



CITY OF BEND



# Bend Electric Vehicle Readiness Plan

November 2022







# Acknowledgments



## **City of Bend:**

Cassie Lacy, Senior Management Analyst

Tobias Marx, Parking Services Division Manager

Stephanie Betteridge, Chief Innovation Officer

## **City of Bend Committees:**

Economic Development Advisory Board

Environment and Climate Committee

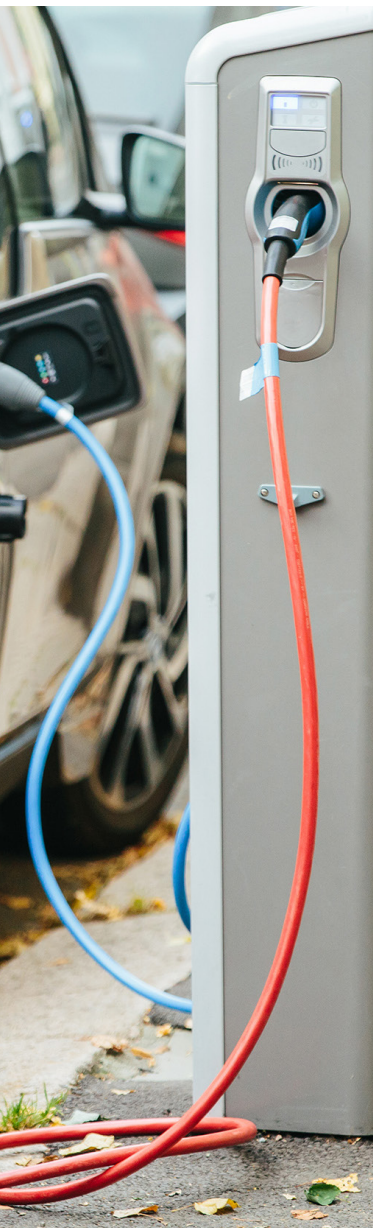
## **Stakeholder Interviews:**

City of Bend Economic Development Department: Ben Hemson

City of Bend Parks and Recreation: Sasha Sulia and Bronwen Maestro

The Environmental Center: Neil Baunsgard

Cascades East Transit: Ashley Mohni



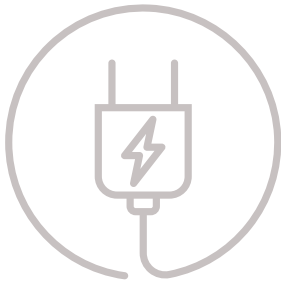
# Contents

## General Acronyms & Abbreviations

<b>01</b>	<b>Introduction</b>	<b>6</b>
<b>02</b>	<b>Stakeholder &amp; Community Engagement</b>	<b>8</b>
	Stakeholder Outreach	8
	Community Outreach	10
<b>03</b>	<b>Needs Assessment</b>	<b>11</b>
	Electric Vehicle Adoption	11
	Charging Infrastructure	13
	Electrical System	17
<b>04</b>	<b>Equity in Electrification</b>	<b>18</b>
	Charger Accessibility	19
	Equity Strategies	20
<b>05</b>	<b>Charging Infrastructure Siting</b>	<b>25</b>
<b>06</b>	<b>Recommended Actions</b>	<b>28</b>
	Promote EVs	28
	Enable EVs	30
	Deploy EVSE	32
<b>07</b>	<b>Implementation Strategy</b>	<b>35</b>







## Figures

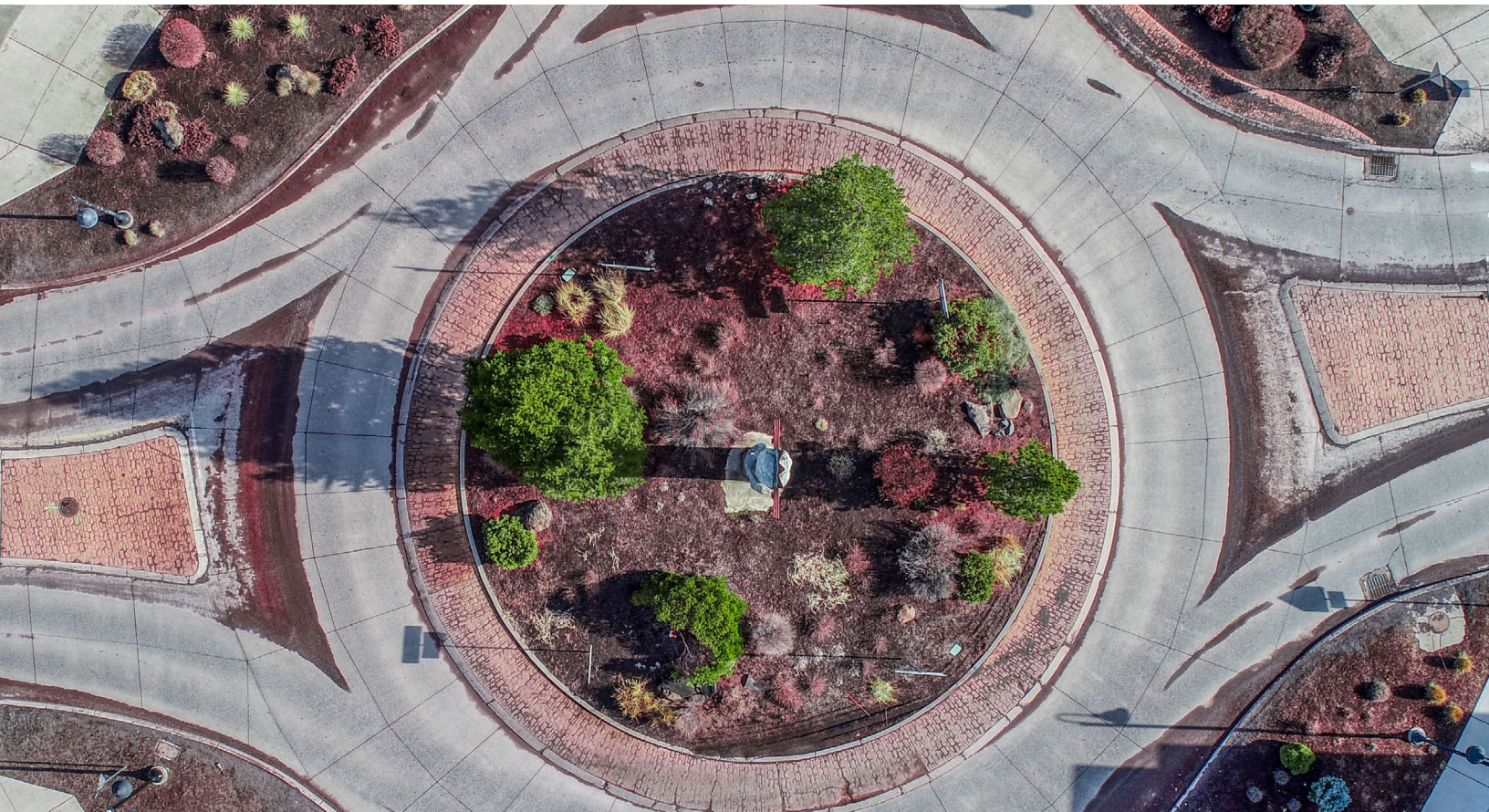
<b>Figure 3-1.</b> Bend Electric Vehicle Adoption Projections	7
<b>Figure 3-2.</b> Existing Public Charging Stations	9
<b>Figure 5-1.</b> Bend EV Charging Infrastructure Sites and Areas of Opportunity	18
<b>Figure 8-1.</b> Bend EV Readiness Action Matrix	27

## Tables

<b>Table 3-1.</b> Existing Charging Infrastructure Inventory	8
<b>Table 3-2.</b> Existing Charging Infrastructure Demand	8
<b>Table 3-3.</b> Future Charging Infrastructure Needs	10
<b>Table 3-4.</b> Future Charging Capacity Needs	11

## Appendices

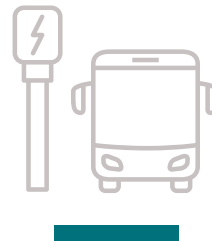
<b>Appendix A.</b> Online Survey Summary
<b>Appendix B.</b> Needs Assessment Supplement
<b>Appendix C.</b> Equity in Electrification Supplement
<b>Appendix D.</b> Sample Code Amendment Language
<b>Appendix E.</b> Charging Infrastructure Siting Supplement
<b>Appendix F.</b> Complete List of Recommended Actions





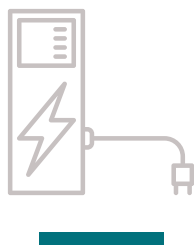
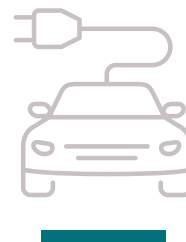
## General Acronyms & Abbreviations

<b>AC</b>	alternating current
<b>AFC</b>	Alternative Fuel Corridor
<b>BEB</b>	battery electric bus
<b>CCAP</b>	Community Climate Action Plan
<b>CEC</b>	Central Electric Cooperative
<b>CET</b>	Cascades East Transit



<b>City</b>	City of Bend
<b>CWCCC</b>	Columbia-Willamette Clean Cities Coalition
<b>DC</b>	direct current
<b>DERA</b>	Diesel Emissions Reduction Act
<b>EMP</b>	e-Mobility Service Providers
<b>EV</b>	electric vehicle

<b>EVSE</b>	electric vehicle supply equipment
<b>FHWA</b>	Federal Highway Administration
<b>FTE</b>	full-time equivalent
<b>GHG</b>	greenhouse gas
<b>ICE</b>	internal combustion engine
<b>kW</b>	kilowatts



<b>LMI</b>	low- and moderate-income
<b>MW</b>	megawatts
<b>ODOE</b>	Oregon Department of Energy
<b>PEV</b>	plug-in electric vehicle
<b>USDOE</b>	U.S. Department of Energy
<b>ZEV</b>	zero-emission vehicle







# Introduction

Since their commercial introduction more than 25 years ago, electric vehicles (EV) have become a popular option for those who depend on a vehicle and are interested in reducing their carbon footprint. The pace of vehicle electrification in the United States has rapidly accelerated in recent years, with nationwide EV sales nearly doubling from 308,000 in 2020 to 608,000 in 2021. Overall vehicle sales increased by just 3 percent in the same period, a stark contrast that makes clear drivers are ready to adopt EVs. The audience for EVs will only grow as technology evolves, prices drop, and new vehicles are made available.

