



Director's Report

Electric Vehicle Readiness Ordinance
January 2019

INTRODUCTION

The Seattle Department of Construction and Inspections (SDCI) is proposing to amend the Land Use Code to require all new development in Seattle that includes off-street parking to provide electric vehicle (EV) charging infrastructure. This proposal was developed in partnership with the Office of Sustainability and Environment (OSE).

SUMMARY

The proposal would amend the Land Use Code (Sections 23.54.030 and 23.49.019) to require that parking spaces provided in new development include the wiring and electrical (power) outlets necessary to be considered “EV-ready,” to make it easier for someone to install charging equipment/stations in the future. The number of “EV-ready” parking spaces required would depend on the type of land use and the type and size of parking facilities provided. The requirements would apply to all off-street parking provided with new buildings—whether or not it is required by the Land Use Code. The proposal provides EV-ready spaces for residential and non-residential uses.

Key components:

- Require that each private garage or private parking area provided for an individual residence (such as a single-family house, duplex, or townhouse) includes an EV-ready space (a 208/240 volt, 40-amp power outlet);
- Require that multifamily development with shared parking garages or shared surface parking lots provide at least 20% of the spaces as EV-ready, with higher requirements for smaller parking facilities;
- Require that parking facilities for non-residential uses include a minimum of 10% of the spaces as EV-ready; and
- Allow flexibility from the EV requirements in instances where meeting the requirements would require certain types of upgrades to the utility infrastructure.

BACKGROUND

This proposal was included in Mayor Jenny Durkan’s 2018 Climate Action Strategy as one of her 12 priority climate actions and is a key milestone in efforts to significantly expand the City’s work to electrify vehicles in Seattle and put us on the path to meet our carbon neutral goal. The proposal is an important component of the City’s strategy to support the electrification of transportation, as established in the 2016 Council Resolution 31696. In addition to this EV readiness proposal, OSE is working with other departments and external stakeholders on a variety of complementary strategies to promote electrification and reduce greenhouse emissions in Seattle.

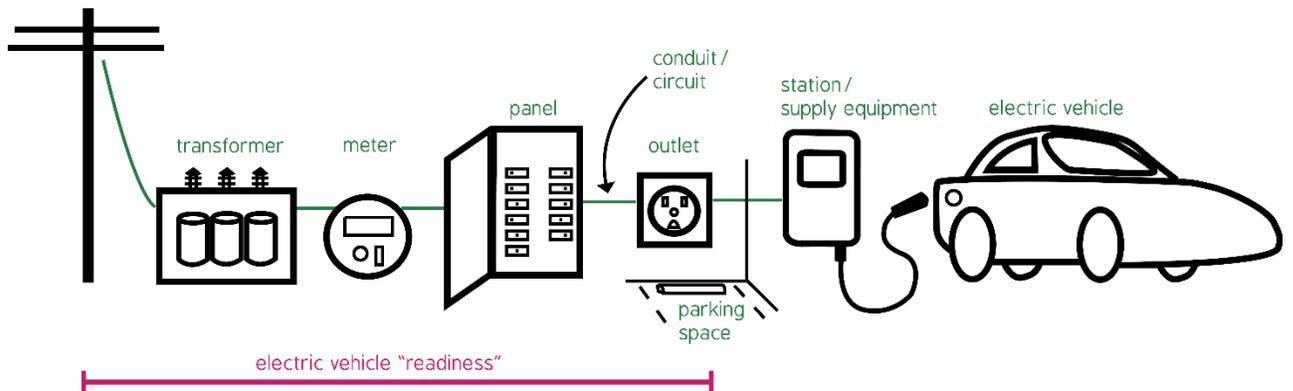
Seattle also has several goals and policies promoting multi-modal mobility and reducing dependence on single-occupancy vehicles. As such, this effort is not intended to increase the overall number of single-occupancy vehicles in Seattle, but rather increase the share of all vehicles (personal, car-sharing, fleet, TNC, etc.) in Seattle that are electric.

Electric Vehicle Readiness

Research shows that access to convenient charging is a key factor in someone’s decision whether to buy an EV. Requiring developers to provide the electrical wiring needed for future charging equipment/stations for new parking will increase the use of EVs and save substantial costs on future charging station installation.

EVs are typically charged at home, at work, or at publicly-accessible charging stations located in neighborhoods/business districts or along highway corridors. Installing the necessary infrastructure to support EV charging after a building has been constructed can be cost prohibitive. As such, there is a need to help ensure that buildings are designed to include some amount of charging infrastructure. This concept is known as "EV readiness."

