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): **429 (Existing Amendment)**

Title: **Electric vehicle (EV) charging infrastructure**

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

Proponent: **Patrick Hanks (Building Industry Association of Washington)**
Title: **Policy and Research Manager**
Date: **9/17/24; Revision 1, 10/23/24; Revision 2, 4/10/25**

3. Designated Contact Person:

Name: **Patrick Hanks (Building Industry Association of Washington)**
Title: **Policy and Research Manager**
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Office Phone: **(360) 352-7800 ext. 163**
Cell:
E-Mail address: **patrickh@biaw.com**

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.

   Clearly state if the proposal modifies an existing amendment or if a new amendment is needed. If the proposal modifies an **existing amendment**, show the modifications to the existing amendment by underlining all added language and striking through all deleted language. If a new amendment is needed, show the modifications to the **model code** by underlining all added language and striking through all deleted language.

   Code(s): 2024 IBC (Existing State Amendment) **Section(s):** 429

   Enforceable code language must be used.
   Amend section to read as follows:

WAC 51-50-0200

Chapter 2—Definitions.

SECTION 202—DEFINITIONS.

~~**AUTOMATIC LOAD MANAGEMENT SYSTEM (ALMS).** A system designed to manage electrical load across one or more EV Ready parking spaces.~~

~~**ELECTRIC VEHICLE (EV) CAPABLE PARKING SPACE.** A parking space provided with a conduit, electrical panel and load capacity to support future installation of EV charging equipment.~~

~~**ELECTRIC VEHICLE (EV) CHARGER.** Off-board charging equipment used to charge electric vehicles.~~

~~**ELECTRIC VEHICLE (EV) CHARGING STATION.** EV Ready parking space with installed EV charger.~~

~~**ELECTRIC VEHICLE (EV) READY PARKING SPACE.** A parking space provided with a receptacle outlet allowing charging of electric vehicles.~~

~~**ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE).** The 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 the electric vehicle.~~

AUTOMATIC LOAD MANAGEMENT SYSTEM (ALMS). A system designed to manage electrical load for *EVSE spaces, EV ready spaces, or EV capable spaces*.

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.

DIRECT CURRENT FAST CHARGING (DCFC) EVSE: (fast/rapid charging) Equipment capable of fast charging on a 100A or higher 480VAC three-phase branch circuit. AC power is converted into a controlled DC voltage and current within the EVSE that will then directly charge the *electric vehicle*.

Commented [PH1]: WA Code

Commented [PH2R1]: Changed wording so ALMS can be used for any EV spaces.

Commented [PH3]: 2024 IECC CG

Commented [PH4R3]: APPENDIX CG ELECTRIC VEHICLE CHARGING INFRASTRUCTURE - 2024 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)

Commented [PH5]: 2022 Denver Energy Code

Commented [PH6R5]: 2022 Denver Building & Fire Code - 3rd Printing - December 2023

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). An *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 the future installation of an *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.

Commented [PH7]: 2024 IECC CG

Commented [PH8]: 2024 IECC CG

Commented [PH9R8]: Wording change to better match EV ready space.

Commented [PH10]: 2024 IECC CG

Commented [PH11R10]: Changed wording to better match EV capable space.

Commented [PH12]: 2024 IECC CG

Commented [PH13R12]: EVSE is more technically accurate than charger or charging station. I think either way can work, but the current code uses all three and it is confusing.

Commented [PH14]: 2024 IECC CG

WAC 51-50-0429

Section 429—Electric vehicle charging infrastructure.

~~**429.1 General.** The provisions of this section shall apply to the construction of new buildings and accessory structures, including parking lots and parking garages.~~

~~Electric vehicle supply equipment (EVSE) shall be installed in accordance with applicable requirements of chapter **19.28** RCW and the National Electrical Code, Article 625.~~

~~EXCEPTION: Electric vehicle charging infrastructure is not required if any of the following conditions are met:~~

- ~~1. There is no public utility or commercial power supply.~~
- ~~2. Dwelling units without garages or other on-site parking.~~

~~**429.2 Electric vehicle (EV) charging infrastructure.** Buildings and accessory structures shall be provided with EV charging stations, EV-Ready parking spaces, and EV-capable parking spaces in accordance with Table 429.2. Calculations shall be rounded up to the nearest whole number. Where a building contains more than one occupancy, the electric vehicle charging infrastructure percentages of Table 429.2 shall be applied to the number of spaces required for each occupancy.~~

