

## EV Readiness in American Cities Climate Challenge Cities – Policy Options and Peer City Research

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### Introduction

Several cities participating in the American Cities Climate Challenge intend to draft, introduce, and pass an EV readiness ordinance in the coming months. This memo provides an overview of the key elements of an EV readiness ordinance and offers comparisons of example elements from peer cities' ordinances. The memo summarizes options, including:

- **Ordinance coverage** (i.e. what types or sizes of buildings and/or land uses are included)
- **Percentage requirements** (i.e. what percent of spaces are required to have EVSE infrastructure)
- **Other key policy elements** (e.g. how the ordinance interacts with parking requirements)

### Key Ordinance Elements

The following section describes key ordinance elements and provides examples from peer cities to inform development of the City's EV readiness policy.

#### Type of Ordinance

Cities have opted to add EV readiness requirements through their building code, energy code, zoning code, or as a standalone ordinance. Not all cities are able to adopt more stringent building codes than those set by the state, which is in part why some cities opt to utilize zoning or some other form of development review (e.g. Boston) to apply EV readiness requirements. Some experts also believe incorporating EV readiness into the zoning code has other benefits. Zoning can enable applying different EV readiness requirements more granularly to different land use types, and can generally enable a more context-sensitive approach than what are typically more broad building classifications. Additionally, zoning codes already regulate parking provision, which can help address some of the non-energy related aspects of EV-readiness, such as the relation of EV-ready spaces to off-street parking requirements.<sup>1</sup>

#### Ordinance Coverage

A key element of an EV readiness policy is what buildings are covered, including what land use types, whether the policy applies only to new construction, and at what size building the policy applies.

**Land use and building types:** Based on surveys of EV drivers, it's estimated that around 80% of charging occurs at home.<sup>2</sup> Charging at home tends to be the most convenient place to charge given that vehicles typically spend the greatest share of time parked at home. It is also typically the most affordable place to recharge, since residents can install simpler chargers and access base utility rates, rather than pay a premium for public chargers that cost more to build, operate, and maintain. Because most EV charging occurs at home, the City may want to consider emphasizing greater levels or percentages of EV readiness in residential land uses/building types.

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<sup>1</sup> [EV group says zoning law, not building code, is best for EV infrastructure](#)

<sup>2</sup> [Quantifying the electric vehicle charging infrastructure gap across US markets](#)

In commercial uses, the City may wish to put greater emphasis on EVSE installed to immediately enable workplace or public charging, and otherwise require an additional percent of spaces to be EV-Capable, as the full circuit required for the EV-Ready classification may be less useful in commercial applications than in residential settings.

**Size thresholds:** In addition to, or alternatively to variation by land use type, some cities' ordinances only apply to buildings over a certain size, determined by square footage, the number of parking spaces, or other measures, while other cities, including Atlanta, have no minimum if a building has any off-street parking. The primary reason some cities exclude smaller buildings is to not unfairly place a cost burden on developers building small buildings that would have to build a 'disproportionate' number of EV-ready spaces (e.g. 20% of 2 spaces rounded up is 50% of spaces). However, this rationale ignores the avoided cost benefits from having to retrofit a building later on. The table below summarizes examples of size thresholds at which cities' EV readiness ordinances apply.

- **Boston, MA**<sup>3</sup> – buildings over 25,000 square feet (or in parking freeze zones)
- **Boca Raton, FL**<sup>4</sup> – 50 parking spaces or more
- **Coral Gables, FL** – 20 parking spaces or more
- **Winter Park, FL** – EVSE-installed only in developments with 50 parking spaces or more.

**Inclusion of existing buildings:** Some leading cities also include EV readiness requirements when certain types of major additions or alterations occur. While including these requirements strengthens the policies' ability to reach a greater share of the building stock and also saves on retrofit costs, setting the right threshold, as well as monitoring and enforcement can be challenging. Some examples include:

- **Boca Raton, FL** – applies when more parking spaces are added to an existing development, and development has over 50 spaces.
- **Denver, CO** – applies “where the work area exceeds 50 percent of the original building area or more than 10 parking spaces are substantially modified.”
- **San Francisco, CA** – applies to “alterations and additions where interior finishes are removed and significant upgrades to structural and mechanical, electrical, and/or plumbing systems are proposed” in buildings over 25,000 square feet.