Bend residents respect the environment in which they thrive and want to protect it, but with a rapidly growing population that will demand more resources every year—particularly in the transportation sector—drastic changes will be needed at every level to mitigate the most severe impacts of climate change. EVs are part of a larger umbrella of mobility solutions that together will reduce emissions and combat climate change. The Bend community is active and has adopted multimodal transportation options, but EVs will offer the chance to contribute for those who still need to rely on a personal vehicle.

The City of Bend (the City) is prepared to play its role in protecting its natural resources and reaching its climate action goals: To reduce fossil fuel use by 40 percent by 2030 and 70 percent by 2050. The 2019 Bend Community Climate Action Plan (CCAP) provided a roadmap for the City toward achieving its ambitious goals, and this Electric Vehicle Readiness Plan was developed in response to one of its recommendations. The first half catalogs the current state of electrification in Bend





and quantifies what Bend residents will need to support a community-wide transition to EVs. The second half gives guidance for prioritizing equity, recommendations for siting new charging stations, and a series of priority actions to be taken toward driving the cultural shift toward electrified transportation.

The opportunities identified in this plan are always considered in relation to a mission, a vision, and goals developed to reflect the needs and desires of the City and its stakeholders.



## MISSION

**The mission statement defines the purpose of the plan and describes what is being done, for whom, and why. The mission of this plan is:**

*To develop a customized and locally applicable action plan that provides clear, comprehensive direction toward equitable widespread electrified mobility in Bend.*



## VISION

**The vision statement describes the unique future the City hopes to create and how the public will be better served by it. To support an electrified future and promote environmental sustainability and responsibility in Bend, the vision of this plan is:**

*To reduce transportation-sector greenhouse gas (GHG) emissions through consistent, coordinated planning that facilitates a broad transition to electrified mobility throughout Bend by making it convenient, safe, financially feasible, and equitably accessible to all community members.*



## GOALS

**Goals are broad, qualitative statements covering what should be achieved by the plan; they bring definition to the vision.**

**The goals of this plan are to:**

- 1** Provide equitable access to EVs and the benefits of electrified mobility to all users, including underserved and vulnerable communities, by making it easier to use, purchase/lease, charge, operate, and maintain an EV in Bend.
- 2** Ensure EV charging infrastructure is equitably accessible to the broad range of residents, visitors, and workers in Bend.
- 3** Develop criteria to strategically site EV charging infrastructure in a way that fills key gaps and supports increased EV adoption by all user groups.
- 4** Integrate the EV charging network into a clean power grid that reduces GHG emissions and charging costs.
- 5** Improve awareness of the costs, benefits, and performance of EVs among residents, visitors, and businesses in Bend.
- 6** Lead by example by integrating EVs into municipal fleets.
- 7** Position the City for current and upcoming funding opportunities that promote EV adoption.
- 8** Address barriers to widespread electrified mobility adoption among all users through collaborative, coordinated action by the City, its stakeholders, and community partners.
- 9** Support other modes of electrified transportation that complement increased EV adoption.







# Stakeholder & Community Engagement

A key part of creating an actionable EV Readiness Plan is gathering input from the City's stakeholders and the overall Bend community. This section discusses the engagement activities conducted throughout this plan's development to help identify local barriers to EV adoption and opportunities to address them. The findings have been incorporated into the recommended actions of this plan to address the specific, local needs of the Bend community.

## Stakeholder Outreach

To promote collaboration and gather input from community stakeholders, interviews were conducted in November 2021 with four groups: Bend Parks and Recreation District, the City of Bend Economic Development Department, Cascades East Transit (CET), and non-profit group The Environmental Center. The interviews covered existing conditions, barriers to EV adoption, areas for improvement, and desired outcomes for EV planning in Bend. Participants were asked a series of questions and given the opportunity to offer input into community-wide gaps and needs.

The primary perceived **barriers** to EV adoption in Bend that were identified during the interviews included:

Vehicle purchase cost

Vehicle availability at local dealerships

Cost of infrastructure for businesses

Cost of fleet replacements for businesses

Lack of EV-readiness requirements at new development, particularly multi-family housing

Lack of dedicated budget

Lack of coordination in charging infrastructure deployment

Lack of public knowledge and awareness of EVs

Vehicle performance in inclement weather

Battery capacity for transit vehicles

Interviewees also identified **opportunities** for expanding EV adoption in Bend:

- ✓ Improve public awareness of and exposure to EVs
- ✓ Improve local access to new four-wheel drive EV models
- ✓ Enable home charging
- ✓ Enable commuter use of EVs by installing charging stations in outlying areas
- ✓ Install charging infrastructure at tourist destinations, such as parks and trailheads
- ✓ Partner with large area employers to install chargers
- ✓ Prioritize equity in infrastructure planning and deployment
- ✓ Develop and implement standards for EV-readiness at new development
- ✓ Identify areas where micromobility is feasible and promote E-bikes/scooters
- ✓ Work with sales and service centers to increase maintenance capacity
- ✓ Replace fleet vehicles and small equipment with electric models
- ✓ Partner with transportation network companies to offer EV options for drivers
- ✓ Develop a battery swap program for used EVs
- ✓ Share costs with recreational services



## Community Outreach

To gather public input, the City launched an online survey that ran from February 10, 2022 through March 11, 2022. A link to the survey was included on the project website and announced through City communications. A total of 255 people participated in the survey, which consisted of both quantitative and qualitative, open-ended questions. EV owner participants were directed to specific questions on current conditions, barriers, areas for improvement, and desired outcomes for this plan. A summary of the E-survey findings is provided in **Appendix A**.

### Key themes taken from the online survey results included:



#### Availability of Vehicles and Equipment

Participants expressed the varying needs of EVs such as maintenance, charging availability, and infrastructure cost that should be considered during City adoption. The primary motivators for EV use and ownership include low environmental impact, low maintenance needs, and economic benefits. The unique needs of rural locations were consistently emphasized, including the need for specific vehicle types, long vehicle charge ranges, and towing capacity.



#### Charging Network and User Experience

More than 90 percent of participants who own EVs indicated they primarily charge at home, with only 5 percent charging at locations other than a home or workplace. Creating a more positive and equitable user experience at charging stations is important to current and potential EV users. Ideally, a city's charging network considers long-range trips, multi-family housing, and public access. The primary challenge that EV users currently experience is inconvenient charging locations that create barriers for longer trips and commutes. Many respondents want to charge at recreational areas, in Downtown Bend, and at grocery stores and pharmacies.



#### Charging Fees

More than a third of participants said they would pay between \$4-6 for fast charging and \$1-3 for Level 2 charging. Nearly another third desire free Level 2 charging. The City will need to determine a charging fee structure that balances user cost and revenue to make sure EV owners are not deterred from using public chargers due to too-high rates.



#### Public Perception

Most respondents use their personal vehicle as their primary mode of transportation. The principal motivators for non-EV owners to consider purchasing an EV were identified as lower vehicle cost, availability of public charging stations, and rebates. Of the non-EV owners, 22 percent expressed they were unlikely to purchase or against purchasing an EV providing high cost, insufficient range, lack of towing capacity, and long charging duration as reasons.



# Needs Assessment

It is important to understand current progress toward electrification in Bend to properly identify the community's needs moving forward. This section describes the current state of vehicle electrification in Bend along with anticipated future charging demand. The needs identified here directly informed the development of actions the City can take to address them and reach its goals. Information on EV-related programs at the state and national levels, financial incentives, and local and statewide regulations is provided in **Appendix B**.

## Electric Vehicle Adoption

On average, there are 2.2 plug-in electric vehicle (PEV) per 1,000 persons in the United States today. In 2020, EVs accounted for two percent of new vehicle sales and only half a percent of the 287.3 million vehicles registered nationwide. Though this is a small percentage of vehicles on the road today, growth in EV adoption has been exponential and is expected to continue to accelerate in the coming years as new vehicle models and wider ranges of body styles become available, battery ranges increase, costs decrease, and charging infrastructure is made more readily available.

Oregon has about 3.2 million registered passenger vehicles; of these, about 41,000, or 1.3 percent, are PEVs. This equates to 9.6 PEVs per 1,000 Oregonians—nearly 4.5 times the national average. Comparatively, there are 8.2 PEVs per 1,000 Deschutes County residents and 10.3 PEVs per 1,000 Bend residents. Growth only continues to accelerate: Bend surpassed the national average for new PEV sales in 2018, and the number of registered PEVs in Deschutes County nearly doubled in the last two years.



