PCC Electrification Strategy

Portland Community College Electric Vehicle Transition Plan

June 2025

Contents

Executive Summary

Portland Community College (PCC) is continuously evolving in response to the changing needs of students, faculty/staff, and the district and strives to embrace new technology to advance sustainability and climate action goals. To this end, this Electric Vehicle (EV) Transition Plan has been developed for EV charging infrastructure to support the PCC fleet, as well as personal EVs used by students, staff, and the PCC community. Key years for consideration are 2030 and 2035.

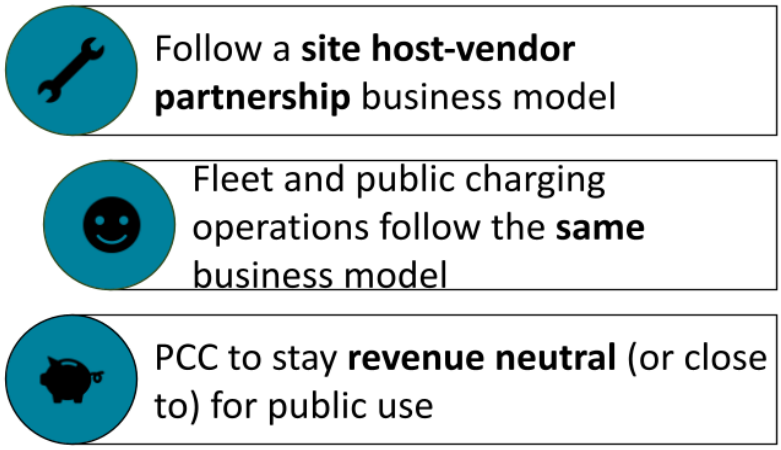
Key Questions

The purpose of the EV Transition Plan is to answer the following key questions:

- What policies and procedures are needed to support EV charging?
- How much EV charging does PCC need?
- What does PCC need to do to implement EV charging?

The general answers to these questions are outlined below.

What policies and procedures are needed to support EV charging?



Key policy decisions include what type of business model to use, if fleet and public charging should follow the same model, and if PCC should pay for staff, faculty, and students to charge. It is recommended that PCC:

- Establish a partnership business model to better serve PCC's maintenance and operational needs as the district scales up its EV charging infrastructure;
- Apply the same business model for fleet and public charging to efficiently support consistent, simple operations and monitoring as well as provide a more straightforward user experience; and
- Adopt a revenue-neutral model for public charging.

How much EV charging does PCC need?

Charging needs for fleet and public use were considered for the years 2030 and 2035. In total, it is predicted that 63-141 charging ports would be needed in the next five years and up to 212 charging ports would be needed in the next ten years.

These estimates are based on a number of assumptions. Notable assumptions for the five-year prediction include:

- EV adoption ranges differ by user group
    - Students: 4-12.5%, informed by survey responses and statewide goals
    - Staff: 15-25%, based on staff survey data and statewide adoption targets
    - Facilities Management Services fleet: Assumes ~50% EV conversion; does not assume disproportionate campus-level transition in the next five years
- The 2021 PCC 2030 Facility Plan guides charger distribution; survey responses were used to estimate needs at centers
- Implementation should account for new vehicle acquisition and expected domicile

The ten-year prediction is based on similar assumptions, with adoption ranges adjusted to include:

- EV adoption ranges differ by user group
    - Students: 4-20%, informed by student survey responses and extrapolated statewide adoption trends
    - Staff: 15-40%, based on staff survey data and extrapolated statewide adoption goals
    - Facilities Management Services fleet: Assumes ~70% EV conversion; does not assume disproportionate campus-level transitions in the next ten years

Number of Charging Ports: Five-Year Prediction

	Student Needs	Staff Needs	Existing Public Chargers	Fleet Needs	Existing Fleet Chargers
Rock Creek	5 - 16	11 - 16	6	3 - 6	3
Sylvania	6 – 19	12 - 20	4	2 - 10	3
Cascade	2 - 8	5 - 8	2	2 - 6	0
South East	2 - 6	4 - 6	4	3 - 6	3
Centers (10)	0 – 1 each		2	0	0
Central Distribution Services (CDS)	0	0	0	2 - 4	1
Total	16 - 53	35 - 56	18	12 - 32	10

These predictions are based on a number of assumptions around adoption ranges, distribution between locations, and implementation considerations. Note replacing existing chargers with the new vendor is advised.

Number of Charging Ports: Ten-Year Prediction

	Student Needs	Staff Needs	Existing Public Chargers	Fleet Needs	Existing Fleet Chargers
Rock Creek	5 - 26	11 - 27	6	3 - 8	3
Sylvania	6 – 30	12 - 32	4	2 - 12	3
Cascade	2 - 12	5 - 14	2	2 - 6	0
South East	2 - 8	4 - 9	4	3 - 8	3
Centers (10)	0 – 2 each		2	0	0
Central Distribution Services (CDS)	0	0	0	2 - 4	1
Total	16 - 84	35 - 90	18	12 - 38	10

These predictions are based on a number of assumptions around adoption ranges, distribution between locations, and implementation considerations. Note replacing existing chargers with the new vendor is advised.

Capital cost considerations (in 2025 dollars) for implementation include:

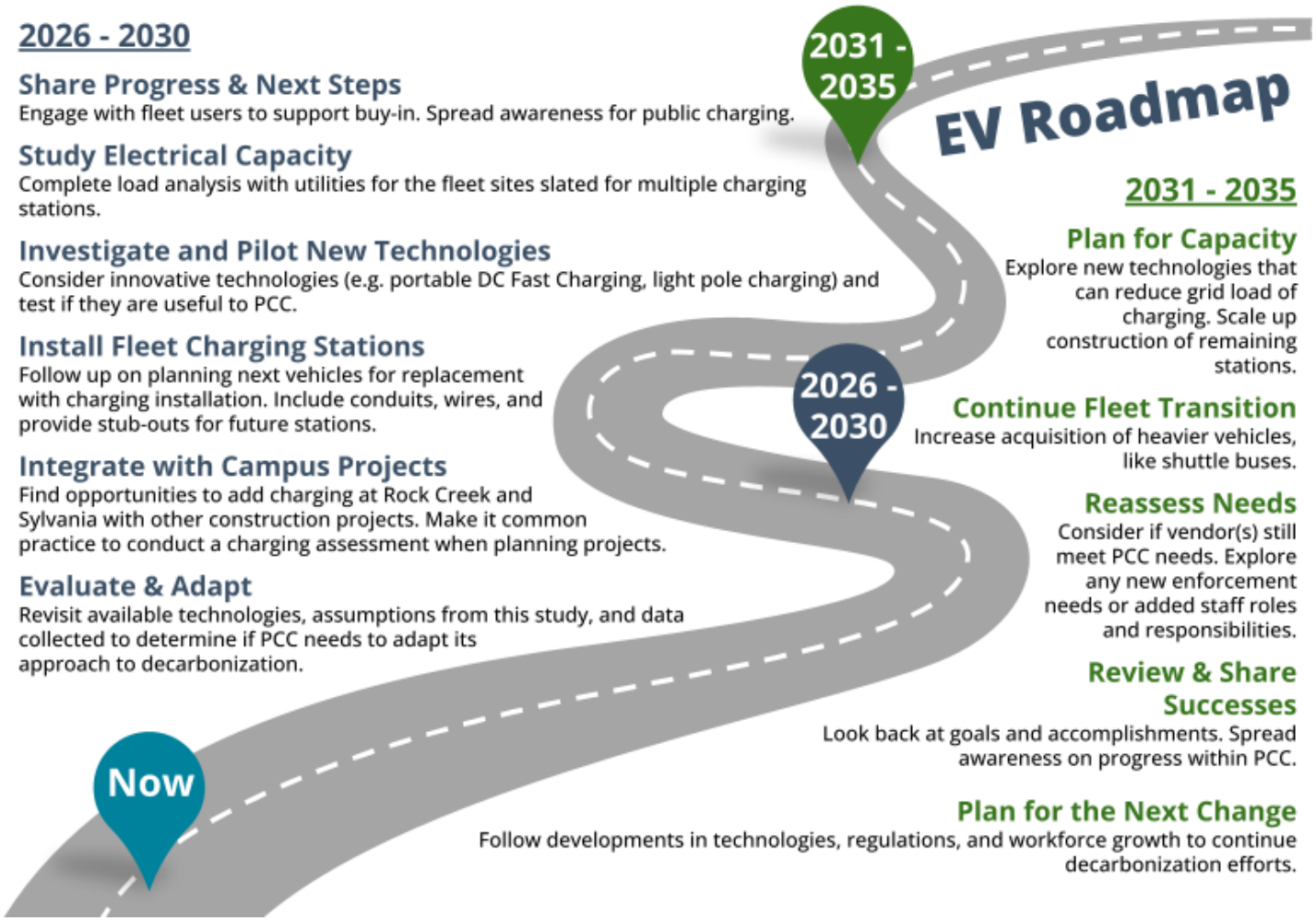
- **Dual-Port Level 2 EV Charging Station**: $15K per station
- **Design & Engineering**: $20K - $30K per site
- **Electrical**: $50K - $115K per site
- **Labor & Materials**: $30K - $50K per site
- **Commissioning**: $2K per station

What does PCC need to do to implement EV charging?

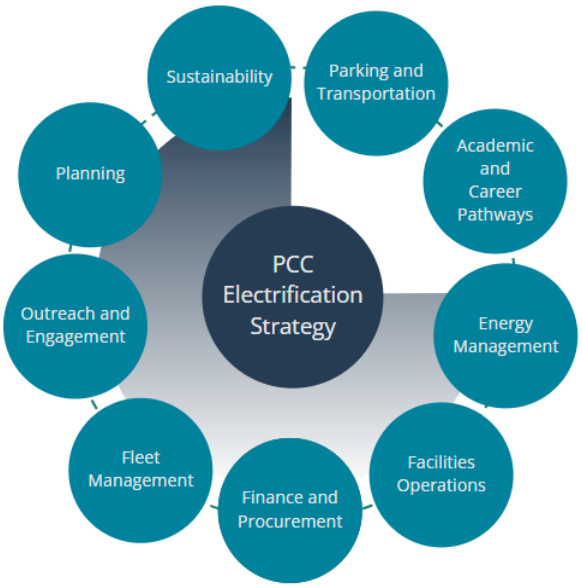
Steps are outlined on the following EV Roadmap, showing key actions to take now, between 2026 and 2030, and between 2031 and 2035. Five actions are identified for each time period and shown in order of priority. Immediate actions to take following the adoption of this EV Transition Plan are:

1. **Release RFP & Select Vendor** - Establish basics for the program, including selection of standard stations, fee structures, and vendor agreements.
2. **Establish Point(s) of Contact to Administer Program** - Set up responsibilities to oversee implementation.
3. **Begin Charging Projects at Cascade and Southeast** - Construct stations in the ready-made spaces in the Cascade garage. Use these projects to pilot the scalability of the program.
4. **Plan Next Fleet Vehicles for Replacement** - Determine which vehicles to replace within the next two years and identify their preferred domiciles.
5. **Share Progress & Next Steps** - Engage with fleet users to support buy-in. Spread awareness for public charging.

By taking these steps, PCC can make progress towards its climate and sustainability goals outlined in the 2021 Climate Action Plan and 2020 Strategic Plan.


