Electric Vehicle Charging Scoping & Technical Criteria – Revised 8.17.23

Definitions:

Electric Vehicle (EV): Any vehicle for on-road use that is powered by an electric motor which may utilize building electrical service as a fuel source.

Electric Vehicle Supply Equipment (EVSE): Electrical circuitry and equipment dedicated to EV charging including conductors, connectors, attachment accoutrements, personnel protection, power outlets, apparatus and equipment installed specifically for the purpose of transferring electricity from building to electric vehicle.

Electric vehicle charging station. "Electric vehicle charging station" means a designated automobile parking space that has a dedicated connection for charging on an electric vehicle by utilizing Electric Vehicle Supply Equipment (EVSE). (underlined is statutory language)

Electric Vehicle Supply Equipment (EVSE) Installed Space: A parking space provided with EVSE equipment for minimum Level 2 electric vehicle charging. (underlined is statutory language)

Electric Vehicle (EV) Ready Space: "Electric Vehicle Ready Space" means a designated automobile parking space that has electrical infrastructure, including but not limited to raceways, cables, electrical capacity, and panelboard or other electrical distribution space necessary for the future installation of an electric vehicle charging station providing at a minimum Level 2 charging. (underlined is statutory language)

Electric Vehicle (EV) Capable Space: "Electric Vehicle Capable Space" means a designated automobile parking space that has a branch circuit capable of supporting the installation of an electric vehicle charging station for Level 2 charging. (underlined is statutory language)

Level 2 Charging Equipment. "Level 2 Charging Equipment" means a device that converts 240-volt AC power into DC power and delivers it to an electric vehicle's battery.

Parking Facilities. "Parking Facilities" includes parking lots, garages, ramps, or decks used for parking passenger vehicles. (underlined is statutory language)

Section 8.9 Electric Vehicle Charging Facilities

8.9.1 Scoping. In each location where *parking facilities* are provided, the number of parking spaces equipped as *EVSE-Installed space*, *EV-Ready space*, and *EV-Capable space* shall be provided in accordance with this section. Where more than one parking facility is provided on a site, EVSE-Installed, EV-Ready, and EV-Capable Spaces shall be calculated separately for each parking facility. Fractions shall be rounded up to the next higher whole number.

> Exception: Residential structures with fewer than four dwelling units. (statutory exception)
>
> **8.9.1.1 Mixed occupancies and shared occupancies.** Where a parking facility is shared by multiple occupancies, the required number of electric vehicle charging facilities shall be provided in proportion to the gross building area of each occupancy classification.

8.9.1.2 Installed Spaces Exceeding Minimums. EVSE Installed spaces that exceed the minimum number of required EVSE Installed spaces may be used to satisfy requirements of EV-Ready and EV-Capable Spaces. Installed EV-Ready spaces that exceed the minimum number of required EV-Ready spaces may be used to satisfy requirements of EV-Capable Spaces.

8.9.1.3 Identification. EVSE Installed spaces shall be identified by permanent signage reading "Electric Vehicle Parking for Charging Only." EVSE Ready spaces shall be identified by permanent signage reading "Electric Vehicle Parking Only." Signs shall be installed at the head end of the designated parking stall and mounted such that the sign is between 60 inches and 66 inches above the parking surface. A permanent and visible label shall be posted in a conspicuous place at the service panel to identify each panel space reserved for future EVSE equipment as required for EV-Capable and EV-Ready spaces. Raceway termination points for EV-Capable and EV-Ready spaces shall be labeled as reserved for EVSE Equipment.

8.9.2 Number of Dedicated parking stalls. EVSE-Installed, EV-Ready Spaces and EV-Capable Spaces shall be provided in quantities in accordance with Table 8.9.2. Where the calculation of percent served results in a fractional parking space, it shall round up to the next whole number.

Table 8.9.2

EVSE-Installed, EV-Ready and EV Capable Space Requirements [1, 2]

Use	Minimum number or % of EVSE-Installed spaces	Minimum number or % of EV-Ready spaces	Minimum number or % of EV-Capable spaces
Commercial (Groups A, B, E, F, I-2, I-3, I-4, M, R-4, S)	3% EVSE Installed (50+ spaces)	15% EV-Ready	7% EV- Capable
Multi-family (R-1, R-2, ~~R-4,~~ I-1)	5% EVSE Installed (20+ spaces)	15% EV-Ready	15% EV-Capable

Footnotes:

1. Parking spaces dedicated to commercial, or emergency vehicles are exempt. Parking for non-commercial vehicles at the facility are not exempt.
2. Parking serving mixed occupancies on the same property shall be provided with electric vehicle charging facilities as required and in proportion to the building area of each occupancy classification.

8.9.3 EV Capable Spaces. Each EV capable space used to meet the requirements of Section 8.9.2 shall comply with the following:

1. A continuous raceway or cable assembly shall be installed between a junction box or outlet located within 3 feet (914mm) 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 8.9.6
3. The electrical distribution equipment to which the raceway or cable assembly connects shall have dedicated space for an overcurrent protection device and electrical capacity to supply a calculated load in accordance with Section 8.9.6.
4. The junction box or outlet and the electrical distribution equipment directory shall be marked "For electric vehicle supply equipment (EVSE)."

8.9.4 EV Ready Spaces. Each branch circuit serving EV ready spaces used to meet the requirements of Section 8.9.2 shall comply with the following:

1. Terminate at an outlet or junction box located within 3 feet (914 mm) of each EV ready space it serves.
2. Have a minimum system and circuit capacity in accordance with 8.9.6.
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)."

8.9.5 EVSE Installed 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 8.9.2, serving either a single EVSE space or multiple EVSE spaces, shall comply with the following:

1. Have minimum system and circuit capacity in accordance with Section 8.9.6.
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 the equipment manufacturers recommended instructions.

8.9.6 System and circuit capacity. The system and circuit capacity shall comply with this section.

8.9.6.1 Circuits for electric vehicle charging. The service panel shall provide sufficient capacity and space to accommodate the circuit and over-current protective device for each EVSE, EV-Ready and EV-Capable space. Circuits for EVSE, EV-Ready and EV-Capable spaces shall have no other outlets. Termination points for EV-Ready and EV-Capable spaces shall be located where proposed future equipment for such purposes is intended to be installed.

8.9.6.2 System Capacity. The electrical distribution equipment supplying the branch circuit(s) serving each EV capable space, EV ready space, and EVSE space shall 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 Installed space.

8.9.6.3 Circuit Capacity. The branch circuit serving each EV capable space, EV ready space, and EVSE Installed space shall have a rated capacity not less than 40 amperes at 208/240-volt capacity or the nameplate rating of the equipment, whichever is larger.

8.9.7 Accessibility. Not fewer than 5% of the EVSE Installed spaces but not less than one shall be accessible. Not fewer than 5% of EVSE Ready Spaces but not less than one shall be accessible. Accessible vehicle spaces shall comply with the requirements for an accessible parking space where the EVSE is located at the head end of the access aisle.

https://www.energycodes.gov/sites/default/files/2021-07/TechBrief_EV_Charging_July2021.pdf

https://www.iccsafe.org/wp-content/uploads/21-20604_COMM_EV_Strategy_RPT_v5.pdf

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.

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, EVSE, a rechargeable storage battery, a fuel cell, a photovoltaic array, or another source of electric current.

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). Equipment for plug-in power transfer including the ungrounded, grounded and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, 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.

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, and 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 either an outlet, junction box or receptacle, that will support an installed EVSE.

