



EV Charging Plan Development Update

March 3, 2026



Presentation Overview

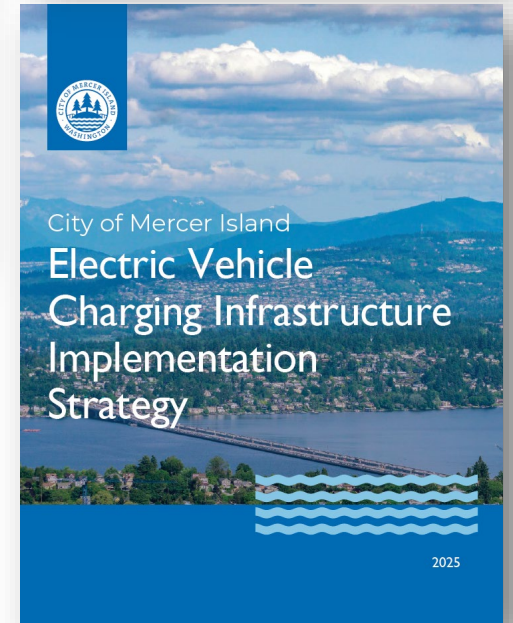
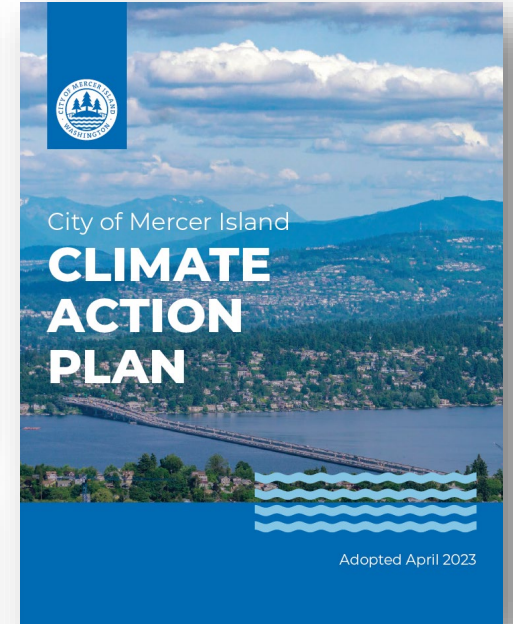
Climate Action Plan (CAP) Context

Plan Development & Key Partners

Municipal Fleet Transition Strategy

Infrastructure & Resilience Technologies

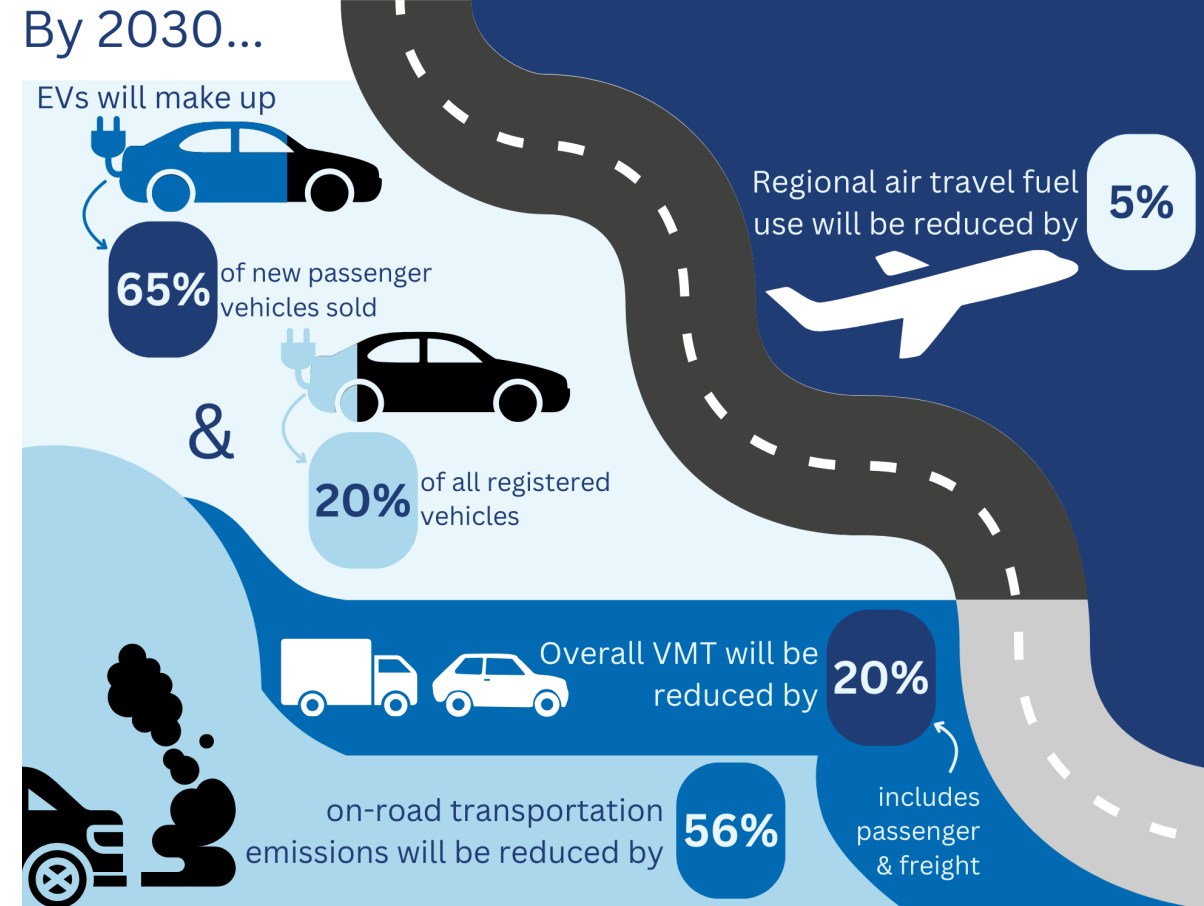
Community Adoption Phase (Next Steps)