EV Roadmap
Now
2026 - 2030
2031 - 2035
NOW
Release RFP & Select Vendor
Establish basics for the program, including selection of standard stations, fee structures, and vendor agreements.
Establish Point(s) of Contact to Administer Program
Set up responsibilities to oversee implementation.
Begin Simple Stand-Alone Charging Projects
Construct stations in the ready-made spaces in the Cascade garage. Use Cascade/Southeast projects to pilot the scalability of the program.
Plan Next Fleet Vehicles for Replacement
Determine which vehicles to replace in the next two years and identify their preferred domiciles.
2026 - 2030
Share Progress & Next Steps
Engage with fleet users to support buy-in. Spread awareness for public charging.
Study Electrical Capacity
Complete load analysis with utilities for the fleet sites slated for multiple charging stations.
Investigate and Pilot New Technologies
Consider innovative technologies (e.g. portable DC Fast Charging, light pole charging) and test if they are useful to PCC.
Install Fleet Charging Stations
Follow up on planning next vehicles for replacement with charging installation. Include conduits, wires, and provide stub-outs for future stations.
Integrate with Campus Projects
Find opportunities to add charging at Rock Creek and Sylvania with other construction projects. Make it common practice to conduct a charging assessment when planning projects.
Evaluate & Adapt
Revisit available technologies, assumptions from this study, and data collected to determine if PCC needs to adapt its approach to decarbonization.
2031 - 2035
Plan for Capacity
Explore new technologies that can reduce grid load of charging. Scale up construction of remaining stations.
Continue Fleet Transition
Increase acquisition of heavier vehicles, like shuttle buses.
Reassess Needs
Consider if vendor(s) still meet PCC needs. Explore any new enforcement needs or added staff roles and responsibilities.
Review & Share Successes
Look back at goals and accomplishments. Spread awareness on progress within PCC.
Plan for the Next Change
Follow developments in technologies, regulations, and workforce growth to continue decarbonization efforts.

Introduction



Portland Community College (PCC) serves over 50,000 full time students as a multi-campus community college with primary campuses including Cascade, Rock Creek, Southeast, and Sylvania. With enrollment projected to increase approximately 23 percent by 2030, PCC is continuing to evolve in response to the changing needs of students, faculty/staff, and the district and strives to embrace new technology to advance sustainability goals. To this end, an Electric Vehicle (EV) Transition Plan has been developed for EV charging infrastructure to support the PCC fleet and personal EVs used by the public, primarily staff and students. Key years for consideration are 2030 and 2035.

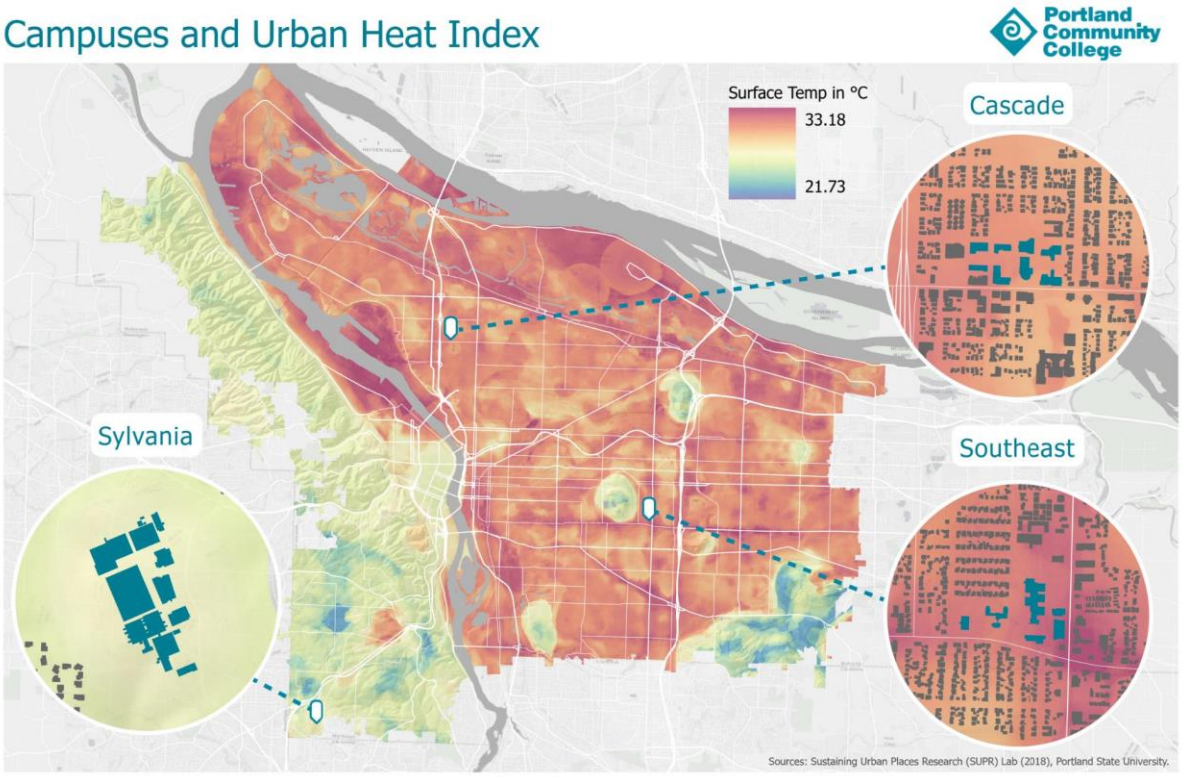
A Steering Committee met over the course of a year with support from Kittelson & Associates, Inc. (Kittelson) to consider several perspectives: academic and career pathways, energy management, facilities operations, finance and procurement, fleet management, outreach and engagement, planning, sustainability, and transportation and parking.

To put this EV Transition Plan (or Plan) in context, an overview is provided of how this effort ties into previous PCC efforts around the Climate Action Plan and Strategic Plan. The purpose of this Plan is also outlined, followed by a summary of EV charging basics.

Previous PCC Plans

The 2021 Climate Action Plan sets several sustainability goals, key among them being to achieve carbon neutrality by 2040. By next year, PCC aims to reduce fleet fuel emissions by 25 percent below 2006 levels. The 2021 Climate Action Plan included an analysis of PCC campuses within the City of Portland (Cascade, Southeast, and Sylvania) and illustrated how locations compare when considering the urban heat index. As shown in **Figure 1**, Cascade and Southeast in particular are situated in areas with high surface temperatures, which can lead to increased energy demand, health risk, and negatively impact overall quality of life.

Figure 1. PCC Campuses and Urban Heat Index



Source: https://www.pcc.edu/sustainability/wp-content/uploads/sites/22/2023/08/CamusesUHI.pdf

Similarly, the 2020 Strategic Plan includes the Climate Friendly Fleet & Equipment Project, which involves updating policies, standard operating procedures, and equipment to support emission reduction targets and creating a roadmap for full fleet electrification. In building on these goals to promote the transition to EVs, PCC can reduce emissions and enhance the quality of life on its campuses and for its surrounding neighbors.

EV Transition Plan Purpose

This EV Transition Plan provides an approach to and plan for supporting EV charging for PCC fleet vehicles, faculty/staff, students, and visitors for the next five to ten years. Key considerations addressed include policies and procedures, amount of charging, and next steps. The EV Transition Plan considers district-wide needs; however, the main campuses are prioritized with more detail.

Throughout the course of developing the Plan, recommendations were developed to support the release of a Request for Proposal (RFP) to facilitate implementation.

EV Charging Basics

Charging stations for cars, trucks, and buses are categorized by levels of charging speeds. Levels and plug types are described in more detail below. **Figure 2** visualizes the different charging levels and associated plug types.

Level 1

A level 1 is a regular wall outlet, low cost to install and operate, and can be a good option for plug-in hybrids and battery EVs that have low daily mileage and can sit for a long time to charge. Outlets need to be installed on a dedicated circuit in an existing electrical panel.

For plug types, a J1772 plug is used by all EVs in the country, other than Tesla. The North American Charging Standard (NACS) plug is used by Tesla, which began opening their supercharger network to non-Teslas in 2023.

Level 2

A level 2 can be a wall outlet similar to a dryer plug or an EV charging station. Level 2 charging stations dispense electricity at different speeds, measured in amps. Low-amp Level 2 charging stations (usually around 12 amps) are a good option for smaller batteries, like those in sedans. Bigger vehicles, like shuttles and buses, typically require 60 and 80-amp charging stations. One or two low-amp charging stations can be installed on a dedicated dual-circuit in an existing electrical panel. Higher-amp stations and installation of multiple charging stations may need a dedicated panel and potentially new electrical service. Level 2 charging uses J1772 and NACS plugs.

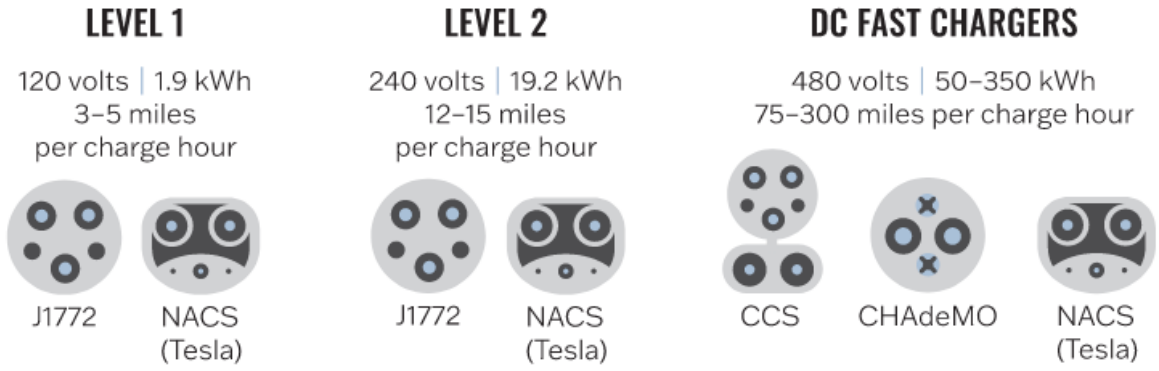
DC Fast Chargers

Direct Current (DC) Fast Chargers provide the highest level of charging speed. These chargers are measured in amps from 50 to 150 for passenger vehicles and 150 to 300 for trucks and buses. DC Fast Chargers need to be on a dedicated electrical service from a nearby transformer.

For plug types, Combined Charging System (CCS) plugs are currently used for fast charging by GM, Ford, VW, BMW, and Hyundai. Since May 2023, GM, Ford, and Rivian have announced their plans to switch to the NACS plug for their EVs. CHAdeMO is the DC Fast

Charger plug used by Nissan, Mitsubishi, and Kia for fast-charging capable EVs. The NACS plug can also be used for DC Fast Chargers.

Figure 2. EV Charging Levels and Plugs



Note: This Level 2 charging speed value is an average. Level 2 charging speed varies significantly among vehicles and can range from just a few miles of range per hour of charge to around 40 miles per hour of charge. Source: fueleconomy.gov.

Existing Conditions

Background information was first gathered to understand the needs and opportunities for EV charging at PCC.

Current Charging Stations

Charging stations are currently available for public use at several locations throughout the urban area. Fleet charging infrastructure has also recently been added for some campuses. **Table 1** summarizes the charging ports currently available. At the time of analysis, usage data was available for public chargers. Charts showing breakdowns of usage data are included in **Appendix A**.

Rock Creek was found to have the highest number of charging sessions per month (311), followed by Sylvania (232), Southeast (187), and Cascade (65). Despite having the second highest number of stations, the Opportunity Center had the lowest number of charging sessions (1), along with Columbia County Center (1).

Table 1. Current Charging Ports By Location

Location	Use	Ports	Level Type	Provider
Cascade	Public	2	Level 2	Blink
Rock Creek	Public	6	Level 2	Blink
	Fleet	3	Level 2	Ford
Southeast	Public	4	Level 2	Blink
	Fleet	3	Level 2	Ford
Sylvania	Public	4	Level 2	Blink
	Fleet	3	Level 2	Ford
Columbia County Center	Public	2	Level 2	Chargepoint
Opportunity Center	Public	4	Level 2	Blink
All	**Public & Fleet**	**30**	**Level 2**	**Blink, Chargepoint, Ford**

Note: Public chargers are pedestal-mounted while fleet chargers at several locations are wall-mounted.