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Karen Gridley

Date: 8/21/2023

Email address: karen.gridley@state.mn.us

Model Code:

Telephone number: 612-296-1902

Code or Rule Section: 8.9.7

Firm/Association affiliation, if any: DLI

Code or rule section to be changed: 8.9.7

Intended for Technical Advisory Group ("TAG"): Electric Vehicle Charging Facilities

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General Information	**Yes**	**No**
A. Is the proposed change unique to the State of Minnesota?	☒	☐
B. Is the proposed change required due to climatic conditions of Minnesota?	☐	☒
C. Will the proposed change encourage more uniform enforcement?	☒	☐
D. Will the proposed change remedy a problem?	☒	☐
E. Does the proposal delete a current Minnesota Rule, chapter amendment?	☐	☒
F. Would this proposed change be appropriate through the ICC code development process?	☐	☒

Proposed Language

1. The proposed code change is meant to:

   ☐ change language contained the model code book? If so, list section(s).

   ☐ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☐ delete language contained in the model code book? If so, list section(s).

   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   X add new language that is not found in the model code book or in Minnesota Rule.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.
   No

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and ~~strikethrough~~ words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.

> **8.9.7.1 Vehicle Space Size.** Accessible vehicle charging spaces shall be 132 inches (11 feet) wide and 240 inches (20 feet) long.
>
> **Exceptions:**
>
> 1. Where the drive aisle behind the accessible charging station is striped in a similar way to the access aisle for the full width of the parking stall and the adjacent access aisle, the parking stall length may be reduced to not less than 18 feet.
> 2. Where a minimum 5 foot wide access aisle is provided at the head end of the parking stall and equipped with barriers to prevent vehicles from encroaching into the required space.

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
   No.

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)

   This proposed change is needed because standard parking stalls are 18 feet deep, not 20 feet deep and the rationale behind the additional depth is to provide access space around the back of the vehicle.

2. Why is the proposed code change a reasonable solution?

   Exception 1 makes other drivers aware that pedestrians may be in the drive aisle, very much like a cross walk, and will slow down.

   Exception 2 is for other locations where an access aisle is provided at the head end of the parking stall to ensure safe access around the vehicle.

3. What other factors should the TAG consider?

   When 20 or more EVSE installed spaces are required, 5% of the number of required stalls may be used and count as an accessible parking stalls.

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.

   The proposed will decrease construction costs by allowing standard sized parking stalls in rows containing EV charging facilities.

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible.

N/A

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
   N/A

4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
   No

5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city (Minn. Stat. § 14.127)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
   No.

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?

   Architects, engineers, building owners, developers, EVSE equipment manufacturers, the disabled public that will utilize EVSE facilities.

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.

   No

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?

   Parking facilities will need to be sized with parking rows that are deeper than standard in order to accommodate EV charging. This may force buildings with interior parking facilities to be 24 inches wider to accommodate the deeper parking stalls, affecting the overall cost of construction because the entire building will need to be larger.

4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.

   No.

***Note: Incomplete forms may be returned to the submitter with instruction to complete the form. Only completed forms can considered by the TAG.

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Karen Gridley

Date: 8/21/2023

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Model Code:

Telephone number: 612-296-1902

Code or Rule Section: 8.9.7.3.5

Firm/Association affiliation, if any: DLI

Code or rule section to be changed: 8.9.7.3.5

Intended for Technical Advisory Group ("TAG"): Electric Vehicle Charging Facilities

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General Information	**Yes**	**No**
A. Is the proposed change unique to the State of Minnesota?	☒	☐
B. Is the proposed change required due to climatic conditions of Minnesota?	☐	☒
C. Will the proposed change encourage more uniform enforcement?	☒	☐
D. Will the proposed change remedy a problem?	☒	☐
E. Does the proposal delete a current Minnesota Rule, chapter amendment?	☐	☒
F. Would this proposed change be appropriate through the ICC code development process?	☐	☒

Proposed Language

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   X add new language that is not found in the model code book or in Minnesota Rule.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.
   No

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and ~~strikethrough~~ words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.

8.9.7.3.5 Encroachment. The access aisle shall be free and clear of all obstructions.
Exception: Equipment and other obstructions are permissible within 30 inches of the head-end and foot-end of the access aisle provided that obstructions do not encroach the minimum width of an accessible route or impede access to charging equipment.

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
No.

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)

   This proposed change is needed because equipment will need to be mounted in the access aisle in a typical interior parking configuration and any obstructions at the head or foot of the access aisle will not interfere with accessible ingress or egress from the vehicle.

2. Why is the proposed code change a reasonable solution?

   It clarifies that some encroachment can be permissible without negatively affecting the accessibility of the space.

3. What other factors should the TAG consider?

   ADA guidelines regarding parking, and whether or not this is considered a parking stall or a fueling station stall.

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.

   The proposed will decrease construction costs by allowing EVSE equipment to be installed within designated areas of the access aisle, thereby not requiring additional floor space to be dedicated to equipment.

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible.

   N/A

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
N/A

4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
   No

5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city (Minn. Stat. § 14.127)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
   No.

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?

   Architects, engineers, building owners, developers, EVSE equipment manufacturers, the disabled public that will utilize EVSE facilities.

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.

   No

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?

   Parking facilities will need to be sized larger to accommodate equipment outside of parking stalls and access aisles. More space equates to additional construction cost.

4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.

   No.

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Model Code:

Telephone number: 612-296-1902

Code or Rule Section: 8.9.2.1

Firm/Association affiliation, if any: DLI

Code or rule section to be changed: 8.9.2.1

Intended for Technical Advisory Group ("TAG"): Electric Vehicle Charging Facilities

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General Information	**Yes**	**No**
A. Is the proposed change unique to the State of Minnesota?	☒	☐
B. Is the proposed change required due to climatic conditions of Minnesota?	☐	☒
C. Will the proposed change encourage more uniform enforcement?	☒	☐
D. Will the proposed change remedy a problem?	☒	☐
E. Does the proposal delete a current Minnesota Rule, chapter amendment?	☐	☒
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2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.
   No

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and ~~strikethrough~~ words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.

   8.9.2.1 Dispersion. Where more than one parking facility or class of parking is provided on a site, the number of EVSE installed, EV ready, and EV capable spaces shall be distributed equitably among the parking facilities and parking classifications.

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
   No.

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)

   This proposed change is needed to ensure that EV charging facilities are available among all types of parking provided so that no group is excluded from the opportunity to charge their vehicle where EV charging facilities are required. Dispersion does not guarantee that EV charging facilities will be available in the quantities necessary to serve all who may require use of the facility.

2. Why is the proposed code change a reasonable solution?

   This is a reasonable proposal because there are currently no requirements and ensuring that the ability to charge a vehicle is distributed in such a way as to make charging available to as many as possible is reasonable.

3. What other factors should the TAG consider?

   None

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.

   There may be a cost increase in some cases to comply with requirements to provide EV charging at different locations when clustering all of the charging in one location could be more economical.

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible.

   The cost will be offset by ensuring that EV charging in mixed use occupancies is not provided only to private parties or leased spaces, but available to all who may park at the site.

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
   Business and government units. When the State is the owner of a site providing EVSE facilities the people of Minnesota will bear the cost.

4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
   No

5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city (Minn. Stat. § 14.127)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
   No.

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?

   Architects, engineers, building owners, developers, EVSE equipment manufacturers, the public that will utilize EVSE facilities.

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.

   No

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?

   The cost or consequence of not adopting the proposed code change is that building owners may opt to locate EV charging facilities in locations exclusive to select groups and not make facilities generally available. The result would be that the required facilities would be under-utilized.