Project Background

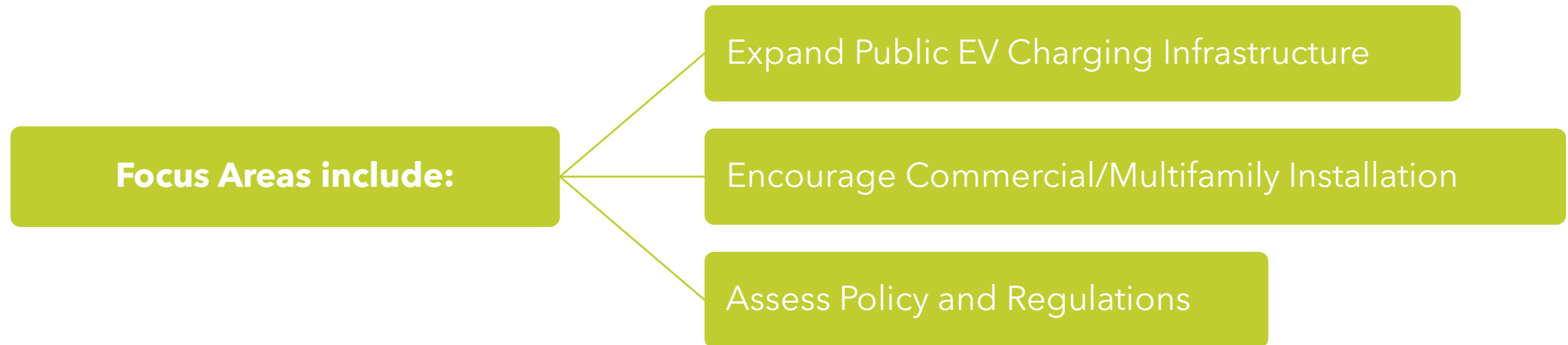
- The Transportation Sector contributes a significant percentage of Mercer Island's GHG emissions
- The City aims for carbon neutral municipal operations by 2030 and a reduction of 56% in ALL on-road emissions

Electrifying the municipal fleet and providing infrastructure for community EV charging represent easy wins for reaching the City's emissions reductions goals



EV Charging Plan Update: Overview

- **Purpose:** To provide an update on the development of the City's Electric Vehicle (EV) Charging Infrastructure Plan.
- **Context:** Supports City Council Priority 4, focused on being an environmentally and fiscally sustainable community.
- **Motivation:** The **Transportation sector** is one of the largest contributors to Mercer Island's greenhouse gas (GHG) emissions



City Fleet Plan Development

- Assess existing City Fleet and vehicle replacement schedule to determine a strategy for EV replacements over the next 5-25 years
- Focus on aligning the transition with design and construction for planned facilities.

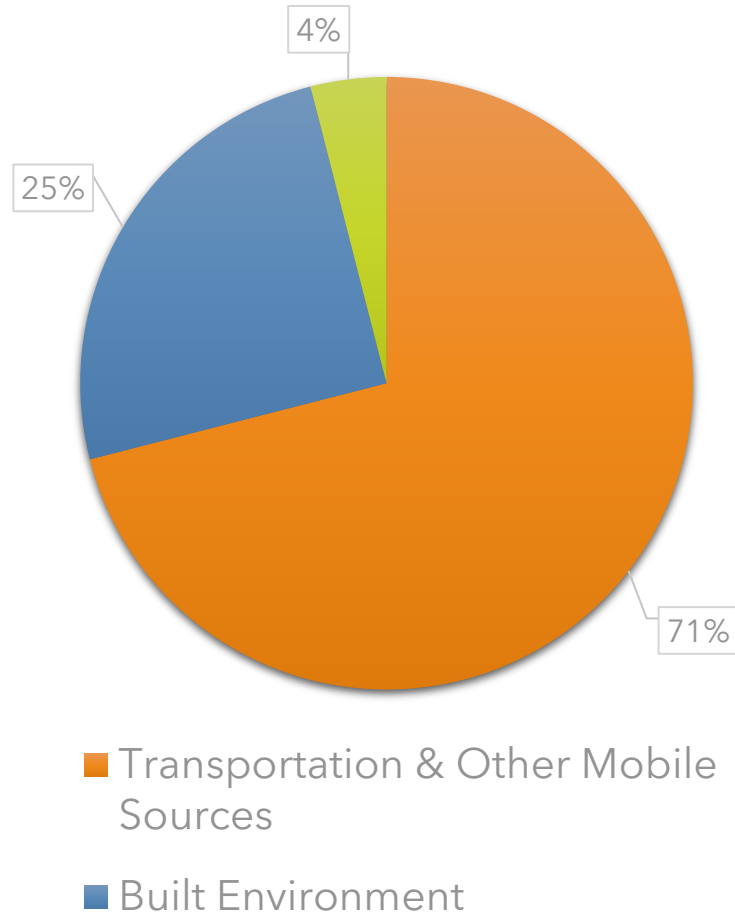
Benefits

- Lower long-term costs
- Decreased emissions
- Enhanced leadership
- Community recognition



Electrifying Mercer Island's Fleet

Municipal Operations Emissions, by Sector 2023



Key Aspects:

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

71% of municipal emissions are from transportation. Fleet electrification is the main avenue for achieving **carbon neutral municipal operations by 2030.**

Phase 1: Municipal Fleet Electrification Results

Financial Findings: Total Cost of Ownership Analysis

Capital Cost



Increased Capital Cost

~\$2.8 million

12-Year Operational Cost



12-year Operational Savings:

