City of Mercer Island

Electric Vehicle Charging Infrastructure Implementation Strategy

JUNE 2025

exp.

electrotempo

Message from the City

This **Mercer Island** Electric Vehicle Charging Infrastructure (EVCI) strategy is a comprehensive plan designed to support the widespread adoption of electric vehicles, starting with the City fleet. This initial transportation electrification strategy will be leveraged to support a community-wide transition to electric vehicles (EVs). This initiative aims to meet the City's ambitious carbon reduction goals set for 2030 and 2050 and supports the action in the 2023 Climate Action Plan to "**electrify the municipal fleet**."

These initiatives have been driven by many insightful discussions and strategic planning and will bring about **meaningful and positive changes** in the Mercer Island community. We look forward to working across the Island to articulate this vision and we're excited to see the impact our collective efforts will have for the Island's future. By investing in EV infrastructure, providing educational programs, and ensuring fiscal responsibility, Mercer Island is committed to creating a **sustainable, future-proofed transportation system**. This seamless implementation will not only reduce greenhouse gas emissions (GHG) but also promote a **healthier, more equitable** community for all residents.

Mercer Island leaders and staff bring passion and expertise to drive this transformation. By engaging with community members, conducting technical analyses, collaborating with City colleagues, and partnering with industry leaders, Mercer Island will seize this opportunity for innovation and future investment. Now is the time to re-envision energy services that uplift communities throughout our region, especially those historically excluded. We are ready, and our infrastructure, our people, our region, and our future stand to benefit. Mercer Island continues to be a **green jewel** on Lake Washington.

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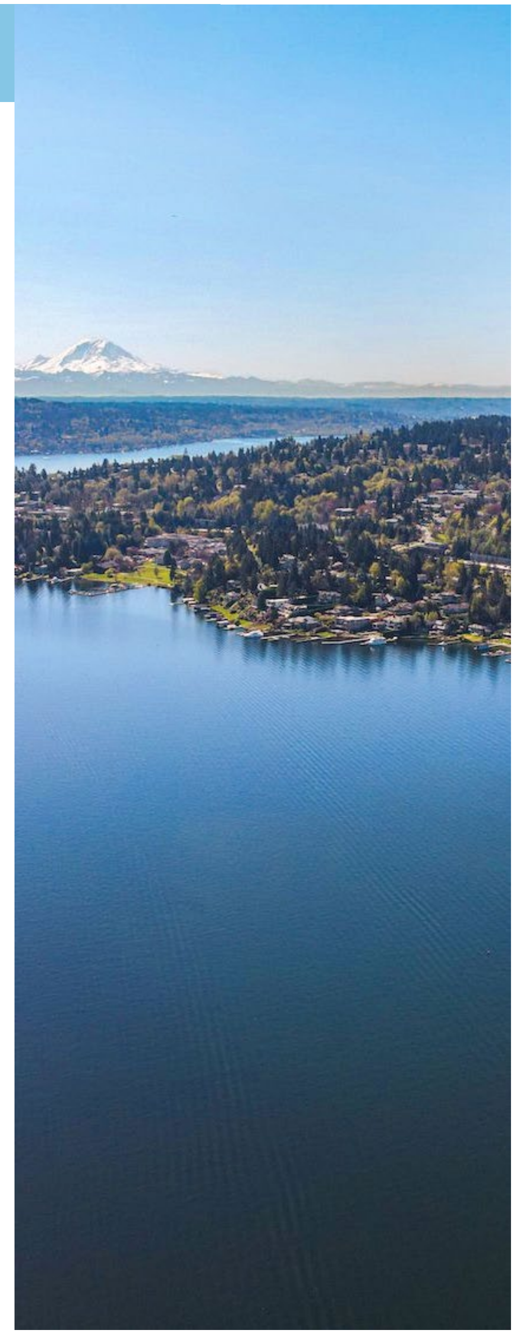


List of Acronyms

ACC I, ACC II, and ACT	Clean Vehicles Program
ACF	Advanced Clean Fleets
AFC	Alternative Fuel Corridors
BHEVs	Plug-in hybrids
BIPOC	Black, Indigenous, and People of Color
CCA	Climate Commitment Act
CEF	Department of Commerce's Clean Energy Fund
CWCC	Columbia-Willamette Clean Cities Coalition
DCFC	Direct-current fast chargers
DER	Distributed Energy Resources
DOE	U.S. Department of Energy
DRVE	Dashboard for Rapid Vehicle Electrification
DR	Demand Response
EV	Electric Vehicle
EV Council	Interagency Electric Vehicle Coordinating Council
EVCI	Electric Vehicle Charging Infrastructure
EVITP	Electric Vehicle Infrastructure Training Program
EVSE	Electric Vehicle Supply Equipment
FCA	Facility Conditions Assessments
FCEV	Fuel cell electric vehicle
FZER	Fleet Zero Emissions Roadmap
GHG	Green House Gas
ICE	internal combustion engine
K4C	King County-Cities Climate Collaboration
MHDV	Medium- and heavy-duty vehicles
MICEC	Mercer Island Community & Event Center
MSRP	Manufacturer's Suggested Retail Price
MTCO2e	Metric Tons of Carbon Dioxide equivalent
NEVI	National Electric Vehicle Infrastructure
NPV	Net Present Value
PSE	Puget Sound Electric
PSM	Public Safety and Maintenance
RMI	Rocky Mountain Institute
TCO	Total cost of ownership
TES	Washington Transportation Electrification Strategy
V2B	Vehicle-2 building
V2G	Vehicle-to-grid
VMT	Vehicle Miles Travelled
VPP	Virtual Power Plants
WA	Washington
WSDOT	Washington Department of Transportation
ZAP	Zero-Emissions Access Program
ZEC	Zero-emissions vehicle

1. Introduction

This Electric Vehicle Charging Infrastructure (EVCI) strategy is an action plan that lays out **fleet electrification** options to help Mercer Island's elected officials and staff to understand the **greenhouse gas (GHG) emissions reductions** and **costs/savings** associated with a range of potential future scenarios. The strategy lays out a phased deployment approach to facilitate and optimize fleet electrification. The content is practical and forward-thinking, focusing on potential barriers, such as grid impacts, and how to address them. Additionally, the plan aids in building internal education and **awareness**, coordinating with stakeholders, and understanding **industry best practices**. The strategy aligns with current state/local goals, plans, and initiatives.

The analysis was done with consideration of the schematic design in process for key municipal buildings including the **Public Safety and Maintenance (PSM) Facilities.** The new PSM building campus design considers space needs, organizes for efficient workflows, plans for future growth, and accommodates shared spaces for five City departments. There is a distinctive opportunity to adjust the design to **optimize the configuration for Electric Vehicle (EV) charging.**

The intentions of this EVCI strategy are to:

1) Ensure successful deployment of electrifying the municipal fleet, and
2) Build a foundation from which a community-wide EVCI can be developed.

In 2007, when the City began tracking emissions, the City's total emissions were estimated to be 154,000 Metric Tons of Carbon Dioxide equivalent ($MTCO_2e$). In 2022, as part of the City's Climate Action Plan process, Mercer Island emissions from 2007 were recalculated using modern protocols and more accurate data sets, leading to an updated estimate of **333,539 MTCO2e**. Transportation involving passenger air travel and on-road vehicles including buses (excluding passenger trains and light rail) leads to158,000 $MTCO_2e$.

The City has committed to **GHG reduction targets of 50% by 2030, 75% by 2040, and 95% by 2050** (compared to 2007 levels). Collectively, Counties and Cities are required to reduce statewide emissions by 95% by 2050 and offset the other 5% (to achieve **"net zero"** emissions). Mercer Island's Climate Action Plan also set a target to have 65% of new passenger vehicle sales and 20% of all registered passenger vehicles be EVs by 2030. **By 2050, the goal is for 100% registered passenger vehicles to be EVs.** These ambitious targets require significant investment in EV infrastructure. The transition to EVs should be timed to coincide with technological advancements to ensure the City can continue to serve its residents, especially **during emergencies**. The City will need additional charging equipment and capacity upgrades, and possibly backup power supply, to support a fully electrified fleet.

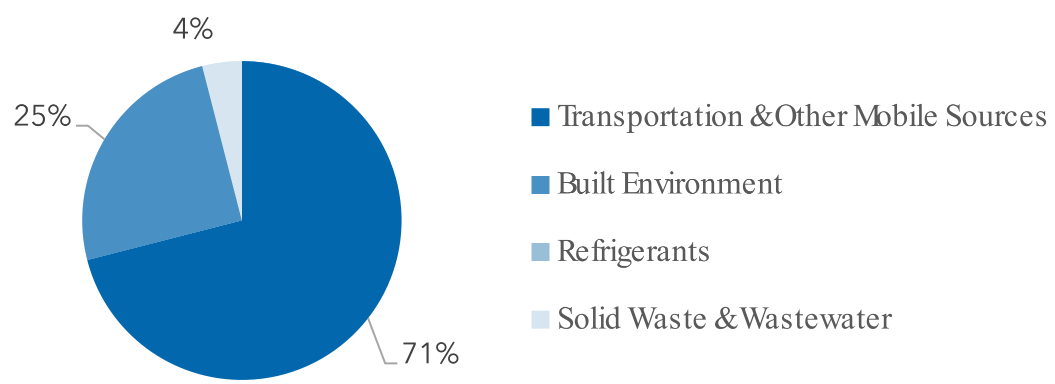
Key Aspects of Electrifying Mercer Island's Fleet:

- Meeting emissions reduction goals
- Data-driven scenario planning
- Community partnerships
- Feasibility and cost-effectiveness

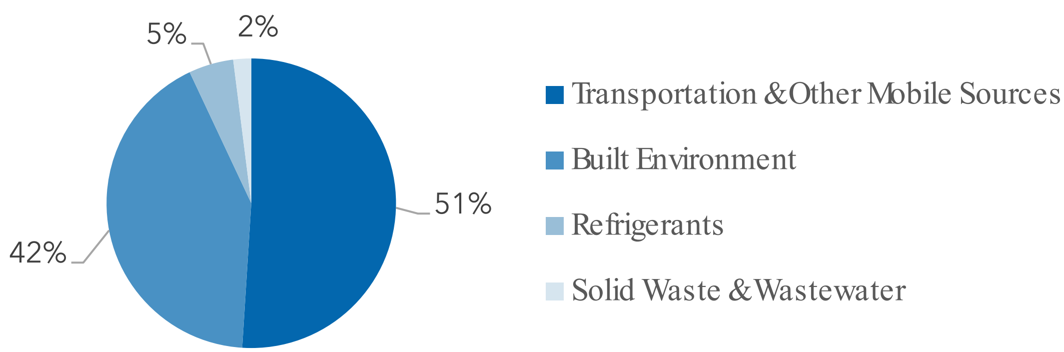
Mercer Island Transportation Emissions

The following graphs are drawn from the Mercer Island GHG dashboard, which is based on 2023 GHG emissions data. They show that **51% of total City emissions are from Transportation and other Mobile Sources.** In 2023, EVs represented 30% of all vehicle registrations in Mercer Island. Further transitioning to EVs is a key pathway to meeting targets for municipal and community-wide emissions reductions.

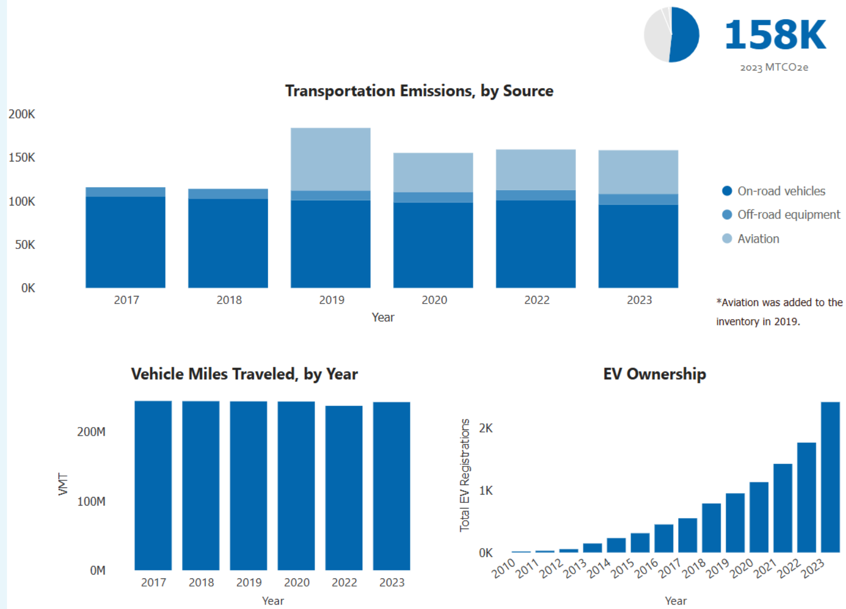
Municipal Operations Emissions, by Sector 2023



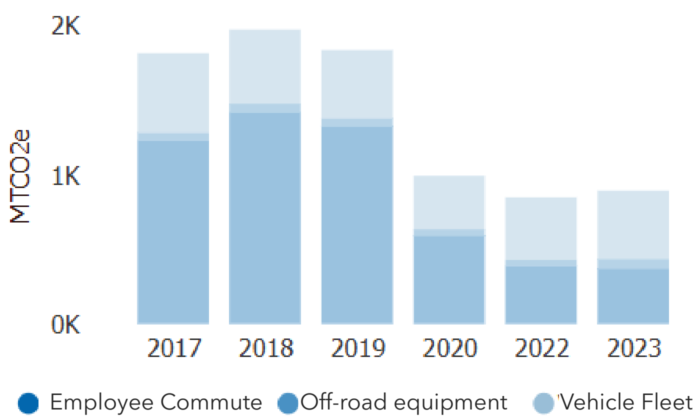
Community-wide Emissions, by Sector 2023



Community Action Plan Dashboard shows that EV ownership has grown exponentially, and vehicle miles traveled have slightly reduced



Municipal Transportation Emissions



Business travel emissions are removed from the transportation, emissions chart to maintain comparability to 2017 transportation emissions

Goal: to reduce overall community and municipal GHD emissions, integrate climate considerations into city, reporting and decision-making, and encourage community members to participate in local climate action.

Target: carbon neutral municipal operations by 2030

Given that **71% of municipal operations emissions are from transportation** and other mobile sources, fleet electrification is the main avenue for achieving **carbon neutral municipal operations by 2030.**

1.1 Background

This section provides policy, regulatory, and funding context at the state level. Washington is among the first states to develop a truly holistic plan for equitably transitioning to a predominantly electric transportation system. The **Climate Commitment Act (CCA)** establishes a comprehensive, market-based program to reduce carbon pollution and achieve the GHG limits set in state law. Passed in 2021, the Cap-and-Invest program went into effect in 2023 with the first emissions allowance auction held in February. In 2024, the CCA generated nearly $500 million in funding to invest in various climate and air quality projects, prioritizing **environmental justice**.

Expanding Washington's EV charging network is prioritized and funded by the CCA. An EV Charging Program dashboard shows that so far, **66%** of the EV funding applied for has been awarded. A total of **$93 million** is funding the installation of **5,780 charging ports** across the state, 10% of which are Direct-Current Fast Chargers (DCFCs); the remainder are Level 2 chargers. A large portion of this funding went to King County, where 197 of the 575 funded sites are located.

In 2022, the Washington Legislature passed Move Ahead Washington, which allocates $17 billion over 16-years to transportation projects intended to accelerate mode shift and electrification for the reduction of vehicle miles traveled (VMT) and associated emissions. It also established the Interagency Electric Vehicle Coordinating Council (EV Council) (RCW 43.392.030) and a nonbinding statewide target of reaching **100% new electric passenger vehicle sales by 2030 (2030 EV target)** – five years earlier than the 100% new zero-emissions vehicle (ZEV) sales requirement under ACC II. The EV Council publicly tracks key performance indicators and publishes an annual report.

The State of Washington established a comprehensive plan for transitioning to EVs in the **Washington Transportation Electrification Strategy (TES),** which aims to ensure market and infrastructure readiness for all new vehicle sales.

Overarching Goals and Targets:

- The state aims to meet the **2030 EV target** outlined in Move Ahead Washington.
- Washington seeks to ensure the transportation system decarbonizes, covering on-road and non-road vehicles, while prioritizing benefits for vulnerable populations.
- The state has a goal that all passenger and light-duty vehicles of model year **2030** or later that are registered in Washington State be zero-emission vehicles.