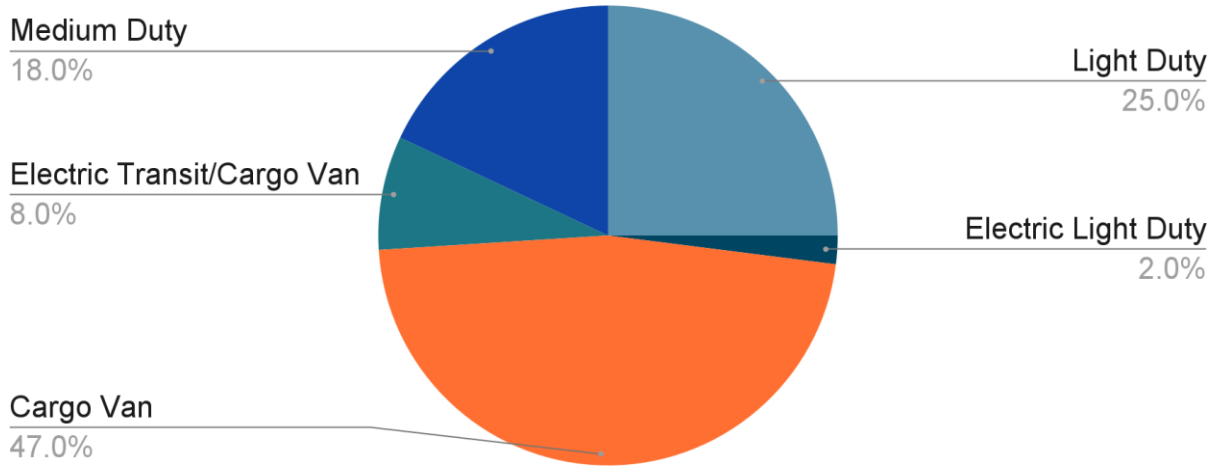
Site Visit Notes

The four primary campuses were visited by the project team in April and May of 2024. Campus maps with notes from the site visits and photos are included in **Appendix B**.

Fleet Vehicles

At the time of analysis, PCC's vehicle fleet consisted of 75 total vehicles. Of these, 64 vehicles were operational and utilized for general purposes, while the remaining 11 vehicles served various academic programs offered by the college. **Figure 3** breaks down fleet vehicles by type, with light duty cargo vans dominating the mix of vehicles. This is notable, as there are more EV replacement options available for light duty vehicles.

Figure 3. Fleet Vehicle Breakdown



Survey Results

A brief electronic survey was developed to gather information from faculty, staff, students, visitors, and other campus users on topics relevant to EV charging. The survey was available September 15, 2024, through October 18, 2024, and was advertised with e-mail notifications and printed signs posted in parking areas. **Figure 4** and **Figure 5** summarize answers to key questions from the survey related to EV ownership and access to charging. All survey questions and response breakdowns are included in **Appendix C**.

Figure 4. EV Survey Ownership Responses (Do you own an EV?)

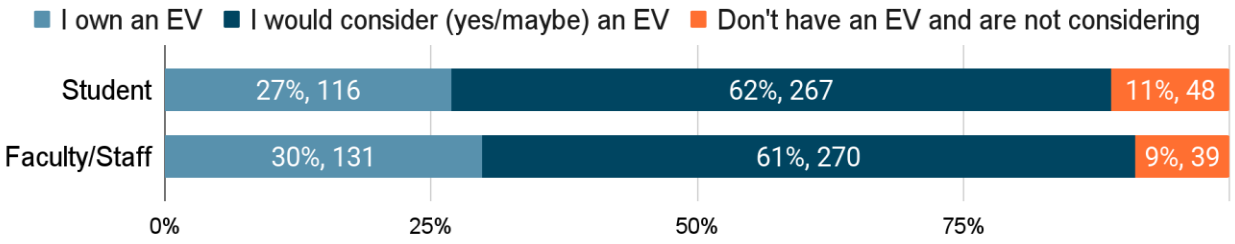
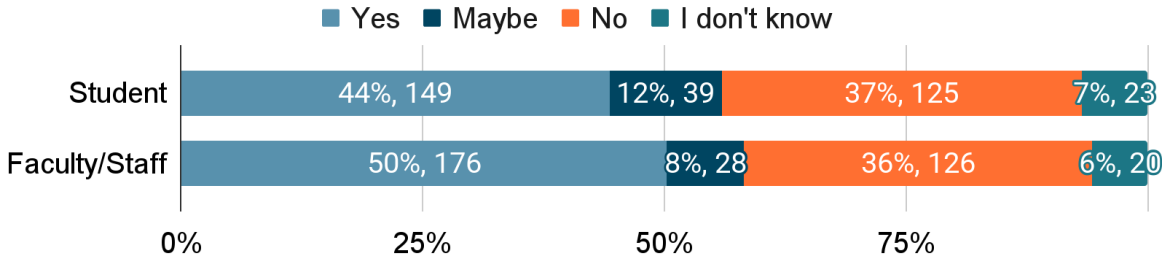


Figure 5. EV Survey Access to Charging Responses (Do you have access to charging?)



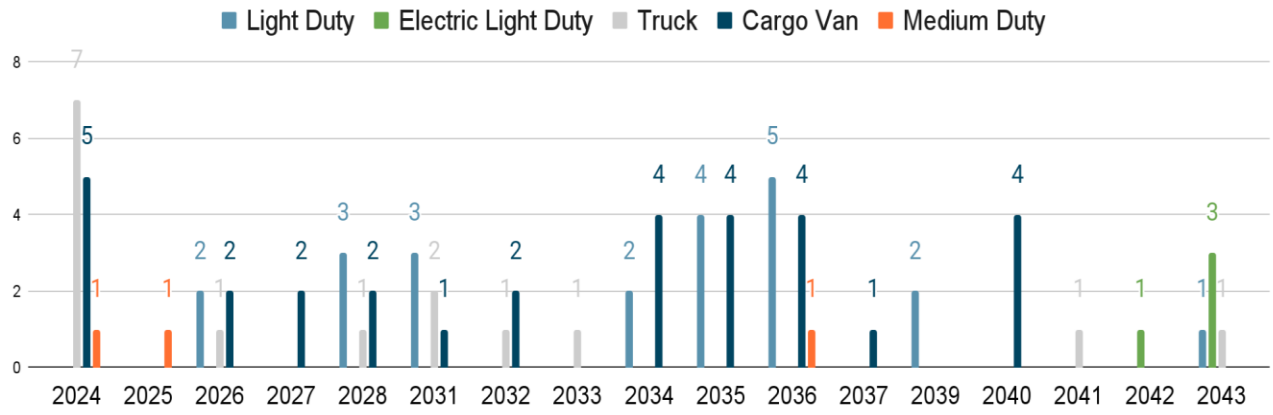
Fleet EV Charging Demand

The charging needs required to support conversion of the PCC fleet were considered. This included a review of fleet data to estimate the timeline for vehicle replacements, engagement with PCC staff using fleet vehicles, estimating the number of chargers needed in the future, and considering the ultimate locations and siting needs for fleet chargers.

Fleet Vehicle Transition Timeline

Fleet data provided as part of the existing conditions review were analyzed to understand the potential timeline for transitioning PCC's vehicles to EVs. **Figure 6** shows the number of vehicles PCC would expect to replace each year, based on the age of each vehicle and anticipated lifecycle. As shown, 27 vehicles are expected to be replaced by 2030. PCC has set an additional goal to transition 50 percent of the fleet, or 35 vehicles, by the end of 2030 to support the 2021 Climate Action Plan.

Figure 6. Natural Fleet Vehicle Replacement and Transition Timeline



Note: Electric light duty fleet vehicles are first replacement instead of transition

As of April 2024, PCC had added new EVs to the fleet since the time of the existing conditions assessment. Ten vehicles in the fleet were transitioned hybrids, indicating the college has made notable progress in reaching its goals.

Staff Engagement

To support the transition to EVs, input from staff using PCC fleet vehicles was gathered to understand current and future needs. Questions to guide discussion were as follows:

1. Can you describe a typical day for the fleet vehicles your department uses?
2. How far and how frequently are PCC vehicles in your department driven? Are the distances you are travelling consistent those days?
3. How many/which PCC fleet vehicles are shared amongst several staff?
4. Are there any fleet vehicles that might require their own charger (emergency services, for example)?
5. Where are you driving to/from when using a PCC fleet vehicle?
6. Do you park fleet vehicles at the same location(s) in the evening? What are the locations?
7. Is the PCC fleet vehicle parked for several hours during the day? Where is it parked?
8. What is your department's experience with using the College's EVs? If you have used one of the fleet's EVs, what was your experience charging the vehicle? Any feedback on the benefits/drawbacks of EVs and/or chargers?
9. What concerns do you have about EVs?
10. Does your department have any anticipated future vehicle needs?

Appendix D includes the details of responses gathered and meeting notes. Key takeaways that were considered when making recommendations included:

- **Sharing fleet charging with other staff/faculty private vehicle charging would require careful coordination**. Staff using fleet vehicles may need to begin charging as early as 2 PM, which would need to be communicated with signage and training. It was expressed the preference would be for separate, dedicated fleet charging.
- **Guidance to fleet vehicle users should consider cold-weather operations.** Some existing EVs in the fleet have shown significantly reduced battery performance in winter months. Making sure staff are aware of best practices and back-up options will help to alleviate range anxiety. One back-up option discussed was the potential for portable DC fast chargers to be used in emergency situations.
- **Resiliency should be built into the charging approach in case of any power outages.** There were several options discussed to ensure PCC staff can perform duties under unusual circumstances, such as providing some charging stations with a connection to backup generators, using the aforementioned portable chargers, and retaining some ICE vehicles for use during inclement weather or power outages.

In addition to gathering feedback and hearing concerns, these discussions also provided an opportunity to build support and partnership on the fleet transition within PCC.

Estimated Number of Fleet Chargers

Some members of the PCC Steering Committee were participating in the Breaking Barriers Collaborative as this EV Transition Plan was being developed. As part of that collaborative, initial estimates for fleet charging needs were developed. Kittelson reviewed these estimates and largely concurred with the conclusions. **Table 2** shows the number of fleet charging ports expected in the next five years, ten years, and once the fleet is fully transitioned.

Table 2. Estimated Fleet Charging Ports By Location

Location	Five-Year*	Ten-Year*	Full Transition
Cascade	2 - 6	2 - 6	8
Rock Creek	3 - 6	3 - 8	10
Southeast	3 - 6	3 - 8	10
Sylvania	2 - 10	2 - 12	16
CDS Warehouse	2 - 4	2 - 4	6
All	**12 - 32**	**12 - 38**	**50**

* Range is based on the number of existing chargers and ~50% in 2030 or ~70% in 2035 fleet conversion to EVs. This assumes a campus will not have disproportionately more EVs transitioned. Vehicle acquisition and its domicile should be considered during implementation.

Note that a separate effort is expected to consider options for PCC shuttle operations and Zero Emission Vehicles (ZEV). As noted earlier, charging infrastructure for the fleet should also consider testing use of portable DC fast chargers.

Siting Considerations for Fleet Charging

As part of a previous project, PCC worked with Portland General Electric (PGE) to identify locations for fleet charging at the Rock Creek, Southeast, and Sylvania campuses. Findings

from that project are included in **Appendix E**. Locations for fleet charging at these campuses are recommended to include:

- Cascade - Underground parking garage
- Rock Creek - Building 1 and Barn
- Southeast - Community Hall Annex
- Sylvania - College Services Building

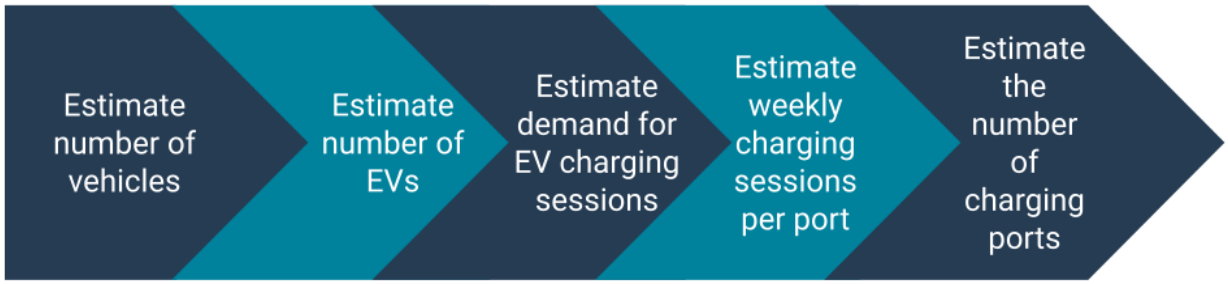
To further develop design plans, a checklist for charging station siting is included in **Appendix F**. In summary, there are three key questions to ask while siting EV charging stations:

1. What type of vehicles are expected to use the chargers and where are they domiciled (or parked) when they are expected to be charging?
2. Does the location have electricity, or is cost-effective electrification possible at this location?
3. Is the site an adequate size to accommodate charging equipment, on-site circulation, queuing, ingress and egress, and other requirements necessary with design standards?