Reaching the statewide goal of 250,000 registered EVs by 2025 will require significant investment and widespread support from communities across the state. More than 100,000 people call Bend home, and it will be important they do their part—coupled with substantial support from the City. To develop adoption targets specific to Bend, this analysis assumes every Oregonian is equally responsible for helping reach that goal. With 2.5 percent of the state’s population living in Bend, there will need to be 6,250 registered EVs in the community if it is to contribute its proportional share. Three growth scenarios were evaluated as adoption projections were developed for Bend (Figure 3-1):



#### Stay the Course

*Reflects a continuation of current adoption growth rates in Deschutes County. Based on recent trends, countywide adoption grew by 44 percent from 2020 to 2021. This scenario is based on 45 percent annual growth, which results in 4,850 EVs in Bend in 2025.*



#### Achieve the Goal

*Reflects the level of growth in adoption needed to reach 6,250 EVs in Bend in 2025: 55 percent per year. The City will drive this growth by operating proactively and deploying charging infrastructure such that EV ownership becomes more attractive and accessible to all.*



#### Exceed the Goal

*Reflects adoption growing at an even more rapid rate of 65 percent per year, resulting in 8,150 EVs in Bend in 2025. This can be achieved through incentive programs, infrastructure deployment, fleet vehicle replacements, public outreach, and other proactive measures.*

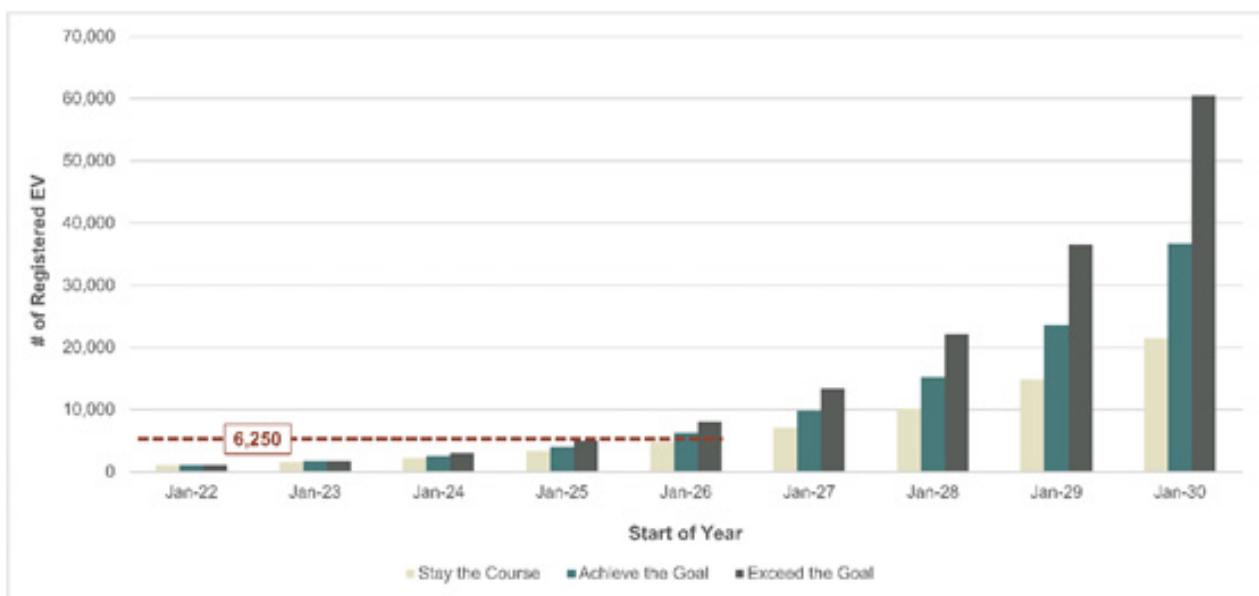


Figure 3-1: Bend Electric Vehicle Adoption Projections

## Charging Infrastructure

EV charging infrastructure, also known as electric vehicle supply equipment (EVSE), is typically discussed in terms of stations, ports, and connectors.



A **charging station** is a site with one or more ports at the same address.



A **port** provides power to charge one vehicle at a time, even though it may have multiple connectors. There can be more than one port per charging post.



A **connector**, or plug, attaches to a vehicle to charge it. Multiple connectors can be attached to one port, but only one will charge at a time.

Chargers are generally segmented into three types: Level 1, Level 2, and Direct Current (DC) Fast Chargers:

### Level 1 chargers

use alternating current (AC) to charge through a common 120-volt outlet and can replenish about 40 miles of charge over eight hours. They are most commonly used in home charging.

### Level 2 chargers

also use AC to provide charging through a 240-volt plug. They are most commonly used in public and workplace charging: As of 2019, over 80 percent of public chargers nationwide were Level 2.

### DC Fast Chargers

can fully charge an EV in approximately 30 minutes or less using direct current (DC), enabling rapid charging along regional corridors. As of 2019, about 15 percent of public chargers in America were DC Fast Chargers.

There are 19 public charging stations, 17 restricted-access charging stations, and 10 Tesla-specific charging stations in Bend (Table 3-1). A detailed breakdown of charger and connector types, fees, access, and size for each station is provided in **Appendix B**. Note that Tesla and private-access stations and plugs are not considered further in this plan because they do not satisfy the public charging needs of the Bend community.

Table 3-1: Existing Charging Infrastructure Inventory

Access Type	Level 1	Level 2	Dc Fast	Tesla Destination	Tesla Supercharger
<b>Public Access</b>					
<i>stations</i>	1	15	3	--	--
<i>plugs</i>	1	37	17	--	--
<b>Private Access</b>					
<i>stations</i>	1	15	1	--	--
<i>plugs</i>	1	25	1	--	--
<b>Tesla Network</b>					
<i>stations</i>	--	--	--	9	1
<i>plugs</i>	--	--	--	15	8





Two-thirds of the publicly accessible charging plugs in Bend are Level 2, and nearly all the remaining plugs are DC Fast Charge. Level 2 plugs are spread between 15 stations, and DC Fast Charge plugs are spread between three (Figure 3-2). Public chargers are generally concentrated in the central business district and along the US 20 and US 97 corridors, which have been designated as Ready and Pending Alternative Fuel Corridors (AFCs) by the Federal Highway Administration (FHWA). These two corridors converge in Bend and offer great opportunities to build designated connections between Bend and its surrounding communities through new investment in charging infrastructure.

U.S. Department of Energy’s Electric Vehicle Infrastructure Projection Tool (EVI-Pro) Lite tool was used to identify the existing charging needs of the Bend community. These needs are based on factors such as daily miles traveled, ambient temperature, vehicle types, and access to home charging. The tool estimates 40 Level 2, 10 DC Fast Charge, and 49 workplace Level 2 plugs are needed to support the 1,100 EVs in Bend today (Table 3-2).

Table 3-2: Existing Charging Infrastructure Demand

Scenario	Public Level 2	Public DC Fast	Workplace Level 2
<b>Existing Network</b>			
<i>plugs</i>	37	17	--
<b>Existing Need [1,000 EVs]</b>			
<i>plugs</i>	40	10	49
<i>gap</i>	3	-7	--

This indicates a small gap in Level 2 chargers and a small surplus of DC Fast Chargers based on existing demand. If home charging were accessible to 100 percent of Bend residents, only 21 public Level 2, 4 public DC Fast Charge, and 27 workplace Level 2 would be needed. In this case, today’s existing charging network far exceeds demand. However, basing the community’s charging needs on this assumption may not properly account for equity in charging for all by implying those without access to home charging do not need to be supported through public charging.



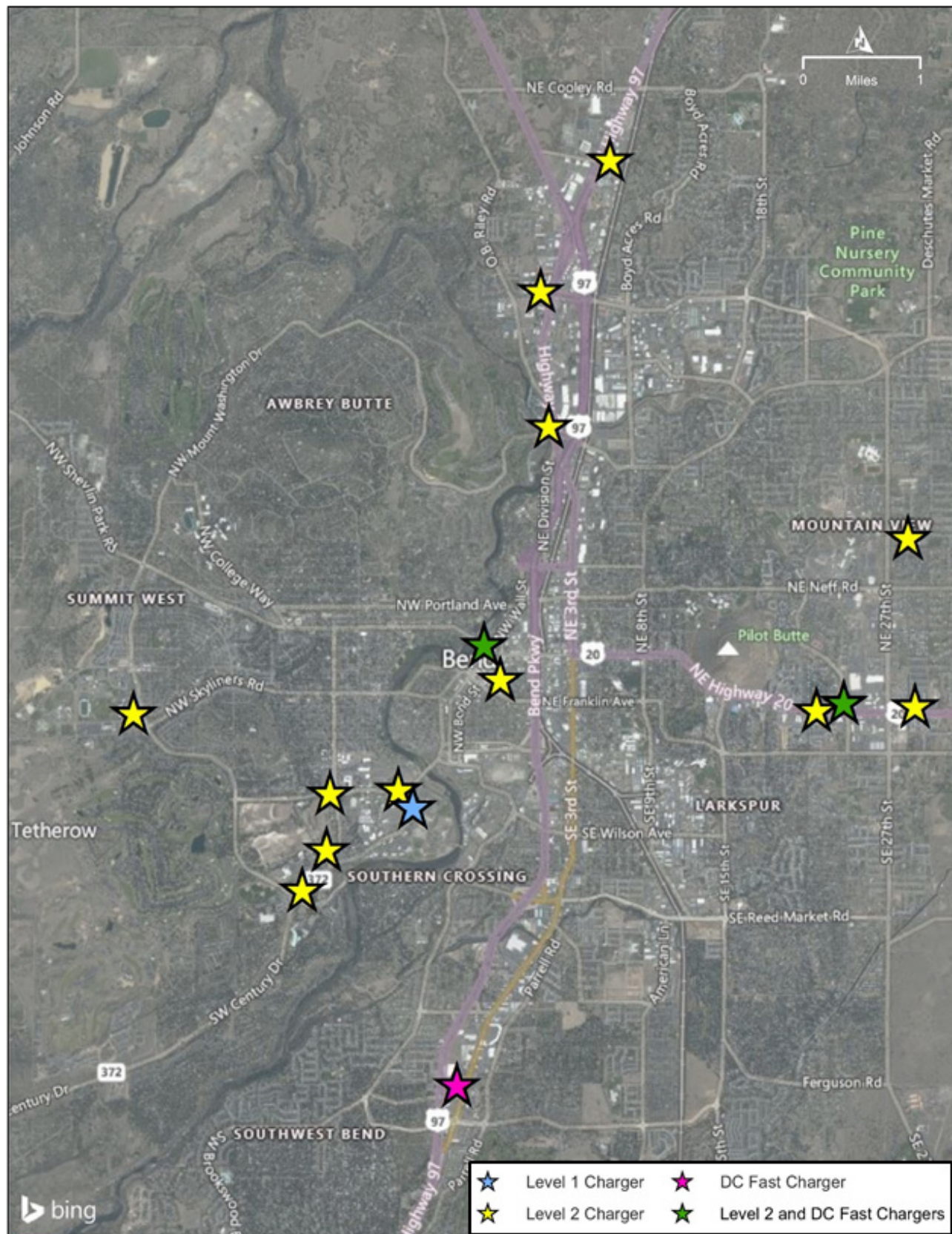


Figure 3-2: Existing Public Charging Stations



The EVI-Pro Lite tool was again used to estimate charging needs in Bend in 2025 under each growth scenario (Table 3-3):