- The state has a mandate that all passenger and light-duty vehicles of model year **2035** or later that are registered in Washington State be zero-emission vehicles.
- Reduce emissions to **45% below 1990 levels by 2030** and achieve **net-zero emissions by 2050.**

Key Strategies and Policies:

- **Adoption of California's motor vehicle emission standards** under the Clean Vehicles Program (ACC I, ACC II, and ACT).
- Focus on **supporting the implementation of existing policies** by lowering upfront EV costs, making charging accessible, and increasing education.
- The state should focus on the levers it has readily available to promote transportation electrification, equity, and alignment with climate goals.
- **Electrifying on-road transportation** is a critical opportunity for the state to reduce GHG emissions.
- **Prioritizing** the electrification of MHDV (medium- and heavy-duty vehicles) through targeted policies and financial support.
- **Expanding access** to e-bikes and integrating them with electrified public transit.
- The state should continue to monitor and track the development of fuel cell electric vehicle (FCEV) technology and costs, and over time consider how these vehicles can contribute to meeting transportation sector emissions reduction targets.

Infrastructure Development:

- **Building a statewide network** of EV infrastructure with charging stations every **50** miles or less across the state highway network, including Washington State Ferries routes.
- **Prioritizing** the completion of EV charging along interstates I-5 and I-90 and other Alternative Fuel Corridors (AFCs).
- Using the National Electric Vehicle Infrastructure (NEVI) Formula Program to fund Electric Vehicle Supply Equipment (EVSE) along interstates and highways.

Workforce Development:

- **Investing** in workforce training programs across Washington and easing barriers to entry for Black, Indigenous, and People of Color (BIPOC), women, tribal citizens, low-income residents, and veterans.

Equity and Accessibility:

- The plan includes recommendations for a transportation equity baseline, an equitable distribution process, and a clear model for adaptive management.

Public Engagement and Education:

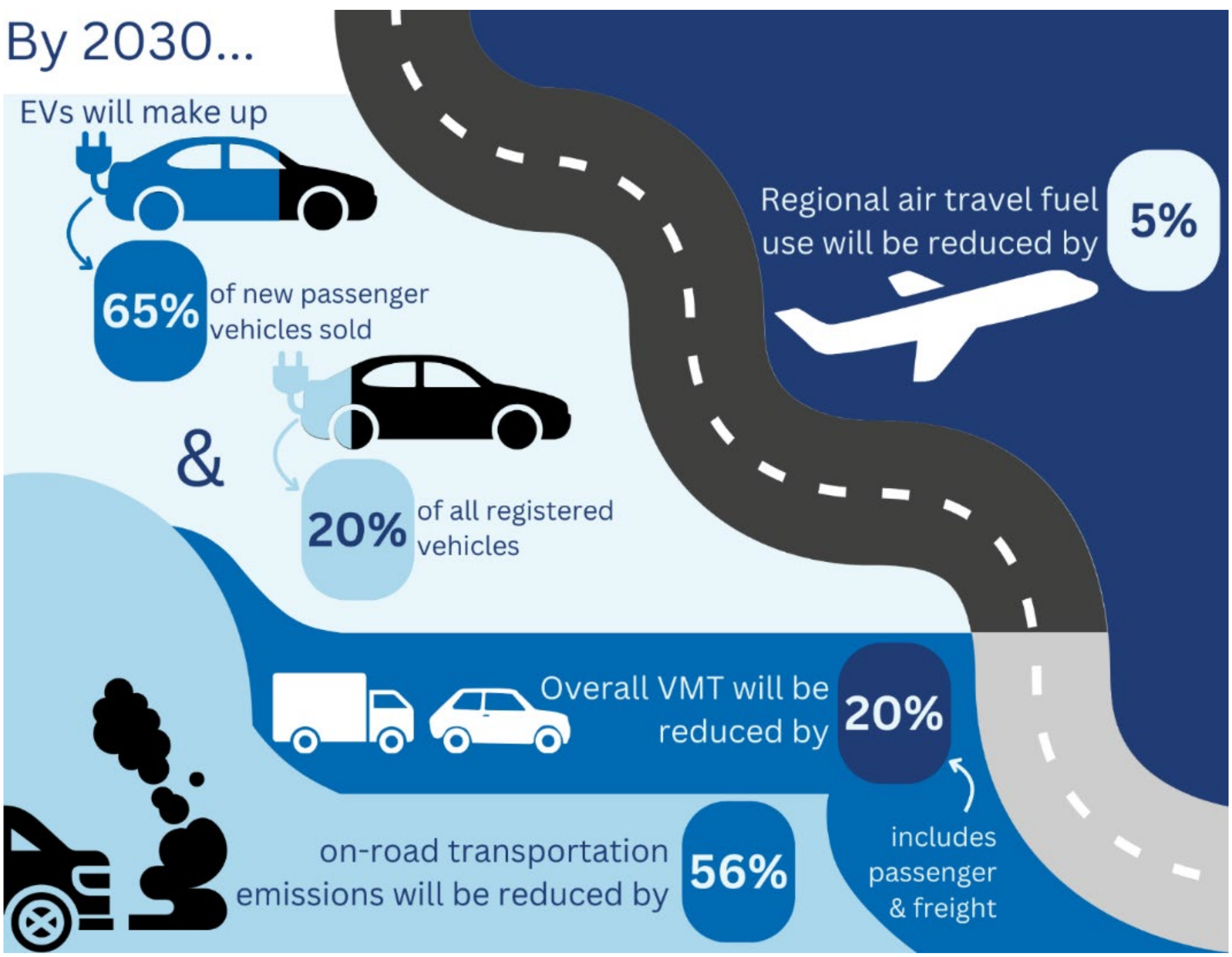
- Developing an EV Education Plan and Engagement Plan and conducting education and awareness campaigns to promote the benefits and affordability of EVs.

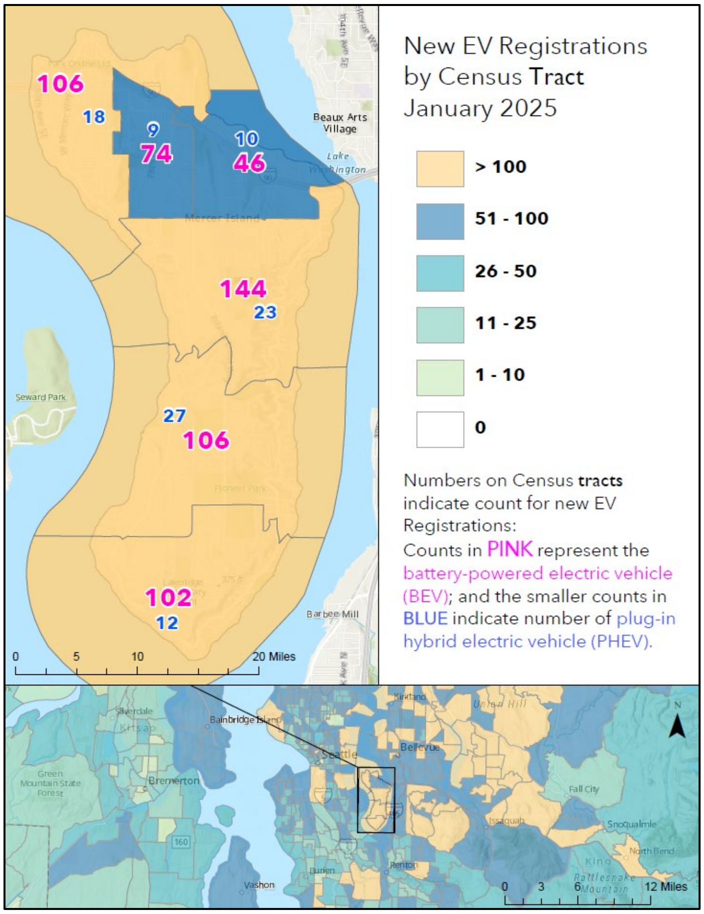
Specific Initiatives:

- **Zero-Emissions Access Program (ZAP):** The Washington Department of Transportation (WSDOT)'s ZAP grants provide funding for zero-emissions car-share pilot programs.

Mercer Island Targets:

Mercer Island is a founding member of the King County-Cities Climate Collaboration (K4C) and has been committed to reducing reliance on fossil fuels in the transportation sector with aspirational 2030 targets.





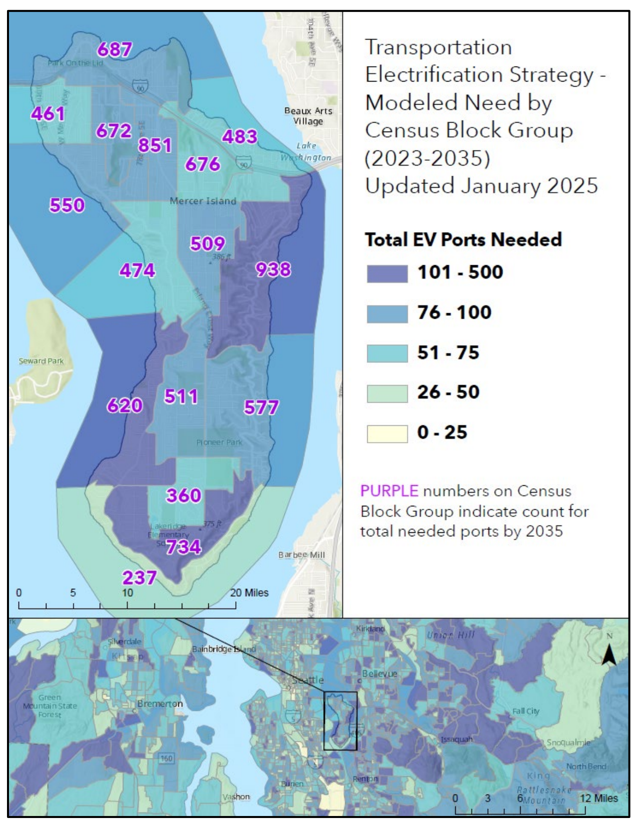
Mercer Island has had a significant increase in the number of EVs and plug-in hybrids (BHEVs) registered in 2023. That year, there were **677 new EVs registrations** in Mercer Island, 99 of which were PHEVs and 578 of which were battery - powered EVs. EV totals estimated at data.wa.gov count a current total of 2830 EVs in the City, half of which are Tesla models.

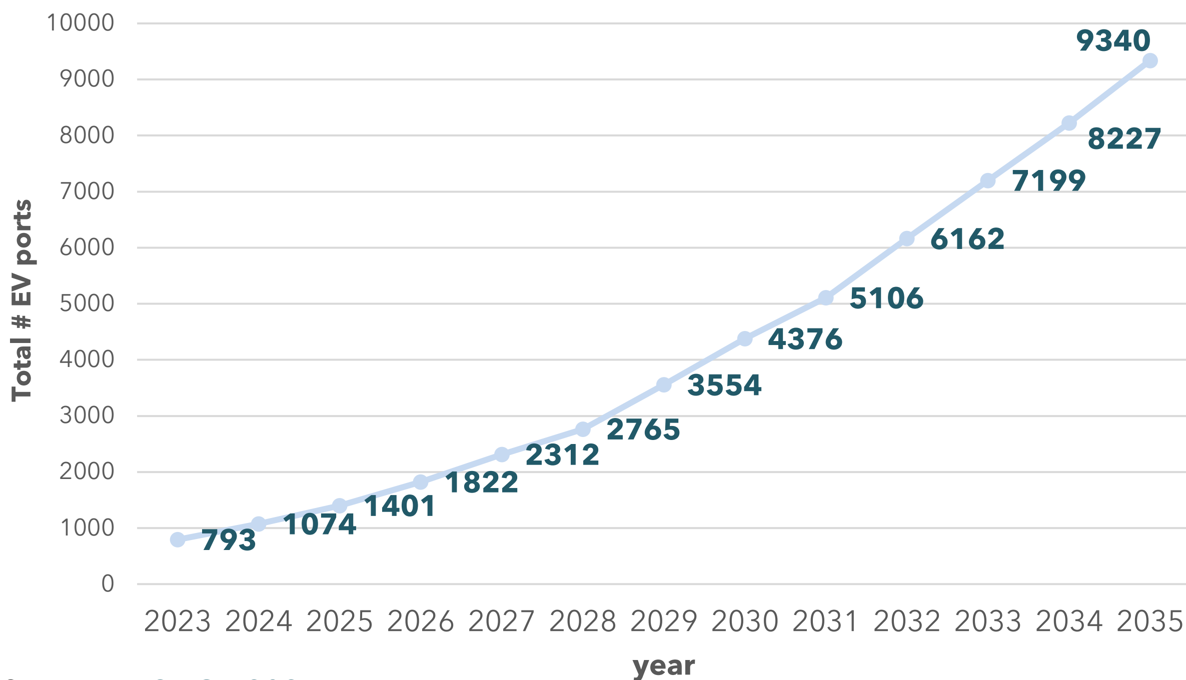
Map Source: WSDOT 2025

The Rocky Mountain Institute (RMI) Transportation Electrification Strategy (TES) modeled need for EV stations within Washington State (2023-2035).

The graph below shows how the results project Mercer Island's **total** EV charging to increase from 793 ports to 9340 ports by 2035. With this projection, 97% - 99% of the ports are **level 2 chargers**, and the majority of chargers are in **single family homes**.

Learn more at https://gridup.rmi.org/tool





Source: WSDOT 2025

Objective: Assess existing City Fleet and vehicle replacement schedule to determine a strategy for EV replacements over the next 5-25 years, with a focus on coupling the transition with new facility design.

Electric vehicles (EVs) have the potential to significantly reduce greenhouse gas emissions (GHG) that contribute to climate change and pose serious public health risks. Mercer Island recognizes the importance of this issue and, in 2025, began developing this EVCI Strategy. This strategy outlines a fleet electrification program with the goal of achieving a vision of a healthy future for our City: future-proofed, seamlessly implemented, fiscally responsible, educational, and sustainable. Mercer Island's fleet electrification requires a data-driven evolution that is supported by City employees. By considering equipment, infrastructure needs, costs, and rate options, experts developed this comprehensive plan that provides a clear picture of the necessary steps and investments

The timing is right for a unique opportunity to couple the City's fleet transition with facility upgrades which are currently being planned. It is more cost-effective and efficient to integrate EV charging infrastructure early in the design process, rather than post construction installation. The Fleet Transition Strategy has 4 sections:

2.1 Planning Context for Future Facilities and Upgrades: A timeline indicating project need and an overview of the current design plans for future City facilities and utilities upgrades.

2.2 Fleet Electrification Analysis: After an overview of the existing EV landscape within City operations, the ElectroTempo Fleets Module is introduced. The tool's methods for identifying and prioritizing EV transitions are described.

2.3 Fleet Electrification Plan Results: Provides recommendations for a phased electrification plan that will meet the City's 2030 and 2050 goals, with a range of year-by-year EV transition scenarios to compare costs estimates and feasibility.

2.4 Aligning Fleet Electrification with Construction Plans for Future Facilities: Exploring potential modifications for construction, such as solar panels to power EV charging and customized charging infrastructure.

Benefits of Fleet Electrification on Mercer Island

- ✓ Lower long-term maintenance and fueling costs
- ✓ Decreased emissions and carbon footprint to meet City and State targets
- ✓ Enhanced reputation as a leader in sustainability and innovation
- ✓ Greater community recognition for the fleet

2.1 Planning Context for Future Facilities and Upgrades

The City of Mercer Island is currently in the process of designing a new campus for City services, including designing a new Public Safety and Maintenance (PSM) building and acquiring an adjacent building to house additional City services. The timeline below describes the key events which led to the **New City Hall Building** and **PSM Facility** design:

- **March 1, 2024**: City Council directed planning for a new PSM facility on the City Hall Campus due to the limited state of the Public Works Building and City Hall.
- **May 21, 2024**: Design update introduced a new facility combining Public Works, Police, Emergency Operations, and IT & GIS.
- **Summer 2024**: Pre-design completed; expanded customer service area added to the plan.
- **Fall 2024**: Project entered schematic design phase.
- **February 4, 2025**: City Council received a design update on the PSM facility.
- **Q2 2025**: Funding discussions begin, including potential bond ordinance for voter approval.
- **Late 2025 / Early 2026**: Zoning review anticipated and to be discussed with City Council.

2.1.1 Current Opportunities for EV Charging to be Integrated into New Design

With Mercer Island's City Hall permanently closed and staff dispersed across multiple temporary locations, planning for the City's long-term infrastructure needs is critical, including its transition to an EV fleet. The City's evolving facility strategy presents an opportunity to collaborate with Puget Sound Energy (PSE) on assessing future energy capacity and ensuring that any new municipal facilities are designed to support EV charging infrastructure. Integrating these considerations now will help the City plan for sustainable operations, reduce long-term costs, and align with broader electrification goals. As discussions continue on permanent City Hall solutions, it is essential to communicate projected EV fleet charging requirements to PSE and to the architects, ensuring the upgraded electrical infrastructure can meet the City's future needs.

2.1.2 New City Hall Building Plans and Ongoing PSM Facility Design

The planned facility complex will house the City's Police Department and public works staff, providing a safe and functional facility that meets the urgent needs the City. The existing Public Works Building is well beyond its useful life and hasn't met the City's needs for some time. The closure of City Hall only exacerbated this challenge, displacing staff across all teams and the specialized functions of our Police Department.