Public EV Charging Demand

The charging needed to support public charging of private vehicles was considered. This included a review of parking and survey data to estimate demand, calculations to translate demand into the number of chargers needed, and considering the ultimate locations and siting needs for public chargers. The general approach is summarized in **Figure 7** and details are included in **Appendix G**.

Figure 7. Public Charging Estimate Process



Estimating Public Demand

In estimating demand, it was important for the PCC Steering Committee to consider if charging for private vehicles would come with no cost or fee to users, or if a fee structure should be instituted. Ultimately it was determined that demand calculations should assume some type of fee structure would be instituted. The considerations that went into this recommendation are outlined in the Program Policies section of this document.

The future years considered were 2030 and 2035, representing anticipated needs over the next five to ten years. Ranges for charging estimates are recommended, as new technology becomes available and factors impacting EV adoption (federal policy, vehicle availability, economic conditions/cost, etc.) may change. As noted in the EV Roadmap, PCC should have reassessment points throughout EV adoption to verify assumptions are still reasonable.

Assumptions

At the time of analysis, some parking data was available to estimate the number of vehicles coming to PCC campuses. If there are opportunities with future planning efforts or studies, it would be beneficial for parking occupancy counts or driveway volume counts to be conducted at PCC's main campuses to verify assumptions.

Oregon has established EV adoption goals for 2030 and 2035, which were used as a starting point in developing EV adoption assumptions. However, Kittelson reviewed recent 2024 data and found EV adoption is currently half of the Oregon goal for 2025.

The 2030 adoption range for students was assumed to be four percent to 12.5 percent, with the low range reflecting the number of student survey respondents indicating that they either own or are interested in buying an EV. The high range is half of the statewide adoption goal, reflecting current trends. The high range for 2035 was assumed to be 20 percent, again representing approximately half of the statewide adoption goal. Visitor estimates were included in the calculations for students.

The 2030 adoption range for staff/faculty was assumed to be 15 percent to 25 percent, with the low range reflecting the number of staff/faculty that indicated they either own or are interested in buying an EV. The high range reflects the statewide adoption goal. The high range for 2035 was assumed to be 40 percent, again reflecting the statewide adoption goal.

Other assumptions are detailed in **Appendix G.**

Estimated Number of Public Chargers Needed

The estimated number of chargers needed was developed district-wide, then distributed across PCC's locations. The distribution of chargers across the main campuses is based on the 2021 PCC Facility Plan, which was supplemented with survey responses to estimate the amount of charging for Centers. **Table 3** shows the number of charging ports expected in the next five years, while **Table 4** shows the number of charging ports estimated in the next ten years.

Table 3. Five-Year Estimated Public Charging Ports By Location

Location	Student*	Staff*	Total
Cascade	2 - 8	5 - 8	7 - 16
Rock Creek	5 - 16	11 - 16	16 - 32
Southeast	2 - 6	4 - 6	6 - 12
Sylvania	6 - 19	12 - 20	18 - 39
Big Centers (2)	0 - 1 each		0 - 1 each
Medium Centers (6)	0 - 1 each		0 - 1 each
Small Centers (2)	0 - 1 each		0 - 1 each
All	**16 - 53**	**35 - 56**	**51 - 109**

* Ranges are based on data from survey respondents, current adoption trends for students, and statewide goals for staff/faculty.

Table 4. Ten-Year Estimated Public Charging Ports By Location

Location	Student*	Staff*	Total
Cascade	2 - 12	5 - 14	7 - 26
Rock Creek	5 - 26	11 - 27	16 - 53
Southeast	2 - 8	4 - 9	6 - 17
Sylvania	6 - 30	12 - 32	18 - 62
Big Centers (2)	0 - 2 each		0 - 2 each
Medium Centers (6)	0 - 2 each		0 - 2 each
Small Centers (2)	0 - 2 each		0 - 2 each
All	**16 - 84**	**35 - 90**	**51 - 174**

* Ranges are based on data from survey respondents, current adoption trends for students, and statewide goals for staff/faculty.

Siting Considerations for Public Chargers

Siting considerations for fleet charging are also generally applicable to public charging, with some replacements and additions. Principles for locating public charging sites include:

1. Does the location have electricity, or is cost-effective electrification possible at this location?
2. Is the site an adequate size to accommodate charging equipment, on-site circulation, queuing, ingress and egress, and other requirements necessary with design standards?
3. Are there accessible pathways to the building(s)?
4. Can chargers be grouped together to allow drivers to easily identify an open station?
5. Can chargers be installed without encroaching on the parking space?

In addition, new technologies are becoming available to install Level 2 charging on light poles. Considering opportunities for installing chargers on light poles may also impact site selection.

With these principles in mind, high-level recommendations for locating the chargers in **Table 3** and **Table 4** are visualized on **Figure 8** through **Figure 11**. Additional details regarding accessibility and siting within the areas identified are included in **Appendix H**.