~\$4 million

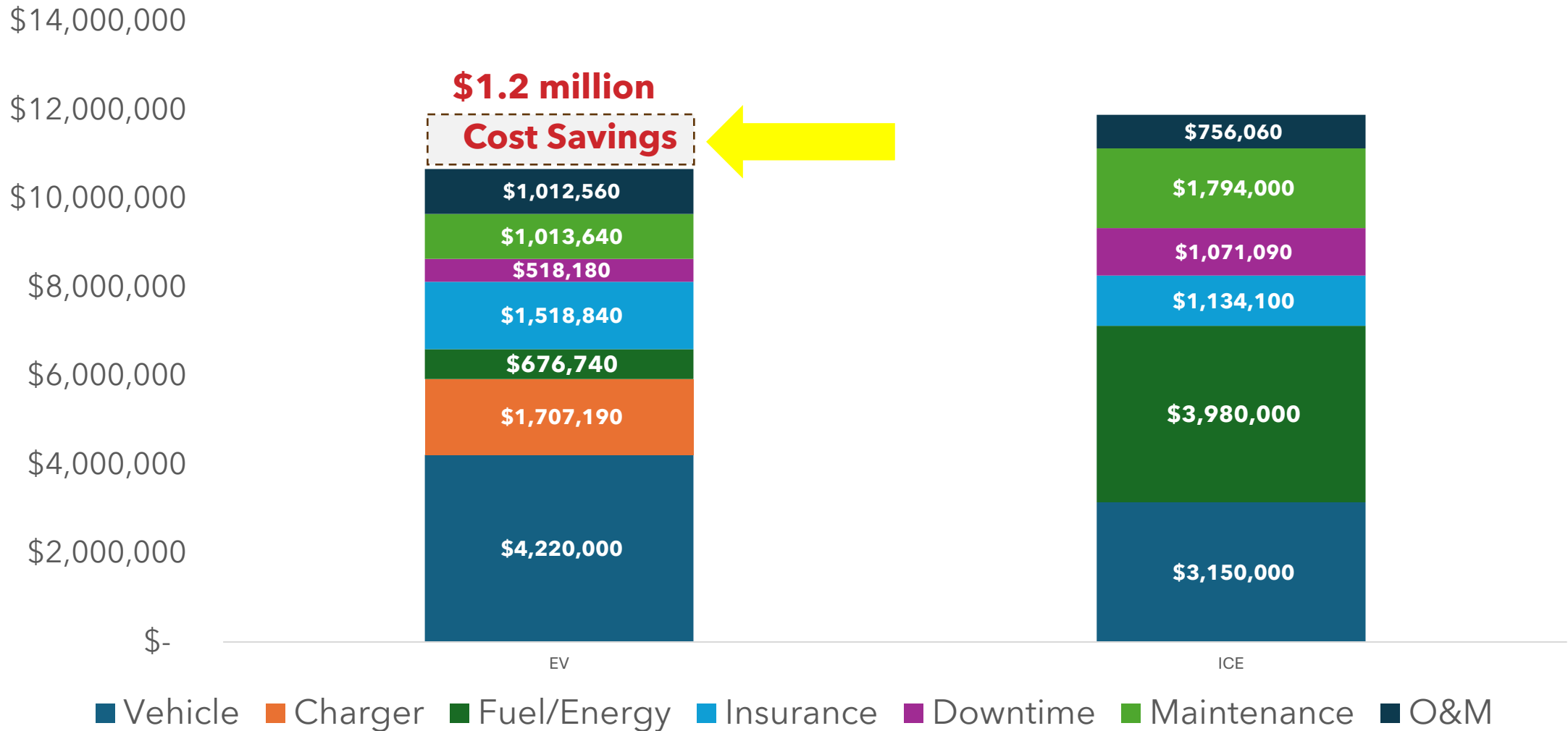
Net Savings



Net Savings:

~\$1.2 million

Total Cost of Ownership Comparison

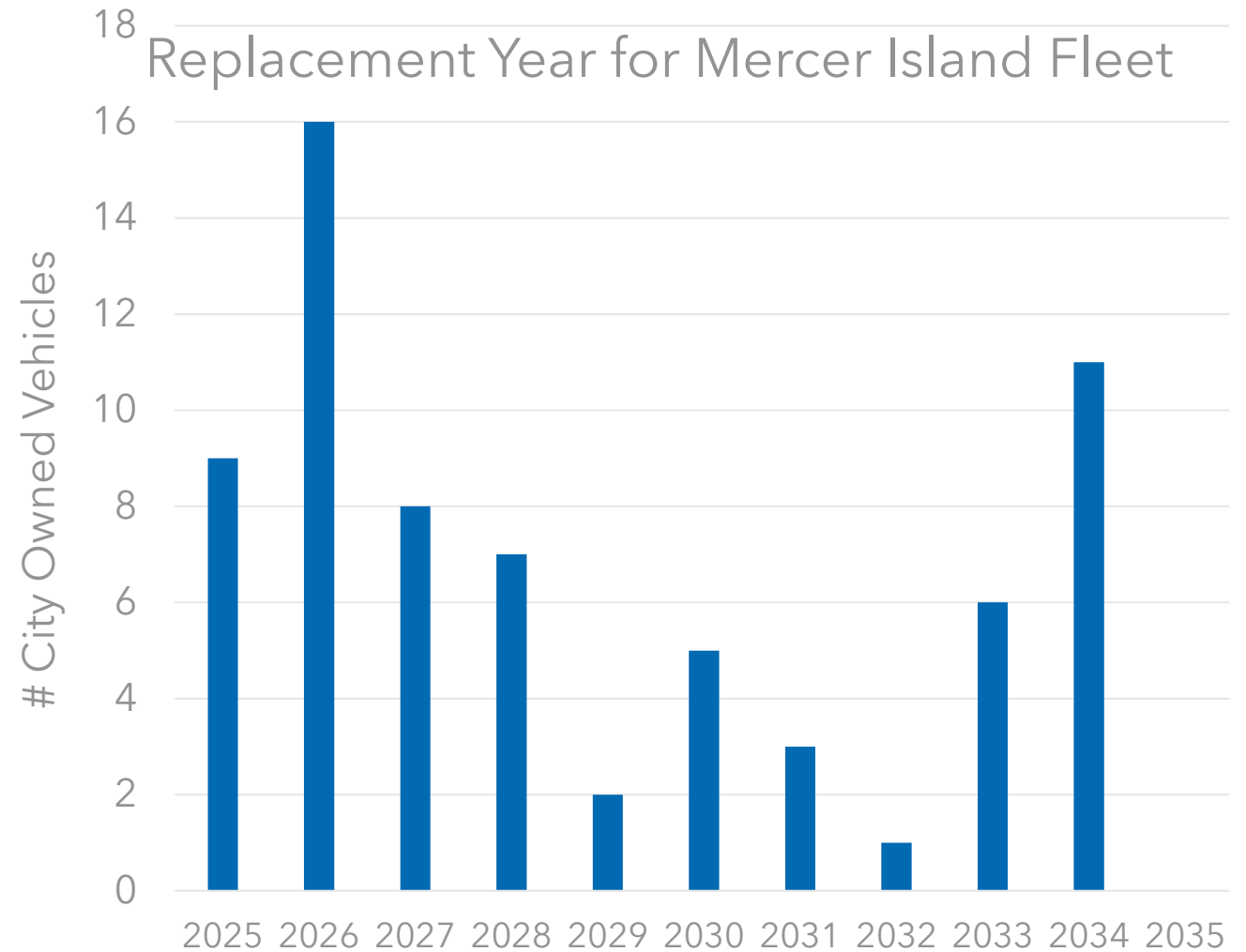


Fleet Charging Requirements

- **Slow charging fleet**
 - 24 light-duty non-emergency vehicles
- **Fast charging fleet**
 - 27 vehicles (all emergency response & medium- to heavy-duty trucks)
- **Key Constraint:** Available charging capacity at the Public Works facility is **severely constrained**.