On February 4, 2025, the City Council held a Special Hybrid Meeting to review the conceptual plans. Figure 1 and Figure 2provide maps of the existing facilities, showcasing various storage and maintenance areas for public works and safety equipment. This layout includes vehicle and equipment storage, raw materials storage, and facilities for the police department, highlighting the strategic organization of the site. The goal of the new campus is to improve the overall flow and reduce congestion.

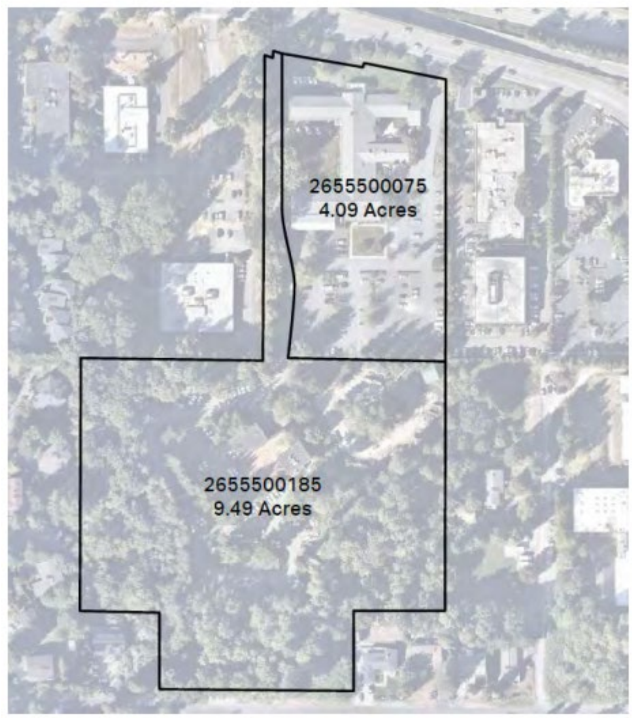


Figure 1: The existing City Hall Campus has two parcels: City Hall – 4.09 acres and Public Works – 9.49 acres

By strategically organizing the facilities and incorporating sustainable energy solutions, the new campus aims to create a more efficient and environmentally friendly environment. This will not only enhance operational efficiency but also provide a better working space for staff and a more streamlined experience for the community. The project site is considered a good candidate for roof-mounted solar power generation

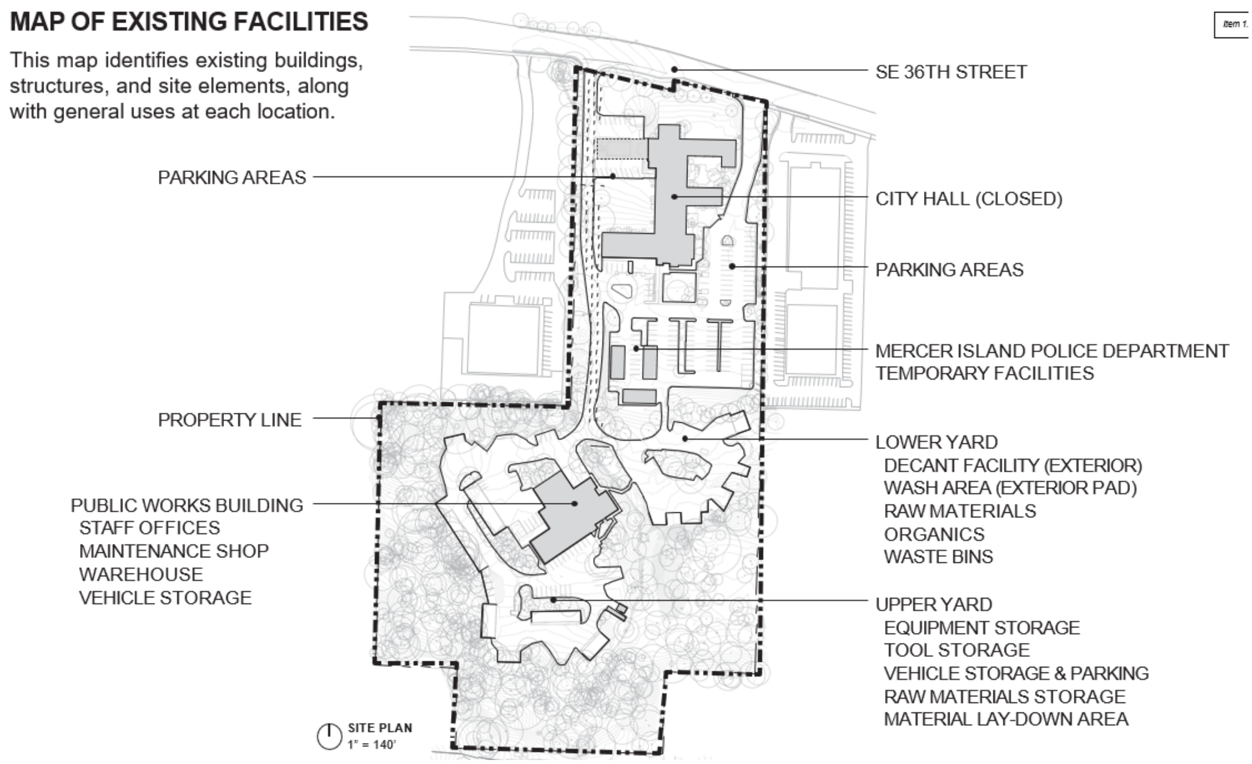


Figure 2: Map of the existing facilities in the Upper and Lower Yards Hall (Source: AB6604)

A key goal of this EVCI Strategy is to align the new PSM facilities with EV charging needs. The Covered Vehicle & Equipment Storage area, which spans approximately 25,000 gross square feet and accommodates around 60 pieces of equipment and vehicles, presents a prime opportunity for this. By potentially integrating roof-mounted solar panels, the project can support the electrification of the vehicle and equipment fleet, increase emergency resiliency, and reduce operational energy costs. Preliminary studies indicate positive benefits, though further analysis is needed to optimize the system's size and cost-effectiveness. Studies also show that EVs generally have less built-in fuel capacity compared to combustion vehicles, requiring more frequent refueling and increasing the impact of missed fueling opportunities. Additionally, EVs take longer to refuel, meaning emergency fueling at offsite locations will take longer and have a larger impact on critical operations. Solar power when paired with battery storage systems can extend the life of vehicle batteries by providing consistent charging during grid outages, preventing deep discharges, and reducing the need for frequent replacements. The combination of solar panels accompanied by battery storage addresses the unique challenges of EV fleets, ensuring efficient and resilient operations.

The integration of solar power into Covered Vehicle Storage is particularly promising if the Council were to choose to invest in it. Figure 3 shows the potential balance that would be available to provide power for fleet electrification or other opportunities. The facility's roof-mounted solar panels could generate up to 300,000 kWh of energy annually. While some of this energy production would be needed for other energy uses, up to 270,000 kWh could be fully utilized for EV charging, effectively supporting the electrification of the vehicle and equipment fleet. By leveraging this significant energy production, the project can ensure that the new complex meets its EV charging needs, further enhancing sustainability and operational efficiency.

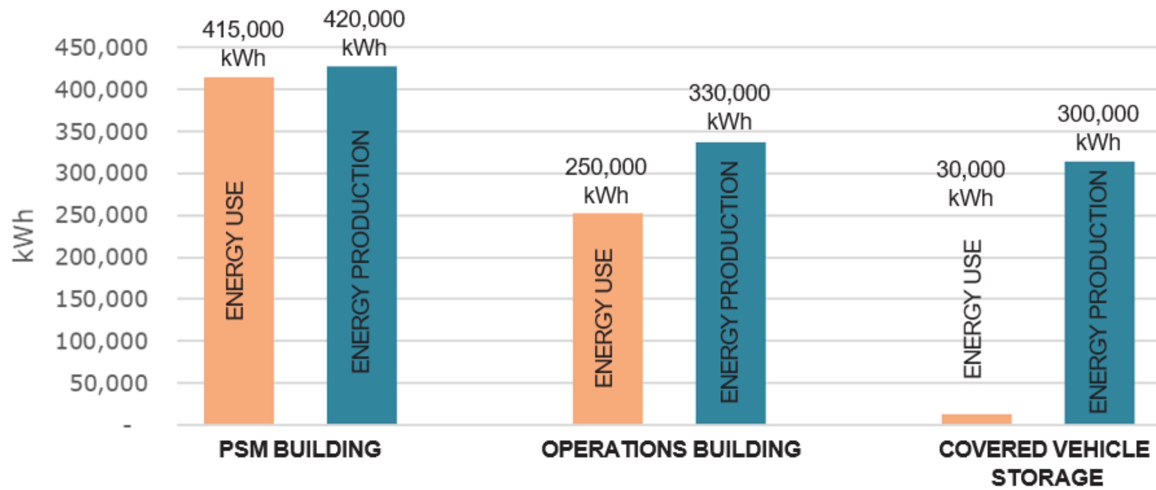


Figure 3: Power generation potential for rooftop solar on three proposed buildings (Source: AB6604)

To minimize future disruption, the plan is to prepare for full electrification by installing the necessary infrastructure, such as conduits for EV chargers, even if the technology isn't currently available, eliminating the need for excavation when the infrastructure is ready for installation. The project intends to have strategically placed charging ports suitable for various vehicle charging locations. This creates the opportunity of incorporating solar panels over parking spaces to support EV charging.

2.2 Fleet Electrification Analysis

2.2.1 Overview

While EVs generally have higher upfront costs compared to traditional **internal combustion engine (ICE)** vehicles, they tend to be significantly more affordable to operate overtime (Figure 4). For local governments, budget considerations often determine the feasibility of fleet electrification. For instance, as Mercer Island funds fleet upgrades in part by auctioning old vehicles, the significant depreciation in retail value for EVs when compared to ICE vehicles of the same age will require a reassessment of how fleet upgrades are financed. The **financial benefits of EVs** stem primarily from lower fuel and maintenance expenses, but actual savings depend on electricity rates and charging strategies. There are also co- benefits including the social cost of carbon, community resilience, public health, and air quality.

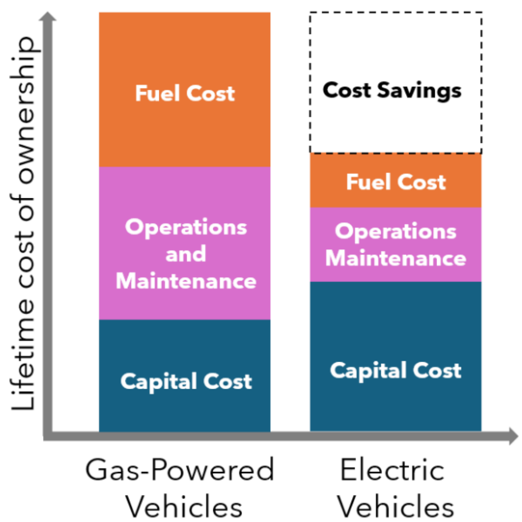


Figure 4: Long Terms Savings sources for EVs (Reference: Atlas Public Policy, 2024)

For fleets, energy costs can vary based on utility pricing structures, including **demand charges and time-of-use rates.** Charging multiple vehicles simultaneously under a high-demand rate can lead to high electricity costs, while charging during peak pricing periods further increases expenses. To **optimize savings,** managed charging strategies can be implemented to minimize peak demand and prioritize off-peak charging when electricity rates are lower.

To assist in financial decision-making, several open-source tools are available. The Dashboard for Rapid Vehicle Electrification (DRVE), developed by Atlas Public Policy and the Electrification Coalition, is a Microsoft Excel-based tool that enables users to assess fleet electrification strategies. By entering basic fleet data—ideally sourced from an inventory assessment—along with key operational inputs, agencies can generate tailored insights on procurement options, ownership models, and EV charging infrastructure needs. Similarly, the Alternative Fuels Data Center offers a Vehicle Cost Calculator to help compare the economics of different vehicle types. Mercer Island's municipal fleet consists of 129 vehicles, supporting public safety, infrastructure maintenance, and community services (Figure 5).

2.2.2 Mercer Island's Current Fleet Composition

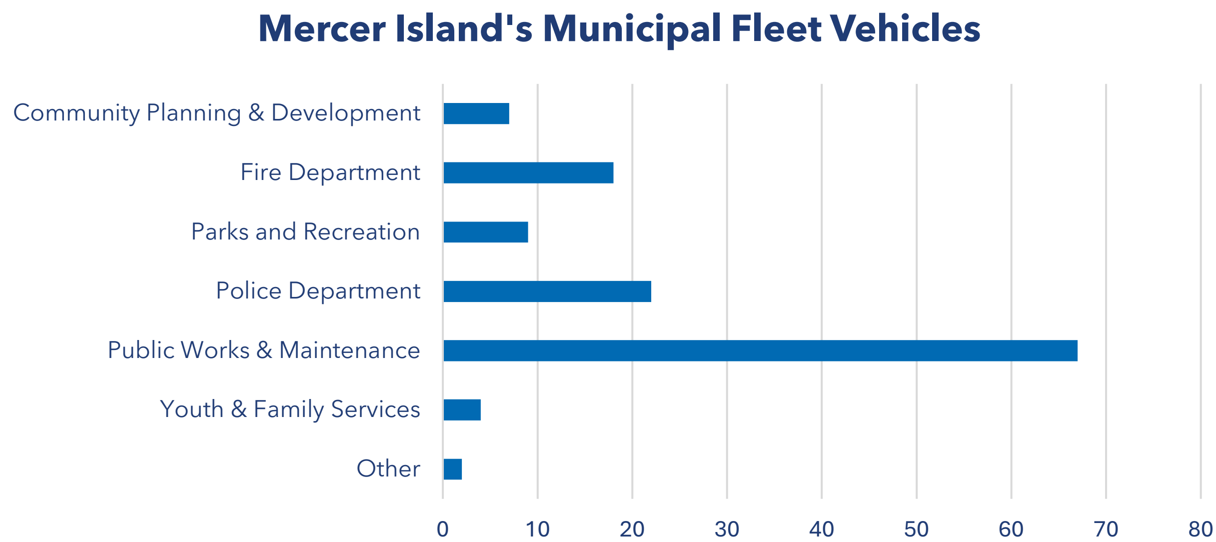


Figure 5: Mercer Island's Municipal Fleet Vehicles

The Mercer Island fleet includes several EVs and multiple hybrid models, reflecting the City's commitment to sustainability while ensuring essential municipal functions remain efficient and well-equipped.

High level summary of EVs in City fleet:

- 129 vehicles total
- Electric: 9 (4 Nissan Leaf)
- Hybrid: 5 (4 Ford Escape SUVs, 1Prius)
- Diesel: 20

2.2.3 Introduction to ElectroTempo

The methodology for mapping analysis in this strategy is rooted in an online data platform provided by ElectroTempo. ElectroTempo is a software firm that specializes in helping to de-risk EV infrastructure investments. The platform uses long-term data trends such as live, work, and travel patterns to accurately assess costs and benefits, risks, and infrastructure needs for rapid EVCI adoption at any scale.

Using travel demand data to develop comprehensive growth and demand projections, ElectroTempo's suite of predictive analytics allows the evaluation of current and future EVCI needs.

- The **Fleets Module** allows users to evaluate and optimize EV options for on-road vehicles at fleet depot sites.
- The **Hubs Module** enables site evaluations which assess individual sites based on site characteristics which would be ideal for EV charging hubs. There are a set of assumptions that can be modified to support specific site needs and to optimize charging scenarios.

2.2.4 The ElectroTempo Fleets Module Customized for Mercer Island

The ElectroTempo Fleets module creates a digital twin of the existing fleet and associated operations to build EV transition scenarios. To create a digital twin, the City of Mercer provided detailed information on the current fleet including details on vehicle make and model, purchase and replacement dates, annual mileage estimates, charging strategy, and home base. Further details on daily operations including daily trip logs and fuel usage can be incorporated to further optimize charging assignment schedules.