~~EXCEPTIONS: 1. Except for Group A, Group E, and Group M occupancies, on-site parking with less than 10 parking spaces shall not be required to comply with Section 429.2.~~

- ~~2. Group A, Group E, and Group M occupancies shall comply with one of the following, whichever is greater:~~
- ~~2.1. The provisions of Section 429.2 shall apply only to designated employee parking spaces.~~
- ~~2.2. One of each 200 parking spaces or fraction thereof shall be EV Ready. One of each 200 parking spaces or fraction thereof shall be an EV Charging Station.~~

~~**Table 429.2**~~
~~**Electric Vehicle Charging Infrastructure**~~

~~Occupancy~~	~~Number of EV Charging Stations~~	~~Number of EV-Ready Parking Spaces~~	~~Number of EV-Capable Parking Spaces~~
~~Group A, B, E, F, H, I, M, and S occupancies~~	~~10% of total parking spaces~~	~~10% of total parking spaces~~	~~10% of total parking spaces~~
~~Group R occupancies~~			

- Buildings that do not contain more than two dwelling units	Not required	One for each dwelling unit	Not required
- Dwelling units with private garages	Not required	One for each dwelling unit	Not required
All other Group R occupancies	10% of total parking spaces	25% of total parking spaces	10% of total parking spaces

429.2.1 EV charging stations and EV-Ready parking spaces. A minimum of 40-ampere dedicated 208/240-volt branch circuit shall be installed for each EV-Ready parking space and each EV Charging Station. The branch circuits shall terminate at a receptacle outlet or EV charger in close proximity to the proposed location of the EV-Ready parking space or the EV Charging Station.

429.2.2 EV-Capable parking spaces. A listed raceway capable of accommodating a minimum of 40-ampere dedicated 208/240-volt branch circuit shall be installed for each EV-Capable parking space. The raceway shall terminate into a cabinet, box or other enclosure in close proximity to the proposed location of the EV-Capable parking space. Raceways and related components that are planned to be installed underground, and in enclosed, inaccessible or concealed areas and spaces, shall be installed at the time of original construction.

429.3 Electrical room(s) and equipment. Electrical room(s) and/or dedicated electrical equipment shall be sized to accommodate the requirements of Section 429.
The electrical service and the electrical system, including any on-site distribution transformer(s), shall have sufficient capacity to simultaneously charge all EVs at all required EV Charging Stations, EV-Ready parking spaces, and EV-Capable parking spaces at a minimum of 40-amperes each.
EXCEPTION: Automatic Load Management System (ALMS) may be used to adjust the maximum electrical capacity required for the EV-Ready and EV-Capable parking spaces. The ALMS must be designed to allocate charging capacity among multiple future EV Charging Stations at a minimum of 16 amperes per EV charger.

429.4 Electric vehicle charging infrastructure for accessible parking spaces. Ten percent of the accessible parking spaces, rounded to the next whole number, shall be EV Charging Stations. Additional 10 percent of the accessible parking spaces, rounded to the next whole number, shall be EV-Ready. Not fewer than one for each type of EV charging system shall be accessible.
The electric vehicle charging infrastructure may also serve adjacent parking spaces not designated as accessible parking. A maximum of 10 percent of the accessible parking spaces, rounded to the next whole number, are allowed to be included in the total number of electric vehicle parking spaces required under Section 429.2.

429.1 General. All provided on-site *automobile parking spaces* for buildings and accessory structures, including parking lots and parking garages, shall be provided with electric vehicle charging infrastructure in accordance with Sections 429.1 through 429.5.
EXCEPTIONS:

1. There is no public utility or commercial power supply.
2. Where the local electric distribution entity certifies in writing that it is not able to provide 100 percent of the necessary distribution capacity within 2 years after the estimated certificate of occupancy date, the required EV charging infrastructure shall be reduced based on the available existing electric distribution capacity.
3. For Group R occupancies, where substantiation is *approved* that meeting the requirements of Section 429 will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the builder or developer by more than $450 per dwelling unit.

Commented [PH15]: Increasing the scope of the code in line with RCW 19.27.540, changing from past SBCC interpretation that the code only applies to parking required by local jurisdictions for each occupancy.