## Percentage Requirements

The City can consider different levels of EV readiness to require, in addition to the percentage of each category. The common levels of EV readiness include EV capable, EV ready, and EVSE installed, as described in the graphic below.<sup>5</sup>

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<sup>3</sup> [Recharge Boston: Electric vehicle resources](#)

<sup>4</sup> Unless otherwise noted, all referenced ordinances can be found on Google Drive: [https://drive.google.com/drive/u/0/folders/136paoeBQxzyDzeNd2nu3iUm\\_QO87uw2S](https://drive.google.com/drive/u/0/folders/136paoeBQxzyDzeNd2nu3iUm_QO87uw2S)

<sup>5</sup> [Cracking the Code on EV-Ready Building Codes](#)

### 1. EV-Capable

Install electrical panel capacity with a dedicated branch circuit and a continuous raceway from the panel to the future EV parking spot.

[Aspen, CO: 3% of parking is EV-Capable \(IBC\)](#)

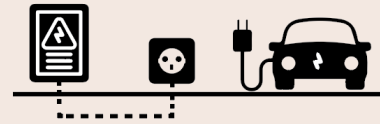
[Atlanta, GA: 20% is EV-Capable \(Ordinance\)](#)



### 2. EVSE-Ready Outlet

Install electrical panel capacity and raceway with conduit to terminate in a junction box or 240-volt charging outlet (typical clothing dryer outlet).

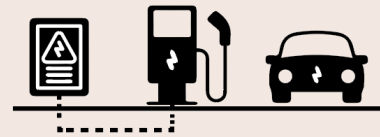
[Boulder, CO: 10% of parking is EV-Ready Outlet](#)



### 3. EVSE-Installed

Install a minimum number of Level 2 EV charging stations.

[Palo Alto, CA: 5-10% of parking is EV-Installed](#)



The table below summarizes the EV readiness requirements for different building types in other Climate Challenge cities. Some of the trends observed amongst these cities' requirements include:

- **EV-Ready:** EV-ready requirements range from around 10% up to 25% in peer cities. It's expected that with load management technology, a lot/garage's electrical load sized to serve 20% of spaces could be managed to support charging in all of the spaces.<sup>6</sup>
- **EV-Capable** is a less stringent and expensive requirement for developers that can still save substantially on retrofit costs. Several cities have required higher percentages up to 100% of new parking spaces to be EV capable, including Boston, MA, Richmond, BC, Vancouver, BC, Oakland, CA, Seattle, WA, Palo Alto, CA, and San Francisco, CA, given that most of the retrofit cost is from trenching and demolition costs that can be saved by putting in raceway much more inexpensively during new construction or major alterations. In public settings (as opposed to multi-family residential or workplace garages for example), EV-capable may be more appropriate given the potential for theft or vandalism of the wiring and outlet.
- **EVSE-Installed:** Leading cities are beginning to require 5% or in some cases substantially higher percentages of spaces to be EVSE equipped, including Palo Alto (5-10% depending on the land use type), Berkeley, CA (10% for commercial), and Boston, MA (25% for large commercial and multi-family developments). Additional examples from peer cities are included below.

City	Commercial	Multi-family	Single-family
<b>Climate Challenge Cities</b>			
Atlanta, GA	20% EV-Capable	20% EV-Capable	EV-Capable
Boston, MA <sup>7</sup>	75% EV-Capable	75% EV-Capable	N/A

<sup>6</sup> [Seattle SDCI - Electric Vehicle Readiness Director's Report](#)

<sup>7</sup> [Recharge Boston: Electric vehicle resources](#)