Figure 8. Public Charging Location Options: Cascade Campus

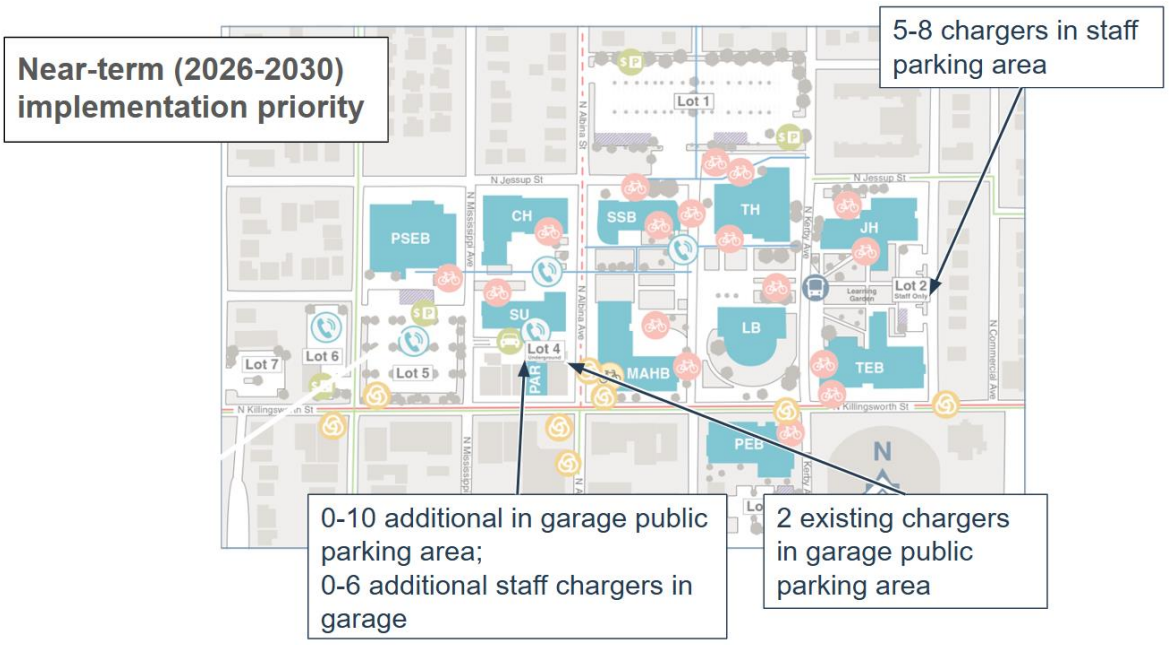


Figure 9. Public Charging Location Options: Rock Creek Campus

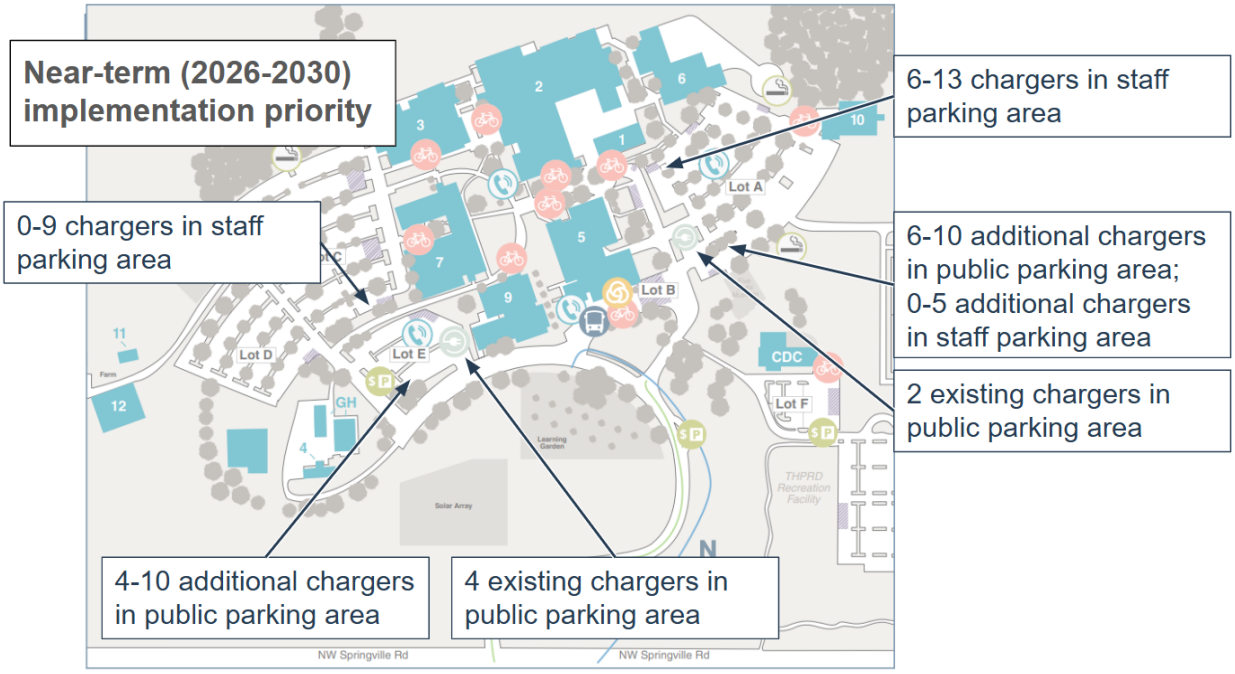


Figure 10. Public Charging Location Options: Southeast Campus

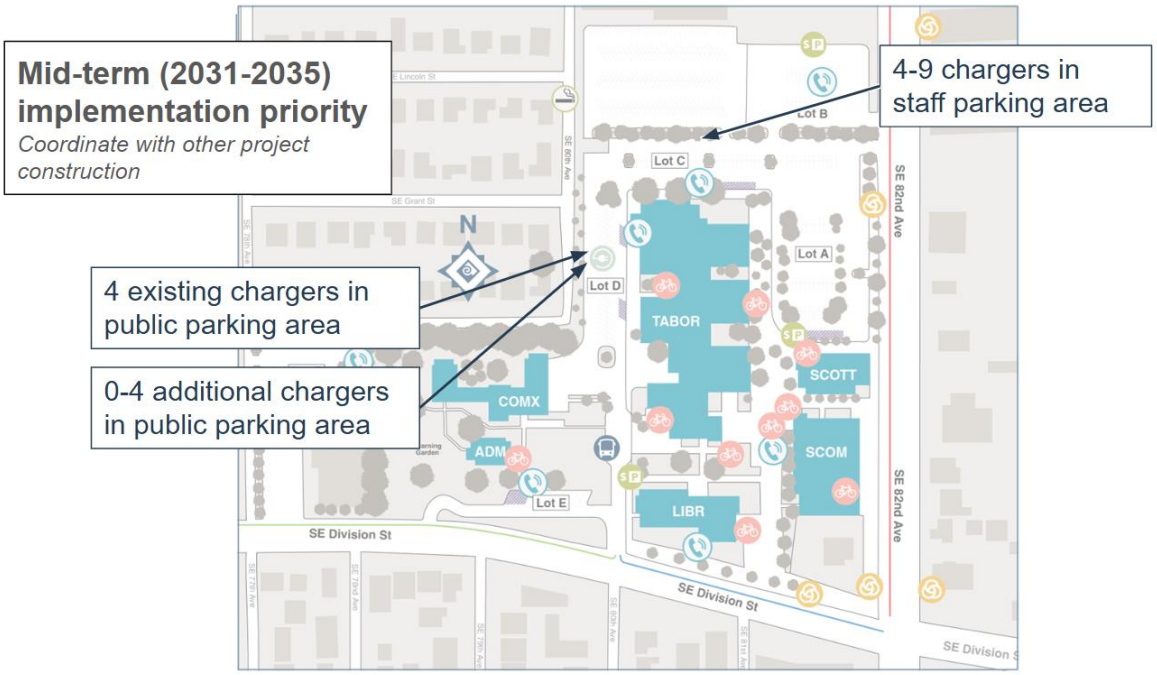
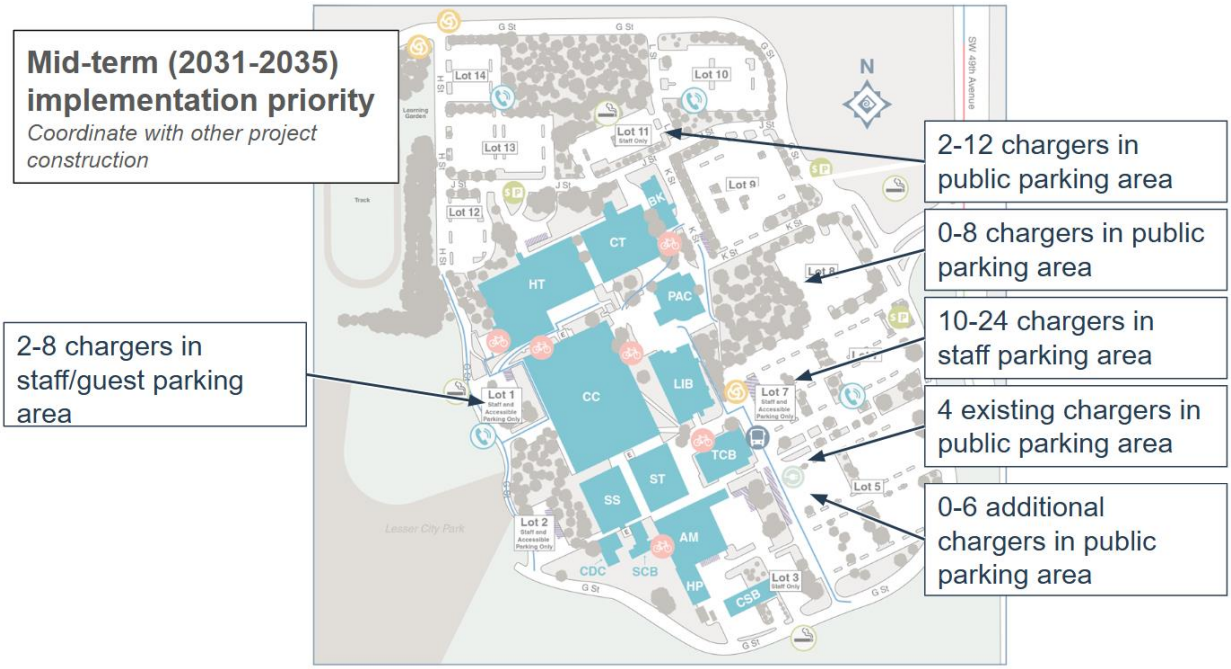


Figure 11. Public Charging Location Options: Sylvania Campus



Program Policies

Throughout the planning process the PCC Steering Committee explored several topics related to making important decisions for EV charging at PCC. To inform these decisions, the team began with interviews of peer institutions to understand challenges and best practices. In the following months, topics discussed included charging levels to be provided, business and revenue model selection, operating best practices, and integration with campus projects and procurement.

Peer Interviews

Peer institution interviews were conducted with Los Angeles Community College, the City of Beaverton, and University of California-Davis. These institutions were selected as they have each shown a particular commitment to electrification. LA Community College also acts as another example of a Community College system, the City of Beaverton program provides some insight to local considerations, and UC Davis's program includes different payment structures that were of interest to the project team.

Questions that informed the discussion for these interviews are summarized in **Table 5**, along with takeaways from these institutions and PCC considerations. Notes from these interviews and the Steering Committee presentation summarizing the interviews are included in **Appendix I.**

Table 5. Peer Institution Interview Summary

Question	Peer Takeaways	PCC Considerations
For fleet use, what level of charging should we provide?	UC Davis is using Level 2. City of Beaverton mostly using Level 2, and DC Fast Charging is under-utilized.	From the site walk, the team identified one potential bus charging location that may have a need for faster charging.
Should fleet vehicles share charging with the public?	UC Davis is currently sharing charging, but staff has concerns for expanding their fleet. City of Beaverton is sharing its DC Fast Charging with City staff for personal use.	Faculty and staff using their personal EVs for work travel also may have charging needs.
How much fleet charging infrastructure do we need?	City of Beaverton may have overestimated the necessary infrastructure. UC Davis likely will have to keep fleet charging mixed with the public.	PCC staff has participated in the Breaking Barriers Collaborative to inform charging estimates.
What should be considered when selecting a vendor?	LA Community College prioritized using Open Charge Point Protocol (OCPP). UC Davis expressed a preference for smart, networked chargers. City of Beaverton had difficulty setting up restrictions and additional fees with their current chargers (Chargepoint).	The PCC Steering Committee noted the importance of resiliency and having some confidence that a vendor will not go out of business.

Question	Peer Takeaways	PCC Considerations
For public use, what level of charging should we provide?	LA Community College has been using Level 2. UC Davis is also using Level 2 and is moving away from Level 1 charging. City of Beaverton is also using Level 2.	While providing Level 1 charging would be easy, it would be more difficult to track fueling costs.
Should the public pay to use our charging infrastructure?	LA Community College was given direction from their legal team that they must charge fees. UC Davis is looking to require payment by kWh and operate as revenue neutral. The City of Beaverton requires payment by kWh.	Neighborhood demand may be present for some campuses.
What enforcement might be necessary?	UC Davis uses license plate reader technology to ticket any non-EVs in an EV spot. City of Beaverton builds in extra fees for being plugged in while not actively charging.	PCC would likely need to increase staff if enforcement is done on foot. It may not be realistic for students to move their cars between classes.
What maintenance/operation agreements are needed?	UC Davis mentioned other campuses using a liaison service to oversee coordination with vendors.	It may be difficult to have adequate staffing to fix and maintain both fleet and public charging.

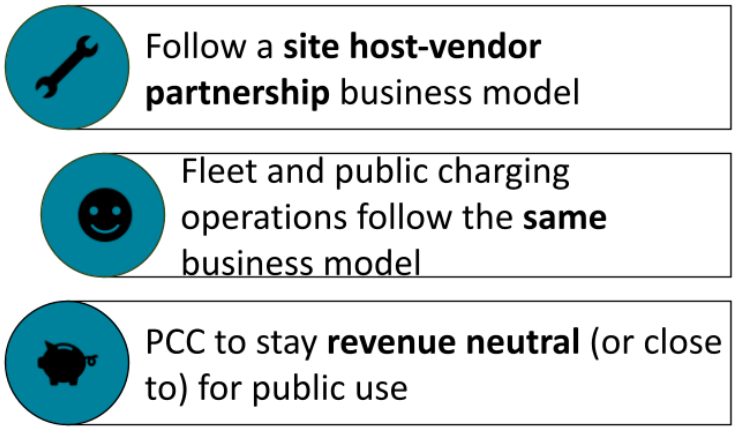
Charging Levels

Interviews with peer institutions highlighted the challenges for Level 1 charging in not being able to track costs and providing users with only a minimal charge. Given this, it is recommended PCC not invest in Level 1 charging. Feedback regarding the cost of installing DC Fast Charging and its utilization also made it a less attractive option. Kittelson reviewed nearby public DC Fast Charging options to determine if there are opportunities for PCC users to charge nearby. The results of this analysis are included in **Appendix J**. In summary, there are several options near all campuses. As such, it is recommended PCC charging infrastructure focus on providing Level 2 charging.

Business and Revenue Model

One early topic discussed with the PCC Steering Committee was that of the business and revenue model for providing EV charging. The presentation given at this Steering Committee meeting is included as **Appendix K**. **Table 6** summarizes the business model options and characteristics.

It is important to note that most universities and cities started under a site host-owned model but are now transitioning to a site host-vendor partnership model. It is recommended PCC also transition to this partnership model, as it can better serve PCC's maintenance and operational needs as the district scales up its EV charging infrastructure. It is worth noting that in a site host–vendor model, responsibility for theft or vandalism typically falls on the vendor when they operate independently and the host only provides space and utilities. However, in shared investment or revenue arrangements, liability may be split or covered through negotiated insurance terms. If the host manages on-site security, vendors may expect some level of protection or accountability in the event of security failures.



Another key recommendation is that the fleet and public charging operations follow the same business model, as this will support consistent, simple operations and monitoring as well as provide a more straightforward user experience. Finally, it is recommended that PCC adopt a revenue-neutral model for public charging. This was reinforced in discussions with peer institutions and confirmed when considering costs to PCC and equity for users.

Table 6. EV Charging Business Models

Task	Site Host-Owned	Site Host-Vendor Partnership	Vendor-Owned
General Description	PCC would own the charging stations and manage operations & maintenance	PCC and vendor lead different aspects of planning-through-maintenance process	Vendor leads most of planning-through-maintenance process
Station Planning	PCC	PCC with vendor support	Vendor
Station Design	PCC	PCC and/or vendor	Vendor
Equipment Purchase	PCC	PCC	Vendor
Construct/Install	PCC	Vendor	Vendor
Operations	PCC	Vendor	Vendor
Maintenance/ Technical Support	PCC or contracted with company	Vendor	Vendor

Operating Best Practices

Several recommendations are made to guide decisions around operations. This includes vendor selection, design policies, parking durations and shared parking, fees for charging, enforcement, and maintenance.

Vendor selection

As noted when identifying the business model, it is important to PCC that operations and monitoring are simple and consistent, as well as provide a more straightforward user experience. With this in mind, the PCC Steering Committee recommends that a consistent vendor be selected for the charging stations. While there may be different station types offered by a vendor, for example one that may be more appropriate for fleet use and one that better meets the needs for public charging, partnering with one vendor will limit extra coordination needed by PCC staff.

Design policies

When designing new EV charging spaces, PCC should follow the US Access Board's Design Recommendations for Accessible Electric Vehicle Charging Stations. Designs should also follow the Manual on Uniform Traffic Control Devices (MUTCD) and Alternative Fuels Data Center requirements and best practices for EV parking space signage and pavement markings.