The electrification plan consists of three parts:

1. Methodology, input data, and key assumptions to accurately represent the current fleet
2. Full electrification results to provide total cost of ownership (TCO) and energy requirements
3. Transition plan to provide year by year guidance on vehicle replacement and charger installation

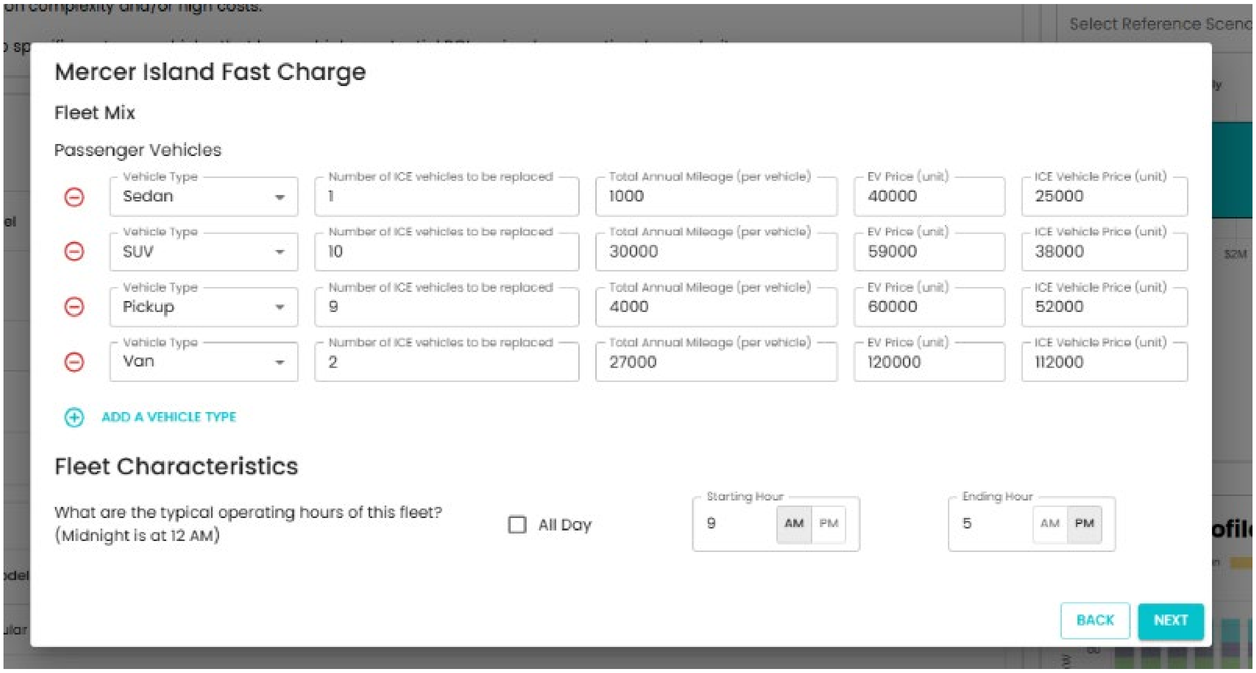


Figure 6: ElectroTempo Fleet Creation Tool

2.2.5 Methodology

The electrification plan provides an overview of the fully electrified fleet plus a transition strategy that incorporates vehicle replacement schedule and on-the-ground constraints such as building construction timelines. The transition plan provides a year-by-year vehicle replacement list, a charging strategy for each vehicle, the associated charger and energy requirements, recommendations for equipment (vehicles and chargers), and cost components (estimated vehicle costs, estimated charger equipment and installation costs, and maintenance costs).

Based on the estimated construction timeline of the PSM and City Hall sites, practical constraints have been incorporated but can be adjusted based on considerations and alternatives discussed below. The modular analysis can take as an input additional practical considerations based on review and feedback from the City of Mercer Island. These adjustments involve delaying vehicle replacements or replacing vehicles with ICE models and then replacing them with EVs in the following replacement cycle (10 years or more) once chargers are available. This provides the updated vehicle replacement plan, with year-by-year recommendations for vehicle replacement, charger and energy requirements, equipment recommendations, and cost estimates.

Input Information and Assumptions

The fleet information was obtained from the City of Mercer Island. The initial dataset contained 131 vehicles and seacraft across multiple sites. After narrowing down the sites in scope, and on-road vehicles slated for replacement, the fleet assessed for this strategy is reduced to62 vehicles. 55 vehicles will reside at the future City Hall/PSM site, while seven vehicles are located at the Mercer Island Community & Event Center site. The fleet information includes years of procurement, year of replacement, current mileage, vehicle class, as well as other information.

Figure 7: The Mercer Island Community & Event Center (MICEC).6

Assumptions

There are key operational assumptions in this initial modeling phase. These will be refined and adjusted in the model after receiving additional operational information.

- Emergency vehicles, like police vehicles, and heavy-duty vehicles, like box trucks and tractors, require charging using Level 3 chargers (DCFC, 150 kW).
- Remaining vehicles can charge with Level 2 chargers (19 kW)
- Each vehicle has a dedicated port on a shared charger. Further charger assignment optimization can be done after receiving better operational data
- Shared chargers lead to lower charging speeds for both charger ports
- The police fleet works in two 12-hour shifts with intermittent fast charging
- The other fleets are expected to be in operation between 8AM and 6PM. The 6PM-8AM window is the charging window without personnel available to move vehicles around once they are done charging
- All vehicles are replaced every 10 years or more
- Vehicles that do not have an electric option now will be replaced with an EV in the next replacement cycle
- Planned vehicle replacement can be delayed by a year for electric capacity or vehicle availability
- Prices for vehicles and chargers are based on current manufacturer's suggested retail price (MSRP) but will likely need to be refined based on required

specifications and available prices. To support cities and counties, Washington has a state website, the Contract Automobile Request System (CARS), which acts as a contract for vehicle procurement. It also supports and informs vehicles informs choices when looking for replacements to transition to EVs.

2.3 Fleet Electrification Plan Results

2.3.1 Total Cost of Ownership Analysis

Total Cost of Ownership (TCO) analysis: ElectroTempo conducted a TCO analysis for each vehicle to determine if an electric or ZEV replacement is appropriate. This analysis includes lifecycle costs associated with the vehicle, such as purchase price, maintenance, fuel, and potential incentives.

The overall fleet electrification plan results in an ROI positive net savings of $1.2 million. Estimated capital expenses for full electrification will be ~$5.93 million, an increase of ~2.78 million, but the 12-year operational savings will be ~$4.00 million. These savings are primarily realized through fuel cost reductions as well as lower maintenance and downtime expenses.

NOTE: This analysis also does not currently include electrification of small utility vehicles or tractors. There are no sufficient electric farm tractors on the market and small utility vehicles do not require additional charging ports.

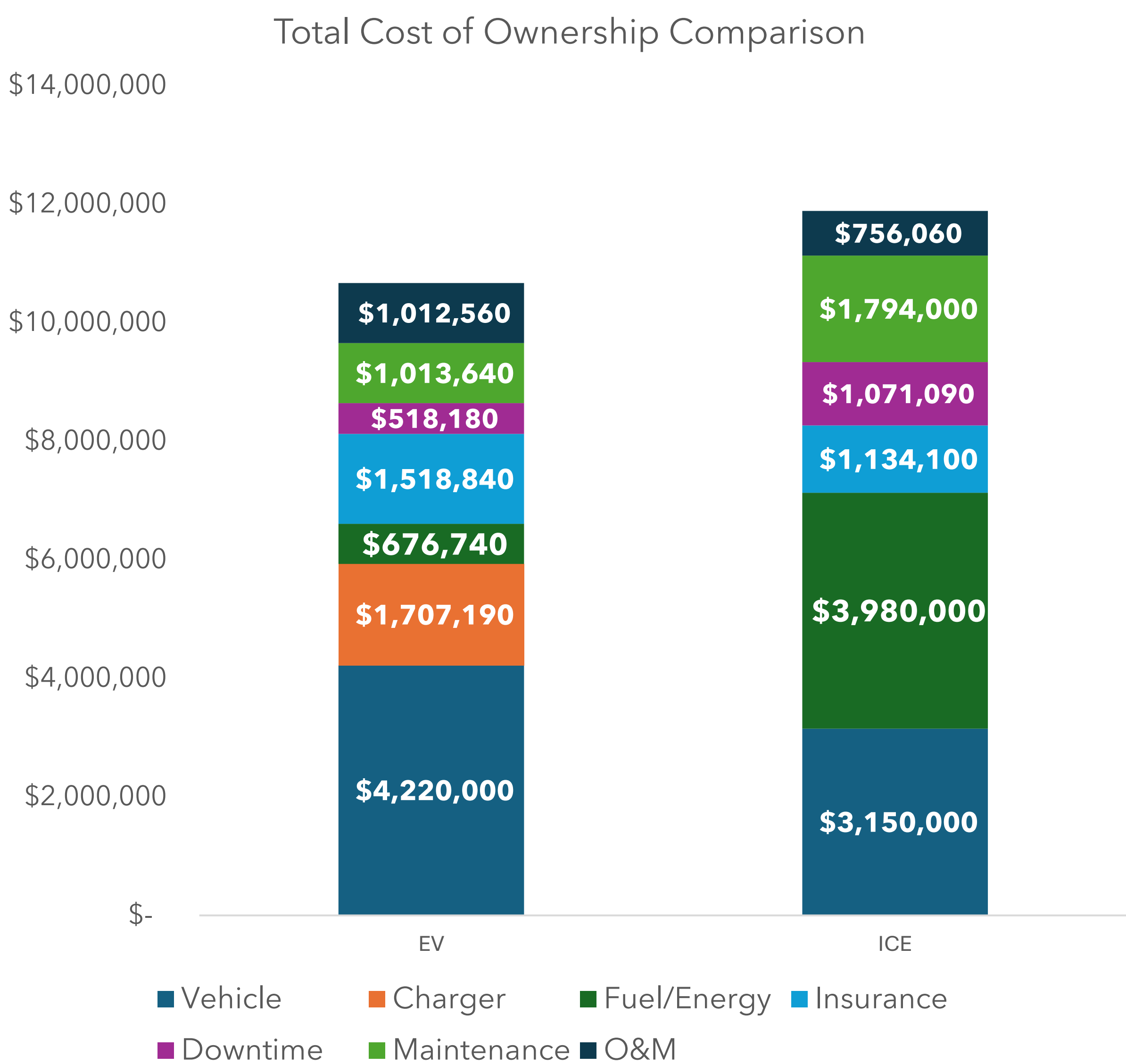


Figure 8: Total Cost of Ownership Analysis shows savings for the EV transition scenario.

The fleet is divided into two groups based on charging requirements:

1. **Slow charging fleet** for all light-duty and non-emergency vehicles (24 vehicles)
2. **Fast charging fleet** for all emergency vehicles and medium- and heavy-duty vehicles (MHDV)(27 vehicles)

The slow charge fleet has an overall TCO savings of ~$2.07 million while the fast charge fleet costs an additional ~$854k when compared to ICE replacements, which when combined, result in the ~1.2MM USD savings mentioned above.

2.3.2 Components of Total Cost of Ownership

The assumptions for the below components of the total cost of EV ownership is sourced from the U.S. Department of Energy (DOE) Alternative Fuels Data Center: Operation and Maintenance for Electric Vehicle Charging Infrastructure. These national estimates provide operational considerations to be aware of, including electricity and maintenance costs.

Vehicles: Each ICE vehicle is assigned a comparable EV replacement vehicle. Each vehicle is assigned a price.

Charger: Vehicles are assigned to chargers based on charging strategy and schedule. Each charger can charge up to two vehicles simultaneously by default. The price includes the cost of the charger and installation costs.

Fuel/Energy: The annual energy required to meet VMT. Assumes 0.05 $/kWh, 2.38 $/kW, and $4 per gallon.*

Insurance: 3% of purchase cost per vehicle per year

Downtime: 5% of purchase price for ICE vehicles and 3% for EVs

Maintenance: Vehicle and charger maintenance costs (5% for ICE and 3% for EVs) plus $400/year per charger.

Other O&M: Other operational and maintenance costs associated with vehicles and chargers (2% cost of capital)

**Fuel and energy cost assumptions do not account for generating power locally on-site using solar panels, which would result in further cost savings.*

2.3.3 Transition Plan

The transition plan is based on vehicle replacement years and an ongoing 10-year replacement schedule. Our approach allows for modular adjustment based on site and market realities that may impact installed charger availability and available EV models.

ElectroTempo developed a transition plan for each site.

PSM/City Hall

The City Hall site will undergo extensive renovation, which constrains the available charging capacity. Two options for EV transition have been prepared to allow for progress towards electrification goals while working around the constraints of the construction project. Scenario A assumes that no fleet vehicles that will need to charge at the PSM campus will be replaced with EVs until after construction has been completed and permanent charging solutions are available. Scenario B assesses how the City could replace a subset of vehicles prior to construction being completed and then ramp up the full EV transition after that point.

Scenario A: City Hall Transition Plan for 2030 and Beyond

With the following vehicle replacement schedule for an average lifetime of 10-years for each vehicle, we obtain the constrained vehicle electrification plan as shown below. The renovation is planned to be completed in 2030, so vehicles slated for replacement in 2029 and beyond are great candidates for electrification. All vehicles except the utility tractor have electric equivalents available today. For the utility tractor, the replacement year is set for 2037, by which time a suitable replacement should be available. The graph in Figure 10 shows the proposed ICE to EV transition purchases for each year.

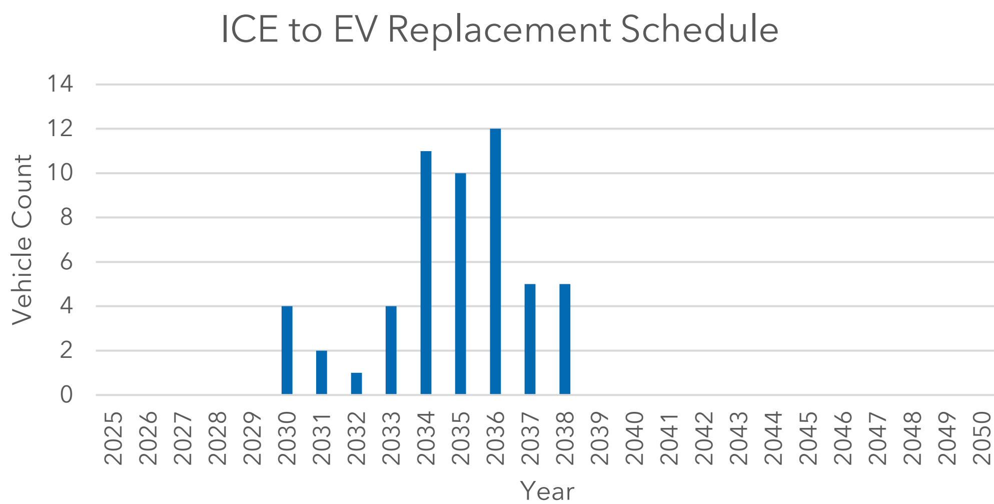


Figure 9: potential ICE to EV transition purchases for each year starting in 2030

Full electrification will require 55 charger ports, assuming smart chargers that can switch charging between ports. This would also eliminate the need for personnel to be on-site to swap vehicles after hours. Electrification will require 2.25MW of power, including the slower L2 chargers with a rating of 19.2kW and fast chargers with a rating of around 200kW. Note that this does not involve charger assignment optimization, which will be conducted after obtaining better operational data. Charger assignment optimization can lower the power requirements by sharing charge between vehicles and pairing vehicles to a charger optimally.

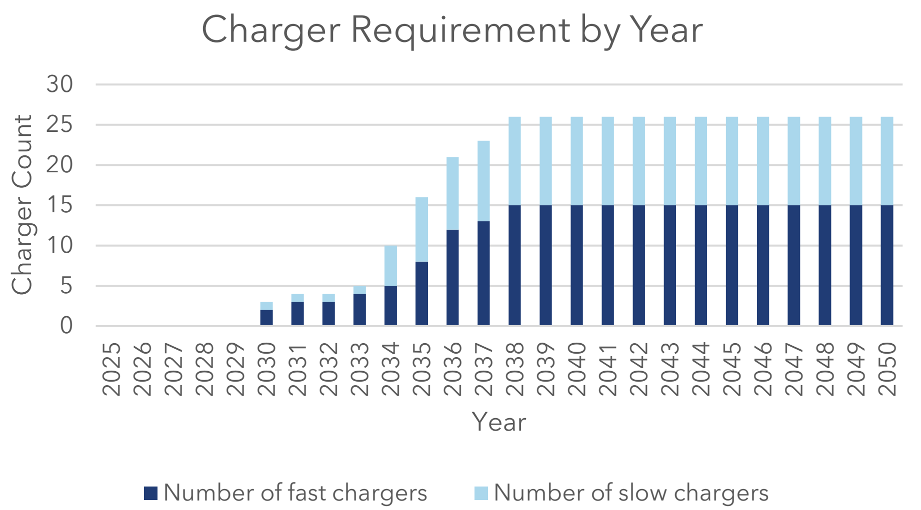


Figure 10: PSM Campus Counts for slow and fast chargers reach their maximum in 2037

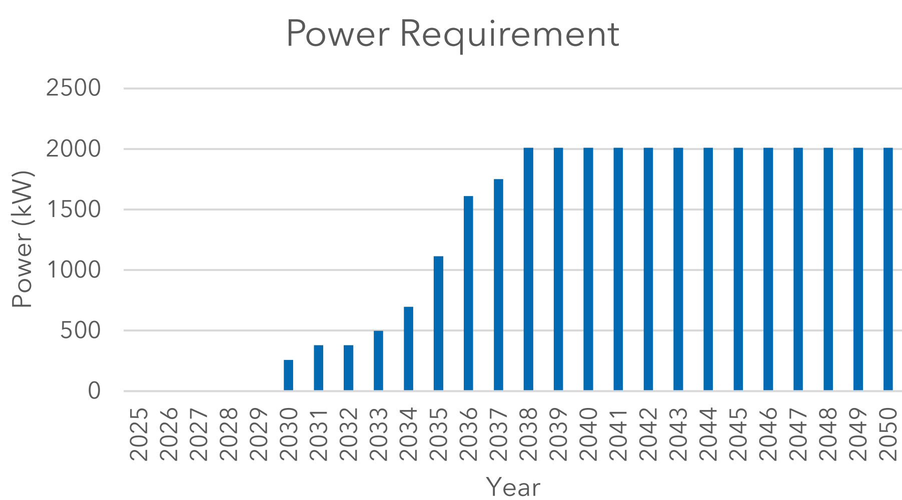


Figure 11: PSM Campus power requirements levels off in 2037

Adhering to this plan will mean that over 50% of ICE vehicles are replaced with EVs by 2034, and all are electrified in 2037. Notably, this schedule is backloaded due to the upcoming replacement cycles in 2025-2027 that comprise a large part of the fleet.