	25% EVSE-Installed	25% EVSE-Installed	
Chicago, IL	20% EV-Ready	20% EV-Ready	N/A
Denver, CO	10% EV-Capable 10% EV-Ready 5% EVSE-Installed ( <i>all 10+ spaces only</i> )	40% EV-Capable ( <i>20% where &lt; 10 spaces</i> ) 15% EV-Ready 5% EVSE-Installed	1 EV-Ready Outlet
Honolulu, HI	25% EV-Ready ( <i>12+ spaces – Level 2</i> )	25% EV-Ready ( <i>8+ spaces – Level 1</i> )	1 EV-Ready Outlet
Los Angeles, CA	20% EV-Capable ( <i>hotels</i> ) 10% EVSE-Installed	20% EV-Capable 10% EVSE-Installed	N/A
Orlando, FL, Orange County, Winter Park ( <i>proposed</i> )	20% EV-Ready, 2% EVSE-Installed	20% EV-Ready, 2% EVSE-Installed	1 EV-Ready outlet
San Jose, CA	40% EV-Capable 10% EVSE-Installed	70% EV-Capable 20% EV-Ready 10% EVSE-Installed	1 EV-Ready outlet
Seattle, WA	10% EV-Ready	20% EV-Ready	1 EV-Ready outlet
Washington, DC ( <i>proposed</i> )	20% EV-Ready	20% EV-Ready ( <i>5+ units</i> )	N/A

### Other policy elements

In addition to the core elements of the EV readiness proposal described above, many cities' ordinances also include additional stipulations described in this section that cities may want to consider.

**Interaction with parking requirements:** Some cities simply specify that EV-ready parking spaces do count towards minimum parking requirements, while some seek to incentivize both less parking and greater levels of EV readiness. A few examples are included in the table below:

City	Language
Kansas City, MO <sup>8</sup>	<i>“Electric vehicle charging stations may be counted toward satisfying minimum off-street parking space requirements.”</i>
Indianapolis, IN <sup>9</sup>	<i>“For each electric vehicle charging station provided, the minimum number of required off-street parking spaces may be reduced by two.”</i>
Middletown, CT <sup>10</sup>	<i>“40.02.03 REQUESTS FOR REDUCTION OF GENERAL PARKING SPACES IN EXCHANGE FOR ADDITIONAL EV PARKING. For any development that exceeds the minimum number of EVCs as required parking spaces equal to the number of EV parking spaces above the minimum required 3%. The reduction of parking cannot be greater than 10% of the total amount of parking for the proposed development.”</i>

The City may want to at least clarify that EV-ready spaces count towards parking minimums.

<sup>8</sup> [Kansas City Zoning Code](#)

<sup>9</sup> [Summary of Best Practices in Electric Vehicle Ordinances](#)

<sup>10</sup> [Planning and Zoning Code- City of Middletown](#)

**Point system for alternate compliance:** In cases where cities require EVSE to be installed, some have proposed alternative compliance mechanisms to enable developers flexibility through installing different technologies or transportation options. Some examples include:

- **Boston:** Boston's new EV readiness policy sets a Level 2 charger as the baseline for its EVSE installed requirement, and enables developers to instead install Level 1 or DCFC chargers for different points that count towards the baseline obligated number of Level 2 chargers. Alternatively, developers can also opt to provide other electric transportation options, such as e-bike parking and charging, or EV carshare.<sup>11</sup>
- **Honolulu:** As part of Honolulu's proposed EV readiness policy, the City is considering a similar point compliance system to Boston's.

**Tie threshold to market adoption:** A few cities have indicated in their ordinance that they may update the requirement thresholds over time, based on market adoption. This may help provide the City with flexibility to update the ordinance over time as the EV market and technology continues to change. Examples include:

- **Miami:** Miami's ordinance includes a timetable to increase its EV readiness requirements (from 10% to 20% in 2022), and also directs staff to conduct a study and prepare a recommendation about whether to increase or decrease the requirement by a certain date (2021).
- **Boston:** The City of Boston's EV readiness policy states that it will release an EV adoption threshold by the end of 2020 that will determine when developers are required to go beyond the 25% required EVSE installed, and indicates developers will be required to submit plans detailing when they will meet those updated requirements.

**Other requirements and standards:** Cities vary in how much they specify with respect to how the EV ready spaces and/or EVSE installations must be designed and operated. Particularly in cases where cities require actual EVSE installations, it may make sense to include additional stipulations to help ensure a positive and even experience across the City. Some examples of additional stipulations to include are:

- ADA requirements
- Non-proprietary equipment (i.e. non-Tesla)
- Signage and lighting requirements
- Restrictions to EV parking
- Usage fee collection and pricing

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<sup>11</sup> [Boston EV Readiness Policy for New Developments](#)