Commented [PH16]: 2024 IECC Appendix RE

Commented [PH17R16]: APPENDIX RE ELECTRIC VEHICLE CHARGING INFRASTRUCTURE - 2024 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)

Commented [PH18]: 2024 IECC Appendix RE

429.2 Electric vehicle (EV) charging infrastructure. The number of required *EVSE spaces*, *EV ready spaces* and *EV capable spaces* shall be determined in accordance with this section and Table 429.2 based on the total number of on-site *automobile parking spaces* provided and shall be rounded up to the nearest whole number. For R-2 buildings, the requirements of this section and Table 429.2 shall be based on the total number of *dwelling units* or *automobile parking spaces*, whichever is less.

1. Where more than one parking facility is provided on a building site, the requirements of this section and Table 429.2 shall be calculated separately for each parking facility.
2. Where one shared parking facility serves multiple building occupancies, *automobile parking spaces* that are designated separately for each occupancy shall comply with the requirements for that occupancy. *Automobile parking spaces* that are shared between occupancies shall comply with which occupancy has the greater requirement or the required number of *EVSE spaces*, *EV ready spaces*, and *EV capable spaces* shall be determined proportionally based on the floor area of each building occupancy.
3. For Groups A, B, E, I, M and S-2 Occupancies, the number of required *EVSE spaces* may be reduced by ten per one *automobile space* with an installed *DCFC EVSE*.
4. Installed *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*.
5. Installed *EV ready spaces* that exceed the minimum requirements of this section may be used to meet the minimum requirements for *EV capable spaces*.
6. 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.
7. Requirements for a Group S-2 parking garage shall be determined by the occupancies served by that parking garage. Where new *automobile parking spaces* do not serve specific occupancies, the values for Group S-2 parking garages in Table 429.2 shall be used.

EXCEPTIONS:

1. Except for Group A, Group E, and Group M occupancies, on-site parking with less than 10 *automobile parking spaces* shall not be required to comply with Section 429.2.
2. Group A, Group E, and Group M occupancies shall comply with one of the following, whichever is greater:
   a. The provisions of Section 429.2 shall apply only to *automobile parking spaces* designated for employees.
   b. One of each 200 *automobile parking spaces* or fraction thereof shall be *EV ready spaces*. One of each 200 *automobile parking spaces* or fraction thereof shall be *EVSE ready spaces*.

Table 429.2
Electric Vehicle (EV) Charging Infrastructure

Occupancy	EVSE Spaces	EV Ready Spaces	EV Capable Spaces
Group A	10%	10%	10%
Group B	10%	10%	10%
Group E	10%	10%	10%
Group F	10%	10%	10%
Group H	10%	10%	10%
Group I	10%	10%	10%
Group M	10%	10%	10%
Group R occupancies			

Commented [PH19]: This section is structured after the 2024 IECC CG, but I think it could be greatly improved to be more clear with all the numbered bullet points.

Commented [PH20]: The IECC determines the requirements for mixed use by floor area. I am trying to design this so that instead the EV charging capacity can be designed to serve one occupancy during the day and residential at night.

Commented [PH21R20]: The goal is to provide flexibility while having mixed use buildings provide sufficient charging capacity.

Commented [PH22]: 2022 Denver Energy Code.

Commented [PH23R22]: Incentivizes fast chargers for occupancies where it makes more sense than level 2 chargers.

Commented [PH24R22]: Not sure why only S-2 is listed and not all Group S occupancies. We can also consider if this should apply to Group R as well.

Commented [PH25]: This is not specifically allowed in RCW 19.27.540. Should only be employee parking.

Commented [PH26]: Table structure based on IECC and incorporating some current WA code. RCW 19.27.540 only requires a 10% EV capable spaces and electrical room sized for 20% of parking spaces. I've maintained the percentages in my previous proposals.

Buildings with one or two *dwelling units*	Not required	One for each *dwelling unit*	Not required
Dwelling units with private garages or dedicated *automobile parking spaces*	Not required	One for each *dwelling unit*	Not required
All other Group R occupancies	10%	15%	10%
Group S occupancies			
Parking garages	10%	10%	10%
All other Group S occupancies	10%	10%	10%
Group U	Not required	Not required	Not required

429.2.1 EV capable spaces. Each *EV capable space* used to meet the requirements of Section 429.2 shall comply with the following:

1. A continuous raceway or cable assembly shall be installed between an enclosure, end cap, or outlet located within close proximity of the *EV capable space* and future or existing panelboard or switchboard location(s).
2. Installed raceway or cable assembly shall be sized and rated to supply a minimum of 40-apmere dedicated 208/240-volt branch circuit.
3. The enclosure, end cap, or outlet and the electrical distribution equipment directory shall be marked: "For electric vehicle supply equipment (EVSE)."