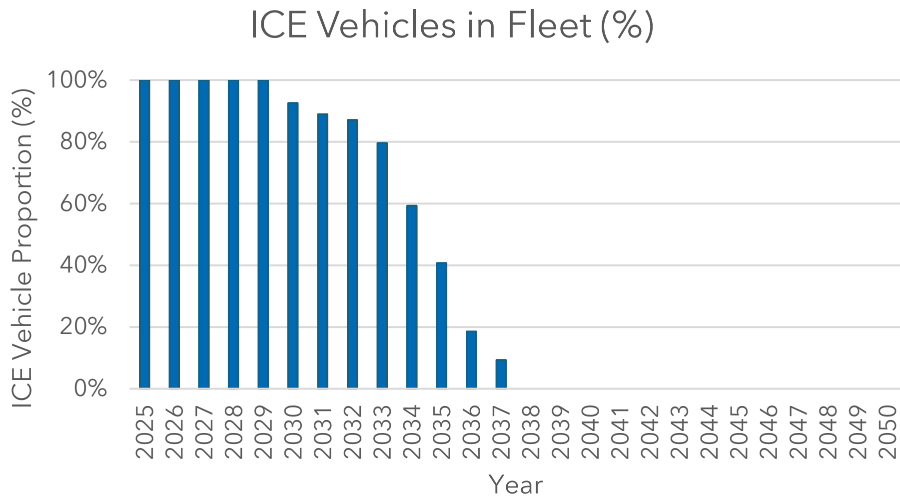


Figure 12: ICE vehicles are phased out by 2038

Scenario B: City Hall Transition Plan with L1 Charging During Renovation

Given the upcoming construction and associated unavailability of charging infrastructure, the following plan prioritizes vehicles by risk of electrification and selects the low-risk vehicles. Specifically, this plan prioritizes vehicles by their emergency/non-emergency use status as well as average mileage derived from the current operational data. This results in thirteen vehicles being electrified before 2030 compared to Scenario A. ICE to EV Replacement Schedule

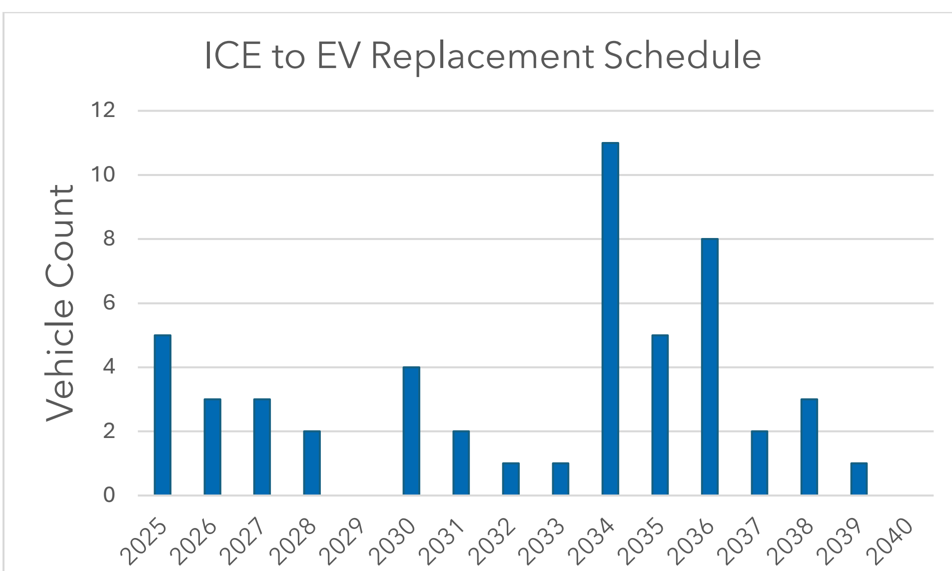


Figure 13: Potential ICE to EV transition purchases for each year

Until 2030, the vehicles being electrified will use L1 chargers at the temporary parking location, or L2 chargers from the currently available and installed chargers. These six chargers are being used for personal staff vehicles and can serve as backup in the event of L1 charging unavailability. For 2030 and beyond, we expect the availability of fast chargers and therefore recommend the following charger requirement schedule.

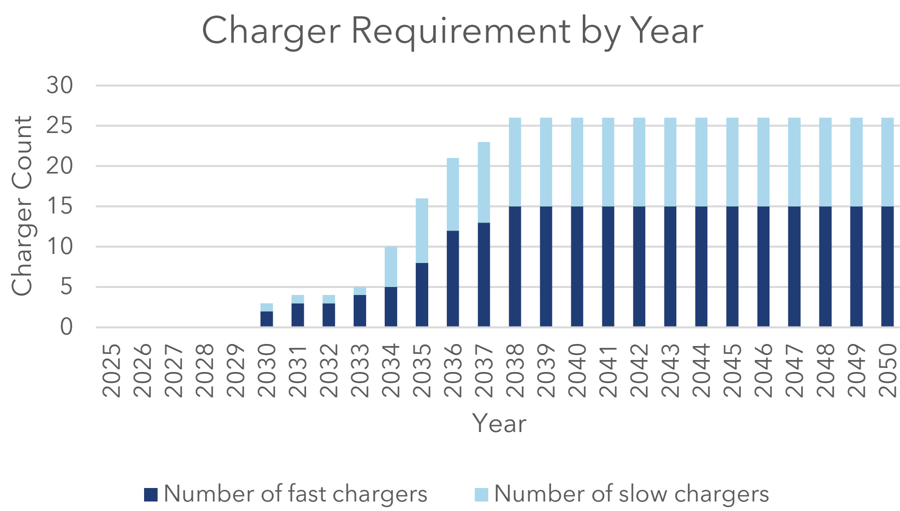


Figure 14: City Hall charger counts for slow and fast chargers

With the lowest mileage vehicles on L1 charging, the power requirements also drop slightly in early years, with these vehicles using L2 chargers after renovation resulting in same peak power requirement of 2.25 MW in later years.

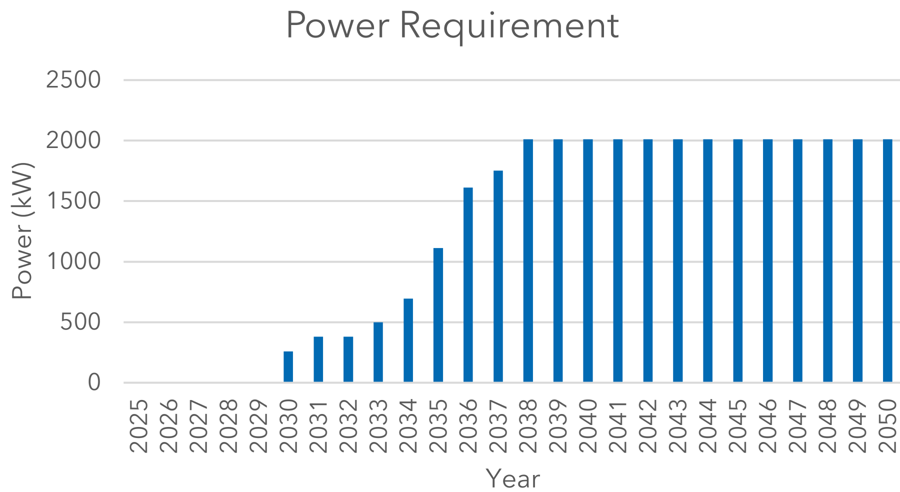


Figure 15: Power requirement for City Hall

The 10-year TCO is slightly lower than Scenario A due to the lower demand charge from L1 charging in the initial years. Net Present Value (NPV) is a financial metric used to determine the profitability of an investment or project. With this scenario, the NPV shows significant difference due to the larger upfront investment in lower mileage vehicles. These vehicles do not necessarily generate enough NPV savings from lower operational costs to offset higher initial expenses, and by extension, also contribute marginally to emissions goals due to the lower mileage driven. Therefore, prioritizing the electrification of these vehicles results in a lower NPV over the planning horizon.

Additional Considerations

It may be possible to accelerate EV transition in this plan with the following considerations:

1. Can the current installed chargers be used to power some of the dedicated fleet?
2. Is there existing parking that will be available throughout construction and at the new site, where new chargers can be installed without the risk of future relocation?

MICEC

MICEC has seven vehicles located on premises in scope for electrification. This site also does not have any known constraints. Therefore, the following is the electrification plan for this site, with five vehicles electrified early by 2030 and two utility tractors electrified in 2039 and 2041.

Figure 16: Existing L2 charging ports at MICEC.

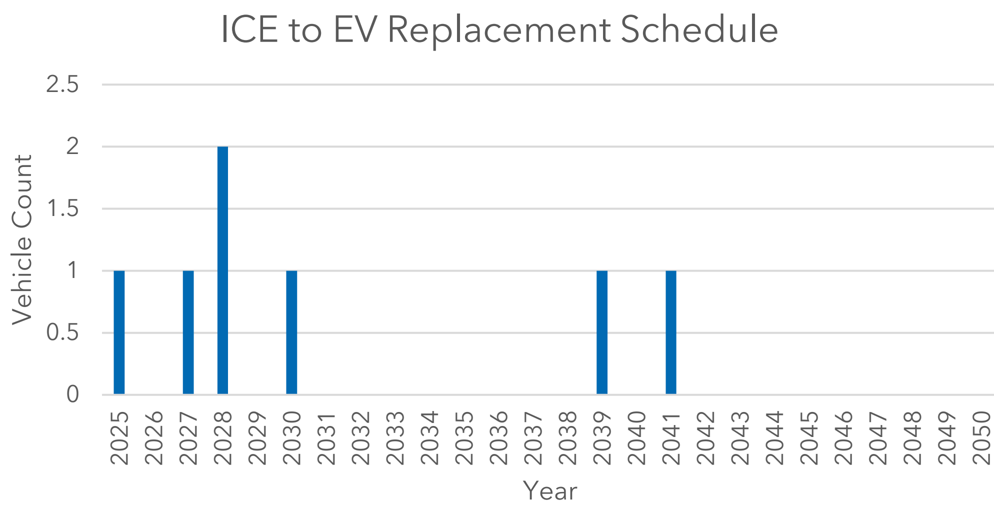


Figure 17: Potential MICEC Transitions

This electrification plan requires four chargers total: one fast charger and three slow chargers. The total power requirement is 178kW starting in 2039. Until then, the site only requires slow chargers, and the demand remains capped at 57.6kW.

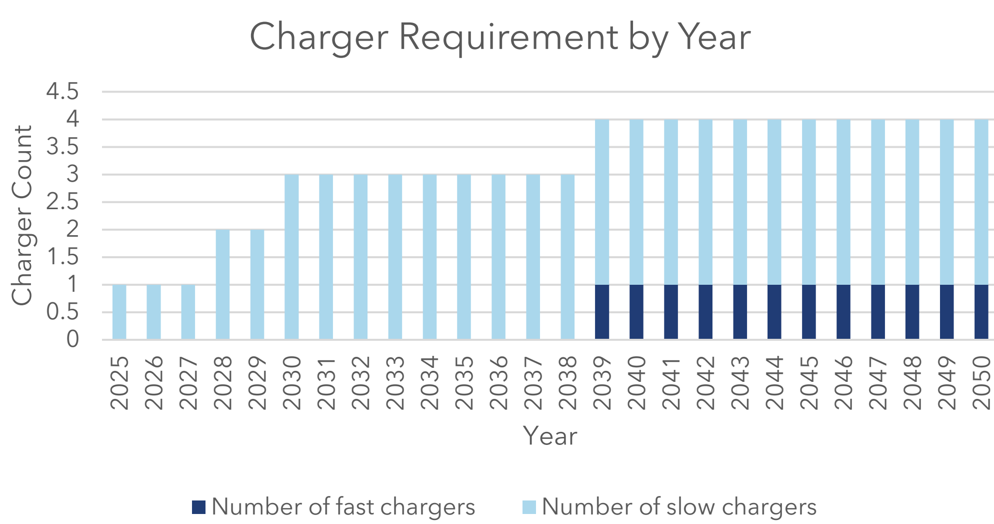


Figure 18: MICEC counts for slow and fast chargers

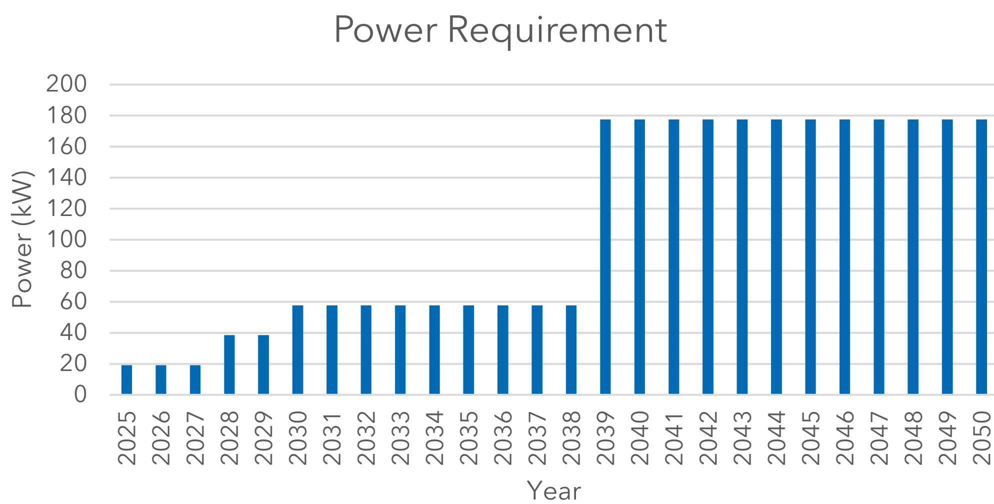


Figure 19: MICEC power requirements reach their maximum in 2039

2.4 Aligning Fleet Electrification with Construction Plans for Future Facilities

It is challenging to weigh whether keeping old vehicles is more environmentally friendly than replacing them with EVs. It depends on the vehicle, the age, and the current construction plans/lack of charging infrastructure complicate things further.

PSE has a program for incentivizing installation of fleet charging infrastructure. The Up & Go Electric for Fleet provides up to $12,000 per Level 2 (L2) charging port and up to $125,000 per DCFC port, up to $250,000 total per charging location. On February 24, 2025, the project team met with PSE's Clean Energy Solutions Program Coordinator, who informed the team that a key criterion when evaluating applications was

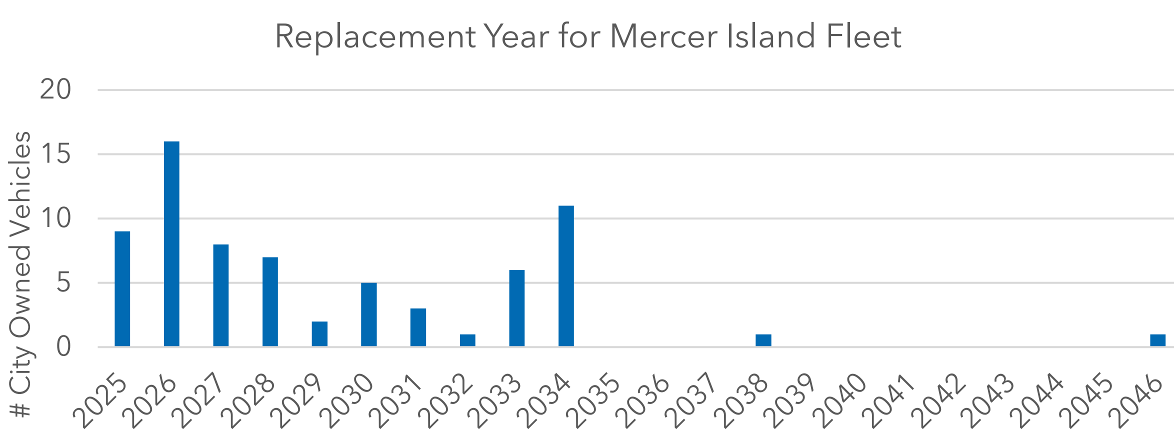


Figure 20: Estimated replacement years for 129 vehicles in the City Fleet

utilization, meaning a *high likelihood of EV charging being used at the proposed property based on the* *__number of EVs within the fleet__* *and* *__existing EV charging options__* *at the property*. This situation presents the City with a challenge within the timing of the transition. While there is an excellent opportunity to optimize EV fleet charging at the new PSM campus and City Hall building, these are not projected to be completed until after 2030. Meanwhile, the City's Fleet Report shows that 47 vehicles are due to be replaced by that time (Figure 20). How can plans be adjusted to optimize efficiency?