#### Stay the Course

*Results in a need for 169 public Level 2, 45 public DC Fast Charge, and 217 workplace Level 2 plugs to support 4,850 EVs, or an additional 132 Level 2 charging plugs and 28 DC Fast Charge plugs. Even this level of growth will require measurable investment and support from the City, which will need to include support for workplace charger installations through a combination of information distribution and financial support.*



#### Achieve the Goal

*Shows a need for 214 public Level 2, 57 public DC Fast Charge, and 278 workplace Level 2 plugs. This indicates a gap of 177 Level 2 and 40 DC Fast Charge plugs that will need to be filled to support 6,250 EVs in Bend. The City must work proactively and quickly for Bend to contribute its proportional share toward reaching the statewide goal.*



#### Exceed the Goal

*Creates a need for 273 public Level 2, 73 public DC Fast Charge, and 361 workplace Level 2 plugs to support 8,150 EVs, or an additional 236 Level 2 and 56 DC Fast Charge plugs. To achieve this, the City would need to actively seek out funding, develop financial incentives, support private charger installations, and conduct significant public outreach.*

Table 3-3: Future Charging Infrastructure Needs

Scenario	Public Level 2	Public DC Fast	Workplace Level 2
<b>Existing Network</b>			
<i>plugs</i>	37	17	--
<b>Scenario 1: Stay the Course [4,850 EVs]</b>			
<i>plugs</i>	169	45	217
<i>gap</i>	132	28	--
<b>Scenario 2: Achieve the Goal [6,250 EVs]</b>			
<i>plugs</i>	214	57	278
<i>gap</i>	177	40	--
<b>Scenario 3: Exceed the Goal [8,150 EVs]</b>			
<i>plugs</i>	273	73	361
<i>gap</i>	236	56	--

Though Bend can strive to expand EV adoption beyond the baseline target, it will already be difficult to register over 5,000 EVs in just three years. The City will need to focus its efforts on achieving this target first to support the State's goal of 250,000 registered EVs. Adoption targets can be revisited when the community-wide shift to EVs has accelerated.



## Electrical System

In Bend, workplace charging peaks in the morning hours, home charging in the evening and overnight, and public charging in the middle of the day. Based on the typical power levels provided at Bend's chargers (6.7 kilowatts [kW] for Level 2 and 65 kW for DC Fast Charge), the maximum demand would be 1,350 megawatts (MW) if every public charger were in use at once. Per the EVI-Pro Lite tool, actual demand—which includes restricted-access and Tesla chargers—peaks at 850 kW in the evening hours on weekdays.

Bend's electrical system is managed by two utility companies: Pacific Power and the Central Electric Cooperative (CEC). Both have indicated it is difficult to define electrical system capacity citywide, so the City will need to communicate its power supply needs and work with the utilities to increase supply as needed at new charger locations. Where possible, additional power can be provided to 'future-proof' the system and reduce the need for future upgrades. This would mean the provision of up to 20 kW of power per Level 2 charger and 150 kW of power per DC Fast Charger.

The EVI-Pro Lite tool was again used, this time to determine the power levels needed to accommodate future demand under each adoption scenario (Table 3-4). The results assume a linear increase in charging demand correlated to increased adoption levels.

Table 3-4: Future Charging Infrastructure Needs

Scenario	Required Power (MW)	
	Public Level 2	Public DC Fast
<b>Existing Network</b>		
<i>power</i>	37	17
<b>Scenario 1: Stay the Course [4,850 EVs]</b>		
<i>power</i>	169	45
<i>gap</i>	132	28
<b>Scenario 2: Achieve the Goal [6,250 EVs]</b>		
<i>power</i>	214	57
<i>gap</i>	177	40
<b>Scenario 3: Exceed the Goal [8,150 EVs]</b>		
<i>power</i>	273	73
<i>gap</i>	236	56



### Stay the Course

*Peak charging demand would reach 4.2 MW, representing an increase of 3.4 MW. If every charger were in use at once, the system would need to accommodate 10.1 MW of power demand.*



### Achieve the Goal

*Peak demand can be expected to reach 5.5 MW. A system capacity of 12.8 MW would be needed to ensure all chargers can be used at once, an 11-MW increase over today's maximum demand.*



### Exceed the Goal

*Peak charging demand reaches 7.1 MW. To be sure every charger can be used at once without breaking the system, it would need to have a capacity of 16.4 MW.*





# Equity in Electrification

More than 4 in 10 Americans live in an area with unhealthy levels of air pollution, driven in no small part by the transportation industry and vehicle-related emissions. Several factors affect an individual's level of risk, including exposure, susceptibility, access to healthcare, and psychosocial stress. These factors are often exacerbated in low- and moderate-income (LMI) and historically disadvantaged communities, where people are more likely to live with chronic health conditions and near sources of pollution. In the United States, people of color are 3.6 times more likely to live in a county with failing grades for ozone, short-term particle, and long-term particle pollution. Similarly, people experiencing poverty have lower rates of health coverage, less access to quality and affordable healthcare, higher rates of asthma, and a higher risk of dying early from long-term exposure to particle pollution.

Much of the discussion regarding gaps in charging infrastructure places a focus on equity in EV planning and EVSE deployment. Because near-term utilization may be higher in higher-income and predominately white communities, it can be attractive to focus efforts there to maximize a return on investment. However, this approach would only exacerbate the equity gap, leaving LMI and historically disadvantaged communities with the brunt of vehicle-related emissions while higher-income communities see improved air quality and reduced health risks.



## Charger Accessibility

Areas in Bend with better access to existing chargers generally have higher median incomes—nearly double those in areas without good access—and less diverse populations. This is reflected maps provided in **Appendix C**, which show demographic data from the 2019 American Community Survey—population experiencing poverty, racial diversity, and the prevalence of multifamily housing—in relation to existing public charging locations in Bend. Key findings from that data include:



Existing charging infrastructure is largely concentrated in Downtown Bend, just west of the Deschutes River, and along key highway corridors.



The Orchard District has the highest concentration of people experiencing poverty, with no access to chargers outside of those downtown.



The Old Farm District has a high concentration of people experiencing poverty and a large non-white population, but no nearby access to chargers.



Areas with the most multifamily housing, particularly those north and east of Downtown Bend, are largely underserved by the existing charging network.

These gaps leave many communities without chargers near residences. The City must focus on these communities and others like them as it works toward making its charging network equitably accessible to all.



## Equity Strategies

Expanding electrification to LMI and historically disadvantaged communities in Bend will require some combination of financial incentivization, vehicle and charger accessibility, tailored outreach, and policy actions. Coordinating these efforts to increase EV adoption in those communities will lead to fewer emissions, better health, and improved quality of life for all. More information, including examples of financial incentive programs, methods for increasing exposure to EVs, and outreach activities is provided in **Appendix C**.

The 2021 Illinois Climate and Equitable Jobs Act defines a portfolio of incentives that can be included in ‘beneficial electrification programs’ that reduce carbon emissions and transition away from fossil fuels. Examples of those incorporating equity include:

- ✓ Incentives for EV purchases and leases by LMI residents, or prioritization of rebate applications from LMI residents
- ✓ Incentives for installing public charging stations in LMI communities
- ✓ Incentives for LMI community members installing home chargers
- ✓ Incentives for electrification of transit vehicles and school buses, with priority given to buses operating in or traveling through LMI communities
- ✓ Incentives for off-peak electricity use and optimized charging programs





Many jurisdictions and local planning organizations have already implemented strategies to make EVs more accessible to all. These programs range from free parking and home chargers to carsharing and outreach. Examples include:

### **City of Cincinnati, Ohio**

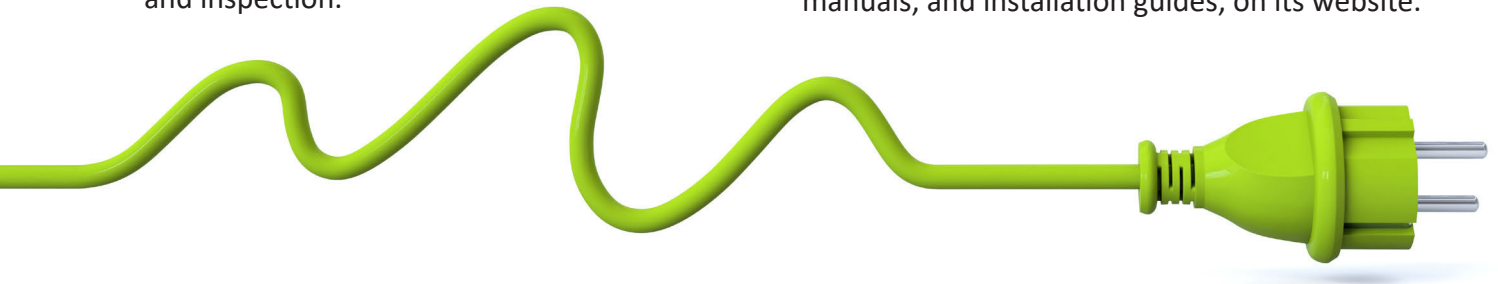
#### *All-Electric Vehicle Incentive Program*

Cincinnati's All-Electric Vehicle Incentive Program is a permit program offering free parking to all-electric vehicles at City-owned parking meters and kiosks. Drivers complete an online application and schedule a virtual vehicle inspection. To be sure anyone can apply, those without access to email can complete an in-person application and inspection.