429.2.2 EV ready spaces. Each *EV ready space* used to meet the requirements of Section 429.2 shall comply with the following:

1. A minimum of 40-amphere dedicated 208/240-volt branch circuit shall be installed for each *EV ready space*.
2. The branch circuit shall terminate at a receptable outlet in close proximity to the *EV ready space*.
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)."

429.2.3 EVSE spaces. An installed *EVSE* with multiple output connections shall be permitted to serve multiple *EVSE spaces* and each *automobile parking space* served by the *EVSE* shall meet the requirements of section 429.2. Each *EVSE space* used to meet the requirements of Section 429.2 shall comply with the following:

1. A minimum of 40-apmhere dedicated 208/240-volt branch circuit shall be installed for each *EVSE space*.
2. The branch circuit shall terminate at a receptable outlet and *EVSE* or *EVSE* in close proximity to the *EVSE space*.

429.3 Electrical room(s) and equipment. Electrical room(s) and/or dedicated electrical equipment shall be sized to accommodate the requirements of Section 429 for *EVSE spaces* and *EV ready spaces*. The electrical service and the electrical system, including any on-site distribution transformer(s), shall have sufficient capacity to charge EVs at required *EVSE spaces* and *EV ready spaces* at their installed ampacity as recommended by the local utility.

EXCEPTION:

Commented [PH27]: Added in dedicated parking spaces along with private garages. Overall these requirements are more stringent than the minimum in RCW 19.27.540, but I think it makes sense and matches the requirements for SF in the residential code.

Commented [PH28]: Base 2024 IECC CG, modified by Denver Energy Code to allow for EV capable raceway to go to a future panel location.

Commented [PH29R28]: Used WA code "close proximity" instead of model code "3 feet".

Commented [PH30R28]: Adding in end cap so it doesn't have to be in an enclosure.

Commented [PH31]: Blended WA code language with IECC structure and tried to match EV Capable.

Commented [PH32]: WA code

Commented [PH33R32]: MF builders shared their experiences that utilities don't know how to size transformers for EV Capable spaces. Removing them from the requirement improves project feasibility an reduces unnecessary construction costs.

Commented [PH34R32]: Current code and utilities are requiring transformers be sized as if all EVSE spaces and EV ready are simultaneous charging. However as utilities get more data on charging behavior they can recommend a more accurate percentage and significantly lower transformer requirements in line with how they are sized for other uses.

Automatic Load Management System (ALMS) may be used to adjust the maximum electrical capacity required for *EVSE spaces*, *EV ready spaces*, and *EV capable spaces*. The *ALMS* must be designed to allocate charging capacity among multiple *EVSE* at a minimum of 16 amperes per *EVSE*.

429.4 Electrical vehicle charging infrastructure for accessible parking spaces. Ten percent of the accessible parking spaces, rounded to the nearest whole number, shall be *EVSE spaces*. An additional 10 percent of the accessible parking spaces, rounded to the nearest whole number, shall be *EV ready spaces*. Not fewer than one for each type of *EVSE* shall be accessible.
The installed *EVSE* for accessible parking spaces may also serve adjacent *automobile parking spaces* not designated as accessible parking and count towards the requirements of Section 429.2. A maximum of 10 percent of the accessible parking spaces, rounded to the next whole number, are allowed to be included in the total number of electric vehicle parking spaces required under Section 429.2.

429.5 Installation. All electrical components installed to meet the requirements of Section 429 shall be installed in accordance with the applicable requirements of chapter 19.28 RCW and WAC 296-46B.

Commented [PH35]: WA code

Commented [PH36R35]: Expanding the exception to allow ALMS to be used for EVSE spaces not just future spaces.

Commented [PH37R35]: The wording may need clarification to specify 16 amperes per EVSE output.

Commented [PH38]: I think the we need to clarify if accessible parking spaces count for the total number of automobile parking spaces for 429.2. Perhaps have them counted separately.

Commented [PH39R38]: May be better to turn this into a table and have the primary table based on non-accessible spaces. So it's clear what the percentages are calculated on and what they apply to.

Commented [PH40R38]: MF builders questioned how this section pertains to mixed occupancies.

