



STATE OF WASHINGTON
STATE BUILDING CODE COUNCIL

May 2018
Log No. _____

1. State Building Code to be Amended:

- | | |
|---|---|
| <input checked="" type="checkbox"/> International Building Code | <input type="checkbox"/> International Mechanical Code |
| <input type="checkbox"/> ICC ANSI A117.1 Accessibility Code | <input type="checkbox"/> International Fuel Gas Code |
| <input type="checkbox"/> International Existing Building Code | <input type="checkbox"/> NFPA 54 National Fuel Gas Code |
| <input type="checkbox"/> International Residential Code | <input type="checkbox"/> NFPA 58 Liquefied Petroleum Gas Code |
| <input type="checkbox"/> International Fire Code | <input type="checkbox"/> Wildland Urban Interface Code |
| <input type="checkbox"/> Uniform Plumbing Code | |

For the Washington State Energy Code, please see specialized [energy code forms](#)

Section(s): 429.2 (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 10/23/24

3. Designated Contact Person:

Name: Patrick Hanks (Building Industry Association of Washington)
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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.

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):** 429.2

Enforceable code language must be used.

Amend section to read as follows:

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 | 2 15% of total parking spaces | 10% of total parking spaces |

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 am revising 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.

The TAG also asked for some more information about the history of this statewide amendment.

HB 1287

In 2021 the legislature passed [HB 1287—concerning preparedness for a zero emissions transportation future](#). It made changes to RCW 19.27.540, adding in the exceed minimum requirements provision amongst other things, and directed the Department of Transportation to create a forecasting and mapping tool to visualize the increased needs for EV chargers across the state. While the statute deals specifically with EV charging, the focus of the bill is increasing zero emission vehicle adoption.

WSDOT Tool

WSDOT has not completed the forecasting and mapping tool yet. It is listed as part of their [plan for electric vehicle infrastructure deployment](#). A 2022 report concluded that the requirements for the tool were greater than currently available technology and similar tools that other states use ([report, pg. 16](#)).

Origin of the 25% requirement

From a brief review of the 2021 code adoption process it appears that Stoyan created a draft proposal for the TAG to meet the minimum requirements of HB 1287 and there was a [competing proposal](#) from the public that would go beyond the minimum requirements. It seems the TAG chose to mesh aspects of the proposals together. This is how the code language ended up mostly meeting the minimum requirements of the statute while the 25% EV-Ready requirement exceeded the statute.

The feedback I have received from BIAW members involved with multifamily residential construction that falls under the IBC is clear. Developers are putting in EV-Ready and EV-Capable parking spaces because they have to, not because the building owners or tenants need the EV charging infrastructure. This results in wasted materials and unnecessary construction costs.

While EV adoption rates in WA are increasing, the total population of EVs is a small fraction of the total vehicles in the state ([data.wa.gov EV population chart](#)). As of September 2024, the monthly statewide EV adoption rate was [2.2%](#) of non-electric passenger vehicles. There are counties with much higher adoption rates like King County at 7.5%. But there are counties with much lower adoption rates like Yakima County at 0.7%. Requiring 25% of parking spaces 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.

Because the WSDOT mapping tool is not complete, and the legislature has not provided clear guidance as to if, when, or how the SBCC should exceed the minimum requirements. It's impractical to accurately forecast what the code needs to do to meet future EV charging demand. Even if we lower the EV-Ready requirement to 15%, the EV adoption rate would have to drastically increase to even meet the capacity of that EV charging infrastructure. Additionally, more commercial buildings are being built with EV charging infrastructure. 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 shopping, 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.

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 Intensity (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 Intensity (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 Intensity (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 RSMMeans 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.