4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.

   No.

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Conservative Projection of 23% + of Sales will be EV or PHEV in 2030								
	All Passenger Vehicles in MInnesota				New Passenger Vehicles Sold			
Year	Total	Fossil Fueled	EV/PHEV	% EV/PHEV	Total	Fossil Fueled	EV/PHEV	% EV/PHEV
2016	5,019,140	5,014,831	4,309	0.09%	NA	NA	NA	NA
2017	5,069,838	5,064,584	5,254	0.10%	362,131	361,186	945	0.26%
2018	5,121,049	5,114,849	6,200	0.12%	365,789	364,843	946	0.26%
2019	5,172,777	5,159,799	12,978	0.25%	369,484	362,706	6,778	1.83%
2020	5,225,027	5,208,998	16,029	0.31%	373,216	370,165	3,051	0.82%
2021	5,277,805	5,253,412	24,393	0.25%	376,986	368,622	8,364	2.22%
2022	5,330,583	5,299,828	30,755	0.57%	380,756	374,394	6,362	1.67%
2023	5,383,888	5,349,418	34,470	0.60%	384,563	380,848	3,715	0.97%
2024	5,437,727	5,396,310	41,417	0.76%	388,409	376,757	11,652	3%
2025	5,492,104	5,427,150	64,955	1.18%	392,293	368,756	23,538	6%
2026	5,547,025	5,446,411	100,614	1.81%	396,216	360,557	35,659	9%
2027	5,602,495	5,453,860	148,635	2.65%	400,178	352,157	48,021	12%
2028	5,658,520	5,445,216	213,304	3.77%	404,180	339,511	64,669	16%
2029	5,715,106	5,424,239	290,866	5.09%	408,222	330,660	77,562	19%
2030	5,772,257	5,386,560	385,696	**6.68%**	412,304	317,474	94,830	**23%**
2031	5,829,979	5,331,848	498,132	8.54%	416,427	303,992	112,435	27%
2032	5,888,279	5,259,764	628,515	10.67%	420,591	290,208	130,383	31%
2033	5,947,162	5,169,968	777,194	13.07%	424,797	276,118	148,679	35%
2034	6,006,633	5,062,112	944,522	15.72%	429,045	261,718	167,328	39%
2035	6,066,700	4,935,844	1,130,856	18.64%	433,336	247,001	186,334	43%
2036	6,127,367	4,790,806	1,336,560	21.81%	437,669	231,965	205,704	47%

23% EV Sales by 2030 Conservative Estimate

MN DOT Projection of 40% + of Sales will be EV or PHEV in 2030								
	All Passenger Vehicles in MInnesota				New Passenger Vehicles Sold			
Year	Total	Fossil Fueled	EV/PHEV	% EV/PHEV	Total	Fossil Fueled	EV/PHEV	% EV/PHEV
2016	5,019,140	5,014,831	4,309	0.09%	NA	NA	NA	NA
2017	5,069,838	5,064,584	5,254	0.10%	362,131	361,186	945	0.26%
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2022	5,330,583	5,299,828	30,755	0.57%	380,756	374,394	6,362	1.67%
2023	5,383,888	5,349,418	34,470	0.60%	384,563	380,848	3,715	0.97%
2024	5,437,727	5,396,310	41,417	0.76%	388,409	368,989	19,420	5%
2025	5,492,104	5,407,535	84,569	1.54%	392,293	349,141	43,152	11%
2026	5,547,025	5,395,099	151,926	2.74%	396,216	328,859	67,357	17%
2027	5,602,495	5,358,528	243,967	4.35%	400,178	308,137	92,041	23%
2028	5,658,520	5,297,341	361,179	6.38%	404,180	286,968	117,212	29%
2029	5,715,106	5,211,049	504,057	8.82%	408,222	265,344	142,878	35%
2030	5,772,257	5,103,278	668,978	**11.59%**	412,304	247,382	164,922	**40%**
2031	5,829,979	4,973,609	856,371	14.69%	416,427	229,035	187,392	45%
2032	5,888,279	4,817,407	1,070,872	18.19%	420,591	206,090	214,502	51%
2033	5,947,162	4,638,403	1,308,759	22.01%	424,797	186,911	237,886	56%
2034	6,006,633	4,436,157	1,570,476	26.15%	429,045	167,328	261,718	61%
2035	6,066,700	4,205,889	1,860,811	30.67%	433,336	143,001	290,335	67%
2036	6,127,367	3,951,434	2,175,933	35.51%	437,669	122,547	315,122	72%

41417 EVs in per MN DOT EV Dashboard

MN DOT Fact Sheet indicates projections of 40%+ EV or PHEV new vehicle sales in 2030

Governor Walz Goal of 1 Million EV's on the Road by 2030								
	All Passenger Vehicles in MInnesota				New Passenger Vehicles Sold			
Year	Total	Fossil Fueled	EV/PHEV	% EV/PHEV	Total	Fossil Fueled	EV/PHEV	% EV/PHEV
2016	5,019,140	5,014,831	4,309	0.09%	NA	NA	NA	NA
2017	5,069,838	5,064,584	5,254	0.10%	362,131	361,186	945	0.26%
2018	5,121,049	5,114,849	6,200	0.12%	365,789	364,843	946	0.26%
2019	5,172,777	5,159,799	12,978	0.25%	369,484	362,706	6,778	1.83%
2020	5,225,027	5,208,998	16,029	0.31%	373,216	370,165	3,051	0.82%
2021	5,277,805	5,253,412	24,393	0.25%	376,986	368,622	8,364	2.22%
2022	5,330,583	5,299,828	30,755	0.57%	380,756	374,394	6,362	1.67%
2023	5,383,888	5,349,418	34,470	0.60%	384,563	380,848	3,715	0.97%
2024	5,437,727	5,387,686	50,041	0.92%	388,409	368,989	19,420	5%
2025	5,492,104	5,409,210	82,894	1.51%	392,293	353,064	39,229	10%
2026	5,547,025	5,396,469	150,556	2.71%	396,216	316,973	79,243	20%
2027	5,602,495	5,332,636	269,860	4.82%	400,178	260,116	140,062	35%
2028	5,658,520	5,201,516	457,005	8.08%	404,180	181,881	222,299	55%
2029	5,715,106	5,006,447	708,659	12.40%	408,222	102,055	306,166	75%
2030	5,772,257	4,769,648	1,002,609	17.37%	412,304	41,230	371,074	90%
2031	5,829,979	4,605,684	1,224,296	21.00%	416,427	41,643	374,784	90%
2032	5,888,279	4,533,975	1,354,304	23.00%	420,591	42,059	378,532	90%
2033	5,947,162	4,460,371	1,486,790	25.00%	424,797	42,480	382,318	90%
2034	6,006,633	4,384,842	1,621,791	27.00%	429,045	42,905	386,141	90%
2035	6,066,700	4,307,357	1,759,343	29.00%	433,336	43,334	390,002	90%
2036	6,127,367	4,166,609	1,960,757	32.00%	437,669	43,767	393,902	90%

HOUSING FIRST MINNESOTA℠

EV Charging Facilities Technical Advisory Group
c/o Minnesota Department of Labor and Industry
443 Lafayette Rd
St. Paul, MN 55155

Aug. 17, 2023

Re: EV Charging Facility Requirements **Via Electronic Delivery**

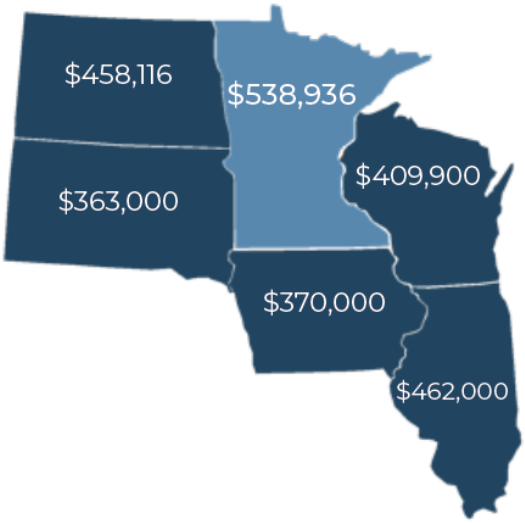
Fellow Members of the EV Charging Facilities Technical Advisory Group (TAG),

On behalf of Minnesota's housing industry, Housing First Minnesota respectfully submits the following comments to contextualize information and research related to the promulgation of rules regulating facilities for electric vehicle charging (the Proposal).