Commented [PH41]: Current code says EVSE, but electrical will inspect more than just installed EVSE.

Commented [PH42]: Replaces reference to the NEC because the NEC is adopted in LNIs WAC and they have other things that are adopted and hierarchies. Also if LNI were to change something then it would be automatically incorporated in the WAC.

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.

My original proposal was to fully exempt Group R-2 occupancies from the requirements of this section with the goal of lowering construction costs for multifamily residential buildings. However, I realized that the base requirements of this code section come from RCW 19.27.540 and my original proposal would have conflicted with those requirements. Based on that, and on feedback from the TAG, I revised my proposal to lower the required percentage of EV-Ready parking spaces for Group R occupancies from 25% to 15%. If implemented, this code change will lower minimum construction costs and operating costs for multifamily residential buildings while still exceeding the minimum requirements of RCW 19.27.540.

Revision 2

After the March BFRW Committee meeting I met with various stakeholders, experts, and BIAW members who build residential projects that fall under the IBC and discussed section 429 with them. They brought forth the following concerns.

- The requirements of 429 are creating large cost increases for residential construction and reducing project feasibility.
- The code does not differentiate between the needs of different locations in the state.
- There is a lack of experienced workforce at the local level to handle electrical work.
- Issues with how 429 applies to mixed use occupancy and not allowing for reasonable flexibility in meeting the requirements.
- Utilities don't know how to size transformers and distribution capacity for EV capable spaces because the wiring and capacity is not installed.
- Utilities (and the current code) require that transformers and distribution be sized for all EV spaces (EVSE/charging stations, ready, and capable) simultaneously charging. This creates a massive cost burden.
- Increasing the amount of EV charging infrastructure increases electrical fire risks and increases insurance rates or makes it harder to get insurance for a building.
- One builder has been required by insurance companies to convert EV ready spaces to full chargers which increases construction costs and operational costs.

- The code does not account for possible changes in EV technology, or zero emission vehicles over the life cycle of the building.
- Not very many, if any, residential buildings have been built under the 2021 IBC. However, if the issues with 429 are not addressed now then multifamily housing supply will be negatively impacted. The next opportunity to resolve these concerns will be in the 2027 code cycle which will not go into effect until 2029.

I looked at the 2024 IECC Appendix CG and RE, and at Denver's energy code for ideas on how to improve 429. There were some exceptions and small things that these codes have that I think would improve Washington's code without changing the main requirements. Additionally, there are some areas where I am suggesting changes that would increase the overall stringency but better align with RCW and other codes.

Summary of new code changes:

- Readjusting the code to better match national codes in style and function. Blending with WA code and IBC styling as needed.
- Adding parking automobile parking space and DCFC fast charging to definitions.
- Changes wording to better match other national codes (EVSE, EV ready spaces, EV capable spaces, etc.).
- Clarifying the requirements of 429 apply to all parking provided in line with RCW 19.27.540. This differs from prior opinions where the SBCC interpreted the requirements only apply to parking required for each occupancy by local ordinance.
- Allowing R-2 to calculate based on dwelling units or parking spaces, whichever is less. This makes the requirements of the section more fair so that smaller apartment buildings won't have to have a disproportionate amount of EV charging infrastructure compared to larger apartment buildings.
- Adding exemptions from requirements if utility cannot provide capacity for EV charging infrastructure and raise utility side costs to Group R builders over $450/DU.
- Adding DCFC substitution for EVSE spaces requirement.
- Adding extra EVSE spaces compensate for EV ready spaces. Extra EV ready spaces compensate for EV capable spaces.
- Adding that if R-2 has EV ready spaces equal to parking or dwelling units then they don't need EVSE.
- Trying to clarify how 429 applies to mixed use.
- Allowing EV capable spaces to end with an end cap instead of box.
- Removing EV capable spaces from electrical room and transformer sizing requirements.
- Allowing EVSE spaces with multiple connections to serve multiple parking spaces and each space served counts towards the requirements.
- Expanding ALMS to include EVSE spaces with EV ready and EV capable.

Percentages and Forecasting

Earlier this year, WSDOT completed the EV Mapping tool required by HB 1287 (2021) (the same bill that added requirements for the code to exceed the minimum requirements of RCW.19.27.540). From my research of the 2021 code cycle the current percentages were not determined based on any forecasting or anticipation of what would be needed to meet the needs of the different occupancies and Washingtonians based on current market adoption and reasonable changes over time.