### **City of Long Beach, California**

#### *Electric Vehicle Charger Giveaway*

The Electric Vehicle Charger Giveaway Program offers Level 2 chargers free of cost to Long Beach residents who own or lease an EV and obtain an electrical permit. Recipients are responsible for expenses related to any electrical work, including permitting and inspection fees. Expedited permitting is available for owner-occupied multifamily buildings with four units or less. The City provides all relevant information, including eligibility criteria, user manuals, and installation guides, on its website.



### **City of Los Angeles, California**

#### *BlueLA Powered by Blink Mobility*

BlueLA is an all-electric carsharing program operating in low-income Los Angeles communities through a partnership between Blink Mobility, the LA Mayor's Office, and a committee of community-based organizations. It offers point-to-point service at 40 charging locations with low membership costs: \$5 monthly, reduced to just \$1 monthly for low-income residents.

### **City of Sacramento, California**

#### *Our Community CarShare*

Our Community CarShare is a free pilot program operated by Zipcar that offers zero-emission vehicle (ZEV) rentals in historically disadvantaged communities. Users can also receive \$100 per month toward ridesharing services, taxis, and Amtrak. Residents can sign up to be a Community Representative who drives others to appointments or satisfies other transportation needs.

### **City of Richmond, California**

#### *Charge Up Contra Costa*

The Contra Costa Transportation Authority was awarded over \$3.4 million in funding from the State of California to implement community-based strategies toward reducing GHG emissions. The Charge Up Contra Costa program offers rebates for charging stations, \$500 e-bike rebates for low-income residents, EV carsharing, and workforce development courses for EV and EVSE maintenance and installation. The transportation authority estimates a reduction of 55,000 tons of GHG emissions will come from these efforts.





Financial incentives are often geared toward purchasing or leasing a personal EV, but many other avenues exist to share the benefits of EVs in these communities. Electrifying public transit, school bus, and municipal fleets, along with supporting a transition to EVs in the freight industry, will serve to increase exposure to EVs and improve air quality and health in Bend's LMI and historically disadvantaged communities. Locally, Bend-La Pine Schools received grant funds from Pacific Power and the Oregon Clean Fuels Program to purchase one Lion battery electric bus (BEB) to assess viability for central Oregon communities, the first of its kind east of the Cascades. In addition, the district also received Diesel Emissions Reduction Act (DERA) rebates totaling \$125,000 to replace and retrofit five buses with propane versions. School district leadership is interested in continuing to replace older diesel buses with BEBs and other low- or zero-emission models.

Convenient charging stations can greatly influence a community's decision to electrify its transportation choices. Without access to chargers near their home or workplace, it is unlikely that someone will opt for an EV. While it may be easier to focus initial EVSE deployment efforts on locations where near-term utilization will be high, this would leave Bend's LMI and historically disadvantaged communities behind. The City will need to install some chargers that may be less utilized initially to help spur adoption, but without adding so many chargers that the low utilization becomes a visual deterrent to residents failing to see their peers adopt EVs.

As with any new technology, there is also a general lack of knowledge of the costs, benefits, and performance of EVs compared to traditional internal combustion engine (ICE) vehicles. Many prospective owners are aware of the cost differential barrier but unaware of the financial support available to help reduce or remove it. The City will need to work with local organizations with existing connections to Bend's

LMI and historically disadvantaged communities to develop a tailored outreach strategy focused on expanding EV adoption and charging infrastructure access in those communities. Having a strategic plan at the outset will help guide efforts and ensure equity is at the forefront of electrification in Bend. This plan needs to include stakeholder input from LMI advocates and local community members, payment and design standards that accommodate those without access to credit cards or smartphones, distribution of information on financial incentives for LMI residents, regular performance reporting, and a means of sharing program successes with the public.

In addition to disseminating information, the City will support community events to give residents the chance to communicate directly with its staff and see, learn about, and ride in an EV. The City can use these events to showcase E-mobility and address the specific concerns of its LMI and historically disadvantaged residents. These events can include ride-and-drives, BEB demonstrations, promotions and giveaways, pop-ups events at new chargers, and other events that align with the specific interests of Bend's residents. In Oregon, Forth Mobility offers tailored outreach, community carsharing, and micromobility programs specifically aimed at sharing the benefits of vehicle electrification with LMI and historically disadvantaged communities.

Policy actions will also enable EV ownership by making chargers more easily installable and accessible. State agencies and local jurisdictions across the United States are adopting EVSE requirements for residential and commercial construction to provide chargers to those without convenient access to public options, typically with a focus on multifamily housing which offers the opportunity to expand electrification to those that otherwise may not have access to a charger at home. Those communities often include LMI residents who are disproportionately Black, Indigenous, and people of color.

Code language generally takes the form of 'Make-Ready' requirements, which define some percentage of the parking spaces in a development that must include wiring and electrical capacity for future charging stations. Some jurisdictions, including Tacoma and Covington, Washington, require developers to install complete, usable charging stations up front. The City will explore this option as a future code amendment but prioritize the rapid adoption of 'Make-Ready' requirements consistent with the 2022 Transportation Planning Rules amendments, which require new multifamily and mixed-use construction with five or more residential units to include sufficient electrical service capacity to accommodate 40 percent of all vehicle parking spaces.



Sample code amendment language adapted from guidance from the International Code Council is provided in **Appendix D**. It includes EV-related definitions, requirements from the 2022 Transportation Planning Rules amendments, and some wiring standards. The City will need to revisit its adopted language over time as statewide requirements evolve. It may also consider enhancing them in the future to further enable charging and promote EV ownership in Bend's multifamily communities by:

- ✓ Applying EVSE requirements to major renovation projects,
- ✓ Applying EVSE requirements to existing multifamily and mixed-use properties regardless of renovation status,
- ✓ Increasing the number or percentage of spaces that must be 'made ready' in LMI areas or housing developments,
- ✓ Increasing the level of chargers that must be supported, and/or
- ✓ Requiring complete, usable charging stations be installed up front.

Adopting a first set of EV readiness requirements now does not prohibit future changes as demand for EVs and chargers grows. Regardless of the specific requirements in place, enabling charging at multifamily housing will promote equity in electrification across Bend by supporting LMI and historically disadvantaged residents choosing EVs.





EV CHARGING  
ONLY

# Charging Infrastructure Siting

Successful public EV charging stations are accessible, usable, and reliable. They can be found at locations where people want to spend time—grocery stores, shopping centers, restaurants, parks, trails, and so on—and are accessible to all, with a focus on those in underserved areas and people with disabilities. Charging stations are often considered most successful when placed where they are highly utilized, not only indicating the charger is meeting a community need but also helping the City to recover installation costs more quickly. Siting criteria for successful chargers include:










## Level 2 Chargers

Proximity to multifamily housing for overnight charging, mid-range dwell times of two to six hours, presence of existing system gaps, community input and requests, grant requirements, equitable distribution, and right-of-way needs. Example locations with mid-range dwell times include housing and mixed-use developments, trailheads and parks, sports venues, and universities.

## DC Fast Chargers

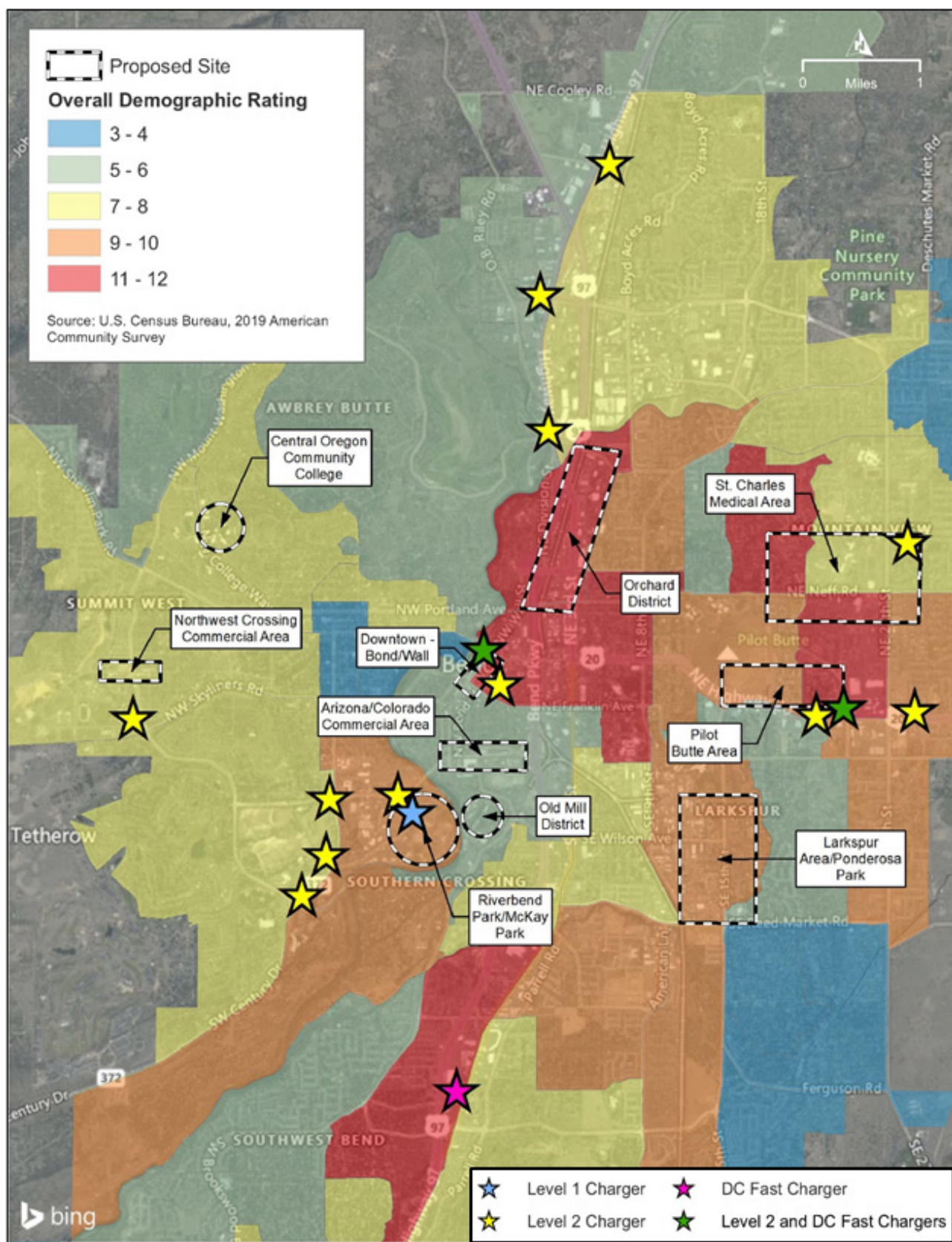
Proximity to dense multifamily housing development for shared charging, short dwell times of less than an hour, presence of existing system gaps, electrical system capacity, high traffic volumes, proximity to major highway corridors, grant requirements, equitable distribution, and right-of-way needs. Example locations with short-range dwell times include fueling stations, grocery and convenience stores, and restaurants.