Diagram: EV Readiness



For parking to be fully "EV-ready", the development should be designed and constructed to include a fully-wired circuit for an EV charging power outlet, including conduit and wiring. A power outlet with 208/240 volts and 40-amps (sometimes referred to as "Level 2" charging) is generally accepted as the standard for most EV charging needs. Installing the wiring and power outlets for EVs can be done as part of the overall building's electrical and utility service permitting. In addition, the property needs to have the electrical service capacity necessary to serve the power outlets to allow for future installation of EV equipment/stations. The electrical load of the building is set at the time the building is constructed and can be expensive to upgrade in the future.

Current Regulations and Incentives

Seattle currently has some requirements for EV infrastructure in new development that includes off-street parking. The current requirements, located in the Seattle Electrical Code, were adopted in 2008 and expanded upon in 2017. The code requires that:

- New buildings must reserve physical space on the electrical panel for EV circuit breakers (or for larger development projects, wall or floor space in the mechanical room for additional panels);
- Electrical drawings must clearly indicate where future equipment and conduit for electrical service to utility connections and future EV charging stations could be installed; and
- New buildings cannot be designed and built to include physical obstructions, such as concrete barriers, blocking those conduit pathways.

These rules apply to all new development that includes off-street parking except for single-family homes and duplexes. The Electrical Code does not require that the wiring be installed, or that the building's electrical service connection from the power utility have adequate capacity to serve the potential future wiring. The code requires that conduit be installed at the time of construction only in instances where it would not be feasible to install at a later time. The Land Use Code does not contain any requirements that new parking be designed to serve EVs, however it was amended in 2011 to reduce barriers to EV charging that may have inadvertently existed. As a result, EV charging equipment is more clearly allowed in front, side, and back yards in residential zones and as an accessory use in public parking facilities.

SDCI offers expedited permit review for new buildings designed to meet green building standards through its Priority Green program. To be eligible, projects must be certified by a third-party green building

organization such as Built Green (a program of the Master Builders), Leadership in Energy and Environmental Design (LEED), Living Building Challenge, or Passive House. These organizations have recently begun incorporating EV charging infrastructure into their rating systems.

EV charging is generally considered a desirable and marketable amenity by the private sector. Some amount of EV readiness is provided in new construction, particularly in new single-family homes marketed to higher-income, environmentally-conscious buyers, however the exact amount is unknown. A very small amount of multifamily and commercial development includes charging infrastructure.

Other Cities

San Francisco recently passed an EV readiness ordinance to require fully-wired circuits installed in 10% of parking stalls in new residential and commercial buildings or major remodels. An additional 10% of parking stalls are required to have conduit (but no wiring) running to them. Vancouver BC recently passed legislation requiring 100% of parking stalls built in new residential construction to have fully wired circuits installed to support EV charging, with some flexibility on how to achieve this standard.

Stakeholder Outreach

Conversations with external and internal stakeholders heavily influenced the development of the proposal. Staff met with the development community, the environmental justice community, and the EV advocacy/green building communities throughout 2018.

Key takeaways from conversations with the EV community:

- Focus on residential development, which is critical for EV adoption, reduces strain on the power grid, and reduces the cost of power for consumers.
- Focus on fully-wiring the stalls (rather than just running conduit, etc.).
- Focus on 208/240 volt, 40-amp outlets (sometimes referred to as “Level 2” charging).
- Load management technology can stretch power from one outlet to serve up to five parking spaces.
- It is significantly more expensive to retrofit parking facilities for EVs. Retrofit costs are often cost-prohibitive in instances where: 1) the building's electrical service connection would need to be upgraded, 2) the parking facilities are located far from the power service, or 3) there are physical obstructions between the parking stalls and power service.
- The shared ownership of some properties can complicate the process to install physical infrastructure after the building is constructed.
- Building owners, operators, and tenants can decide what type of charging station is most appropriate and how payment should be arranged.

Key takeaways from conversations with the development community:

- Prefer for market demands and incentive programs to drive installation of EV infrastructure.
- EV charging is considered a marketable amenity, but installing EV power outlets (currently voluntary) is not widespread.
- EV power outlets are currently being provided in some amount of new construction, particularly in housing marketed to higher-income, environmentally-conscious buyers.
- Avoid overbuilding EV infrastructure to minimize any potential increases to the cost of development.
- Don't be too prescriptive—allow EV infrastructure to be designed and installed in a way that makes sense for individual projects.