By way of background, Housing First Minnesota represents more than 900 member companies from across the housing industry, including the builders, remodelers, and trade partners that build the communities we call home. Our comments are rooted in our mission of homeownership opportunities for all and must be viewed against the backdrop of Minnesota's housing crisis.

MINNESOTA'S HOUSING AFFORDABILITY CHALLENGES

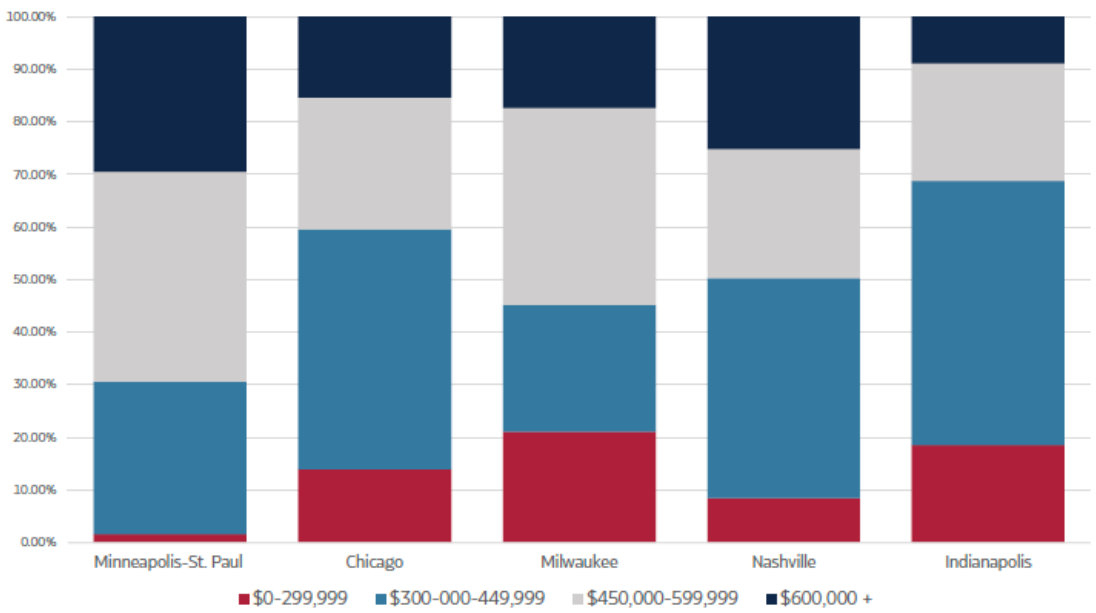
Minnesota and the Twin Cities, in particular, are facing one of the worst housing crises in the nation. This crisis is rooted in a housing regulatory framework that often dismisses affordability in favor of the concerns of special interest groups.



Currently, Minnesota has the highest new home costs in the region; our new homes (right), on average cost nearly $77,000 more than neighboring states[1]. Minnesota's housing deficit is increasing at an alarming rate when it should be falling. In the year that the state was to have erased its housing deficit, this figure stands between 66,000[2] and 95,000[3].

[1] Date: Zonda review of median new, single-family detached homes. July 2023. Chart: Housing First Minnesota
[2] Minnesota Housing Dashboard. Housing First Minnesota. July 2023.
[3] 2022 Housing Underproduction in the United States. Up For Growth. 2023.

Today, less than 2% of all new homes in the Twin Cities are priced under $300,000, one of the lowest figures in the nation[4] (below).



MINNESOTA'S BUILDING CODE

2023 is an important year for the Minnesota State Building Code, as it marks the 50th anniversary of our state's uniform building standards. This milestone is possible because of the language establishing the State Building Code:

> *"Many citizens of the state are unable to secure adequate housing at prices or rentals which they can afford. Such a situation is contrary to the public interest and threatens the health, safety, welfare, comfort, and security of the people of the state. Other persons in commerce and industry are also affected by the high cost of construction. Construction costs for buildings of all types have risen and are continuing to rise at unprecedented rates.*
>
> *A multitude of laws, ordinances, rules, regulations, and codes regulating the construction of buildings and the use of materials therein is a factor contributing to the high cost of construction. Many such requirements are obsolete, complex, and unnecessary. They serve to increase costs without providing correlative benefits of safety to owners, builders, tenants, and users of buildings.*
>
> *It is the purpose of this act to prescribe and provide for the administration and amendment of a state code of building construction which will provide basic and uniform performance standards, establish reasonable safeguards for health, safety, welfare, comfort, and security of the residents of this state who are occupants and users of buildings, and provide for the use of modern methods, devices, materials, and techniques which will in part tend to lower construction costs."*

[4] Data: Zonda review of new home price point distribution, Jan. 1, 2022 – Feb. 24, 2023. Chart: Housing First Minnesota.

Today, this intent remains, with Minn. State Statue 326B. 101 reading:

> *"The commissioner shall administer and amend a state code of building construction which will provide basic and uniform performance standards, establish reasonable safeguards for health, safety, welfare, comfort, and security of the residents of this state and provide for the use of modern methods, devices, materials, and techniques which will in part tend to lower construction costs. The construction of buildings should be permitted at the least possible cost consistent with recognized standards of health and safety."*

RULEMAKING REQUIREMENTS

As acknowledged by the Department's technical staff at our first meeting, the framework presented for the Proposal is arbitrary, with the basis of looking at what other states are doing and simply trying to be "more progressive" than the rest. Part of the supporting rationale is the goal of having 20% of all cars on Minnesota roads be electric vehicles by 2030.

In its landmark decision in *BATC v. DLI*, the Minnesota Court of Appeals invalidated a state rule because the Department of Labor and Industry used an arbitrary standard:

> *"DLI failed to establish a record supporting the 4,500-sq.-ft. threshold for sprinklers as required by Minnesota law invalidating the sprinkler mandate . . . We are mindful today that we are declaring a rule adopted by an administrative agency of the state invalid. We do not do so lightly, but rather thoughtfully and unanimously. Nevertheless, we are bound to apply the law."* *Minnesota Court of Appeals, BATC v. DLI (2015)*

As presented, the Proposal is arbitrary and will not pass any legal challenge. Any attempt to reverse engineer documentation to fit this standard would be misguided.

MARKET FACTORS

There are several important market factors the TAG must consider as we proceed with our work.

1. Transformer Shortage. Importantly, the proposal would result in a noticeable increase in transformer demand in Minnesota. This increase comes at a time when there is a documented transformer shortage. Currently, builders are faced with significant delays with the current supply of transformers woefully inadequate.