The City Council and staff understand the urgency to meet emissions reduction targets, and they are currently planning some replacements to support fleet electrification. A report for budgeted vehicle replacements for 2025-2026 allocates over $3.5 million for the estimated costs. For the 20 replacements considered in 2025, the City is looking into replacing some of the vehicles with either EVs or plug-in hybrids. Two older trucks will be easy to replace with electric Ford Lightnings, as the amount that was previously allocated for the replacement can cover that conversion to an EV equivalent option.

In some cases, the EV option will potentially cost more than was initially budgeted for the ICE option, which means Council approval will be needed for additional funding. This is the case for a sweeper replacement which would cost over double when converting to EV (Figure 21). The City is considering delaying some of the replacements to allow for more time to plan.

Figure 21: RAVO R5e electric sweeper (Source: Fayat)

Another barrier to electrifying the fleet is that the City is running out of space to charge the EVs that are currently housed at Public Works, and with the upcoming construction, it doesn't make sense to add in more chargers right now. **This strategy is exploring ways to continue to make progress in advance of the 2030 PSM campus completion.**

Readiness & Capacity Study

Objective: Assess grid capacity, fleet charging demand, operations, & technology.

Although this project phase is focused on municipal EV expansion, care will be taken to assess how municipal charging infrastructure planned during this project phase can tie into the forthcoming Community Phase.

The Readiness & Capacity Study contains three sections:

3.1 Addressing Key Barriers: Inputs for the Readiness & Capacity Study and how to get ahead of technological, financial, and institutional barriers.

3.2 Current and Future EV Charging Demand Projections: An analysis of the coverage, demand, and future projections of City EVCI.

3.3 Assessment of Electrical Infrastructure: A detailed assessment of the current electrical infrastructure's capacity to support the projected EV charging load, both for the municipal fleet and with a view towards future community-wide EV adoption.

3.1 Addressing Key Barriers

There are significant technological, financial, and institutional barriers to the adoption of EVs for City vehicle fleets. To address these barriers, the City of Mercer Island should identify and understand the specific challenges related to technology, costs, and regulatory frameworks. This understanding will prepare the City to develop targeted strategies and solutions for effective fleet electrification.

3.1.1 Technological Barriers & Opportunities

Technological barriers include the availability and accessibility of charging infrastructure. Without sufficient charging stations, fleet operators face significant operational constraints. Additionally, supply chain limitations and constrained availability of suitable EV models to meet diverse fleet needs poses a challenge to City staff. Proactive measures to reduce these barriers may include:

Assessment of Electrical Infrastructure	**Evaluating Site Feasibility**	**Monitoring Technology**	**Pilot Programs**

Assessment of electrical infrastructure: Conduct an assessment of the current electrical infrastructure to determine if the existing transformers and power lines can handle projected EV charging demands. By identifying potential weaknesses or limitations in the current infrastructure, the City can plan for necessary upgrades to support the fleet transition.

Evaluating site feasibility: Before EVSE installation, it's essential to evaluate the feasibility of the chosen sites. This includes assessing the grid capacity at each location to ensure it can support the additional load from EV chargers. Existing buildings and electrical infrastructure may not support EVCI and require retrofits. New construction provides an opportunity to integrate EVSE considerations into the design schematics from the beginning, including augmenting the power supply sustainably by integrating renewable energy sources, such as solar panels, to reduce the strain on the grid and promote environmental sustainability.

Monitoring technology: Keeping up with innovative technology and the product supply chain for EV materials will best prepare the City to adapt and plan for resources. For instance, pandemic-related supply chain delays for vehicle computer chips doubled the raw material costs for EVs in 2020. As technology advances, it's important to regularly update the Fleet Transition Plan to reflect new developments and best practices. City staff should frequently review the Plan to ensure it remains relevant and effective.

Exploring with pilot programs: Test the effectiveness of EVs in real-world conditions before committing to a full-scale rollout. Pilot programs can provide valuable insights into the performance, reliability, operational challenges of EVs, and identify unforeseen implementation issues. By gathering data and feedback from these trials, cities can develop strategies to address inefficiencies and make more informed decisions about expanding their electric fleets.

3.1.2 Financial Barriers & Opportunities

Despite the long-term savings on maintenance and fuel, the costs associated with purchasing EVs and upgrading electrical infrastructure to support EV charging can be substantial. Consider the following actions to reduce financial barriers:

- **Innovative Procurement**
- **Funding Programs**
- **Grants & Incentives**

Innovative procurement: Embrace innovative procurement structures to address capital roadblocks for the EV transition. Approaches such as leasing or public-private partnerships can help spread out the initial investment over time, making it more manageable for the City. This could include performance-based contracts, where payments are tied to achieving specific outcomes, or energy-as-a-service models, where a third party owns and maintains the EVSE, and the City pays for the service.

Developing funding programs: Connect capital procurement with fuel cost and operational savings by tracking data as the City progresses toward electrification. Accrued vehicle fuel and maintenance savings should offset the price difference between ICE vehicles and EVs.

Grants and incentives: By seeking state grant funding, such as opportunities provided through the Department of Commerce's Clean Energy Fund (CEF) for EV charging infrastructure, the City can obtain substantial financial support for the installation of necessary infrastructure. Additionally, exploring incentives offered by programs like PSE's Up & Go Electric for Fleet can provide financial assistance and offset the capital expenses associated with purchasing EVs and installing charging infrastructure. These incentives also reduce ongoing operation and maintenance costs, making the transition to EVs more economically viable. Furthermore, adopting standards such as Advanced Clean Fleets (ACF), can provide technical assistance, funding opportunities, and recognition for leadership in fleet electrification.

3.1.3 Institutional Barriers & Opportunities

The City Council is engaged in discussions regarding long-term energy resilience, infrastructure readiness, and the strategic placement of EV charging stations to support the City's transition to sustainable transportation. Their involvement includes considering the installation of conduit for future charging stations, exploring solar power generation for fleet electrification, and securing grants to begin an island-wide EV charging plan.

Institutional barriers encompass policy and regulatory challenges such as complex and lengthy permitting processes, which can delay the deployment of necessary charging infrastructure. Below are effective strategies to limit impacts from institutional barriers:

Policy and Regulation	Assessment of Fleet Data	Workforce Development

Policy and Regulation: Conduct a thorough review of existing policies and regulations to identify potential barriers to the EV transition. This review will help in developing solutions to address these barriers, such as updating outdated regulations or creating new policies that support EV adoption. Streamlined processes are needed for departments to opt for electric or zero-emission vehicles or equipment at the time of replacement. Identify which decision-makers need to be engaged and work with them to understand how to improve the process most effectively. Processes involving permitting, supply chain, and regulatory procedures with utilities may delay the charging infrastructure installments.

As the City expands its fleet charging infrastructure, it is essential to develop specific policies and standard operating procedures that outline department responsibilities, maintenance schedules, and expectations around charging. Tools like **ElectroTempo's Fleets and Hubs** can provide valuable information to assist with these policies.

Assess and improve fleet data: Accurate and accessible data is essential for tracking progress. Evaluate the current format and accessibility of fleet inventory data and report on EV fleet trends to identify areas of optimization. Tracking and reporting on variables like usage times and mileage will help the City to adjust their purchasing plans and charging schedules as needed, remaining agile as better data becomes available.

Workforce development: As described in Section 2.5, new electric and zero emission vehicles require staff that know how to operate them, and it is essential to support internal workforce development to ensure departments and staff are up to date on opportunities and prepared to take on maintenance requirements as required. Provide targeted workforce training courses that provide education about mechanics, operations, and maintenance of EVs.

3.2 Current and Future EV Charging Demand Projections

3.2.1 Current Charging Coverage

As described in Section 2.2.5, the City fleet currently comprises 131 vehicles and seacraft, 62 of which are considered in this study for replacement within the next 10 years. Of those, 55 are housed at the PSM facility and seven at the MICEC. Currently, there are three level 2 chargers installed at the closed City Hall/PSM site, which have the capacity to charge six vehicles at once. These are shown in Figure 22, just south of I-90 (in blue) which is designated as an Alternative Fuel Charging Corridor. There is one publicly-accessible level 2 charger at the MICEC site with the capacity to charge 2 vehicles. The three chargers at the PSM site are not expected to be usable during construction.

Figure 22: Location for three City EV Chargers

3.2.2 Future Charging Coverage

The number and type of chargers required to facilitate a successful fleet transition are described in detail in Section 2.3.3 for both the PSM and MICEC sites. Overall, across the two sites 18 level 3 DCFC chargers and 14 Level 2 chargers will be required. Each charger is capable of charging two vehicles, resulting in a total of 64 charging ports between the two sites. In all, the additional chargers will require approximately 2.43 MW of additional power.

PSM Site: 28 chargers L2: 11 chargers DCFC: 17 chargers	Power required: 2.25 MW
MICEC Site: 4 chargers L2: 3 chargers DCFC: 1 charger	Power required: 178 kW

3.3 Assessment of Electrical Infrastructure

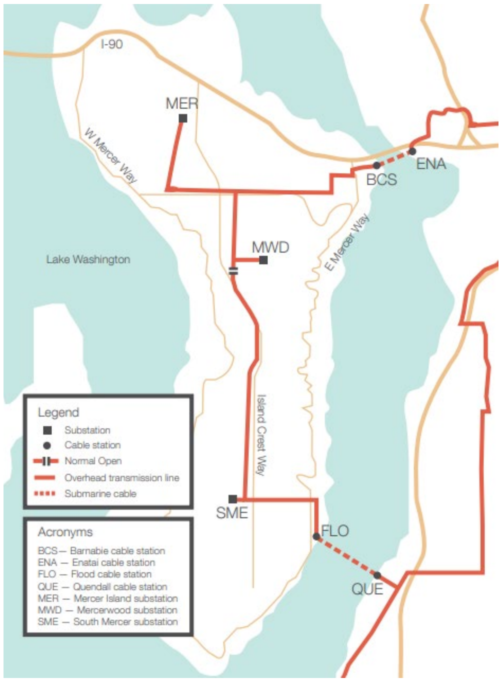


Figure 23: Mercer Island Electrical Infrastructure Map ([PSE | Mercer Island Electric Upgrade Project])

3.3.1 Existing Grid Load Capacity

Mercer Island's power is supplied by Puget Sound Energy (PSE), a local utility that provides electric and natural gas services to several counties in Washington. The City's power is brought to the island via two submarine cables located at the North and South ends of the island (see Figure 23). At the time of writing this report, these two cables are capable of supplying 101 MW of electricity to Mercer Island. The City's power supply is also 100% renewable energy.

A 2022 load study indicates that Mercer Island's peak load reaches 44 MW in the summer and 37 MW in the winter. Assuming a 3 kW impact on peak load per EV that is being charged on the island, EVs currently contribute 9.8 MW towards the City's peak load.

3.3.2 Future Grid Load Capacity

PSE is working to upgrade the submarine cables that supply power to the City to improve the resilience of the grid system and increase the power supply from 101 MW capacity to approximately 170 MW capacity. This should provide ample power for both projected increases in demand and full electrification of not only the City's fleet but also the wider community. PSE estimates that EVs will comprise approximately 57 MW of additional future peak load while other sources of demand will account for 93 MW, for a total of roughly 150 MW of peak load. Mercer Island should be able to easily meet the power demands of full fleet electrification.

For the current project of City fleet electrification, load supply at each of the specific locations where fleet vehicles will be charged must also be considered. As the majority of fleet vehicles will be charged at the new City Hall/Public Works Maintenance Building Campus, care must be taken to ensure adequate power is supplied to the site during the design phase of this project. The new chargers at the PSM campus will require approximately 2.25 MW of power.

3.3.3 Mercer Island Utility Cable Upgrade

To keep up with increasing energy demands and improve reliability, Mercer Island's electrical infrastructure requires significant upgrades. Aging equipment increases the risk of power outages, making modernization essential for a stable and resilient power supply. PSE is in the early stages of designing improvements to its transmission and distribution network, including replacing the aging submarine cables that supply electricity to the island.

These upgrades will:

- Enhance service reliability
- Reduce the likelihood of power disruptions
- Ensure the future energy needs are met

The project team is collaborating with PSE to assess future energy capacity needs, including planning and funding support for the installation of EV charging stations. By sharing projected long-term requirements, the community can help ensure that the upgraded infrastructure is equipped to support increasing electrification and sustainability efforts. It would be both wasteful and cost-prohibitive to backtrack in case more power was required after the cable was installed.

3.3.4 Strategies for Grid Capacity Enhancement and Management

As technology and needs continue to change in the rapidly evolving space of vehicle electrification, the City should continue to work with PSE and EV subject-matter experts to develop, adjust, and implement long-term plans for electrification. Innovative new technologies become available each year and could be considered to augment the existing strategy presented in this report. Some potential additions to consider include:

- Integrating distributed energy resources (DERs)
- On-site solar generation
- Battery energy storage systems (BESS)

The City should also examine their local and State-level policies and regulations around EVs, grid infrastructure, solar installations, BESS, and other relevant sectors and technologies. Local development code should be amended as needed to facilitate a smooth EV transition, and any County, State, or Federal roadblocks to successful EV infrastructure implementation must be accounted for.

Bidirectional Infrastructure Charging Strategy

Objective: Assess the feasibility of integrating bidirectional charging capability into the fleet transition plan.

One of the key goals for this project was for the EV Fleet to have the potential to provide backup power during an emergency or extended power outage. This section provides an overview on what bidirectional charging is and how the team worked with Mercer Island to explore feasible options for this desired function, as well as the constraints on integrating this feature into Mercer Island's fleet. This critical functionality could be achieved but would require additional investment in infrastructure to optimize efficiency and energy resilience.

Bidirectional charging capability is integral to developing system-wide energy resilience, making it possible to keep key City systems operational during extended power outages. A full bidirectional charging deployment provides a mechanism for balancing energy demand, increasing energy resiliency, and minimizing expense through load shifting and peak shaving.

The Bidirectional Infrastructure Charging Strategy contains three sections:

4.1 Bidirectional Charging Overview: A high-level explanation of bidirectional charging.

4.2 Compatible Electric Vehicles: A breakdown of the EVs that are compatible with both the City's needs and bidirectional charging capability.

4.3 Infrastructure Components: Goes into detail on the different facets of a bidirectional charging system and the required elements.

4.1 Bidirectional Charging Overview

The primary bidirectional charging technology of interest is **Vehicle-to-Building (V2B),** driven by the need for backup power during outages to maintain critical infrastructure. **Vehicle-to-Grid (V2G)** is not being considered due to PSE's current policy, which prohibits connections that feed power back into the grid.

V2B technology enables EVs to discharge stored energy into a building's electrical system, offering benefits such as enhanced energy resilience, cost optimization, and greater integration with renewable energy sources. However, realizing the full potential of V2B requires more than just compatible EVs—it also depends on a supporting ecosystem of infrastructure components.