A preliminary siting analysis has been conducted that aims to balance the effectiveness and utilization of new charging stations with equitable considerations. Demographic data at the block group level, including multifamily housing density, income, and race, were acquired from the 2019 American Community Survey. Ten charging sites and areas of opportunity for new charging infrastructure were identified in this analysis (Figure 5-1):

-  St. Charles Medical Area (Level 2)
-  Riverbend Park (Level 2)
-  Central Oregon Community College (Level 2)
-  Larkspur Area/Ponderosa Park (Level 2)
-  Pilot Butte Area (Level 2 and/or DC Fast Charge)
-  Orchard District (DC Fast Charge)
-  Old Mill District (DC Fast Charge)
-  Arizona Ave./Colorado Ave. Commercial Area (DC Fast Charge)
-  Northwest Crossing Commercial Area (DC Fast Charge)
-  Downtown Bend (Level 2 and/or DC Fast Charge)

These sites fill gaps in the existing charging network, make charging accessible where people want to go, and prioritize underserved communities that often bear the brunt of increased pollution. The methodology for this analysis is detailed in **Appendix E**, along with in-depth descriptions of each proposed site.







# Recommended Actions

The following recommended actions will be taken by the City to achieve its goals for electrified transportation in Bend. They are divided into three core actions: **Promote EVs**, which focuses on information distribution and outreach activities; **Enable EVs**, which focuses on policy aspects; and **Deploy EVSE**, which focuses on expanding the charging network in Bend. Each core action has supporting actions and strategies that can be implemented to effect change.

Through coordination with staff from many City departments, the strategies outlined here have also been organized into three tiers. Tier 1 strategies are most crucial to implement, whether to actively promote EV adoption and charger accessibility or to set the City up for future success. The Tier 1 strategies for this plan are listed on the following pages, and guidance for implementing them is provided in the next section. Tier 2 and Tier 3 strategies are listed in **Appendix F**.

## Promote EVs

The following actions and tactics are focused on promoting EVs through information distribution, incentivization, equitable outreach, and coordination of local efforts. The emerging technology and alternative fuel industries have developed much of the information needed to educate the public, but it is the City's responsibility to distribute that information. These outreach and education efforts must always consider equity to ensure the benefits associated with vehicle electrification are shared by the wide range of residents, workers, and visitors in Bend.



## ACTION 1A:

### INCREASE COMMUNITY AWARENESS OF THE BENEFITS, COSTS, SAFETY, AND AVAILABILITY OF EVS

1-1A.1

Develop and maintain an EV-specific page, hosted on the City website, that includes links to available information, including charger locations and types; permitting guidance; building codes; Federal, State, and local incentives; available and upcoming EV lists; and current and planned projects.

1-1A.2

Distribute information to the public related to the growing used EV market by partnering with and providing information to local auto dealers.

1-1A.3

Coordinate with key partners like Oregon Department of Energy (ODOE) and Columbia-Willamette Clean Cities Coalition (CWCCC) to distribute specific educational materials focused on vehicle performance in local weather and terrain conditions.

1-1A.4

Leverage social media to show City progress and build excitement toward EV adoption and EVSE deployment.

1-1A.5

Maintain a back-and-forth with the public through continued feedback opportunities and surveys posted to the EV website and advertised online and in local print sources.



## ACTION 1B:

### INCENTIVIZE COMMUNITY ADOPTION OF EVS, PRIVATE INVESTMENT IN EV CHARGING INFRASTRUCTURE, AND LOCAL SERVICE SUPPORT FOR EVS

1-1B.1

Publicize incentives for employers investing in workplace EVSE, such as the grants for charging infrastructure offered by Pacific Power.

1-1B.2

Work with local businesses to develop a generic employee survey template for use by any employer to determine if workplace charging is appropriate.

1-1B.3

Work with nonprofit organizations such as Forth Mobility to provide business owners with the information needed to educate employees on the use and benefits of workplace chargers.







### ACTION 1C:

#### ENSURE EQUITY THROUGH COORDINATED OUTREACH TO BEND'S UNDERSERVED AND HISTORICALLY DISADVANTAGED COMMUNITIES

##### 1-1C.1

Work with local nonprofit organizations, such as NeighborImpact, to focus outreach on historically disadvantaged communities.

##### 1-1C.2

Partner with outreach organizations such as Forth Mobility to distribute information to underserved communities about the benefits of EVs and financial incentives for purchasing or leasing an EV.

##### 1-1C.3

Translate all information into Spanish when staff resources can support follow-up contact.



### ACTION 1D:

#### COORDINATE WITH OTHER LOCAL PROJECTS AND PARTNER GROUPS TO IMPROVE ACCESS TO, AND VISIBILITY OF, E-MOBILITY IN BEND

##### 1-1D.1

Work with CET to incorporate micromobility in new mobility hubs.

##### 1-1D.2

Partner with CET to publicize new battery electric buses through promotion events.

##### 1-1D.3

Partner with CWCCC and local groups (e.g., Bend Electric Vehicle Club) to operate EV ride-and-drives and other community events promoting EVs.

## Enable EVs

Promotion alone cannot drive EV adoption in Bend to the levels needed to support the State's goals of 250,000 registered EVs by 2025; the City must also support EVs through coordinated action at the policy level. This includes planning and budgeting for EVs, amending regulatory language to incorporate them, and enforcing new restrictions and requirements that aim to benefit EV users. Policy actions in particular may be the most crucial to enabling widespread electrification by removing regulatory barriers and proving the City's commitment to EVs and EVSE deployment.





## ACTION 2A:

### INCORPORATE E-MOBILITY AND EV CHARGING INFRASTRUCTURE IN PLANNING AND BUDGETING EFFORTS

#### 1-2A.1

Plan for the transition of the City's municipal fleet to electric or otherwise 'clean' vehicles.



## ACTION 2B:

### ENABLE EV OWNERSHIP AND EVSE DEPLOYMENT THROUGH POLICY

#### 1-2B.1

Define EV- and EVSE-related terms in the Bend Development Code.

#### 1-2B.2

Adopt requirements for EV-Ready parking spaces in new or major renovation construction consistent with the 2022 Transportation Planning Rules amendments, or the most recent legislated requirements.

#### 1-2B.3

Update zoning regulations to ensure EVSE installations are allowed by designating EVSE as permissible uses in all zoning designations.

#### 1-2B.4

Investigate the value and feasibility of on-street residential charging.



## ACTION 2C:

### DEVELOP AND ENFORCE CRITERIA FOR DEDICATED EV PARKING SPACES

#### 1-2C.1

Adopt language restricting charging station parking to EVs and enabling enforcement.

#### 1-2C.2

Adopt parking enforcement criteria for EVSE, including time limits based on location and power level of the charger, to facilitate turnover and increase utilization.

#### 1-2C.3

Enforce EV parking criteria

#### 1-2C.4

Establish consistent design criteria for dedicated EV parking spaces, including space size, allowable locations (e.g., parking lot, on-street), and accessibility requirements.

#### 1-2C.5

Adopt standardized signing and marking practices for easy identification of EV parking spaces, consistent with Manual on Uniform Traffic Control Devices standards.



## Deploy EVSE

The final core action the City must take is to deploy an EV charging network that not only serves but drives community adoption of EVs. Installing charging stations takes more than just a site and some funding; it includes developing the right contract, selecting the right technologies, and effectively integrating chargers into, while minimizing strain on, the local power grid. Deployed EVSE must then be supported through ongoing monitoring, operations, and maintenance to ensure each charger is meeting the City's expectations and community's needs.



### ACTION 3A:

#### STRATEGICALLY SITE NEW EV CHARGING INFRASTRUCTURE TO BEST SERVE THE NEEDS OF THE BEND COMMUNITY

##### 1-3A.1

Coordinate and plan the charging network with a holistic approach that considers existing and planned chargers and sites chargers where gaps exist in the network.

##### 1-3A.2

Prioritize equity in EVSE deployment by evaluating population diversity, income distribution, and multifamily housing density when siting new chargers.

##### 1-3A.3

Dedicate initial funding to DC Fast Chargers at short-stay destinations and along key highway corridors to support community quick charging and long-distance travel.

##### 1-3A.4

Build out an initial Level 2 charging network focused on multifamily housing and locations with mid-range dwell times, including parks, trailheads like Pilot Butte and Mt. Bachelor, and popular areas like the Old Mill District.