   This issue is well documented in reporting of the issue by reputable media outlets . Recent headlines include:
   - Grid Transformer Supply Crunch Threatens Clean Energy Plans (Bloomberg Law)
   - A massive power transformer shortage is wreaking havoc in the US (New Scientist)
   - Transformer shortage continues, with hurricane season looming (Houston Chronicle)

   This last headline is critical, as we saw increased issues with transformer supply

following Hurricane Ian in 2022. With the recovery of Maui underway from the devastating fire last week and hurricane season now just beginning, we are facing continued increased demand in an already undersupplied market.

There is no end in sight for this transformer shortage.

2. EV Utilization in Minnesota. In the United States today, less than 1% of all vehicles on the road are electric, and 4.3% of all vehicles purchased in Minnesota are electric[5]. There are more than 34,000 eclectic vehicles in Minnesota today[6].

3. EV Charger Demand. As presented, the requirements outlined in Table 8.9.2 far exceed consumer demand for EV chargers. While our dataset for multifamily construction is currently limited to the multifamily buildings subject to the IRC, only 4 of the more than 3,000 townhomes built by respondents sine 2020 have had buyers request an EV charger in their unit, a miniscule figure. On all single-family (detached and attached), this figure is 313 of the 11,993 homes surveyed, 2.6 % of all market-rate homes had buyers request and EV Charger. The scope of this request was focused upon homebuilders engaged in townhome production whose total share of new housing in the metro exceeds 60%.

   The reason, according to homebuilders building and selling homes to Minnesotans, is that multifamily housing tends to be on the more affordable end of the spectrum. At these price points, EVs are far less common.

   As is clearly demonstrated, consumers view electric vehicle chargers as a luxury option. Notably, the Minnesota State Building Code does not require a microwave, computer, or television in any dwelling, yet the proposal would reverse that trend and these would be located in almost any home in the state.

4. EV Charging Costs. Excluding the actual cost of a space and without accounting for placement in all locations, an electric vehicle charger requirement, as outlined in Table 8.92. would cost, in for-ownership settings, no less than:

   - EVSE-Installed: More than $2,500
   - EVSE-Ready: Between $1000 and $2,000, depending on placement
   - EVSE-Capable: Less than $500 (current estimate)

   As you can see, EVSE-Capable is the most affordable and data-driven option.

PROPOSED AMENDMENTS

Housing First Minnesota respectfully submits the following proposed amendments for consideration, while reserving the right to submit additional amendments and modification to these amendments based on TAG feedback, industry engagement, and discovery of additional relevant facts:

- A-1. 8.9.1.3 Identification.
  "EVSE Installed spaces shall be identified by permanent signage reading "Electric Vehicle Parking for Charging Only." EVSE Ready spaces shall be identified by permanent signage ~~reading "Electric Vehicle Parking Only."~~ indicating that parking

[5] "Twin Cities sees bump in electric vehicle registrations." Axios Twin Cities. April 7, 2023.
[6] Minnesota Public Utilities Commission. Electric Vehicles

space is or spaces are intended for charging of electric vehicles. Signs shall be installed at the head end of the designated parking stall and mounted such that the sign is between 60 inches and 66 inches above the parking surface. A permanent and visible label shall be posted in a conspicuous place at the service panel to identify each panel space reserved for future EVSE equipment as required for EV-Capable and EV-Ready spaces. Raceway termination points for EV-Capable and EV-Ready spaces shall be labeled as reserved for EVSE Equipment."

Rationale: A more pragmatic and flexible approach to signage will reduce the inevitability of a certificate of occupancy from being withheld because the property owner or contractor ordered the wrong sign. The second part of this section in the proposal does dues a more pragmatic approach and this suggested amendment seeks the same approach.

- A-2: Table 8.9.2. Strike existing table and replace.

	Minimum number or % of EVSE-Installed spaces	Minimum number or % of EV-Ready spaces	Minimum number or % of EV-Capable spaces
Commercial (Groups A, B, E, F, I-2, I-3, I-4, M, S)	3% (When there are 20+ spaces)	0%	7% EV- Capable
Multifamily Communal Parking (R-1, R-2, R-4, I-1)	3% (When there are 20+ spaces)	0%	7% EV- Capable
Multifamily Unit-Restricted Parking (R-1, R-2, R-4, I-1)	0%	0%	1-Per Unit

Rationale: Given that the Department has already acknowledged that the Proposal's version of table 8.9.2 is arbitrary and invalid from a rulemaking perspective, the suggested changes are necessary. Additionally, the Proposal fails to comply with the requirements of the State Building Code as it sharply deviates from accepted construction practices (as there is no uniform standard and the Proposal seeks to be the most progressive in the nation) and it disregards affordability.

This amendment also reflects the current market reality of the transformer shortage. This proposal also aligns commercial and multifamily to the same standard and creates a framework for future EV requirements in multifamily construction for IRC buildings.

- A-3 8.9.1 Scoping.

In each location where parking is provided, the number of parking spaces equipped as EVSE-Installed, EV-Ready, and EV-Capable shall be provided in accordance with this section. Where more than one parking facility is provided on a site, EVSE-Installed, EV-Ready, and EV-Capable Spaces ~~shall be calculated separately for each parking facility~~ may be allocated across the gross parking area provided the allocation complies with 8.9.7 Accessibility. Fractions shall be rounded up to the next higher

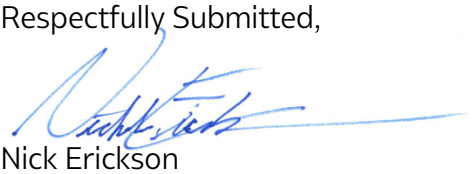
whole number.

Rationale: The basis for the scope appears to be derived from the Accessibility Code. As accessibility is accounted for in 8.9.7, the proposed amendment allows the permit applicant and property owner to design EV parking locations in a manner that works for the structure's occupants and intended use and in the most cost-effective manner. This amendment also provides latitude for the inevitable situation when there are practical difficulties with complying with the Proposal's stringent allocation. A prime example of this is a common interest community in which there may be maintenance or safety concerns to the placement of EV charging in certain locations.

CONCLUSION

As presented, the Proposal is arbitrary, does not adequately consider costs, and places unnecessarily restrictive requirements when effective and efficient alternatives are available.

Respectfully Submitted,



Nick Erickson
Senior Director of Housing Policy
Housing First Minnesota

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Nick Erickson

Date: 8/17/2023

Email address: nick@housingfirstmn.org

Model Code: Commercial Energy

Telephone number: (651)697-7586

Code or Rule Section:

Firm/Association affiliation, if any: Housing First Minnesota

Code or rule section to be changed: 8.9.1.3

Intended for Technical Advisory Group ("TAG"):

General Information	**Yes**	**No**
A. Is the proposed change unique to the State of Minnesota?	☒	☐
B. Is the proposed change required due to climatic conditions of Minnesota?	☐	☒
C. Will the proposed change encourage more uniform enforcement?	☒	☐
D. Will the proposed change remedy a problem?	☐	☒
E. Does the proposal delete a current Minnesota Rule, chapter amendment?	☐	☒
F. Would this proposed change be appropriate through the ICC code development process?	☐	☒

Proposed Language

1. The proposed code change is meant to:

   ☐ change language contained the model code book? If so, list section(s).

   ☐ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☐ delete language contained in the model code book? If so, list section(s).

   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☒ add new language that is not found in the model code book or in Minnesota Rule
   There is no current model code language and the Minnesota Legislature has directed the creation of this standard.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and words proposed to be deleted. Include the entire code (sub) section or rule subpart that contains your proposed changes.