Aligning with Fleet Replacement Schedules

Mercer Island has planned and budgeted for vehicle replacements based on anticipated usage, mileage and age



Implementation

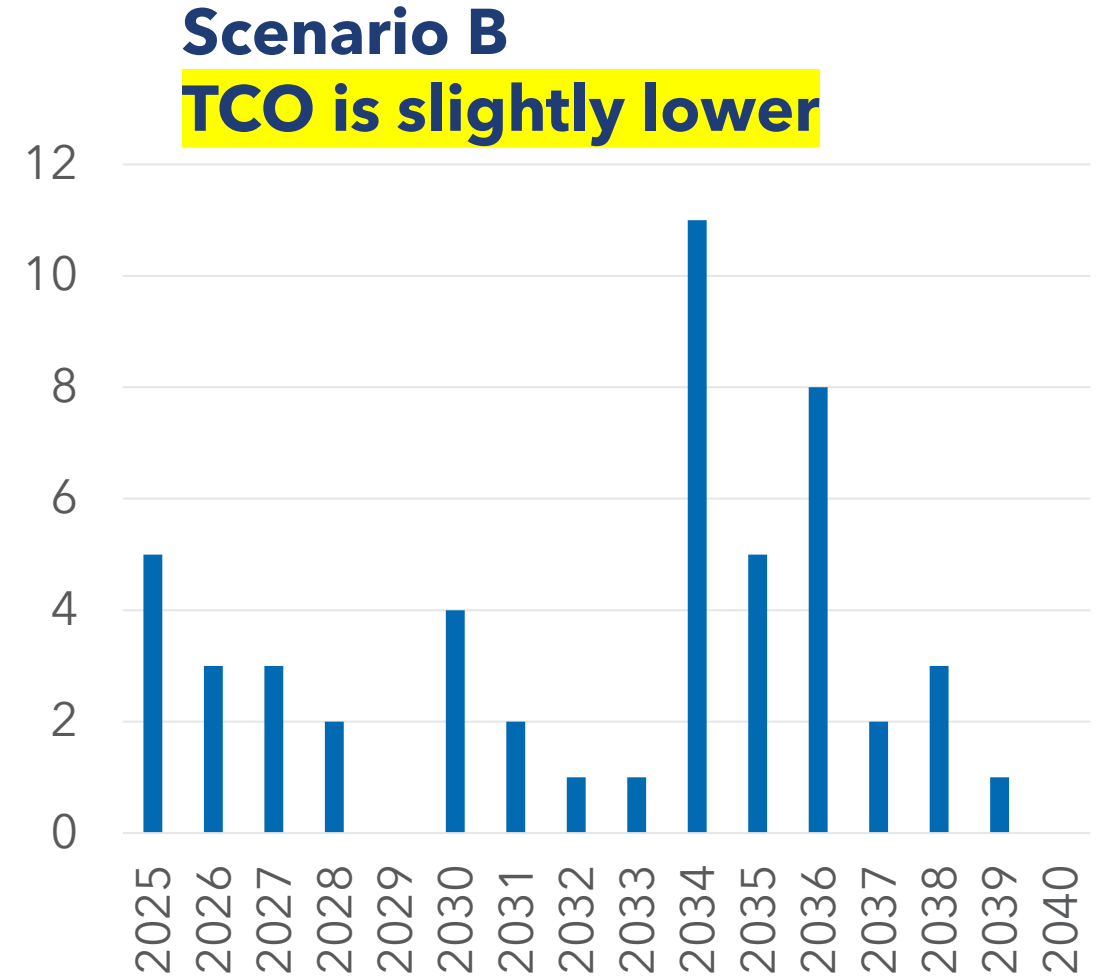
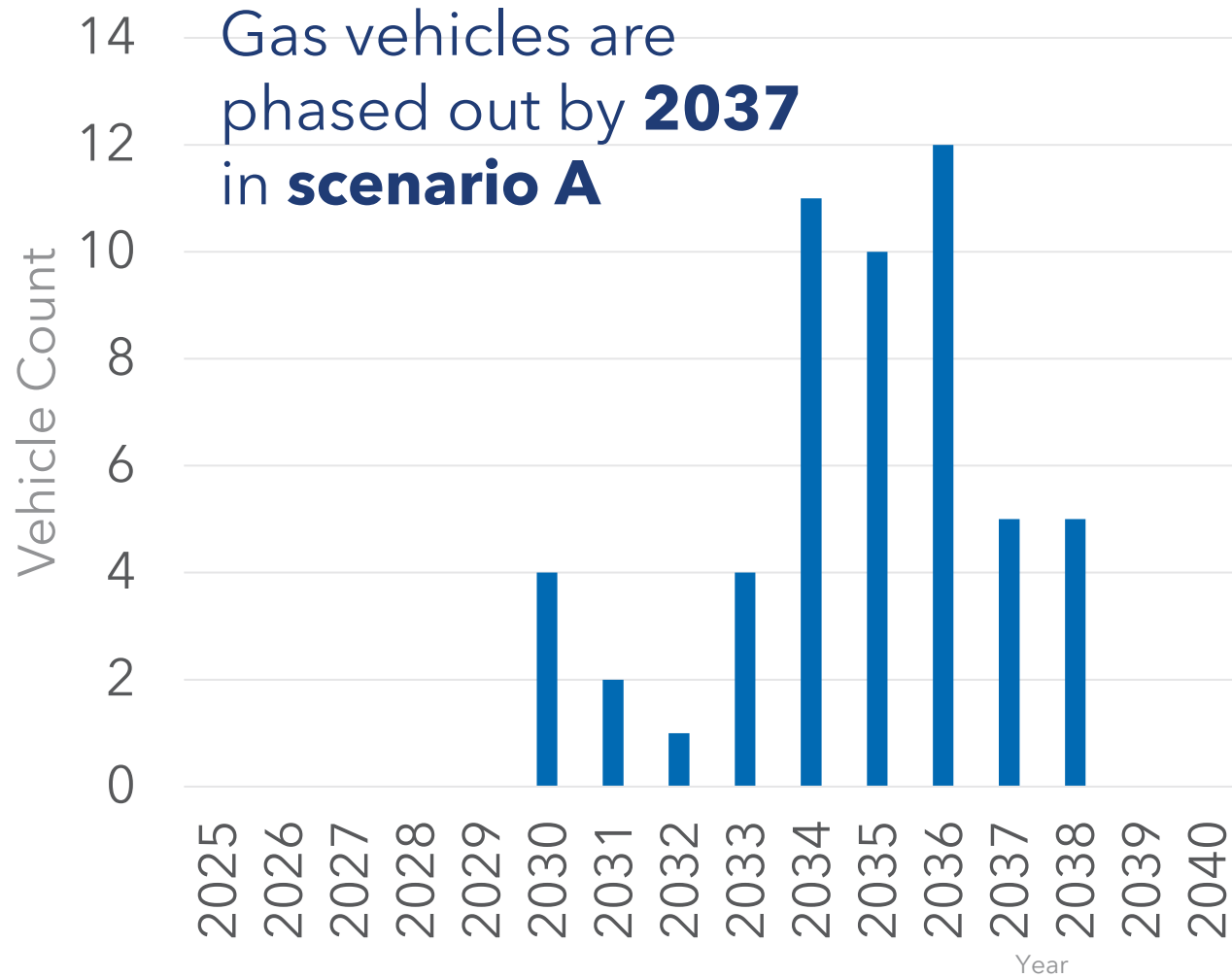
- Establish a clear, actionable roadmap for executing the City's fleet electrification goals
- Timeline of vehicle replacement and charging infrastructure installation that is recommended based on data driven transition scenarios.