Key elements include:

- Bidirectional charger
- Building integration system
- Energy management system (EMS)
- Battery Energy Storage System (BESS)
- Solar power generation

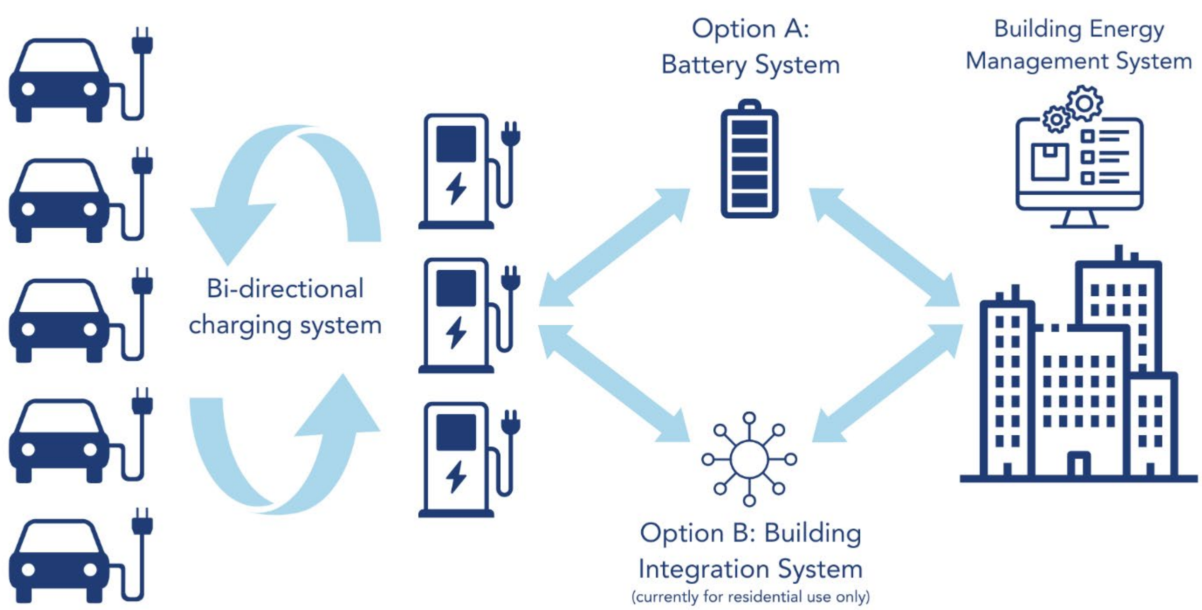


Figure 24: the components of a V2B system. These components are described in detail in Section 4.3.

Below, we explore the requirements for vehicles and infrastructure, followed by energy output estimates assuming a fully operational system.

4.2 Compatible Electric Vehicles

Currently, two EV models on the market support V2B functionality: the **Nissan Leaf** and the **Ford F-150 Lightning**. Additional models with upcoming V2B support include the **Hyundai Ioniq 5, Hyundai Ioniq 6, Kia EV6, Chevrolet Silverado EV, and GMC Hummer EV**.

At present, most vehicles support V2B only within the manufacturer's proprietary ecosystem, requiring specific installation and integration setups. For example:

- The **Nissan Leaf** supports bidirectional charging via **CHAdeMO**.
- The **Ford F-150 Lightning** uses the **Ford Charge Station Pro** and **Home Integration System**.

Within the fleet analyzed in this report, there are:

- **4 Nissan Leafs** (each with a 40–60 kWh battery)
- **Up to 21 vehicles** eligible for replacement with **Ford F-150 Lightnings** (each with a 98–131 kWh battery)

This translates to a **total potential battery capacity** of approximately **2,218 kWh to 2,991 kWh**.

Factoring in:

- ~20% efficiency losses due to charger and battery round-trip losses
- A 5% state-of-charge buffer (to protect battery health)

The **estimated usable energy supply** that could be generated through V2B integration is approximately **1,596 kWh to 2,153 kWh**. According to the U.S. Energy Information Administration, essential facilities like fire and police stations require approximately 11.8 kWh per square foot to operate at full capacity, while the average government office requires approximately 14.3 kWh per square foot. This suggests that with the maximum power that could be supplied by V2B energy generation (2,153 kWh), only 150 square feet of the PSM campus could remain fully operational. While V2B could offer some supplemental power supply in an emergency, the City will still require additional power generation methods in order to remain operational during an extended period of power loss.

4.3 Infrastructure Components

4.3.1 Bidirectional Charger

A bidirectional charger allows for two-way energy flow; it charges the vehicle and discharges energy to the building. It must support both AC-DC and DC-AC conversions and be compatible with the vehicle's charging protocol (e.g., CHAdeMO or CCS with ISO 15118-20).

Example models include:

Model	Cost*	Compatibility
Ford Charge Station Pro	$1,310	Ford F-150 Lightning
Wallbox Quasar 2	$6,440	Kia EV9
dcbel Ara	$4,999	Multiple models

*excludes taxes and installation fees

4.3.2 Building Integration System

This system enables safe, automatic switching between power sources such as the grid, EVs, solar panels, or battery storage. It typically includes:

- A transfer switch
- Critical load panel
- Energy control hardware

For example, the **Sunrun Home Integration System** (Figure 25) works with the Ford F-150 Lightning to manage power source transitions during outages or peak demand periods. The system is tied directly into the building's electrical panel.

Figure 25: The Sunrun Home Integration System, which integrates with the Ford F-150 Lightning.

4.3.3 Energy Management System (EMS)

An EMS is essential for monitoring and optimizing energy flows between EVs and building loads. It enables:

- Load prioritization
- Demand response capabilities
- Smart discharge scheduling (e.g., based on utility rates or building load profiles)

EMS functionality may be integrated into the building's existing energy controller or provided via third-party platforms.

4.3.4 Solar Power and Battery Energy Storage System (BESS)

Adding solar power enhances sustainability and allows for off-grid operation. EVs can be charged by solar during the day and then used as a power source at night or during outages. Supplemental **stationary battery storage** can further increase system resilience by:

- Supporting higher load demands
- Providing backup power when EVs are unavailable or fully discharged
- Reducing energy costs with better load shifting and peak shaving
- Increasing clean energy utilization

Below is an example description of a potential BESS & solar arrangement that may fit Mercer Island's profile (though a full assessment would be required for specific numbers):

- Building Load: Approximately 2 MWh
- Peak EV Load: Approximately 2MWh
- Photovoltaic (PV) System: Production of 800 kWh to 850kWh
    - ~800 kW capacity of DC (direct current)
    - ~500 kW capacity of AC (alternating current)
- Battery Energy Storage System (BESS): Capacity range of approx. 1.5 MW / 1.375 MWh

The above scenario would cover roughly two-thirds of the total power demand. Hardware costs for a similar arrangement may range from $500k - $1M for each system (solar and BESS), though they will vary significantly depending on several factors, such as the type of solar panel and type of batteries (i.e., Lithium-Ion vs Iron Phosphate) desired. Other cost factors to consider include labor & construction overhead, professional services & permitting, and any applicable taxes. Some companies also offer leasing arrangements to avoid up-front capital expenditure.

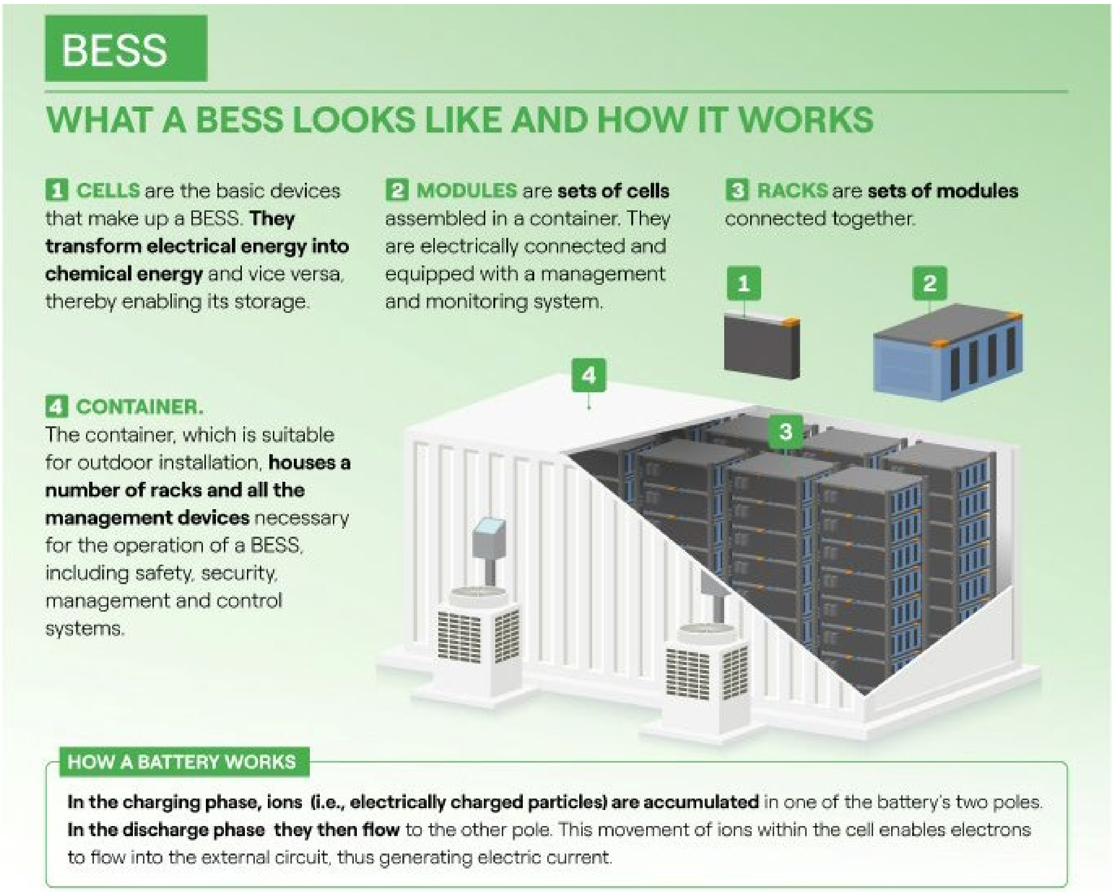


Figure 26: Detailed breakdown of the components of a BESS (Source: Enel Green Power).

Some commercially available systems include:

Manufacturer	Capacity	Est. system cost
Distributed Sun	Not specified	Unknown
Generac	200kWh to multiple MWh	~$8K - $22K
Exro	Up to 192 kWh per unit	Unknown
Cactos	Up to 430 kWh per unit	10-year lease; ~$800/month

Commercial-scale BESS units vary widely in cost depending on a number of factors, including the battery type, the manufacturer, the capacity of the system, and whether the unit is purchased outright or leased. On average, the National Renewable Energy Laboratory (NREL) estimates that a lithium-ion BESS costs $1,263-$1,849 per kWh, although there are manufacturers who offer options both above and below this price range. As technological advances are made in this field, allowing for more efficient manufacturing processes, it is expected that the cost of installing BESS units will decrease significantly.

Implementation Strategy

Objective: Establish a clear, actionable roadmap for executing the City's fleet electrification goals

Using ElectroTempo's fleet transition scenarios, the City has a clear roadmap to electrification that will further the City's emissions reduction goals.

The Implementation Strategy contains six sections:

5.1 Deployment Using the ElectroTempo Transition Plan: Breaks down the timeline of vehicle replacement and charging infrastructure installation that is recommended by the ElectroTempo transition scenarios.

5.2 Organizational Roles and Governance Framework: Provides suggestions for who should be included in further planning and implementation of the plan.

5.3 Training Staff on EV Operation and Charger Maintenance: An overview of recommendations for training fleet users on operating and maintaining EVs.

5.4 Stakeholder Engagement: Suggestions for engaging fleet users on the plan and using the City's fleet electrification to promote expansion of EV use across the entire Mercer Island community.

5.5 Adaptive Management: Brief recommendations for adjusting the plan and integrating it into future planning efforts.

5.6 Monitoring: Suggestions for how the City can ensure EV rollout goes smoothly.

5.1 Deployment Using the ElectroTempo Transition Plan

ElectroTempo's software tools offer a detailed timeline of vehicle replacement and charger installation, offering data-driven decision support to align EV deployment with budget cycles, vehicle retirement schedules, and construction timelines. This plan will be further refined and updated as the PSM campus designs are finalized.

5.1.1 Fleet Transition Timeline at the PSM Site

Section 2.3.3 of this plan presented two potential timelines for fleet transition at the PSM site. Scenario A delays any fleet transition until 2030 when construction at the PSM campus will be completed while Scenario B presents an option for slow transition of select vehicles prior to 2030. Under Scenario A, the City's fleet housed at the PSM site will be fully electrified by 2038. Despite the earlier investment in EVs under Scenario B, the City's fleet would not be electrified until 2039 using this plan in order to appropriately account for the required capital investments.

Vehicle and charger investments required by year (Scenario A):

	2030	2031	2032	2033	2034	2035	2036	2037	2038
Vehicles Replaced	**5**	**2**	**1**	**1**	**11**	**10**	**11**	**5**	**5**
Cars	2	0	0	0	3	9	9	2	2
Light Trucks	1	0	1	0	6	1	0	1	1
Heavy Equipment	1	1	0	1	2	0	1	1	0
Other	1	1	0	0	0	0	1	1	2
New Chargers	**3**	**1**	**0**	**1**	**5**	**6**	**5**	**2**	**3**
DCFC	2	1	0	1	1	3	4	1	2
L2	1	0	0	0	4	3	1	1	1

Vehicle and charger investments required by year (Scenario B):

	2025	2026	2027	2028	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Vehicles Replaced	**5**	**3**	**3**	**2**	**4**	**2**	**1**	**1**	**11**	**5**	**8**	**2**	**3**	**1**
Cars	5	1	1	0	0	0	0	0	3	4	8	1	1	1
Light Trucks	0	0	1	1	0	0	1	0	6	1	0	0	1	0
Heavy Equipment	0	1	1	0	0	1	0	1	2	0	0	0	0	0
Other	0	1	0	1	4	1	0	0	0	0	0	1	1	0
New Chargers	**3**	**1**	**2**	**1**	**2**	**1**	**1**	**0**	**6**	**2**	**4**	**1**	**2**	**0**
DCFC	0	0	0	0	2	1	0	0	2	2	4	1	2	0
L2	3	1	2	1	0	0	1	0	4	0	0	0	0	0

5.1.2 Fleet Transition Timeline at the MICEC Site

There are a total of seven vehicles housed at the MICEC site that will be replaced as part of the fleet transition. The vehicles at this site should be fully electrified by 2041.

	2025	2027	2028	2030	2039	2041
Vehicles Replaced	**1**	**1**	**2**	**1**	**1**	**1**
Cars	1					
Light Trucks						
Heavy Equipment					1	1
Other		1	2	1		
New Chargers	**1**	**0**	**1**	**1**	**1**	**0**
DCFC	0	0	0	0	1	0
L2	1	0	1	1	0	0

5.1.3 Recommendations for Vehicle Replacements

ElectroTempo compiled data on Mercer Island's existing fleet and generated recommendations for equivalent EV replacements.

Buses

Vehicle Model	Replacement Options	Count
Ford - E450	• Kenworth K270E • Hino 195h EV • BYD 8TT • Peterbilt 220EV	1
Ford - E350	• Ford e-Transit • Rivian Electric Delivery Van (EDV) • Mercedes-Benz eSprinter • BrightDrop Zevo 600	1

Heavy Duty Trucks

Vehicle Model	Replacement Options	Count
International - SA525	• Volvo VNR Electric 6x4 Tractor • Freightliner eCascadia • Nikola Tre BEV • Lion8 Tractor	3
Ford - F550		3
Ford - F450		1
Peterbilt - 348		1
Isuzu - NPR HD	• Kenworth T270	2
Isuzu - NPR		2

PETERBILT - GapVax	• Peterbilt 220EV • BYD 8R Electric Truck	1

Passenger Cars

Vehicle Model	Replacement Options	Count
Ford - Focus ZX4	• Tesla Model 3 • Polestar 2 • BMW i4 • Hyundai Ioniq 6	1
Toyota - Prius ZVW30L		1
Ford - Fusion S		1

Pickup Trucks

Vehicle Model	Replacement Options	Count
Ford - F350	• Ford Lightning • Rivian R1T • Chevrolet Silverado EV • GMC Hummer EV	12
Nissan - Frontier		7
Ford - F150		6
Ford - F250		5
Ford - Ranger		4
Chevrolet - Colorado		2
Ford - 3500HD		1
Ford - F250 Super Duty		1
Ford - F550	• Volvo VNR Electric 6x4 Tractor • Freightliner eCascadia • Nikola Tre BEV • Lion8 Tractor	3
Ford - F350 Super Duty		3

Police Sedans

Vehicle Model	Replacement Options	Count
Ford - FUSION SE	• Tesla Model 3 • Polestar 2 • BMW i4 • Hyundai Ioniq 6	2

SUVs

Vehicle Model	Replacement Options	Count
Ford - Explorer	• Tesla Model X • Rivian R1S • Audi e-tron • BMW iX	12
Ford - Escape		7
JEEP - WRANGLER		1
Chevrolet - Tahoe		1
Ford - Escape XLS		1

Vans

<table>
<tr><th>Vehicle Model</th><th>Replacement Options</th><th>Count</th></tr>
<tr><td>Chevrolet - Express</td><td rowspan="3">• Ford e-Transit
• Rivian Electric Delivery Van (EDV)
• Mercedes-Benz eSprinter
• BrightDrop Zevo 600</td><td>3</td></tr>
<tr><td>Ford - TRANSIT</td><td>1</td></tr>
<tr><td>Ford - Econoline 150</td><td>1</td></tr>
<tr><td>KIA - SEDONA</td><td rowspan="2">• Tesla Model X
• Rivian R1S
• Audi e-tron
• BMW iX</td><td>1</td></tr>
<tr><td>Dodge - Grand Caravan RT</td><td>1</td></tr>
</table>

Small Tractors

There are currently no EV models equivalent to Mercer Island's small tractor fleet that are suitable for recommendation. As the EV market continues to evolve, we expect suitable EVs to come onto the market within the next decade.