"EVSE Installed spaces shall be identified by permanent signage reading "Electric Vehicle Parking for Charging Only." EVSE Ready spaces shall be identified by permanent signage ~~reading "Electric Vehicle Parking Only."~~ indicating that parking space is or spaces are intended for charging of electric vehicles. Signs shall be installed at the head end of the designated parking stall and mounted such that the sign is between 60 inches and 66 inches above the parking surface. A permanent and visible label shall be posted in a conspicuous place at the service panel to identify each panel space reserved for future EVSE equipment as required for EV-Capable and EV-Ready spaces. Raceway termination points for EV-Capable and EV-Ready spaces shall be labeled as reserved for EVSE Equipment."

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
   Not at present

Need and Reason

1. Why is the proposed code change needed?
   As written, the proposal is far too prescriptive.

2. Why is the proposed code change a reasonable solution?
   A more pragmatic and flexible approach to signage will reduce the inevitability of a certificate of occupancy from being withheld because the property owner or contractor ordered the wrong sign.

3. What other considerations should the TAG consider?
   Any that provides more flexible language.

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain.
   No Cost change

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain.

3. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
   As noted above, this provides more flexibility for sign language.

4. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
   no

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Code officials, building occupants, contractors

2. What are the probable costs to the agency and to any other State agencies of implementing and enforcing of the proposed rule? Is there an anticipated effect on state revenues?
   None

3. Are there less costly intrusive methods for achieving the purpose of the proposed rule?
   Yes, removing the sign mandate all together.

4. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.
   Lift the sign mandate or any language that allows a more pragmatic approach.

5. What are the probable costs of complying with the proposed rule, including the portion of the total costs that will be borne by identifiable categories of affected parties, such as separate classes of governmental units, businesses, or individuals?
   None from the proposal.

6. What are the probable costs or consequences of not adopting the proposed rule, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   Consequences were previously mentioned.

7. Are you aware of any federal regulation or federal requirement related to this proposed code change? If so, please list the federal regulation or requirement and your assessment of any differences between the proposed rule and the federal regulation or requirement.
   No

8. Please include an assessment of the cumulative effect of the rule with other federal and state regulations related to the specific purpose of the rule.
   n/a

***Note: Incomplete forms may be returned to the submitter with instruction to complete the form. Only completed forms can considered by the TAG.

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Nick Erickson

Date: 8/17/2023

Email address: nick@housingfirstmn.org

Model Code: Commercial Energy

Telephone number: (651)697-7586

Code or Rule Section:

Firm/Association affiliation, if any: Housing First Minnesota

Code or rule section to be changed: 8.9.1.

Intended for Technical Advisory Group ("TAG"):

General Information	**Yes**	**No**
A. Is the proposed change unique to the State of Minnesota?	☒	☐
B. Is the proposed change required due to climatic conditions of Minnesota?	☐	☒
C. Will the proposed change encourage more uniform enforcement?	☒	☐
D. Will the proposed change remedy a problem?	☐	☒
E. Does the proposal delete a current Minnesota Rule, chapter amendment?	☐	☒
F. Would this proposed change be appropriate through the ICC code development process?	☐	☒

Proposed Language

1. The proposed code change is meant to:

   ☐ change language contained the model code book? If so, list section(s).

   ☐ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☐ delete language contained in the model code book? If so, list section(s).

   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☒ add new language that is not found in the model code book or in Minnesota Rule
   There is no current model code language and the Minnesota Legislature has directed the creation of this standard.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and words proposed to be deleted. Include the entire code (sub) section or rule subpart that contains your proposed changes.

In each location where parking is provided, the number of parking spaces equipped as EVSE-Installed, EV-Ready, and EV-Capable shall be provided in accordance with this section. Where more than one parking facility is provided on a site, EVSE-Installed, EV-Ready, and EV-Capable Spaces shall be ~~calculated separately for each parking facility~~ may be allocated across the gross parking area provided the allocation complies with 8.9.7 Accessibility. Fractions shall be rounded up to the next higher whole number.

4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
   Not at present

Need and Reason

1. Why is the proposed code change needed?
   As written, the proposal does not consider situations when unit-specific parking exists. This can be detached parking in which one or more wholly contained stalls with a private access point (i.e. garage door).

   Under the proposal, each unit-specific, parking space would need 1 EV charger and either be EV ready or capable in the other (should two or three stalls exist), making 100% of the parking stalls comply with this rule.

2. Why is the proposed code change a reasonable solution?
   The proposal is taking an approach that does not recognize all parking types, particularly for multi-family development in which parking can be built to be unit-specific. It also allows property owners to design the EV spaces unique to their needs and occupants likely use in the most cost effective way,

3. What other considerations should the TAG consider?
   Any language that recognizes the realities of parking in multi-family settings.

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain.
   Decrease costs.

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain.
   n/a

3. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
   Compliance costs would fall as permit applicants could design their EV spaces to be the most cost effective.

4. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.

This depends on the total area of the parking spaces and the final rule.

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Code officials, building occupants, contractors

2. What are the probable costs to the agency and to any other State agencies of implementing and enforcing of the proposed rule? Is there an anticipated effect on state revenues?
   None

3. Are there less costly intrusive methods for achieving the purpose of the proposed rule?
   Possibly, but with greater flexibility, this is far less costly than the Proposal.

4. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.

5. What are the probable costs of complying with the proposed rule, including the portion of the total costs that will be borne by identifiable categories of affected parties, such as separate classes of governmental units, businesses, or individuals?
   None from the proposal.

6. What are the probable costs or consequences of not adopting the proposed rule, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   Left unchanged, the proposal will mandate the location of chargers in places that may not be relevant for their occupants, leading to costly, unused or under utilized chargers.

7. Are you aware of any federal regulation or federal requirement related to this proposed code change? If so, please list the federal regulation or requirement and your assessment of any differences between the proposed rule and the federal regulation or requirement.
   No

8. Please include an assessment of the cumulative effect of the rule with other federal and state regulations related to the specific purpose of the rule.
   n/a

***Note: Incomplete forms may be returned to the submitter with instruction to complete the form. Only completed forms can considered by the TAG.

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Nick Erickson

Date: 8/17/2023

Email address: nick@housingfirstmn.org

Model Code: Commercial Energy

Telephone number: (651)697-7586

Code or Rule Section:

Firm/Association affiliation, if any: Housing First Minnesota

Code or rule section to be changed: Table 8.9.2

Intended for Technical Advisory Group ("TAG"):

General Information	**Yes**	**No**
A. Is the proposed change unique to the State of Minnesota?	☒	☐
B. Is the proposed change required due to climatic conditions of Minnesota?	☐	☒
C. Will the proposed change encourage more uniform enforcement?	☒	☐
D. Will the proposed change remedy a problem?	☐	☒
E. Does the proposal delete a current Minnesota Rule, chapter amendment?	☐	☒
F. Would this proposed change be appropriate through the ICC code development process?	☐	☒

Proposed Language

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   ☐ delete language contained in the model code book? If so, list section(s).

   ☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

   ☒ add new language that is not found in the model code book or in Minnesota Rule
   There is no current model code language and the Minnesota Legislature has directed the creation of this standard.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.

3. Provide *specific* language you would like to see changed. Indicate proposed new words with underlining and words proposed to be deleted. Include the entire code (sub) section or rule subpart that contains your proposed changes.
4.