If the committee chooses to not move forward with a reduction in percentages, I recommend that they convene a workgroup to consult with stakeholders, builders, and utilities and make a reasonable change to the percentages requirements to better accommodate the current market needs, electrical capacity and distribution, and reduce construction and operational costs while anticipating future demand in an efficient and cost-effective way. It's also possible that 429.2 could be changed to better account for local EV adoption.

Data on EV adoption in WA

- Monthly EVs compared to non-EVs. As of Feb 2025, EV passenger vehicles and trucks are 1.39% of total WA vehicles.
- Electric Vehicle Share of New Registrations. As of Feb 2025, BEVs and PHEVs make up 15% of new passenger vehicle registrations.
- WSDOT – WA total registered EVs by county. There are multiple counties that in 2024 had less than 100 registered EVs.

Requiring 25% of parking spaces to be EV ready for all residential buildings under the commercial code, across the whole state, based on the current adoption rates is extremely aggressive. Especially when considering our housing affordability crisis and the need to lower housing costs and increase supply.

Not every EV user will need to have a charger available *every day* at their residence in order to charge their vehicle. People will be able to charge at work, when out running errands, or even stop by a charging station while commuting long distances.

This proposal threads the needle between meeting and exceeding the requirements of the RCW 19.27.540, while also reducing construction and operating costs for multifamily residential buildings. This better aligns the code with the statutory objectives of the SBCC in RCW 19.27.020 which includes eliminating restrictive requirements that could unnecessarily increase construction costs.

The proposal will not add additional enforcement, reporting, or inspection requirements.

Type	Dwelling Units	Parking Ratio	Parking Spaces	EVCS Spaces	EVR Spaces	EVC Spaces	Total EV Spaces	EV Parking Spaces to DU	Nights of Weekly Charging Per DU
24-GP1-068	12	1	12	2	2	2	6	0.50	3.5
24-GP1-068	24	1	24	3	4	3	10	0.42	2.9
24-GP1-068	36	1	36	4	6	4	14	0.39	2.7
24-GP1-068	12	1.5	18	2	3	2	7	0.58	4.1
24-GP1-068	24	1.5	36	4	6	4	14	0.58	4.1
24-GP1-068	36	1.5	54	6	9	6	21	0.58	4.1
24-GP1-068	12	2	24	3	4	3	10	0.83	5.8
24-GP1-068	24	2	48	5	8	5	18	0.75	5.3

24-GP1-068	36	2	72	8	11	8	27	0.75	5.3
Current	12	1	12	2	3	2	7	0.58	4.1
Current	24	1	24	3	6	3	12	0.50	3.5
Current	36	1	36	4	9	4	17	0.47	3.3
Current	12	1.5	18	2	5	2	9	0.75	5.3
Current	24	1.5	36	4	9	4	17	0.71	5.0
Current	36	1.5	54	6	14	6	26	0.72	5.1
Current	12	2	24	3	6	3	12	1.00	7.0
Current	24	2	48	5	12	5	22	0.92	6.4
Current	36	2	72	8	18	8	34	0.94	6.6
24-GP1-122	12	1	12	2	5	2	9	0.75	5.3
24-GP1-122	24	1	24	3	10	3	16	0.67	4.7
24-GP1-122	36	1	36	4	15	4	23	0.64	4.5
24-GP1-122	12	1.5	18	2	8	2	12	1.00	7.0
24-GP1-122	24	1.5	36	4	15	4	23	0.96	6.7
24-GP1-122	36	1.5	54	6	22	6	34	0.94	6.6
24-GP1-122	12	2	24	3	10	3	16	1.33	9.3
24-GP1-122	24	2	48	5	20	5	30	1.25	8.8
24-GP1-122	36	2	72	8	29	8	45	1.25	8.8
24-GP1-135	12	1	12	2	3	3	8	0.67	4.7
24-GP1-135	24	1	24	3	6	6	15	0.63	4.4
24-GP1-135	36	1	36	4	9	9	22	0.61	4.3
24-GP1-135	12	1.5	18	2	5	5	12	1.00	7.0
24-GP1-135	24	1.5	36	4	9	9	22	0.92	6.4
24-GP1-135	36	1.5	54	6	14	14	34	0.94	6.6
24-GP1-135	12	2	24	3	6	6	15	1.25	8.8
24-GP1-135	24	2	48	5	12	12	29	1.21	8.5
24-GP1-135	36	2	72	8	18	18	44	1.22	8.6

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

If no, state reason:

If yes, provide economic impact, costs and benefits as noted below in items a – f.

a. ***Life Cycle Cost.*** Use the OFM Life Cycle Cost **Analysis tool** to estimate the life cycle cost of the proposal using one or more typical examples. Reference these **Instructions;** use these **Inputs.** Webinars on the tool can be found **Here** and **Here**). If the tool is used, submit a copy of the excel file with your proposal submission. If preferred, you may submit an alternate life cycle cost analysis.