Parking policies

The current EV parking guidelines at PCC limit charging to three hours per day. Vehicles parked beyond the three hour limit may be ticketed or towed at the owner's expense. Charging is also free and provided as a privilege currently. From the electronic survey it was found that a little less than half of students usually spend four hours or less on campus. For staff and faculty, longer days are typical with half of staff spending a full day on campus. Changing the guideline to four hours per day would align with most student's behavior and also represent when staff or faculty would likely be taking a break that would allow them to move their vehicle.

The PCC Steering Committee also discussed the possibility of sharing fleet charging with privately owned faculty/staff vehicles. Based on feedback from PCC staff using fleet vehicles, it is recommended that privately owned vehicles are not intended to charge in fleet areas. As such, the fleet chargers should operate with an RFID or fob setup so other users do not plug in. It is also recommended that public chargers support use of fleet RFIDs or fobs to give flexibility to fleet users in the case of an emergency or outage of fleet chargers. In addition, PCC should establish charging policies for fleet users. One issue to consider is if staff should be considered "on the clock" if they need to charge during their workday.

Fees for charging

As a partnership business model is recommended, fee structures for charging will be largely proposed by the vendor. However, PCC should be able to provide input on fee structures. As guiding principles in providing this input, PCC should be prepared to consider the following pricing mechanisms:

- Establishing special pricing for fleet vehicle charging so fleet vehicles do not pay as much as public charging.
- Using dynamic pricing and demand management to set higher rates during peak periods, stop or slow charging to avoid demand surges, and potentially to encourage charging during off-peak hours.
- Bundling charging station access into parking permits.
- Charging idling fees when a vehicle is parked but not charging to incentivize drivers to move their vehicles when they are finished charging.
- Charging a start-up fee (often less than $1.00) that helps to fund maintenance.

As mentioned earlier, it is recommended that PCC pilot the use of a portable DC Fast Charger to support emergency charging services—particularly for cases where a student, staff, or public user's vehicle is low on charge and needs a temporary boost to reach another charging station. PCC's Transportation and Parking Services team can oversee deployment, and PCC should consider whether a fee should be applied for this service.

If students, faculty, or staff are provided with an emergency fast charge, PCC should consider what, if any, fee is charged for this service.

Enforcement

With PCC transitioning over to a fee-based system for public EV charging, it is possible there will be an initial dip in charging station utilization. As such, this may make enforcement of parking in an EV space and charging duration less critical. It is recommended that PCC revisit enforcement needs periodically as public charging stations are expanded and EV adoption grows.

Maintenance

The expansion of PCC's fleet and public EV charging systems will represent a significant increase from current conditions. With this in mind, it is expected that PCC will not be able to accommodate maintenance needs internally. As recommended earlier, a site host-vendor partnership will more adequately meet PCC's needs with a partner having responsibility for charging station maintenance.

Integration with Campus Projects

Advanced planning will reduce the costs of EV chargers, including equipment, installation, electrical upgrades, and soft costs. It is recommended PCC conduct charging assessments at the planning phase of any new construction projects.

The PCC Steering Committee has identified the Rock Creek and Sylvania campuses as having potential for near- or mid-term projects that could likely include EV infrastructure with construction activities. The Roadmap and prioritized next steps included in this document account for these anticipated projects at Rock Creek and Sylvania.

Future Program Needs

When considering the number of chargers that may be needed in the next ten years for fleet and public use, PCC could have a system of over 200 chargers to manage. This represents a seven-fold increase from the current system, underscoring the need for PCC to consider institutionalizing its EV charging as a program. Thought was given to guiding principles for the RFP process, to expeditiously expand PCC's EV charging system while ensuring solid foundations are laid for the future. An overview of funding sources and opportunities are included, along with PCC roles and responsibilities. Finally, a Roadmap reiterates the steps needed to realize the vision outlined in this document.

Guiding Principles for the RFP Process

Throughout the course of developing the strategy, recommendations were developed to support release of a request for proposal (RFP) to facilitate implementation. Guidance is provided below on the overview of desired services, cost considerations, and schedule factors for charging projects.

Overview of desired services

In selecting a site host-vendor partnership business model, there are several nuances in roles for each party. Recommendations have been developed to outline roles envisioned for PCC and for the vendor, which are shown in **Table 7**.

Table 7. Site Host-Vendor Partnership Envisioned Roles

PCC	Vendor
• Determine station locations for each campus and the corresponding number of charging ports at each location • Purchase charging infrastructure • Parking enforcement • Provide PCC main point of contact for vendor coordination • Identify fleet vehicles for PCC charging pricing	• Install charging stations per PCC directions • Operate software that collects fees from users • Maintain and repair charging infrastructure • Maintain a real-time dashboard for monitoring and reporting • Pay for electricity • Pay PCC its revenue share • Set price for charging (some PCC input may be possible)

The PCC Steering Committee also deliberated on specific requirements of the vendor related to installation, maintenance, and monitoring and reporting. A compilation of technical requirements and scope to include in the RFP is provided in **Appendix L**. **Figure 12** through **Figure 14** summarize vendor requirements related to installation, maintenance, and monitoring and reporting.

One requirement that is important to note: OCPP compliance is a standard for communication between charging stations and management systems. Using this system ensures that PCC has future flexibility to potentially use management software that fits the district's needs. It reflects charging stations that are non-proprietary and could be transferred to another vendor if, for instance, a vendor goes out of business. Including this requirement in the RFP will help protect PCC's investment.

Ensuring PCC has both real-time and historical access to charging data is essential for assessing performance, tracking progress toward sustainability goals, and responding proactively to issues like equipment downtime or user complaints. Therefore, data access and transparency are critical to both the charging technology and the partnership model since data insights will inform key decisions related to future system operations.

Figure 12. Installation Requirements for Vendors

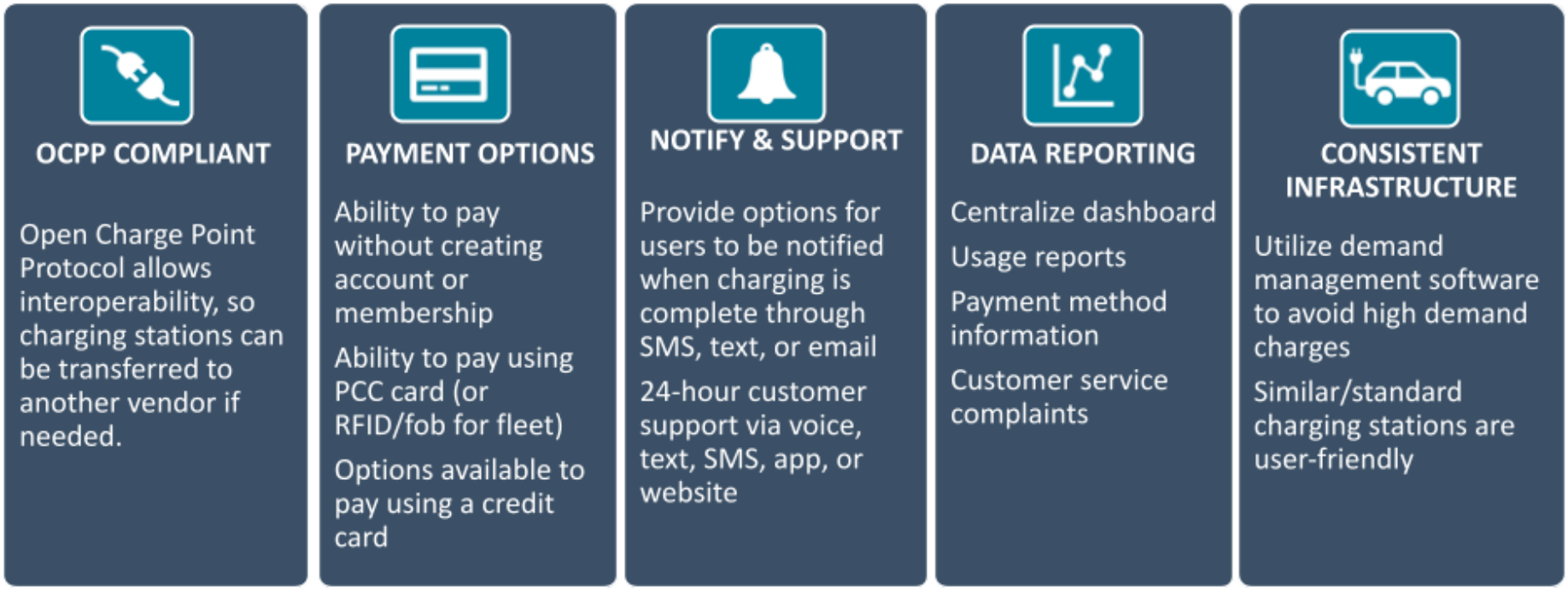


Figure 13. Maintenance Requirements for Vendors

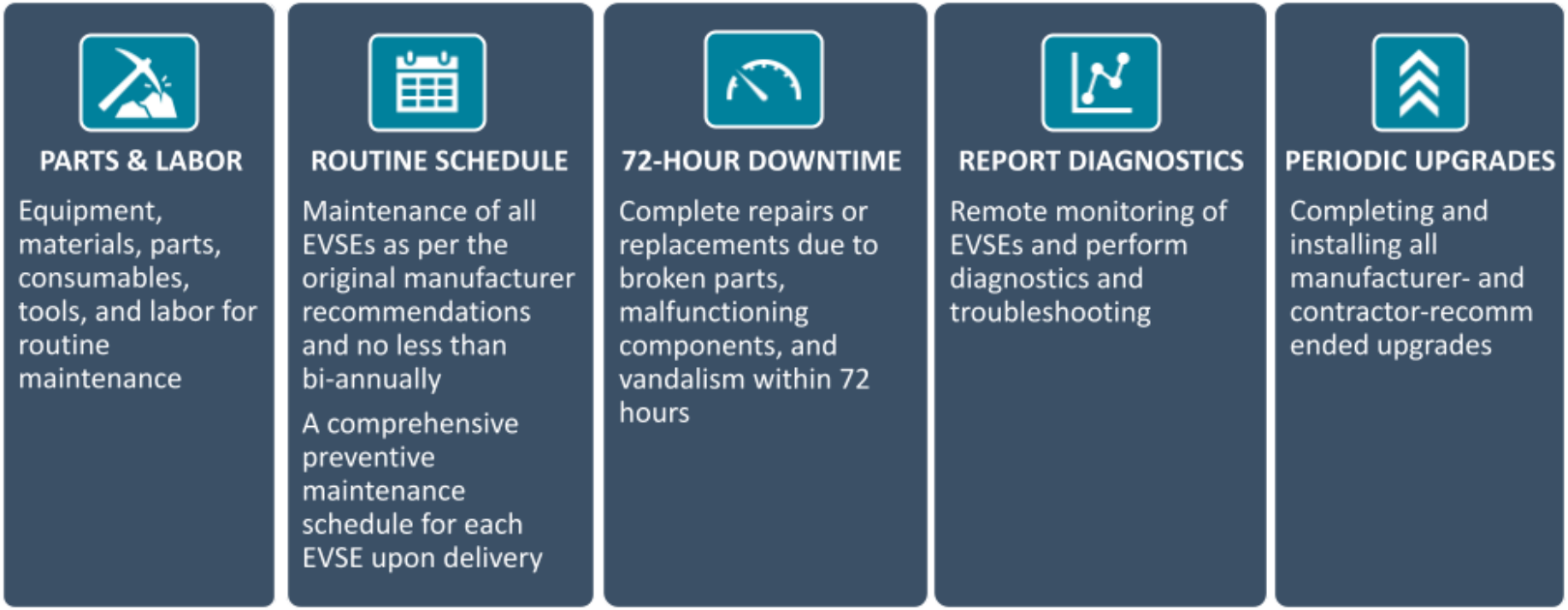
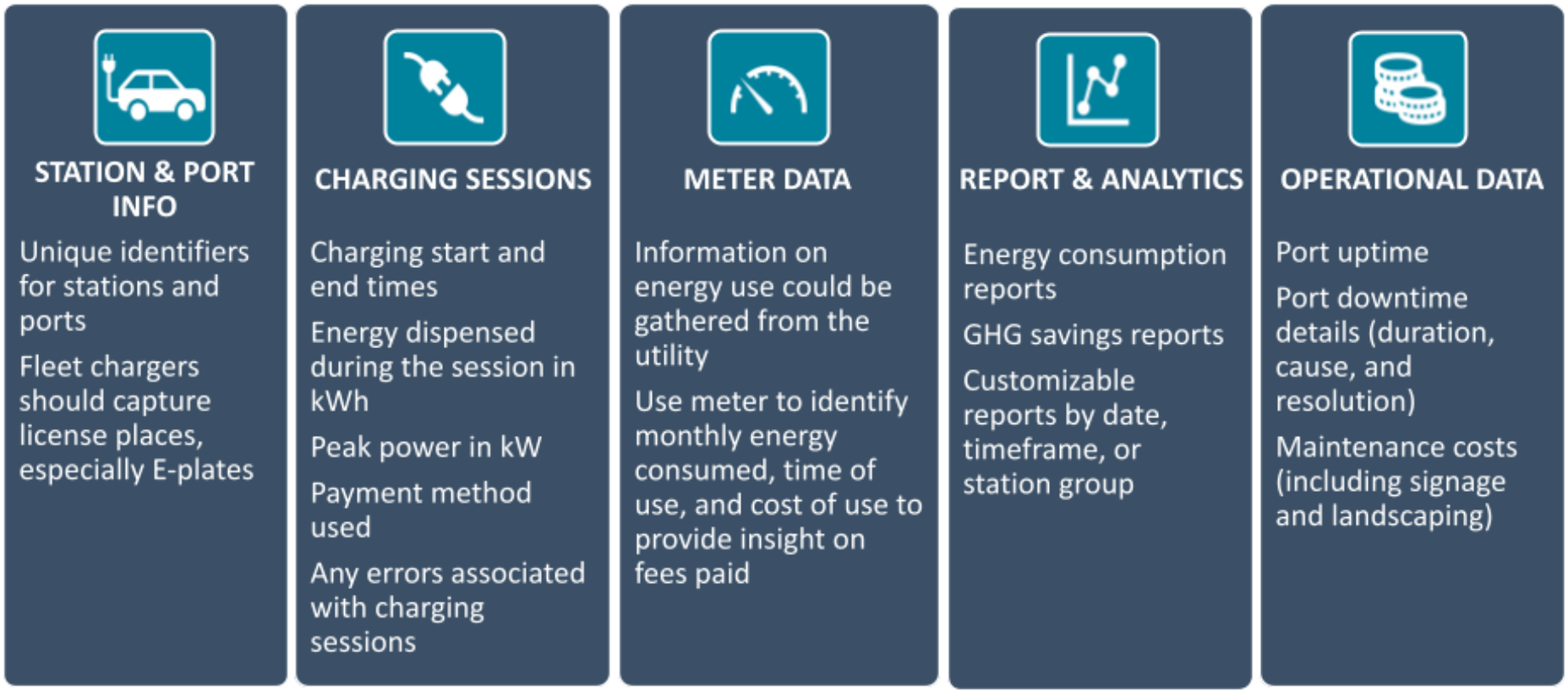