Transition Scenarios

- Two options were evaluated to work around facility unknowns:
 - **Scenario A:** Full transition completed by **2037**.
 - Assumes no further fleet electrification until 2030
 - **Scenario B:** Full transition completed by **2039**
 - allows for 13 vehicles to be electrified before 2030 using slow charging

EV Replacement Schedule Scenario Comparison

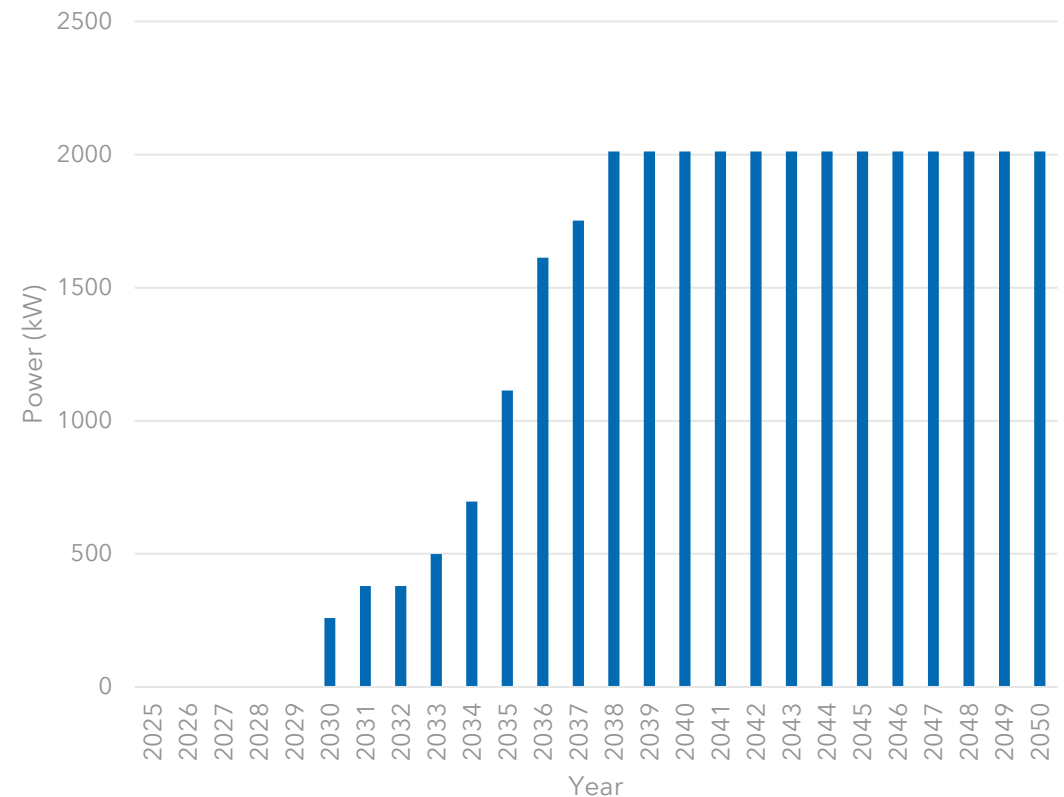


Infrastructure Requirements

Total Charging Ports Required

- Full fleet electrification requires:
- **64 charging ports** across the Public Works/City Hall site and the Community Center site.
 - This includes **18** Level 3 DCFC chargers and **14** Level 2 chargers.
- **Total Power Demand:** The additional chargers will require approximately **2.43 MW of additional power**.