Key takeaways from conversations with the environmental justice community:

- Concern that providing EV infrastructure in new development in low-income communities may contribute to displacement.
- Mitigate housing cost impacts to avoid exacerbating displacement.
- Lack of access to charging in rental housing creates a homeowner/renter divide in EV access.
- No home charging is a barrier to EVs for ride hail drivers in communities of color.

PROPOSAL AND ANALYSIS

The proposal would require that a certain portion of any new off-street parking spaces constructed in association with a new building include the wiring and power outlets necessary to be considered “EV-ready,” to make it easier for someone to install charging equipment/stations there in the future. The proposal would significantly expand upon existing EV-readiness requirements in the Seattle Electrical Code. It would not specifically require charging stations themselves and is not intended to impact the number of off-street parking spaces constructed. The required power outlets would provide 208/240 volt, 40-amp power, which is sufficient for “Level 2” charging.

The number of “EV-ready” parking spaces required would vary depending on the type of land use and the type and size of parking facilities provided. These requirements would apply regardless of whether the parking was required by the Land Use Code or provided for market-based reasons.

DEVELOPMENT TYPE	TYPE OF PARKING FACILITIES	EV READINESS REQUIREMENTS
Small-scale residential (single-family, townhouses, DADUs, etc.)	Private (individual) garage, carport, or surface parking area	1 outlet per garage, carport or surface parking area
Multifamily (townhouses, apartments, etc.)	Shared surface parking	1-6 spaces: 1 outlet per space 7-25 spaces: 6 outlets total >25 spaces: outlets for 20% of parking spaces
	Shared parking garages	Outlets for 20% of parking spaces
Other residential	Any parking facilities	Outlets for 20% of parking spaces
Non-residential (retail, office, industrial, institutional, etc.)	Any parking facilities	Outlets for 10% of parking spaces

An important factor in developing the proposal was identifying which types and scales of development may be suitable for load management technology, which can be used to stretch power from one outlet to serve multiple parking spaces. Power sharing is most likely to be successful in slightly larger development projects where shared parking facilities have a separate electrical meter. In such cases, the EV-ready requirements were reduced to require power outlets in as little as 20% of parking spaces. Those spaces could, with load management technology, fully electrify all the spaces in the parking facility.

The proposed requirements for residential uses are higher than for other uses. This is consistent with the approach that many other jurisdictions have taken, as non-residential charging is less critical to EV adoption than reliable access to charging at home.

Environmental Benefits

The proposal is intended to increase the share of vehicles driven in Seattle that are electric vehicles. If successful, the proposal would help reduce vehicle emissions and reduce the amount of petroleum consumed by vehicles in Seattle. Seattle’s electrical power is 100% carbon neutral.

Cost Implications

The proposal was designed to maximize electrification of new off-street parking spaces while minimizing potential impacts on the cost of construction, particularly housing, by avoiding over-building infrastructure. The cost of building off-street parking can range from \$3,000 per parking space (for surface parking where the parking would not limit the overall development capacity) to \$55,000 per space (for a structured parking garage)¹. Recent studies in other jurisdictions estimate the cost of providing EV outlets at parking spaces would add an additional \$150-\$1,000+ per space.² In single-family homes and most other small-scale development, where the parking facilities are located near the meter and there is adequate capacity in the planned electrical service, the cost of installing a 208/240 volt EV power outlet would likely be just a few hundred dollars. In larger developments with structured parking, a single EV-ready power outlet could cost over \$1,000 but the power from that single outlet could be stretched to electrify up to five parking spaces, reducing the average cost of electrifying the parking garage significantly.

The increased electrical load required by the proposal may, for some development projects, increase the amount of infrastructure required for an electrical service connection for the development project. This can be a major component of the cost of providing EV infrastructure, and among the most difficult to predict. Under the current proposal, this is most likely to be an issue for townhouse or rowhouse developments providing approximately 6 to 10 units, each with a private parking space, where the project's overall electrical service would fall below the threshold for more expensive on-property transformers without providing any EV power outlets, but would potentially exceed this threshold by providing the number of EV power outlets required by the proposal. In such instances, however, the proposal contains a pathway for the applicant to request flexibility from the EV requirements to avoid providing the more substantial transformer equipment on their property. The proposal also allows a homeowner who is adding a new garage or detached accessory dwelling unit (also sometimes called a "backyard cottage" or "DADU") to their property to request flexibility from the EV requirements if they would need to upgrade the existing electrical service for their home in order to provide an EV outlet. The approval process for a reduction in EV-readiness requirements would happen at the time of the electrical permit review.