Figure 14. Monitoring and Reporting Requirements for Vendors



Overview of cost considerations

A typical budget for EV charging station implementation will include one-time capital expenses (CapEx) and ongoing operational costs (OpEx). Grants and incentives can reduce some of the costs. These costs include:[1]

One-Time Capital Expenses (CapEx):

- **Electric Vehicle Supply Equipment (EVSE) units and installation costs** - EVSE is the technical term for EV charging stations. Equipment and installation costs can vary depending on the vendor and the site. Locating charging stations close to power transmission equipment can save construction costs. This also includes electrical upgrades, like adding an electrical panel or submeter.
- **Site restoration** - This includes curbs, sidewalks, striping parking spaces, adding signs, ADA access, lighting, bollards, wheel stops, and landscaping. PCC should consider bundling costs into existing projects or on-going maintenance processes.
- **Labor** - A licensed electrician or UL-certified staff is required to install Level 2 charging stations. Many grants require that at least one electrician with Electric Vehicle Infrastructure Training Program (EVITP) certification be on the installation team.
- **Design and engineering** - EVSE installation requires that a licensed electrician create site plans and conduct a load analysis according to local electrical codes. Sites may also require civil engineering and ADA engineering to prepare plans to submit with permits. Design and engineering is usually budgeted at 20 percent of labor and site restoration costs.
- **Utility "Make-Ready" fees** - PGE or Pacific Power may need to make infrastructure improvements that include feeder lines, transformers, switchgear, meters, and substations.
- **Permitting costs** - Electrical permits are required, and jurisdictions may require additional permits for stormwater, lighting, and increased traffic.
- **Networking** - Charging stations require dedicated, secure WiFi or cellular networks or improvements to existing networks. Vendors may also require a separate payment gateway for charging stations that accept credit cards for payment.
- **Commissioning** - A one-time fee per port to connect the charging station to the electrical supply and network and run a series of tests to ensure optimal operation.

[1] Host of Boston, 2020. How-To Guide: Starting an electric vehicle workplace charging program.

Ongoing Operational Expenses (OpEx):

- **Maintenance** - Vendor agreements typically include five years of software maintenance and limited repairs due to faulty parts. PCC should plan to coordinate with the vendor on keeping parts for replacement due to wear-and-tear, negligence, and vandalism; preventive hardware maintenance; and site maintenance, like snow removal and trash clean up.
- **Networking and credit card processing** - Many vendors include two to five years of networking fees in their initial price. After the contract period, site hosts need to pay a per-port charge for access to cloud-based software. As noted, most vendors charge a swipe fee for credit card transactions.
- **Electricity** - The vendor or PCC, but most likely the vendor under the recommended business model, will purchase electricity by the kWh and may pay an additional cost for peak energy periods or demand charges. This cost would typically be passed on to the fleet and public users.
- **Customer support** - Many charging vendors have online customer support through a website and chatbot. Some site hosts contract with a third-party to provide in-person and telephone customer training, education, and support or assign a staff person to provide support during business hours.
- **Program management** - Site hosts can integrate charging station operation and data collection with other software platforms and/or use vendor provided tools. Organizations with a large number of charging stations may hire a full- or part-time person to collect data, schedule maintenance, and make sure that station uptime meets grant requirements.

With these costs in mind, **Table 8** outlines planning-level ranges based on recent projects. These ranges are also extrapolated assuming the number of ports and sites identified in the Fleet EV Charging Demand and Public EV Charging Demand sections of this document. Note these represent capital costs only and do not include PCC's share of any "make-ready" costs to bring additional electric services. Assumptions and calculations are included in **Appendix M**.

Table 8. Planning-level CapEx Cost Ranges (Excludes Utility "Make-Ready" Fees)

Item	Cost Range Per	Five-Year Fleet & Public	Ten-Year Fleet & Public
Dual-Port Level 2 EVSE Charger	$15K per charger	$255K - $840K	$255K - $1.365M
Design & Engineering	$20K - $30K per site	$160K - $510K	$160K - $540K
Electrical	$50K - $115K per site	$400K - $1.955M	$400K - $2.07M
Labor & Materials	$30K - $50K per site	$240K - $850K	$240K - $900K
Commissioning	$2K per EVSE	$34K - $112K	$34K - $182K
	Total	**$1.1M - $4.3M**	**$1.1M - $5.1M**

* Note that utility "make-ready" fees are not included

Overview of schedule factors

The timeline for implementing an EV charging station from concept to development can vary greatly depending on several factors, including the scale of the project, the local regulatory environment, and the specific needs of the site. However, below is a general timeline that outlines the major steps:[2]

1. **Concept Development (1-3 months)**: This includes market research, feasibility studies, and the initial design of the EV charging station.
2. **Detailed Design, Planning, and Site Selection (3-12 months)**: This stage involves selecting the site and more detailed design work, which may include site surveys, evaluating existing electric infrastructure, detailed design drawings, and other technical specifications. This stage requires coordination with PGE or Pacific Power to verify existing grid access meets the site needs or may require PGE or Pacific Power to complete electrical or construction work to upgrade the grid.

[2] SparkCharge, How Long Does it Take to Install Commercial EV Charging Stations?

3. **Permits and Approvals (1-3 months)**: This stage involves obtaining any necessary permits or approvals. The permit and approval process may vary depending on the level of the chargers, the complexity of the project, and the institution's permitting process.
4. **Procurement (1-3 months)**: This involves sourcing and ordering the necessary equipment, including the charging stations themselves, any necessary electrical equipment, and possibly construction materials.
5. **Installation and Testing (1-3 months)**: This includes the physical installation of the charging stations, as well as any necessary electrical work. The schedule will depend on the complexity of the project and availability of equipment. This stage may also include testing of the equipment to ensure it is functioning properly.
6. **Commissioning and Launch (1 month)**: This is the final stage where the charging stations are officially brought into service. This may involve a launch event or public campaign to raise awareness of the new facilities.

It might take six months to a year or more from concept to launch of a commercial-grade EV charging station. However, this is just a general estimate—the exact timeline can vary greatly depending on the specifics of the project.

Some companies are developing mobile charging units or portable DC fast chargers to serve charging needs in less time than permanent installation takes. They can be moved to different sites depending on fleet needs, special event planning, or emergency needs.

Funding Sources and Opportunities

While PCC is already expecting some funding to be available through bond sources, the PCC Steering Committee and Kittelson have also explored other funding sources and opportunities. These opportunities are summarized below:

Federal Tax Credit

The 45W Commercial Clean Vehicle Credit allows businesses and tax-exempt organizations that buy a qualified commercial clean vehicle to be eligible for a clean vehicle tax credit of up to $40,000 and does not have a limit on the number of credits that an organization can claim. It applies to plug-in hybrid, battery electric, and fuel cell electric vehicles that are mostly manufactured in the U.S.

The 30C Alternative Fuel Vehicle Refueling Property Credit (30C credit), which provides an income tax credit for qualified alternative fuel vehicle refueling property, was extended and amended under the Inflation Reduction Act of 2022 (IRA) to include certain property for the recharging of an electric vehicle placed in service in eligible census tracts. Eligible census tracts can be viewed using the US Department of Energy's Argonne National Laboratory 30C Tax Credit Eligibility Locator. The Rock Creek campus appears to be located in an eligible census tract.

In general, there should be some caution in relying solely on federal incentives when planning infrastructure investments, as eligibility requirements and funding levels can shift with changes in legislation or administrative guidance.

Oregon Department of Transportation (ODOT) Community Charging Rebates Program

The Community Charging Rebates program is part of ODOT's $100 million commitment to accelerate the deployment of EV charging over the next five years. While the third round of funding is expected to close before PCC will have selected a vendor, it is worth keeping this program in mind for future rounds of funding. The program includes rebates per Level 2 charging port for $3,500 or up to 75 percent of eligible costs.

PGE Drive Change Fund

The Drive Change Fund supports projects within PGE's service area. Applications can be submitted for projects that purchase EVs, install charging stations, or generally promote EV adoption. Like the ODOT rebates program, a current funding cycle is not immediately available but it is worth keeping this option in mind for future rounds of funding.

Pacific Power Electric Mobility Grants

These electric mobility grants are designed to support projects that advance electrification in underserved communities, with a specific focus on EV charger installation and purchase of EVs. Applications are scheduled to close on June 30, 2025. This is also worth considering for future rounds of funding.

Oregon Zero-Emission Fueling Infrastructure Grant

This pilot grant program is funded by the Oregon Department of Environmental Quality (DEQ) and supports medium- and heavy-duty zero-emission vehicle charging and fueling infrastructure projects. As funds for the pilot have been distributed, it is recommended PCC also monitor if the pilot program is expanded in the coming years.