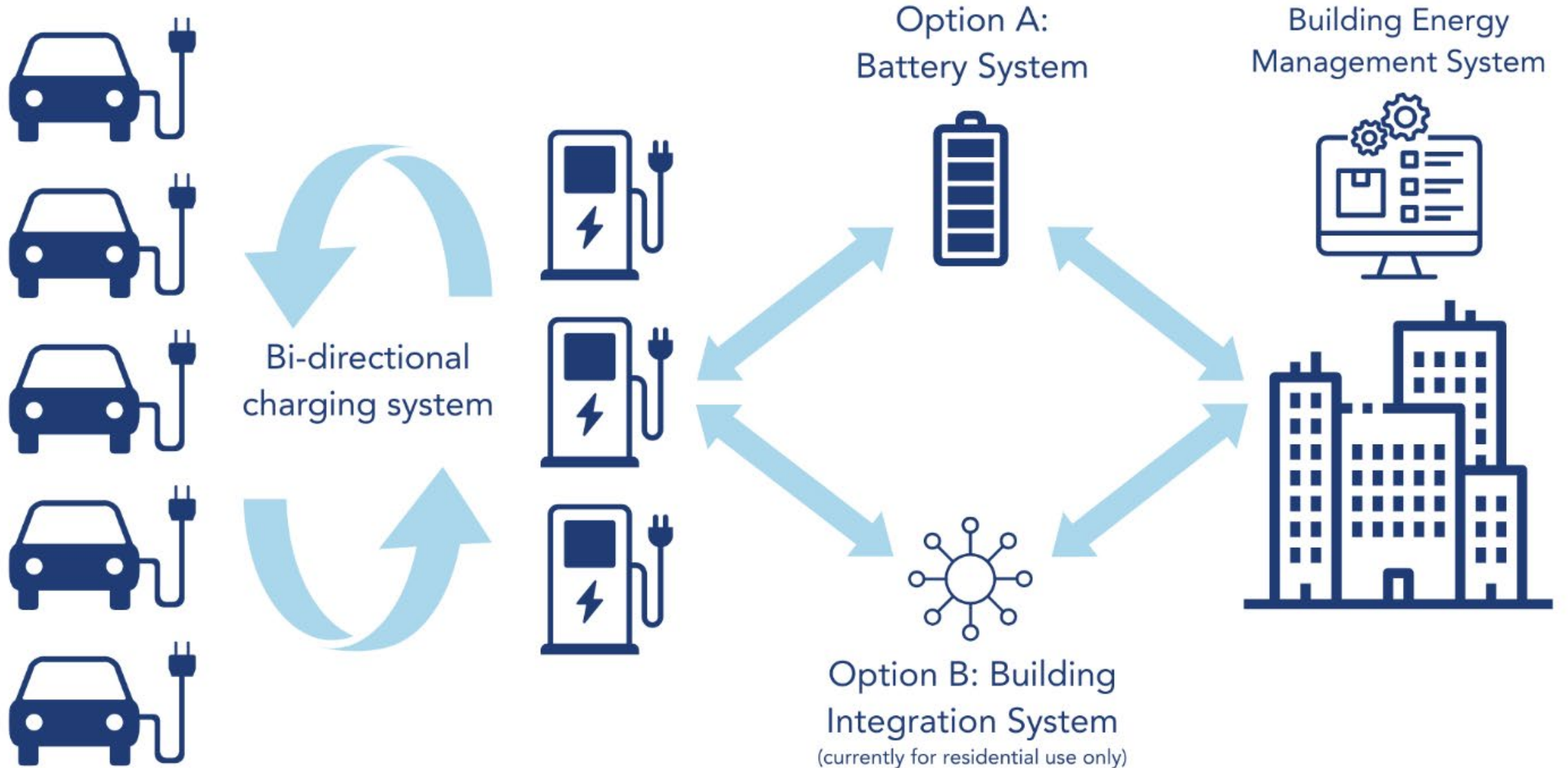
Power Requirement for EVs at City Hall Campus



Resilience Planning

- **Vehicle-to-Building (V2B)** was evaluated as an option for enhanced energy resilience and cost optimization.
 - The current fleet could provide up to 2,153 kWh of usable energy supply.
 - V2B offers supplemental power, but **additional generation methods** will be required to maintain full operation during extended outages.
- **Future Enhancements:** Considering integrating **on-site solar generation** (PV System) and **Battery Energy Storage Systems (BESS)** to support high loads, provide backup, and reduce energy costs.

Components of a V2B system



Phase 2: Community-Wide Plan Development

- **Status:** Work is now underway on the community phase of the plan.
- **Goal:** Support community-wide EV adoption and address barriers to charging access.
- **Focus Areas:**
 - Growing existing public EV charging infrastructure.
 - Encouraging charger installation at **commercial and multifamily properties.**
 - Assessing policies and regulations to further support EV adoption.

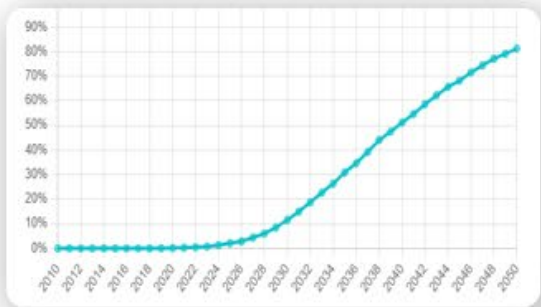


Phase 2: Community-Wide Plan Development

- **Demand Forecasting:** ElectroTempo (ET) developed a dashboard using demographic data (income, homeownership) and travel patterns to forecast future charging demand and energy requirements.
- **Site Prioritization:** Staff are working with EXP/ET to rank priority sites for increasing public charging infrastructure.
 - Prioritization includes expanding access to historically underrepresented groups.
- **Partnerships:** Working with **Puget Sound Energy (PSE)** to assess site readiness for new charger installations.
- **Timeline:** The community phase of the plan is expected to be finalized in June 2026.

Evaluating site feasibility based on electrification analysis

1 Adoption Scenario



Adoption curves supported by leading research firms built rapidly adjustable to support unique dynamics within Mercer Island and the King County Region

2 Charging Demand



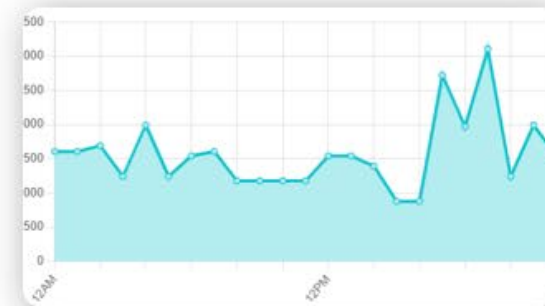
Travel models anticipate where charging demand will come from at each point in the transportation electrification curve.