In addition to the costs outlined above, the cost of the actual charging equipment/stations, which connect the vehicle to the EV power outlet in the wall, can range from just a few hundred dollars to several thousand. These would not be required by the proposed legislation but would be necessary to facilitate charging. In larger buildings, the HOA or property management company would likely purchase or lease the equipment and manage use and payment. In smaller residential buildings, such as single-family homes or townhouses, it would likely be up to the individual residents to acquire the equipment.

Parking

The proposal applies to all new off-street parking constructed with a new building, whether or not it is required by the Land Use Code. The proposal does not include any changes to the minimum or maximum parking requirements. Under current rules, parking requirements vary with different types of land uses and zoning. No parking is required in Urban Centers and in the light rail Station Area Overlay District, and requirements can be reduced for residential uses in areas served by frequent transit. Additionally, certain affordable housing units that are rent/income-restricted are not required to provide off-street parking.

¹ City of Portland, OR Bureau of Planning and Sustainability. November 2012. *"Cost of Onsite Parking and Impacts on Affordability"*

² A cost effectiveness report commissioned by the City of Oakland in 2016 estimates the total cost of a fully wired EV-ready space around \$1,300, whether surface or in an enclosed structure. A similar report prepared for the City and County of San Francisco in 2016 estimates the same infrastructure would cost approximately \$900. Richmond, BC estimates that providing EV infrastructure in new single-family homes and townhouses as \$50-\$150 per parking space.

Under current development trends, roughly 10,000 parking spaces are constructed in Seattle each year.³ Even though parking is not required in the areas mentioned above, parking spaces are provided by an estimated 70% of new multifamily and mixed-use development projects in Urban Centers and Urban Villages. Around 45% of parking spaces provided are estimated to be located in mixed use apartment buildings and another 35% in non-residential buildings. The remainder are located in single-family and multifamily development.

To the extent that the demand for non-required parking is elastic, the increase in costs associated with the proposal could contribute to a small reduction in the number of non-required parking spaces provided. However, given that the increase in cost is likely to be minor when compared to the cost of constructing parking facilities overall, any such reduction in the amount of parking provided is expected to be minimal.

CONSISTENCY WITH THE COMPREHENSIVE PLAN

The proposal is consistent with applicable Comprehensive Plan goals and policies including:

Transportation

- Goal 4 Promote healthy communities by providing a transportation system that protects and improves Seattle's environmental quality.
- Policy 4.4 Manage the transportation system to support modes that reduce the use of fossil fuels and promote the use of alternative fuels.
- Policy 4.5 Encourage the use of electric-powered vehicles and the provision and expansion of electric-vehicle charging stations.

Housing

- Policy 5.22 Continue to promote best practices in use of green building materials, sustainability, and resiliency in policies for rent/income-restricted housing.

Utilities

- Policy 1.5 Ensure that new private development provides adequate investments to maintain established utility service standards.

Environment

- Goal 3 Reduce Seattle's greenhouse gas emissions by 58 percent from 2008 levels by 2030, and become carbon neutral by 2050.
- Policy 3.1 Expand transit, walking, bicycling, and shared-transportation infrastructure and services to provide safe, affordable and effective options for getting around that produce low or zero emissions, particularly for lower-income households and communities of color.
- Goal 5 Seek to ensure that environmental benefits are equitably distributed and environmental burdens are minimized and equitably shared by all Seattleites.
- Policy 5.1 Consider the cost and benefits of policy and investment options on different communities, including the cost of compliance as well as outcomes.
- Policy 5.2 Prioritize investments, policies, and programs that address existing disparities in the distribution of environmental burdens and benefits.

RECOMMENDATION

SDCI recommends adoption of the proposed amendments to the Land Use Code. This proposal ensures that future parking facilities are equipped to serve electric vehicles, accommodating more widespread access to EV charging and promoting climate and transportation objectives consistent with the Comprehensive Plan.

³ Precise data on the amount of parking provided in new development in Seattle is not readily available. As such, high-level estimates were prepared using available permit data for [residential development](#) and complex land reviews in 2017.