5.2 Organizational Roles & Governance Framework

A successful EV transition requires strong leadership, clear policy, and cohesive inter-departmental and inter-agency coordination. Establishing a dedicated framework for governance ensures accountability and streamlines decision-making throughout the electrification process. We recommend that Mercer Island develop a working group to oversee the fleet transition process. This working group should include, at a minimum:

- **Fleet Transition Lead:** This can be anyone within the City staff with the capacity and subject-matter knowledge to advance the fleet transition.
- **City Council Representative:** A City Councilor or their representative should be included throughout the planning and implementation process to facilitate buy-in from the City Council.
- **Key Fleet Users:** Representatives of the departments that operate the greatest number of fleet vehicles should also be included throughout the planning and implementation process. For Mercer Island this should include representatives from the:
  - Police Department
  - Public Works Department
  - Parks and Recreation Department
- **Puget Sound Energy (PSE):** The City should work with PSE throughout the planning process and during installation of new charging infrastructure to

ensure appropriate grid infrastructure and resources are in place for current and future charging needs.

- **Subject Matter Experts:** On an as-needed basis determined by the Fleet Transition Lead. Could include EV industry experts to assist with choosing new equipment, planning experts to assess and update the plan, and members of the fire department to review the safety and siting of EV charging stations.

5.3 Training Staff on EV Operation and Charger Maintenance

To ensure efficient, effective, and safe operations of the EV fleet transition, it is important to provide adequate operational behavior training for staff focusing on operation and maintenance of EVs. Fleet training should be offered to staff including EV drivers and vehicle technicians. Technicians will need to be trained in repairing and maintaining EVs, and drivers will need to be trained in the use and charging of EVs.

Staff training can provide insights on how to optimize EV performance and battery longevity. Best practices for operating and storing EVs should be followed, such as parking EVs in moderate temperature locations. Additional considerations for staff education may include fleet managers needing to reevaluate baseline maintenance schedules and create new maintenance plans, as EVs require less maintenance than ICE vehicles but have unique maintenance needs related to charging infrastructure and high-voltage systems. Addressing these operational considerations ensures a smooth and effective transition to an EV City fleet.

5.3.1 EV Fleet Driving Education

EV driving education can support employee understanding and comfort with operating an EV by providing comprehensive training programs. Aspects to consider for this program may include:

Knowledge Building

- **Driver education** teaches drivers about the basics of EV systems, including best practices for driving and charging EVs. Highlights the value of distributed resources in batteries and their role in energy management.
- **EV Communications Plan** focuses on developing clear and consistent messaging to explain the differences between EVs and traditional gasoline/diesel vehicles. It ensures all drivers understand the environmental and economic benefits of using EVs and uses various communication channels (e.g., newsletters, meetings, intranet) to keep everyone informed about EV-related updates and initiatives.

Skill Development

- **Training requirements** may be integrated into the onboarding process for new drivers, with specialized training modules for drivers of medium and heavy-duty EVs. Training materials should be regularly updated to reflect the latest advancements in EV technology and best practices.
- **Hands-on experience** provides organized ride-and-drive events where staff can test drive EVs and electric equipment. Practical sessions familiarize drivers with EV controls, charging stations, and maintenance procedures, offering opportunities for drivers to experience different types of EVs, including medium and heavy-duty vehicles.

Safety and Support

- **Address safety questions** by establishing a clear process for EV safety concerns and emergency response procedures, including internal protocols for battery management and low battery scenarios. Provide resources and contacts for EV-related issues.
- **Information sharing** to ensure that EV information, resources, and experiences are widely available to employees and the community. Consider creating a platform for sharing lessons learned and best practices within the organization, encouraging open communication and feedback to continuously improve the EV program.

Community and Culture

- **Promote cooperation** by sharing successful ZEV deployment stories and strategies. Foster a culture of learning and innovation around EV adoption and sustainability. Partnerships with other organizations and communities are encouraged to expand the impact of EV initiatives.
- **Acknowledge excellence** by encouraging and recognizing outstanding performance for EV operation and progress on sustainability objectives in City plans.

5.3.2 EV Fleet Maintenance Education

EV fleet maintenance education ensures that staff are well-prepared to handle the unique maintenance requirements of EVs. Training for this program should focus on skill enhancement, efficiency, and collaboration to maintain a reliable and efficient EV fleet.

Skill Enhancement

- **Workforce development** supports staff by updating employees with the latest opportunities and prepares them to handle the maintenance requirements of an EV fleet. By investing in continuous learning and development, the organization can build a skilled and knowledgeable team capable of maintaining the fleet efficiently.
- **Training and skill building** focuses on reviewing available EV training programs and skill-building opportunities for fleet technicians. Enrolling staff in these programs enhances their expertise and ensures they are well-equipped to manage the unique challenges of EV maintenance. This proactive approach to training ensures that technicians are always prepared to handle any maintenance issues that arise.

Efficiency and Clarity

- **Warranty clarity** is beneficial for fleet technicians to understand what maintenance tasks they should perform and what is covered by vehicle and equipment warranties. By clarifying these details, the organization can avoid unnecessary repairs and ensure that technicians focus on tasks that are not covered by warranties. This clarity helps streamline maintenance operations and reduces costs.
- **Assess technician needs** to evaluate the current capacity of the maintenance team and determine if there is a need for additional technicians. This assessment helps in planning and allocating resources effectively.

Collaboration and Support

- **Develop partnerships** to facilitate the exchange of knowledge and experiences, leading to continuous improvement in maintenance practices.
- **Utilize local vendors** to build strong community relationships for more efficient and responsive maintenance operations.

5.3.3 Training and Certification Programs

A number of resources already exist for EV training, with national, state, and regional stakeholders leading efforts to develop specialized training for a variety of roles.

EV Champion Training Series

U.S. DEPARTMENT of ENERGY

DOE, in partnership with the National Renewable Energy Laboratory, has developed a four-part video series to deliver expert insights and resources on fleet electrification. This series provides overviews on EV technology, financial considerations, EV infrastructure, and driving EVs.

Electric Vehicle Infrastructure Training Program (EVITP)

This program provides training and certification for electricians installing EV supply equipment. Local governments that anticipate a significant number of EVSE installations should consider having electrical inspection officials be certified in EV installation through EVITP or a similar educational program. EVITP is a 24-hour course set up to train and certify electricians throughout California to install residential and commercial EVSE. Require EVITP or similar accredited program certification for the installation of the electrical system of EV chargers to ensure safety and effectiveness, starting with publicly funded projects in 2025, and later for privately funded projects.

Columbia-Willamette Clean Cities Coalition (CWCC)

CWCC created a Workforce Training Hub curriculum for EVs and EVSE. The course is tailored specifically to medium- and heavy-duty EVs but is practical for all classes of EVs.

SAE International

SAE International has a developed program to verify technicians who maintain, repair, and operate EV charging stations through their EVSE Technician Certification.

5.4 Stakeholder Engagement

The successful and equitable acceleration of EV adoption requires comprehensive engagement with a diverse range of stakeholders, from internal governmental departments to the broader public.

5.4.1 Education and Engagement

Mercer Island should continue to involve diverse stakeholders early in the process to align shared goals and coordinate efforts across different departments. This collaborative approach will ensure that all relevant parties are on the same page, fostering a comprehensive and unified strategy for fleet electrification. By focusing on education and engagement, the City can build a supportive environment that facilitates the transition to a sustainable and resilient transportation system.

Educational initiatives should address specific concerns fleet users may have related to EVs, such as their efficacy in evacuations and emergencies and range anxiety—the worry that an EV will run out of charge before reaching a charging station.

The project team has created branding and educational materials and shared them at a table at an Earth Day event on April 5 to inform the community about the EV strategy and to gather feedback. Minor feedback was received regarding the actual fleet transition, though several community members expressed support for an electric City fleet and expanded EV infrastructure more broadly across the community. Some community members expressed concerns about charging access for multifamily housing residents, a topic that will be further explored in the Community Phase.

Figure 27: Events like the Leap for Sustainability Fair held at MICEC offer opportunities to engage the community on the EV plan.

5.4.2 Leading by Example

The City's fleet electrification program provides an excellent opportunity to demonstrate to community members what an EV future looks like in Mercer Island. As the City prepares to move into the next phase of EV transition by examining where and how to expand public and community access to EVCI, it will be important to make visible the EV transition the City is already undertaking. Informational pamphlets, presentations, and outreach events can all be utilized to share with the broader community the steps the City will be taking over the next decade to transition to EVs.

The City will use multiple communication platforms and outreach methods to inform and involve stakeholders, including:

Surveys and Online Feedback Tools – Continuing to gather public input on EV adoption, infrastructure needs, and perceived barriers.

City Website and Newsletters – Regular updates on the EV strategy, funding opportunities, and next steps.

Public Workshops and Town Halls – Facilitating discussions on the benefits and challenges of EV adoption and addressing community questions.

Tabling Events at Community Gatherings – Providing direct engagement opportunities at farmers' markets, City fairs, and other local events to share information and answer questions.

Lunch and Learns for Businesses and Employees – Hosting educational sessions on fleet electrification, available incentives, and cost savings associated with EV adoption.

Collaboration with Regional Partners – Working with transit agencies, neighboring cities, and advocacy groups to align efforts and share best practices.

Evident in Figure 27, surveys and outreach have provided insights into community support for EV transition. The City can also engage stakeholders by sharing the plan and the next steps on the City's website and through newsletters.

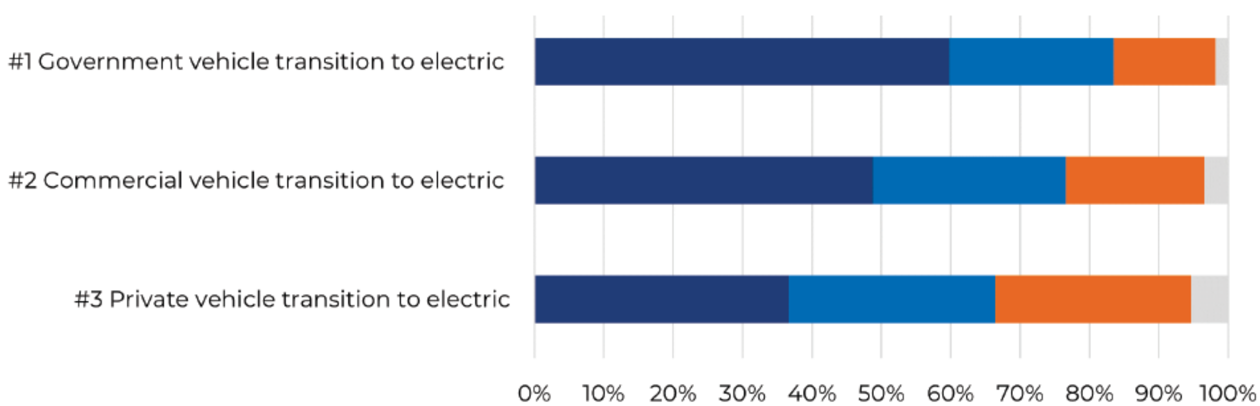


Figure 28: Results from CAP survey on support for potential EV transition priorities show that government transition was most supported.

5.5 Adaptive Management

The EVCI plan is inherently a dynamic and "living document," requiring continued adaptation and refinement. The rapid evolution of EV technology, coupled with the long-term nature of infrastructure development and potential changes in local construction plans, necessitates an iterative approach to ensure the plan remains effective and responsive to current conditions. This is particularly true for Mercer Island, as the City's fleet transition timeline is in large part contingent on the completion of the new PSM campus and acquisition of the adjacent site for additional City services.

5.5.1 Monitoring Evolving Technology

While the transition timeline and plan presented in this document represents the best available options in 2025, EVs are a fast-evolving sector, with new technologies available regularly. The City should continuously monitor the available EV technologies to evaluate and update the transition plan as needed. Some key resources to monitor include:

- National Renewable Energy Laboratory (NREL): generates research on emerging energy technologies for the US DOE.
- Energy Star Electric Vehicle Chargers: provides resources on EV Chargers that meet Energy Star standards, a recognized standard in energy efficiency that will help the City choose products that reduce GHG emissions.
- California Electric Transportation Coalition (CalETC): a California-based non-profit focused on furthering expansion of electric transportation.

5.5.2 Compatibility with Construction Plans

Throughout the development of the next phase of this project, the City and their consultant will continue to work with the architecture and design team for the new PSM campus to ensure that the building plans can support full electrification of the City fleet housed at this site.

5.5.3 Integration with Community Charging

Throughout the development of the next phase of this project, the City and their consultant will evaluate how the City's fleet electrification can work in tandem with the expansion of public charging infrastructure.

5.6 Monitoring

A robust process for monitoring and evaluation is vital to ensure the EVCI plan meets its desired outcomes and remains aligned with the City's goals.

Performance Indicators

Key metrics to assess the effectiveness of the electric vehicle (EV) infrastructure plan include:

- Data on charger performance, such as charging rates, usage levels, and peak demand periods.
- Financial outcomes, including operating costs and maintenance expenses.
- Feedback from EV drivers.

The City should establish a feedback system to work with fleet users throughout the transition process to assess progress and success of the fleet electrification.

Figure 29: Tabling for the EV plan at the Leap for Sustainability Fair, April 2025.

Conclusion / Next Steps

Summary of Key Findings

The Mercer Island Electric Vehicle Charging Infrastructure (EVCI) Strategy outlines a clear and actionable roadmap for electrifying the City's vehicle fleet and supporting a community-wide transition to electric vehicles. The following key findings emerged from this comprehensive strategy:

- **Fleet Electrification as a Starting Point**: The City will begin by electrifying its own municipal fleet, setting the foundation for broader community adoption and aligning with the 2023 Climate Action Plan goal to electrify City operations.
- **Support for Climate Goals**: The EVCI strategy is designed to directly support Mercer Island's carbon reduction targets for 2030 and 2050 by reducing transportation-related greenhouse gas (GHG) emissions.
- **Community-Wide Transition Readiness**: Technical assessments and planning indicate that Mercer Island has the readiness and capacity to scale EV infrastructure to support residents, businesses, and visitors.
- **Bi-Directional Charging Opportunity**: The strategy explores bi-directional charging technologies, such as Vehicle-to-Building (V2B), to enhance energy resilience and create value beyond mobility.
- **Commitment to Equity and Sustainability**: The City is prioritizing equitable access to EV infrastructure and embracing sustainability not only through emissions reduction but also through smart fiscal planning and inclusive community engagement.
- **Regional Leadership and Collaboration**: Mercer Island is positioning itself as a regional leader in transportation electrification, collaborating with internal departments, regional partners, and industry experts to shape a resilient, future-forward mobility system.

This strategy marks a significant step in realizing a clean, accessible, and reliable transportation future for all Mercer Island residents.

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Additional resources from https://www.commerce.wa.gov/clean-transportation/

- **State Agency EV-EVSE Guide (PDF)**
- **PEV Dialogue Group**
- **An Action Plan to Integrate Plug-In EVs with US Electrical Grid**
- **NERC study of Oregon EV Industry 2013 (PDF)**
- **PEV Task Force Report 2013 (PDF)**
- **White Paper: Social Cost of Carbon (PDF)**
- **WA State DOT Hybrid Vehicle & Alt Fuel Reports**
- **Auto Alliance ZEV sales**
- **Plug In Electric Vehicle Registrations in Washington by County (PDF)**

Statewide Initiatives

- **Electric Fleets Initiative (PDF)**
- **Electric Vehicle Infrastructure Pilot Program**
- **Executive Order 20-01 (PDF)**
- **West Coast Green Highway**
- **Volkswagen Settlement Funds**

Information for Consumers

- **Why Go Plug-in?**
- **US Department of Energy EV Guide**
- **Fueleconomy.gov EV Page (with model comparisons)**
- **Federal Financial Incentives**
- **State Financial Incentives**
- EV Selection Guide (**Forth**) (**Plug In America**)
- **Find a Charging Station**

Information for Policymakers, State and Local Government

- State Procurement Rules and Resources
- 2015-2020 State EV Strategy (PDF)
- State Agency EV Guide (PDF)
- Local Government EV Planning
- State Vehicle Contract