See attached Excel workbooks for full analysis. See Construction Cost estimate below for information on estimate assumptions.

Baseline is the current code and Alt.1 is this proposal. Alt. 1 is the best option and achieves lower LCC and a 33-44% CO2e reduction over the lifetime of the building.

12-Unit Walk-Up

Life Cycle Cost Analysis		BEST	
Alternative	Baseline	Alt. 1	Alt. 2
Energy Use Intenstity (kBtu/sq.ft)	#DIV/0!	#DIV/0!	#DIV/0!
1st Construction Costs	$ 15,253	$ 10,169	$ 15,253
PV of Capital Costs	$ 53,956	$ 35,971	$ 53,956
PV of Maintenance Costs	$ 9,994	$ 6,663	$ 9,994
PV of Utility Costs	$ -	$ -	$ -
Total Life Cycle Cost (LCC)	**$ 63,950**	**$ 42,633**	**$ 63,950**
Net Present Savings (NPS)	**N/A**	**$ 21,317**	**$ -**

Societal LCC takes into consideration the social cost of carbon dioxide emissions caused by operational energy consumption

(GHG) Social Life Cycle Cost		BEST	
GHG Impact from Utility Consumption	Baseline	Alt. 1	Alt. 2
Tons of CO2e over Study Period	902	601	902
% CO2e Reduction vs. Baseline	N/A	33%	0%
Present Social Cost of Carbon (SCC)	$ 60,060	$ 40,040	$ 60,060
Total LCC with SCC	**$ 124,010**	**$ 82,673**	**$ 124,010**
NPS with SCC	**N/A**	**$ 41,337**	**$ -**

24-Unit Walk-Up

Life Cycle Cost Analysis		BEST	
Alternative	Baseline	Alt. 1	Alt. 2
Energy Use Intenstity (kBtu/sq.ft)	#DIV/0!	#DIV/0!	#DIV/0!
1st Construction Costs	$ 30,507	$ 20,338	$ 30,507
PV of Capital Costs	$ 107,912	$ 71,941	$ 107,912
PV of Maintenance Costs	$ 19,988	$ 13,325	$ 19,988
PV of Utility Costs	$ -	$ -	$ -
Total Life Cycle Cost (LCC)	**$ 127,900**	**$ 85,266**	**$ 127,900**
Net Present Savings (NPS)	**N/A**	**$ 42,633**	**$ -**

Societal LCC takes into consideration the social cost of carbon dioxide emissions caused by operational energy consumption

(GHG) Social Life Cycle Cost		BEST	
GHG Impact from Utility Consumption	Baseline	Alt. 1	Alt. 2
Tons of CO2e over Study Period	1,804	1,203	1,804
% CO2e Reduction vs. Baseline	N/A	33%	0%
Present Social Cost of Carbon (SCC)	$ 120,120	$ 80,080	$ 120,120
Total LCC with SCC	**$ 248,020**	**$ 165,347**	**$ 248,020**
NPS with SCC	**N/A**	**$ 82,673**	**$ -**

36-Unit Walk-Up

Life Cycle Cost Analysis		BEST	
Alternative	Baseline	Alt. 1	Alt. 2
Energy Use Intenstity (kBtu/sq.ft)	#DIV/0!	#DIV/0!	#DIV/0!
1st Construction Costs	$ 45,760	$ 25,422	$ 45,760
PV of Capital Costs	$ 161,868	$ 89,927	$ 161,868
PV of Maintenance Costs	$ 29,982	$ 16,656	$ 29,982
PV of Utility Costs	$ -	$ -	$ -
Total Life Cycle Cost (LCC)	**$ 191,849**	**$ 106,583**	**$ 191,849**
Net Present Savings (NPS)	**N/A**	**$ 85,266**	**$ -**