3 Site Analysis



Identify and rank potential charging sites by current coverage, environmental justice, and points of interest (multifamily, large employers)

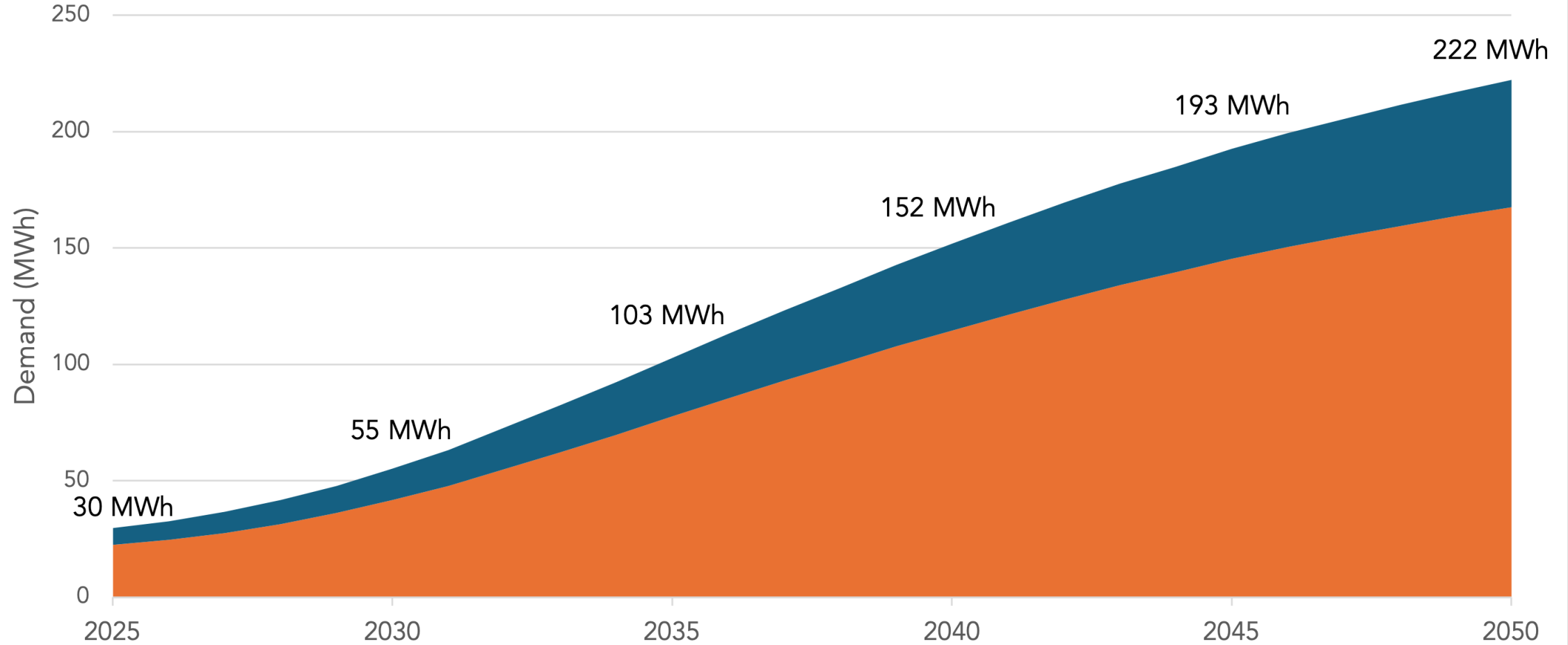
4 Site Feasibility



Deep dive into the feasibility of specific properties by assessing demand, competitive capture rates, and costs (CapEx/OpEx)

EV Energy Consumption Projection 2025 - 2050 (Mercer CAP Projection)