	Minimum number or % of EVSE-Installed spaces	Minimum number or % of EV-Ready spaces	Minimum number or % of EV-Capable spaces
Commercial (Groups A, B, E, F, I-2, I-3, I-4, M, S)	3% (When there are 20+ spaces)	0%	7% EV- Capable
Multi-family Communal Parking (R-1, R-2, R-4, I-1)	3% (When there are 20+ spaces)	0%	7% EV- Capable
Multi-family Unit-Restricted Parking (R-1, R-2, R-4, I-1)	0%	0%	1-Per Unit

5. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
   Not at present

Need and Reason

1. Why is the proposed code change needed?
   As noted by DLI staff in our first meeting, the language proposed is arbitrary and the supporting documentation for it does not exist. The proposal's current language seeks to be the most "progressive" of any type of mandate in the nation, according to DLI staff.

   The code change aligns commercial and multi-family (the previous distinction was based off conjecture of DLI staff, again with no supporting documentation) to the same 3% standard.

   There is also a severe shortage of transformers, which would be needed for both EV-Installed and-Ready spaces. Shifting to focus on EC-Capable over EV-Ready/Installed addresses this.

   Related to another code change form I submitted, a new classification of spaces has been added to plan for the situations when, in addition to communal parking, there are unit-restirred private parking spaces.

2. Why is the proposed code change a reasonable solution?
   Today, from a single-family perspective, chargers are choses as an upgrade roughly 3% of the time. EV Usage in Minnesota is below 3% and the total number of new vehicle purchases stands at 4.3%. The arbitrary proposal places an outsized emphasis on EV-Ready spaces in the time of a documented transformer shortage.

3. What other considerations should the TAG consider?
   Any proposal that is not arbitrary, addresses the supply-side reality of the transformer shortage and is more cost effective.

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain.
   Decrease costs.

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain.
   n/a

3. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
   Compliance costs would fall and construction times decreased as there are fewer spaces required to have EV infrastructure and delays reduced by a corelating reduction in transformer requirements.

4. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed $25,000 for any one small business or small city? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
   This depends on the total area of the parking spaces and the final rule.

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?
   Code officials, building occupants, contractors

2. What are the probable costs to the agency and to any other State agencies of implementing and enforcing of the proposed rule? Is there an anticipated effect on state revenues?
   None

3. Are there less costly intrusive methods for achieving the purpose of the proposed rule?
   Possibly, but with greater flexibility, this is far less costly than the Proposal.

4. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.
   Yes, but it would like rrun into issues with the legislative intent of the rule.

5. What are the probable costs of complying with the proposed rule, including the portion of the total costs that will be borne by identifiable categories of affected parties, such as separate classes of governmental units, businesses, or individuals?
   None from the proposal.

6. What are the probable costs or consequences of not adopting the proposed rule, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
   Left unchanged, the proposal will mandate the location of chargers in places that may not be relevant for their occupants, leading to costly, unused, or under-utilized chargers.

7. Are you aware of any federal regulation or federal requirement related to this proposed code change? If so, please list the federal regulation or requirement and your assessment of any differences between the proposed rule and the federal regulation or requirement.
   No

8. Please include an assessment of the cumulative effect of the rule with other federal and state regulations related to the specific purpose of the rule.
   n/a

***Note: Incomplete forms may be returned to the submitter with instruction to complete the form. Only completed forms can considered by the TAG.

CHAPTER 2 [CE]
DEFINITIONS

SECTION C202
GENERAL DEFINITIONS

The following definitions are added:

ALL-ELECTRIC PROPERTY. A *property* that contains no permanently installed equipment or appliances that utilize *combustion*, plumbing for fuel gas or fuel oil or *fuel gas* utility connection, installed within the *building(s)* or *site*, except for *emergency power systems* and *standby power systems*.

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.

CODE OFFICIAL. The building official as created in Chapter 1 of the Denver Building Code, Sec. 102.2

COMBUSTION. For purposes of this code, the rapid oxidation of fuel accompanied by the production of heat or heat and light.

COMMERCIAL COOKING APPLIANCE. Appliances used in a commercial food service establishment for heating or cooking food. For this definition, a commercial food service establishment is where food is prepared for sale or is prepared on a scale that is by volume and frequency not representative of domestic household cooking.

DEMAND RESPONSE PROGRAM. An agreement between a *building* occupant or *building* owner and third party to install and operate *demand responsive controls* in the building that automatically adjust building operations in response to a *demand response signal* from the third party.

DEMAND RESPONSE SIGNAL. A signal that indicates a price or a request to modify electricity consumption for a limited time period.

DEMAND RESPONSIVE CONTROL. A control capable of receiving and automatically responding to a *demand response signal*.

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*.

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, EVSE, a rechargeable storage battery, a fuel cell, a photovoltaic array, or another source of electric current.

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). Equipment for plug-in power transfer including the ungrounded, grounded and equipment grounding conductors, and the *electric vehicle* connectors, attachment plugs, 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 Installed Space). An *automobile parking space* that is provided with a dedicated *EVSE* connection.

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 necessary for the future installation of an *EVSE*. No electrical service or panel capacity is required for EV Capable Spaces at the time of construction.

ELECTRIC VEHICLE READY SPACE (EV READY SPACE). An *automobile parking space* that is provided with a branch circuit and at least one of the following: an outlet; junction box; receptacle; or *EVSE*.

ELECTRIFICATION RETROFIT FEASIBILITY REPORT. A means a report that analyzes the feasibility of using an electric heat pump when certain appliances are proposed to be replaced without an electric heat pump, and that also lists the following: the cost of the appliance with and without an electric heat pump, the annual energy cost of the appliance with and without an electric heat pump, and the social cost of carbon dioxide over the life of the appliance with and without an electric heat pump.

EMERGENCY EQUIPMENT REPLACEMENT. Where only one piece of heating equipment, cooling equipment, ventilation system, or service water heating equipment is failing and is replaced by another having the same heating or cooling capacity, and no other alterations are made to the central HVAC system or central water heating system.

EMERGENCY POWER SYSTEM. A source of automatic electric power of a required capacity and duration to operate required life safety, fire alarm, detection, and ventilation systems in the event of a failure of the primary power. Emergency power systems are those required for electrical loads where interruption of the primary power could result in loss of human life or serious injuries.

Delete residential building and replace with:

RESIDENTIAL BUILDING. For purposes of this code, detached one- and two-family dwellings and multiple single-family dwellings (townhouses) and Group R-3 and R-4 buildings three stories or less in height above grade plane.

PREDICTED ENERGY USE INTENSITY (pEUI): the annual site energy use of the *proposed design* per year in units of kBtu/sq.ft. (of building floor area).

SOCIAL COST OF CARBON DIOXIDE. Means either $79 per metric ton of carbon dioxide with annual escalation rate of 2.5% from January 1st, 2022, or the social cost of carbon dioxide as determined by the Public Utilities Commission of the State of Colorado, whichever is greater.

SOLAR-READY ZONE. A section or sections of the roof or building designated and reserved for the future installation of a solar photovoltaic and/or solar thermal system.

STANDBY POWER SYSTEM. A source of automatic electric power of a required capacity and duration to operate required building, hazardous materials or ventilation systems in the event of a failure of the primary power. Standby power systems are those required for electrical loads where interruption of the primary power could create hazards or hamper rescue or fire-fighting operations.

STEEP-SLOPED ROOF. A roof or roof section with a rise over run of at least 2 in 12 (2:12).

UNGUARDED BLOWER DOOR TEST. A test where pressures are induced only via a Blower Door (or Blower Doors) attached to the subject Dwelling Unit, not induced through the use of Blower Doors attached to spaces adjacent to the subject Dwelling or Sleeping Unit.

