not be accepted.