##### 1-3A.5

Develop a partnership mechanism with partner entities, such as Bend Park and Recreation District, for funding, installation, operations, and maintenance of EVSE at parks and trailheads.

##### 1-3A.6

Locate chargers in convenient and accessible spaces, such as near parking garage elevators or business entrances.

##### 1-3A.7

Where appropriate, consider allowing DC Fast Charger installations of at least 50 kW rather than an ideal 150 kW, minimizing costs and demand per charger and maximizing the reach of the City's funding.

##### 1-3A.8

Work with Pacific Power and CEC to investigate innovative public charging locations in the public right-of-way, such as in lampposts.







### ACTION 3B:

#### **TAILOR CONTRACTS TO THE SPECIFIC NEEDS OF EACH EVSE INSTALLATION**

##### **1-3B.1**

Leverage private sector efficiencies with Charging-as-a-Service contracts, selecting a Design-Build-Operate Maintain or Design-Build-Own-Operate-Maintain contracting scheme based on the availability of capital funds.

##### **1-3B.2**

Define enforceable, performance-based metrics for all new EVSE contracts to be sure real-world performance will meet City needs and community expectations.



### ACTION 3C:

#### **RELY ON EXISTING INDUSTRY PRODUCTS AND EXPERTISE TO MANAGE AND COMMUNICATE DATA SAFELY AND RELIABLY**

##### **1-3C.1**

Focus on installing networked (smart) chargers managed by private EMPs, such as ChargePoint, EVOCharge, and SemaConnect, to improve the customer experience and further promote the ease and convenience of charging EVs.

##### **1-3C.2**

Require use of the Open Charge Point Protocol 2.0 for all new EVSE.

##### **1-3C.3**

Define security needs for incoming and outgoing data shared with third parties.



### ACTION 3D:

#### **DEVELOP AND IMPLEMENT AN APPROACH TO CHARGING FEES THAT BALANCES USER COSTS, POWER DEMAND, AND MUNICIPAL REVENUE**

##### **1-3D.1**

Negotiate a pricing structure that balances user costs and revenue for new chargers operated by e-Mobility Service Providers (EMPs) in all new EVSE contracts.

##### **1-3D.2**

Define a pricing structure for City-owned EVSE installations based on area characteristics and utilization rates.

##### **1-3D.3**

Locate chargers at destinations with nearby services drivers want to use, such as fueling stations with convenience stores, grocery stores, and short-stay restaurants, to promote local spending while charging.





### ACTION 3E:

**BUILD AND MAINTAIN A CHARGING NETWORK THAT INCORPORATES INDUSTRY BEST PRACTICES, PROMOTES THE USE OF RENEWABLE ENERGY, AND REDUCES STRAIN ON THE LOCAL POWER GRID**

**1-3E.1**

Facilitate a smooth construction permitting process by establishing consistent design criteria for new EVSE.

**1-3E.2**

Include industry best practices for incorporating preventative designs (e.g., housekeeping pads, screen and collision protection, cord length and management) in EVSE design criteria to minimize maintenance needs and costs.

**1-3E.3**

Identify responsibility (i.e., site host, charging network, installer) for maintenance costs and activities in all new EVSE contracts.

**1-3E.4**

Secure warranties for the full length of new EVSE contracts through the EMP.

**1-3E.5**

Incorporate placemaking, branding, and/or public education at charging stations, such as messaging about the source of energy powering the charger or a carbon offset tracker.

**1-3E.6**

Incorporate wayfinding signage to guide drivers to nearby charging stations.





# Implementation Strategy

This plan can only effect change if the strategies in it are understandable and actionable. Planning for successful implementation includes establishing roles and responsibilities, priorities, costs, and timelines. Once these aspects are defined, the City can begin to organize its efforts into a cohesive, scheduled program that is supported by a dedicated workforce and reliable funding.

The Action Matrix (Figure 7-1) was developed to provide a clear path toward achieving its vehicle electrification goals. It incorporates input from the public, stakeholder groups, and staff representing many City departments. The result is a strategy the City can confidently understand, champion, and realize.

## Implementation Lead and Support

Each strategy presented here needs an owner, and that owner needs sufficient support from City staff and community stakeholders to effect change. The Action Matrix identifies an implementation lead, the ‘point person’ who will lead the charge and track progress. The lead is often the Program Manager, who will serve as the champion for the City’s implementation efforts. It also identifies the City departments who will need to dedicate support staff for that lead.



The parties included in the Action Matrix are:

#### Program Manager

*The Program Manager will lead implementation for many of the strategies presented here. This person should be a dedicated staff member with capacity to focus on expanding vehicle electrification. They will primarily be responsible for coordinating with other City staff and partner groups, but will also offer support on infrastructure planning and deployment activities.*

#### Transportation & Mobility

*The Transportation and Mobility (T&M) Department strives to improve current modes of transportation, including the introduction of, and support for, alternative fuel technologies. They are also responsible for providing and regulating parking in Bend. They will primarily lead implementation of infrastructure-related strategies.*

#### Community & Economic Development

*The Community and Economic Development Departments (CEDD) deliver vital services to ensure the City plans well, develops in a manner envisioned in the Bend Comprehensive Plan, and increases economic mobility and prosperity for all. They will lead the adoption of new code language that enables EVs and support other City staff in planning for and deploying charging infrastructure.*

#### Engineering & Infrastructure Planning

*The Engineering and Infrastructure Planning Department (EIPD) manages capital improvement projects with a focus on the long-term improvement of Bend's infrastructure. They will largely play a support role for infrastructure planning- and deployment-related strategies.*

#### Communications

*The Communications Department is responsible for informing the public about City services and activities. They will be supporting the Program Manager in distributing EV-related information to the public, maintaining an EV webpage, sharing City progress, and promoting equity in all outreach activities.*

#### Procurement

*The Procurement & Public Contracts Department posts requests for bids or proposals, evaluates responses, and selects parties to deliver services for the City. They will primarily offer support to the Program Manager in procuring one or more third parties to install charging stations across Bend.*

**Finance**

*The Finance Department is responsible for City budgeting and financial reporting. Here, they will support the Program Manager in negotiating or defining appropriate fee structures for new chargers, whether EMP- or City-owned.*

**Fleet Management**

*The Fleet Management Division provides garage services, including preventative maintenance and fueling for the citywide fleet. They will eventually lead a feasibility study that evaluates replacing City-owned vehicles and other equipment with those powered by electricity or other alternative fuels.*

**Legal**

*The City Attorney's office provides legal services to the City and its staff to assist them in performing their functions consistent with legal standards. They will primarily support the Program Manager and T&M Department in developing and vetting code and contracting language.*

**Information Technology**

*The Information Technology (IT) Division manages software implementation and management activities. Focusing on networked chargers will require the City to define its security needs and communications protocols. The IT Division will support the T&M Department in these tasks.*

## Priority

Every strategy presented here is important, but priorities must be established to develop a realistic implementation schedule. Each Tier 1 strategy has been given high, medium, or low priority based on discussions with City staff and community stakeholders: High priorities are those strategies that can most quickly promote EV adoption or set the City up for future successes; medium priorities will build upon the high-priority strategies to further EV adoption and infrastructure accessibility in Bend; and low priorities are still valuable but can be considered after initial efforts have been completed, staffing needs met, and funding dedicated.

## Start

Timeframes for when each strategy's effort should begin must also be defined to develop an effective, actionable implementation schedule. These timeframes align well with the priority level for each strategy, with high-priority items often beginning now or in 30 days' time, medium-priority items generally starting in 90 to 180 days, and low-priority items kicking off up to 360 days in the future. Efforts will need to be planned based on these start dates, then assigned priorities can be considered to define a realistic schedule that is aspirational but achievable.

## Duration

The duration of each individual effort will vary based on the difficulty and requirements to implement each strategy; information distribution may be focused in the first few years, for example, but deploying infrastructure is an ongoing task that may last for decades. Durations are organized into four categories: short, medium, long, and ongoing. Short-term efforts are implementable within 18 months, medium-term efforts can be completed in 18 to 36 months, and long-term efforts may take more than 36 months to finish. Many efforts, such as facilitating community events and installing charging stations, fall in the 'ongoing' category because they do not have a firm end date. These efforts will continue at least until the City has achieved its goals, if not further.

## Workload

Workload here is measured in full-time equivalents (FTEs). Each FTE represents a full 40-hour work week, and each tenth of an FTE represents one half-day. Some strategies, such as maintaining the EV webpage and using social media, can likely be supported by existing staff able to dedicate two to four hours per week to them; others, like planning the charging network or investigating a fleet transition, may fill half the work week. The fractional workloads presented in the Action Matrix can be summed for each supporting City department to establish when and where additional staff may be needed.

## Capital and Ongoing Costs

Electric vehicles are a relatively new technology, and costs are constantly changing as technologies improve and demand increases. To account for this uncertainty, order-of-magnitude costs have been established for each strategy in the Action Matrix. Low-cost items (\$) can likely be done within existing City discretionary funds, medium-cost items (\$\$) may require a request for general funds, and high-cost items (\$\$\$) may require grants and/or other outside funding to implement. Actual costs will depend on the state of the industry at the time of implementation.