Oregon Clean Fuels Program

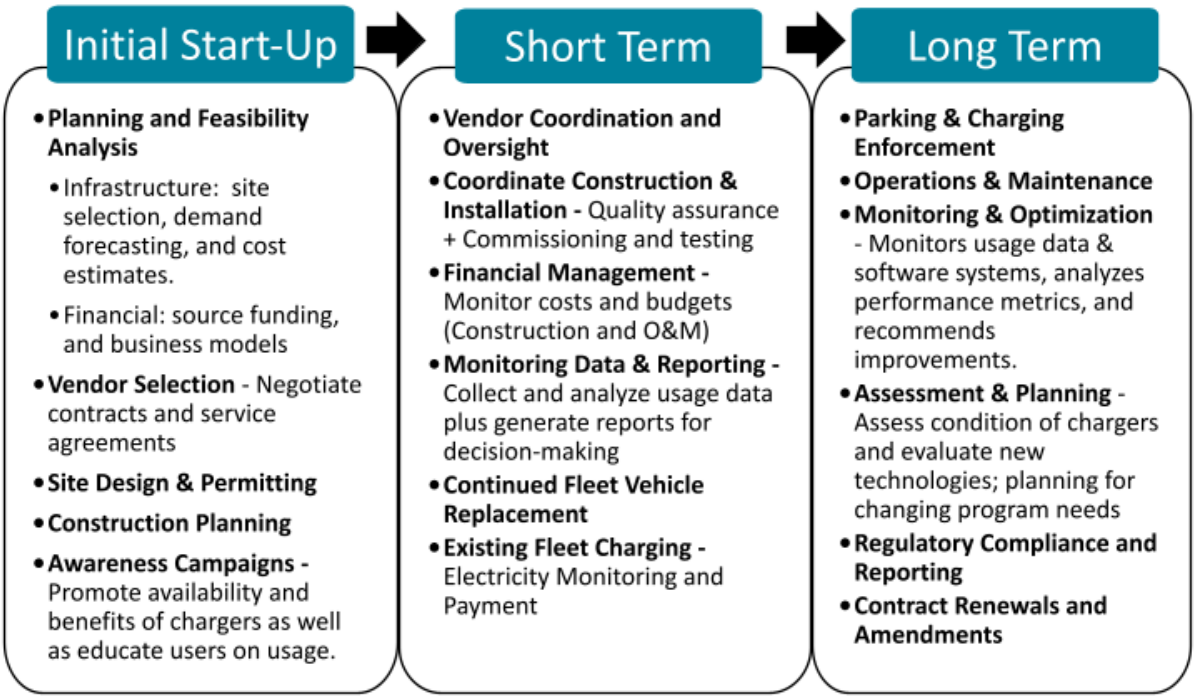
The State of Oregon's Clean Fuels Program reduces greenhouse gas emissions by providing incentives to further develop and commercialize low-carbon fuels. Public policy has established annual standards for Oregon's transportation fuel standards that decrease overtime. These decline incrementally each year with milestones in 2025, 2030 and 2035. Fuels that are lower than the annual standard generate credits, while fuels that are higher than the annual standard generate deficits. Credits can be sold to businesses that need them to comply, which in turn creates revenue for the businesses that provide the low-carbon fuels that generate credits. PCC currently participates as a fuel supplier through its electric vehicle fleet and generates credits. If sold, these credits could provide some funding towards maintenance or other EV program costs.

Managing EV Infrastructure

Needs

Even with a partnership model and experienced EV charging Vendor, there are many responsibilities that PCC will need to assign for the successful implementation and management of a charging system. Either existing PCC departments will need to absorb the additional responsibilities or new roles should be created. The aspects of the System will need to include expertise in the following:

- Parking & Transportation
- Facilities' Fleet
- Procurement and contracting
- Energy Management
- Project Management
- Sustainability
- Public Safety


Initial Start-Up
Planning and Feasibility Analysis
Infrastructure: site selection, demand forecasting, and cost estimates.
Financial: source funding, and business models
Vendor Selection - Negotiate contracts and service agreements
Site Design & Permitting
Construction Planning
Awareness Campaigns - Promote availability and benefits of chargers as well as educate users on usage.
Short Term
Vendor Coordination and Oversight
Coordinate Construction & Installation - Quality assurance + Commissioning and testing
Financial Management - Monitor costs and budgets (Construction and O&M)
Monitoring Data & Reporting - Collect and analyze usage data plus generate reports for decision-making
Continued Fleet Vehicle Replacement
Existing Fleet Charging - Electricity Monitoring and Payment
Long Term
Parking & Charging Enforcement
Operations & Maintenance
Monitoring & Optimization - Monitors usage data & software systems, analyzes performance metrics, and recommends improvements.
Assessment & Planning - Assess condition of chargers and evaluate new technologies; planning for changing program needs
Regulatory Compliance and Reporting
Contract Renewals and Amendments

Roles and Responsibilities

Activity	Funding Source(s)	Lead(s)
Initial Start-Up		
EV Transition Plan	Bond Funded	P&CC
Vendor Selection	Bond Funded	P&CC
Site Design and Permitting	Bond Funded	P&CC
Construction Planning	Bond Funded	P&CC
Awareness Campaigns	Bond Funded	P&CC

Short Term

Vendor Coordination and Oversight	-	P&CC (initiated), long-term handoff needed
Coordinate Construction and Installation	Bond Funded	-
Financial Management	General Fund	P&CC (initiated)
Monitoring Data and Reporting	General Fund	-
Continued Fleet Replacement	General Fund	-
Existing Fleet Charging Electricity Payment	General Fund	-

Long Term

Parking Charging Enforcement	-	Parking & Transportation
Operations & Maintenance Coordination with Vendor	-	FMS & Fleet
Monitoring and Optimization	-	Energy
Assessment & Planning	-	-
Regulatory Compliance and Reporting	-	Sustainability & Energy
Contract Renewals and Amendments	-	Procurement

EV Roadmap

NOW

Release RFP & Select Vendor
Establish basics for the program, including selection of standard stations, fee structures, and vendor agreements.

Establish Point(s) of Contact to Administer Program
Set up responsibilities to oversee implementation.

Begin Simple Stand-Alone Charging Projects
Construct stations in the ready-made spaces in the Cascade garage. Use Cascade/Southeast projects to pilot the scalability of the program.

Plan Next Fleet Vehicles for Replacement
Determine which vehicles to replace in the next two years and identify their preferred domiciles.

2026 - 2030

Share Progress & Next Steps
Engage with fleet users to support buy-in. Spread awareness for public charging.

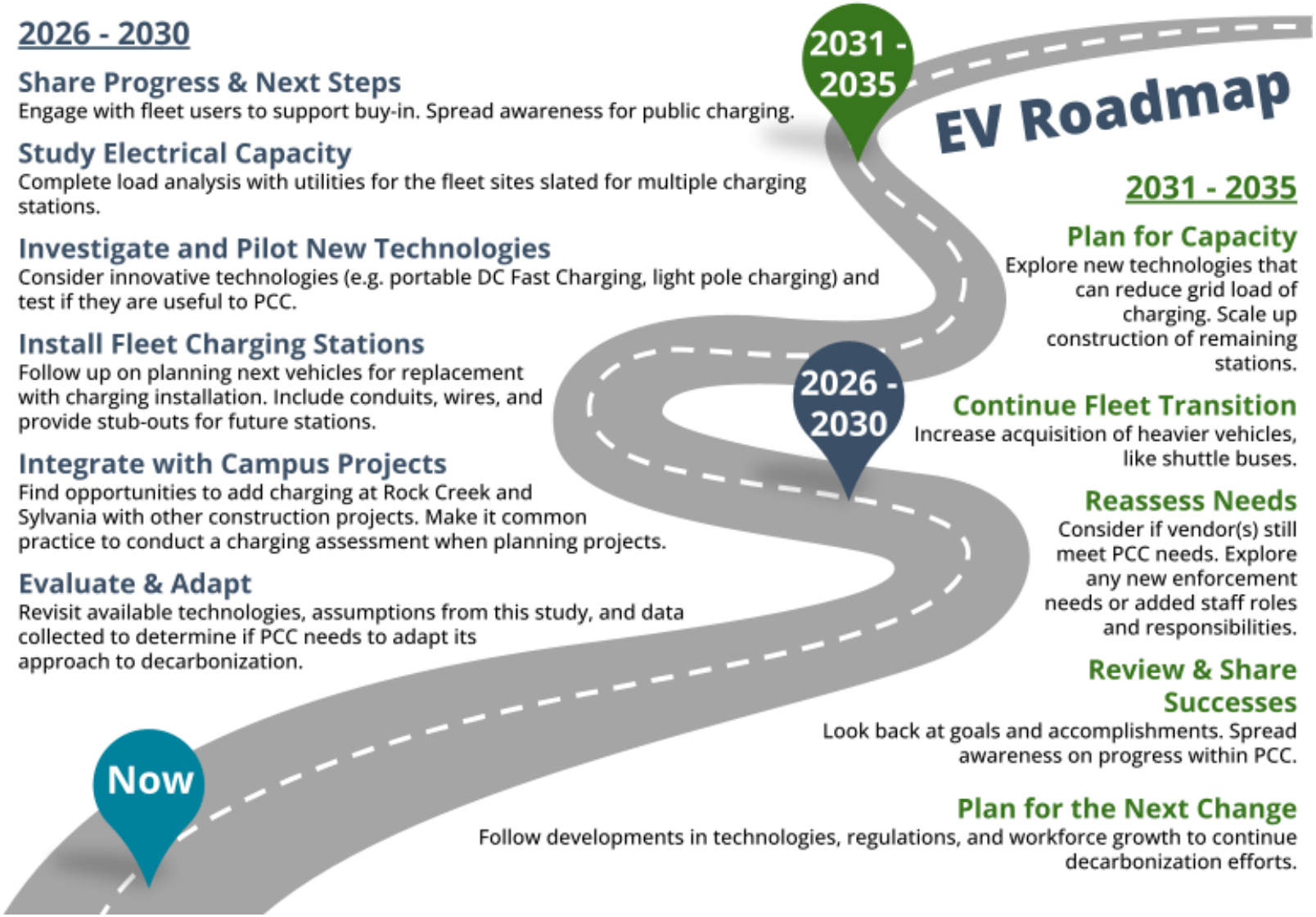
Study Electrical Capacity
Complete load analysis with utilities for the fleet sites slated for multiple charging stations.

Investigate and Pilot New Technologies
Consider innovative technologies (e.g. portable DC Fast Charging, light pole charging) and test if they are useful to PCC.

Install Fleet Charging Stations
Follow up on planning next vehicles for replacement with charging installation. Include conduits, wires, and provide stub-outs for future stations.

Integrate with Campus Projects
Find opportunities to add charging at Rock Creek and Sylvania with other construction projects. Make it common practice to conduct a charging assessment when planning projects.

Evaluate & Adapt
Revisit available technologies, assumptions from this study, and data collected to determine if PCC needs to adapt its approach to decarbonization.



2031 - 2035

Plan for Capacity
Explore new technologies that can reduce grid load of charging. Scale up construction of remaining stations.

Continue Fleet Transition
Increase acquisition of heavier vehicles, like shuttle buses.

Reassess Needs
Consider if vendor(s) still meet PCC needs. Explore any new enforcement needs or added staff roles and responsibilities.

Review & Share Successes
Look back at goals and accomplishments. Spread awareness on progress within PCC.

Plan for the Next Change
Follow developments in technologies, regulations, and workforce growth to continue decarbonization efforts.

Appendix A Existing Charging Station Data

Appendix B
Site Visit Notes

Appendix C
EV Survey Questions and Responses

Appendix D
Fleet Engagement Interview Notes

Appendix E
Previous Fleet Charger Siting Study

Appendix F
Charger Siting Checklist

Appendix G
Public EV Charging Demand Calculations

Appendix H
Public EV Charger Siting Details

Appendix I
Peer Institution Interview Notes

Appendix J
DC Fast Charging Options Near Campuses

Appendix K Business and Revenue Model Steering Committee Presentation

Appendix L
RFP Technical Scope and Requirements

Appendix M
CapEx Cost Range Calculations