Societal LCC takes into consideration the social cost of carbon dioxide emissions caused by operational energy consumption

(GHG) Social Life Cycle Cost		BEST	
GHG Impact from Utility Consumption	Baseline	Alt. 1	Alt. 2
Tons of CO2e over Study Period	2,706	1,503	2,706
% CO2e Reduction vs. Baseline	N/A	44%	0%
Present Social Cost of Carbon (SCC)	$ 180,181	$ 100,100	$ 180,181
Total LCC with SCC	**$ 372,030**	**$ 206,683**	**$ 372,030**
NPS with SCC	**N/A**	**$ 165,347**	**$ -**

b. ***Construction Cost.*** Provide your best estimate of the construction cost (or cost savings) of your code change proposal.

The proposals would produce a cost savings of:

$0.68-0.80/square foot

$423.70-564.94/ dwelling unit

For this cost estimate we use 12-, 24-, and 36-unit walk-ups as examples with the following unit size and composition. These are approximations based on discussions with BIAW members.

Units	1 bd	2 bd	3 bd	Total Sq Ft
12	6	6	0	7500
24	8	14	2	16200
36	10	20	6	25500

Type	Sq Ft
1 bd	550
2 bd	700
3 bd	1000

As a conservative estimate we are using the following base material costs. Data sourced from RSMeans.

Material	Base Cost	Base Labor
Level 2 electric vehicle charging, free standing, single connector, no RFID	$4,471.25	$94.18

This estimate does not include the cost of raceways, wiring, panels and the labor and other costs associated with designing and building the EV charging infrastructure in parking spaces. Some of those costs are highly dependent on the circumstances of individual projects. So, this estimate is extremely conservative and the full cost savings if the proposal is adopted are likely to be greater than presented.

Based on the above parameters we used RSMeans to estimate the construction costs including profit and overhead for the chargers needed to comply with the current code (baseline) and our proposal.

12-Unit Walk-Up

Type	Units	Sq Ft	EV Ready	Chargers	Cost	Labor	Total	$/Sq Ft	$/DU
Baseline	12	7500	25%	3	$14,793.45	$459.84	$15,253.29	$2.03	$1,271.11
Proposal	12	7500	15%	2	$9,862.30	$306.56	$10,168.86	$1.36	$847.41
				Savings	$4,931.15	$153.28	$5,084.43	$0.68	$423.70

24-Unit Walk-Up

Type	Units	Sq Ft	EV Ready	Chargers	Cost	Labor	Total	$/Sq Ft	$/DU
Baseline	24	16200	25%	6	$29,586.90	$919.68	$30,506.58	$1.88	$1,271.11
Proposal	24	16200	15%	4	$19,724.60	$613.12	$20,337.72	$1.26	$847.41
				Savings	$9,862.30	$306.56	$10,168.86	$0.63	$423.70

36-Unit Walk-Up

Type	Units	Sq Ft	EV Ready	Chargers	Cost	Labor	Total	$/Sq Ft	$/DU
Baseline	36	25500	25%	9	$44,380.35	$1,379.52	$45,759.87	$1.79	$1,271.11
Proposal	36	25500	15%	5	$24,655.75	$766.40	$25,422.15	$1.00	$706.17
				Savings	$19,724.60	$613.12	$20,337.72	$0.80	$564.94

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

The proposal does not require extra code enforcement time.

d. ***Small Business Impact.*** Describe economic impacts to small businesses:

Potentially positive impact for small businesses by reducing regulatory burden and construction costs.

e. ***Housing Affordability.*** Describe economic impacts on housing affordability:

The cost of construction and operating costs to maintain residential buildings is a significant factor in housing affordability. This proposal will reduce construction costs for multifamily residential buildings

and lower operational costs compared to the current code. So, if this proposal is adopted it will help improve housing affordability in Washington state.

f. ***Other.*** Describe other qualitative cost and benefits to owners, to occupants, to the public, to the environment, and to other stakeholders that have not yet been discussed:

Lowering the construction and operating costs for these types of residential buildings will help lower renting costs for Washingtonians. This is an especially important part of the housing crisis because renting costs are taking up a greater share of families and individuals monthly budgets giving them less money to spend on healthcare, groceries, and saving up to purchase a home or saving for retirement.

Also requiring developers to include EV charging infrastructure that won't be used wastes materials, labor, and can result unnecessary GHG emissions.

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.