WATER USAGE EFFECTIVENESS, SITE. The total water consumed onsite for a data center divided by its electrical energy consumption, in units of liters per kilowatt hour (L/kWh). Represented as WUE_{site} or WUE; when no subscript is present the water usage effectiveness is presumed to be at the site level.

C405.4 Lighting for plant growth and maintenance. All non-LED lighting using replaceable lamps shall be installed with electronic ballasts. In addition, not less than 95 percent of the total Watts of lighting for areas used for plant growth and plant maintenance shall be provided by lighting having a photosynthetic photon efficacy of not less than 1.6 µmol/J (luminaires), or 1.9 µmol/J (lamps). Indoor agriculture facilities shall demonstrate lighting requirements in accordance with one of the following:

1. LED luminaires listed in the Design Lights Consortium's Horticultural Qualified Products List (QPL), https://www.designlights.org/horticultural-lighting/search.
2. Double-ended high-pressure sodium (HPS) lamps with efficacies of 1.9 µmol/J or greater, used with any reflector and ballast combination.
3. For lamps or luminaires not included in 1) or 2) above, compliance with the efficacy requirements of this section must be demonstrated by either providing manufacturer's documentation indicating the luminaire or lamp efficacy or by submitting for review a third-party test report providing the lamps' or luminaires' photosynthetic photon efficacy (measured in µmol/J), generated by a facility accredited to the ANSI/ASABE S642, ANSI/IES LM-79, or ANSI/IES LM-51 standards.

Section C405.13. Electric vehicle (EV) supply equipment is added as follows:

C405.13 *Electric Vehicle Supply Equipment*. New parking facilities shall be provided with *electric vehicle charging infrastructure* in accordance with Sections C405.13.1 through C405.13.6.

C405.13.1 Quantity. The number of required *EVSE Installed Spaces, EV Capable spaces* and *EV Ready spaces* shall be determined in accordance with this Section and Table C405.13.1 based on the total number of *automobile parking spaces* and shall be rounded up to the nearest whole number.

1. Where more than one parking facility is provided on a building site, the number of required *automobile parking spaces* required to have *electric vehicle charging 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. *EVSE Installed spaces* that exceed the minimum requirements of this section may be used to meet 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 minimum requirements for *EV Capable spaces*.
5. 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 C405.13.1 shall be used.
6. The number of *EVSE Installed* Spaces for Groups A, B, E, I, M and S-2 Occupancies may be reduced by up to ten per *DCFC EVSE* provided that the *building* includes not less than one parking space equipped with a *DCFC EVSE* and not less than one *EV Ready space*. A maximum of fifty spaces may be reduced from the total number of *EVSE Installed spaces*.

Exception: Parking facilities serving occupancies other than R-2 occupancies with fewer than 10 automobile parking spaces.

Table C405.13.1 REQUIRED EV CHARGING INFRASTRUCTURE

OCCUPANCY	EVSE INSTALLED SPACES	EV READY SPACES	EV CAPABLE SPACES
GROUP A, B, E, M	10%	5%	10%
GROUP I	5%	0%	5%
GROUP R-1 AND R-2[a]	15%	5%	40%
GROUP R-3 AND R-4	2%	0%	5%
GROUP S-2 parking garages	10%	5%	0%

[a.] Where all parking spaces serving R-2 occupancies are *EV ready spaces*, requirements for *EVSE spaces* for R-2 occupancies shall not apply.

C405.13.2 EV Capable Spaces. Each *EV Capable space* used to meet the requirements of Section C405.13.1 shall comply with all 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 future or existing panelboard or switchboard location(s).
2. Installed raceway or cable assembly shall be sized and rated to supply a minimum circuit capacity in accordance with C405.13.5.
3. The electrical equipment room shall be provided with dedicated space for the future installation of the electrical distribution equipment required to serve the *EVSE*. Such equipment may include service switchgear, distribution panelboards, and transformers.
4. The electrical enclosure or outlet and the electrical distribution equipment directory shall be marked: "For future electric vehicle supply equipment (EVSE)."

C405.13.3 EV Ready Spaces. Each branch circuit serving *EV Ready Spaces* used to meet the requirements of Section C405.13.1 shall comply with all 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 circuit capacity in accordance with C405.13.5.
3. The panelboard or other 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)."

C405.13.4 EVSE Installed Spaces. An installed *EVSE* with multiple output connections shall be permitted to serve multiple *EVSE Installed Spaces*. Each *EVSE* installed to meet the requirements of Section C405.13.1, serving either a single *EVSE Installed space* or multiple *EVSE Installed spaces*, shall comply with all the following:

1. Have a minimum circuit capacity in accordance with C405.13.5.
2. Have a minimum charging rate in accordance with C405.13.4.1.
3. Be located within 3 feet (914 mm) of each *EVSE Installed space* it serves.
4. Be installed in accordance with Section C405.13.6.

C405.13.4.1 EVSE Minimum Charging Rate. Each installed *EVSE* shall comply with one of the following:

1. Be capable of charging at a minimum rate of 6.2 kVA (208/240V).
2. For R-1 and R-2 Occupancies, where serving multiple *EVSE Installed spaces* and controlled by an energy management system providing load management, be capable of simultaneously charging each *EVSE Installed space* at a minimum rate of no less than 3.3 kVA.
3. Where serving *EVSE Installed spaces* allowed to have a minimum circuit capacity of 2.7 kVA in accordance with C405.13.5.1 and controlled by an energy management system providing load management, be capable of simultaneously charging each *EVSE space* at a minimum rate of no less than 2.1 kVA.
4. For purposes of this section *EVSE* that are not *DCFC EVSE* shall be deemed to have a *power factor* of 1.

C405.13.5 Circuit Capacity. The capacity of electrical infrastructure serving each *EV Ready space* and *EVSE Installed space* shall comply with one of the following:

1. A branch circuit shall have a rated capacity not less than 8.3 kVA for each *EV Ready space* or *EVSE Installed space* it serves.
2. The requirements of C405.13.5.1.

C405.13.5.1 Circuit Capacity Management. The capacity of each branch circuit serving multiple *EVSE Installed Spaces* or *EV Ready Spaces* designed to be controlled by an energy management system providing load management in accordance with NFPA 70, shall comply with one of the following:

a. Have a minimum capacity of 4.1 kVA per space.
b. Have a minimum capacity of 2.7 kVA per space when serving *EV ready spaces* or *EVSE spaces* for a building site when all (100%) of the automobile parking spaces are designed to be *EV ready* or *EVSE spaces.*

C405.13.6 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 or universal in accordance with Denver Commercial Building Code Sections 1106 or 1107, respectively.

Section C405.14. Solar access requirement and its subsections are added as follows:

C405.14 Solar access requirement. All newly constructed buildings of Occupancy Group A, B, E, M, R1 and R2 shall designate a dedicated solar-ready zone on the building plans that meets the specifications of Appendix CB. This zone shall be located on the roof or overhang of the building or on the roof or overhang of another structure located within 250 feet of the building on the building premise or on covered parking installed with the building project.

Section C405.15 Additional electric infrastructure and its subsection are added as follows:

C405.15 Additional electric infrastructure. The following fossil fuel appliances and equipment or connections serving new *buildings* shall be installed in accordance with this section and Section C404.12.

1. Water heating equipment with an input capacity less than 300,000 Btu/h, and used for either space heating, service water heating, or process water heating.
2. Warm air furnaces serving spaces without space cooling.