Action	ID	Strategy	Implementation Lead (L) and Support (S)										Priority	Start	Duration	Workload	Capital \$	Ongoing \$
			Program Manager	T&M	CEDD	EIPD	Comms.	Prommt	Finance	Fleet	Legal	IT						
1A. Increase Community Awareness	1-1A1	Develop and maintain an EV-specific page, hosted on the Citywebsite, that includes links to available information, including charger locations and types; permitting guidance; building codes; Federal, State, and local incentives; available and upcoming EV lists; and current and planned projects.	L				S						High	Now	Ongoing	0.05	\$	\$
	1-1A2	Distribute information to the public related to the growing used EV market by partnering with and providing information to local auto dealers.	L		S								Low	90	Medium	0.1	\$	N/A
	1-1A3	Coordinate with keypartners like ODOE and CWCCC to distribute specific educational materials focused on vehicle performance in local weather and terrain conditions.	L		S								Low	90	Medium	0.1	\$	N/A
	1-1A4	Leverage social media to show Cityprogress and build excitementtoward EV adoption and EVSE deployment.	L				S						Medium	Now	Ongoing	0.05	N/A	\$
	1-1A5	Maintain a back-and-forth with the public through continued feedback opportunities and surveys posted to the EV website and advertised online and in local print sources.	L				S						Medium	Now	Ongoing	0.05	N/A	\$
1B. Incentivize Community Adoption	1-1B.1	Publicizeincentives for employers investing in workplace EVSE, such as the grants for charging infrastructure offered byPacific Power.	L		S		S						Medium	30	Medium	0.05	\$	N/A
	1-1B.2	Work with local businesses to develop a generic employee surveytemplate for use byanyemployer to determine if workplace charging is appropriate.	L		S		S						High	Now	Short	0.2	\$	N/A
	1-1B.3	Work with nonprofit organizations such as Forth Mobilityto provide business owners with the information needed to educate employees on the use and benefits of workplace chargers.	L		S		S						Medium	90	Medium	0.1	\$	N/A
1C. Ensure Equity Through Coordinated Outreach	1-1C.1	Work with local nonprofit organizations, such as NeighborImpact, to focus outreach on historicallydisadvantaged communities.	L				S						High	30	Ongoing	0.1	\$	N/A
	1-1C.2	Partnerwith outreach organizations such as Forth Mobilityto distribute information to underserved communities about the benefits of EVs and financial incentives for purchasing or leasing an EV.	L				S						Medium	90	Medium	0.2	\$	N/A
	1-1C.3	Translate all information into Spanish when staff resources can support follow-up contact	L										Low	360	Ongoing	0.2	N/A	\$
1D. Coordinate with Other Local Projects and Partners	1-1D.1	Work with CET to incorporate micromobilityin new mobilityhubs.	L	S									Low	180	Ongoing	0.1	N/A	\$
	1-1D.2	Partner with CET to publicize new batteryelectric buses through promotion events.	L				S						Low	180	Short	0.2	\$	N/A
	1-1D.3	Partner with CWCCC and local groups (e.g., Bend Electric Vehicle Club) to operate EV ride-and-drives and other communityevents promoting EVs.	L				S						Medium	180	Ongoing	0.2	\$\$	\$
2A. Incorporate E-Mobilityin Planning	1-2A1	Plan for the transition of the City's municipal fleetto electric or otherwise 'clean' vehicles.	S					S			L		Medium	90	Long	0.5	\$\$	N/A
2B. Enable EV Ownership and EVSE Deployment Through Policy	1-2B.1	Define EV- and EVSE-related terms in the Bend Development Code.	S		L						S		High	Now	Short	0.1	\$	N/A
	1-2B.2	Adoptrequirements for EV-Readyparking spaces in new or major renovation construction consistent with the 2022 Transportation Planning Rules amendments, or the most recent legislated requirements.	S		L						S		High	Now	Medium	0.2	\$	N/A
	1-2B.3	Update zoning regulations to ensure EVSE installations are allowed by designating EVSE as permissible uses in all zoning designations.	S		L						S		High	Now	Short	0.1	\$	N/A
	1-2B.4	Investigate the value and feasibilityof on-street residential charging.	L		S						S		Low	180	Long	0.3	\$\$	N/A
2C. Develop and Enforce Dedicated Parking Criteria	1-2C.1	Adoptlanguage restricting charging station parking to EVs and enabling enforcement.	S	L							S		High	Now	Short	0.1	\$	N/A
	1-2C.2	Adoptparking enforcement criteria for EVSE, including time limits based on location and power level of the charger, to facilitate turnover and increase utilization.	S	L							S		High	30	Short	0.2	\$	N/A
	1-2C.3	Enforce EV parking criteria.	S	L									Medium	90	Ongoing	0.05	N/A	\$\$
	1-2C.4	Establish consistent design criteria for dedicated EV parking spaces, including space size, allowable locations (e.g., parking lot, on-street), and accessibility requirements.	S	L							S		Medium	30	Medium	0.3	\$\$	N/A
	1-2C.5	Adoptstandardized signing and marking practices for easyidentification of EV parking spaces, consistentwith Manual on Uniform Traffic Control Devices standards.	S	L							S		High	30	Short	0.05	\$	N/A

Figure 7-1: Bend EV Readiness Action Matrix

Action	ID	Strategy	Implementation Lead (L) and Support (S)										Priority	Start	Duration	Workload	Capital \$	Ongoing \$
			Program Manager	T&M	CEDD	EPD	Comms.	Procurement	Finance	Fleet	Legal	IT						
3A. Strategically Site New EV Charging Infrastructure	1-3A.1	Coordinate and plan the charging network with a holistic approach that considers existing and planned chargers and sites chargers where gaps exist in the network.	S	L	S	S							High	Now	Ongoing	0.5	N/A	\$\$
	1-3A.2	Prioritize equity in EVSE deployment by evaluating population diversity, income distribution, and multifamily housing density when siting new chargers.	S	L	S	S							High	Now	Ongoing	0.2	N/A	\$
	1-3A.3	Dedicate initial funding to DC Fast Chargers at short-stay destinations and along key highway corridors to support community quick charging and long-distance travel.	S	L	S	S							Medium	Now	Medium	0.05	\$\$\$	N/A
	1-3A.4	Build out an initial Level 2 charging network focused on multifamily housing and locations with mid-range dwell times, including parks, trailheads like Pilot Butte and Mt. Bachelor, and popular areas like the Old Mill District.	S	L	S	S							Medium	Now	Medium	0.05	\$\$\$	N/A
	1-3A.5	Develop a partnership mechanism with partner entities, such as Bend Park and Recreation District, for funding, installation, operations, and maintenance of EVSE at parks and trailheads.	S	L	S	S							High	30	Short	0.3	\$	N/A
	1-3A.6	Locate chargers in convenient and accessible spaces, such as near parking garage elevators or business entrances.	S	L	S	S							Medium	Now	Ongoing	0.05	N/A	\$
	1-3A.7	Where appropriate, consider allowing DC Fast Charger installations of at least 50 kW rather than an ideal 150 kW, minimizing costs and demand per charger and maximizing the reach of the City's funding.	S	L	S	S							Low	Now	Ongoing	0.05	N/A	\$
	1-3A.8	Work with Pacific Power and CEC to investigate innovative public charging locations in the public right-of-way, such as in lampposts.	S	L	S	S							Low	180	Long	0.3	\$\$	N/A
3B. Tailor Contracts to the Specific Needs of Each Installation	1-3B.1	Leverage private sector efficiencies with Charging-as-a-Service contracts, selecting a Design-Build-Operate-Maintain or Design-Build-Own-Operate-Maintain contracting scheme based on the availability of capital funds.	S	L				S			S		High	Now	Ongoing	0.05	N/A	\$
	1-3B.2	Define enforceable, performance-based metrics for all new EVSE contracts to be sure real-world performance will meet City needs and community expectations.	S	L				S			S		Medium	Now	Ongoing	0.1	N/A	\$
3C. Rely on Existing Industry Products and Expertise	1-3C.1	Focus on installing networked (smart) chargers managed by private EMPs, such as ChargePoint, EVoCharge, and SemaConnect, to improve the customer experience and further promote the ease and convenience of charging EVs.	S	L								S	Medium	Now	Ongoing	0.05	N/A	\$\$
	1-3C.2	Require use of the Open Charge Point Protocol 2.0 for all new EVSE.	S	L				S			S	S	Low	Now	Short	0.05	\$	N/A
	1-3C.3	Define security needs for incoming and outgoing data shared with third parties.	S	L				S			S	S	Low	Now	Short	0.2	\$	N/A
3D. Develop and Implement a Balanced Approach to Charging Fees	1-3D.1	Negotiate a pricing structure that balances user costs and revenue for new chargers operated by EMPs in all new EVSE contracts.		L				S	S		S		Low	30	Ongoing	0.05	N/A	\$
	1-3D.2	Define a pricing structure for City-owned EVSE installations based on area characteristics and utilization rates.		L					S		S		Medium	30	Ongoing	0.05	N/A	\$
	1-3D.3	Locate chargers at destinations with nearby services drivers want to use, such as fueling stations with convenience stores, grocery stores, and short-stay restaurants, to promote local spending while charging.	S	L									High	Now	Ongoing	0.05	N/A	\$\$
3E. Build and Maintain a Charging Network Following Best Practices	1-3E.1	Facilitate a smooth construction permitting process by establishing consistent design criteria for new EVSE.		L/S	L/S								Medium	30	Medium	0.1	\$\$	N/A
	1-3E.2	Include industry best practices for incorporating preventative designs (e.g., housekeeping pads, screen and collision protection, cord length and management) in EVSE design criteria to minimize maintenance needs and costs.		L/S	L/S								Low	30	Medium	0.05	\$\$	N/A
	1-3E.3	Identify responsibility (i.e., site host, charging network, installer) for maintenance costs and activities in all new EVSE contracts.	S	L				S	S		S		High	Now	Ongoing	0.05	N/A	N/A
	1-3E.4	Secure warranties for the full length of new EVSE contracts through the EMP.	S	L				S	S		S		High	Now	Ongoing	0.05	N/A	N/A
	1-3E.5	Incorporate placemaking, branding, and/or public education at charging stations, such as messaging about the source of energy powering the charger or a carbon offset tracker.	S	L		S							Medium	Now	Ongoing	0.1	\$\$	\$
	1-3E.6	Incorporate wayfinding signage to guide drivers to nearby charging stations.	S	L		S							Medium	30	Ongoing	0.1	\$\$	\$

Figure 7-1: Bend EV Readiness Action Matrix (cont'd)