Winter Average Daily EV Energy Consumption



Mercer CAP Projection

Daily Home Demand

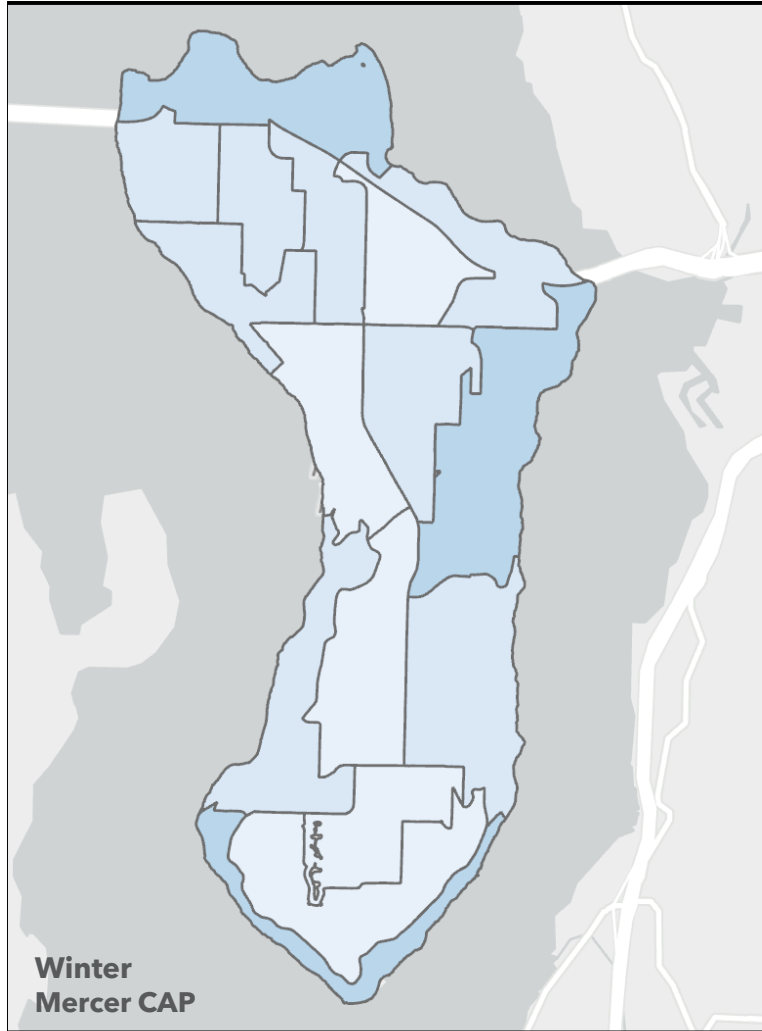
Daily Non-Home Demand

Winter Daily EV Electricity Demand

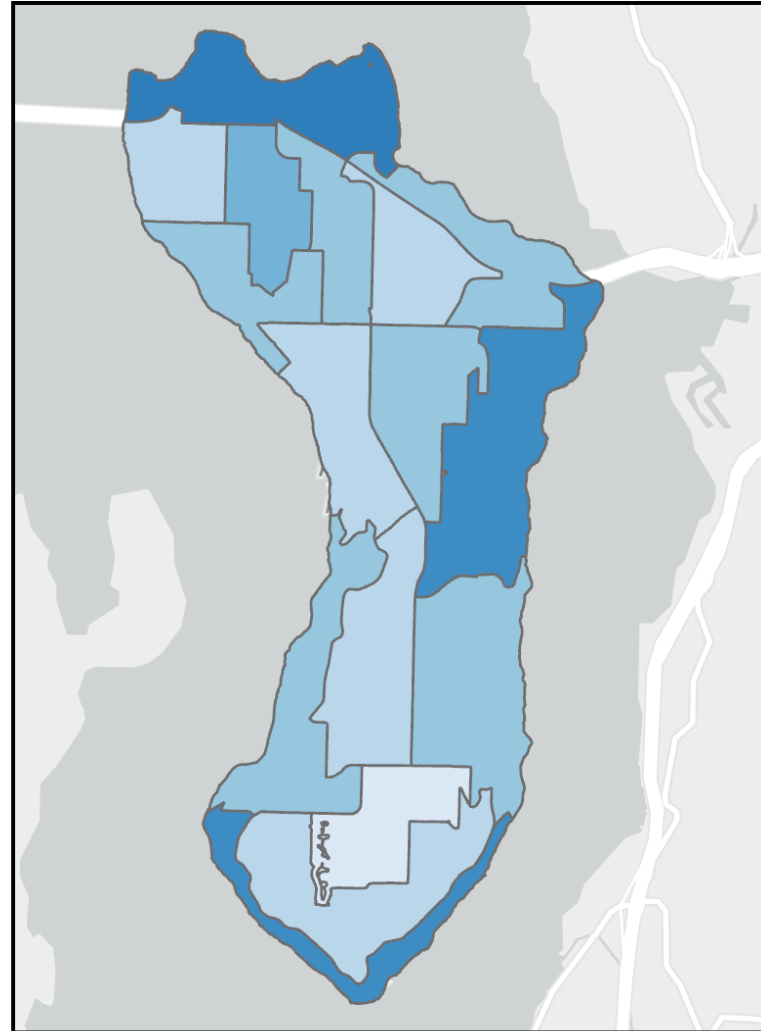
2030

2040

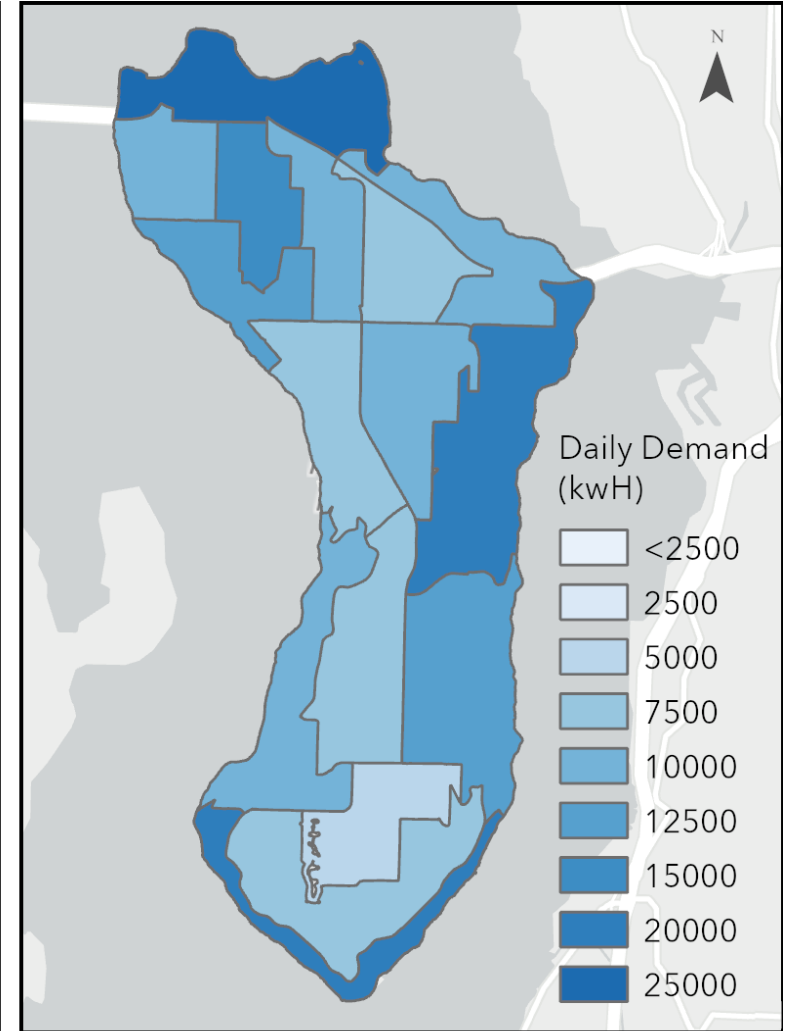
2050



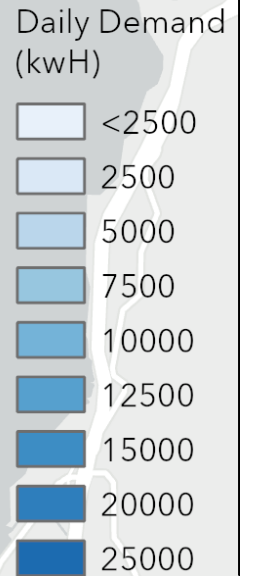
55 MWh



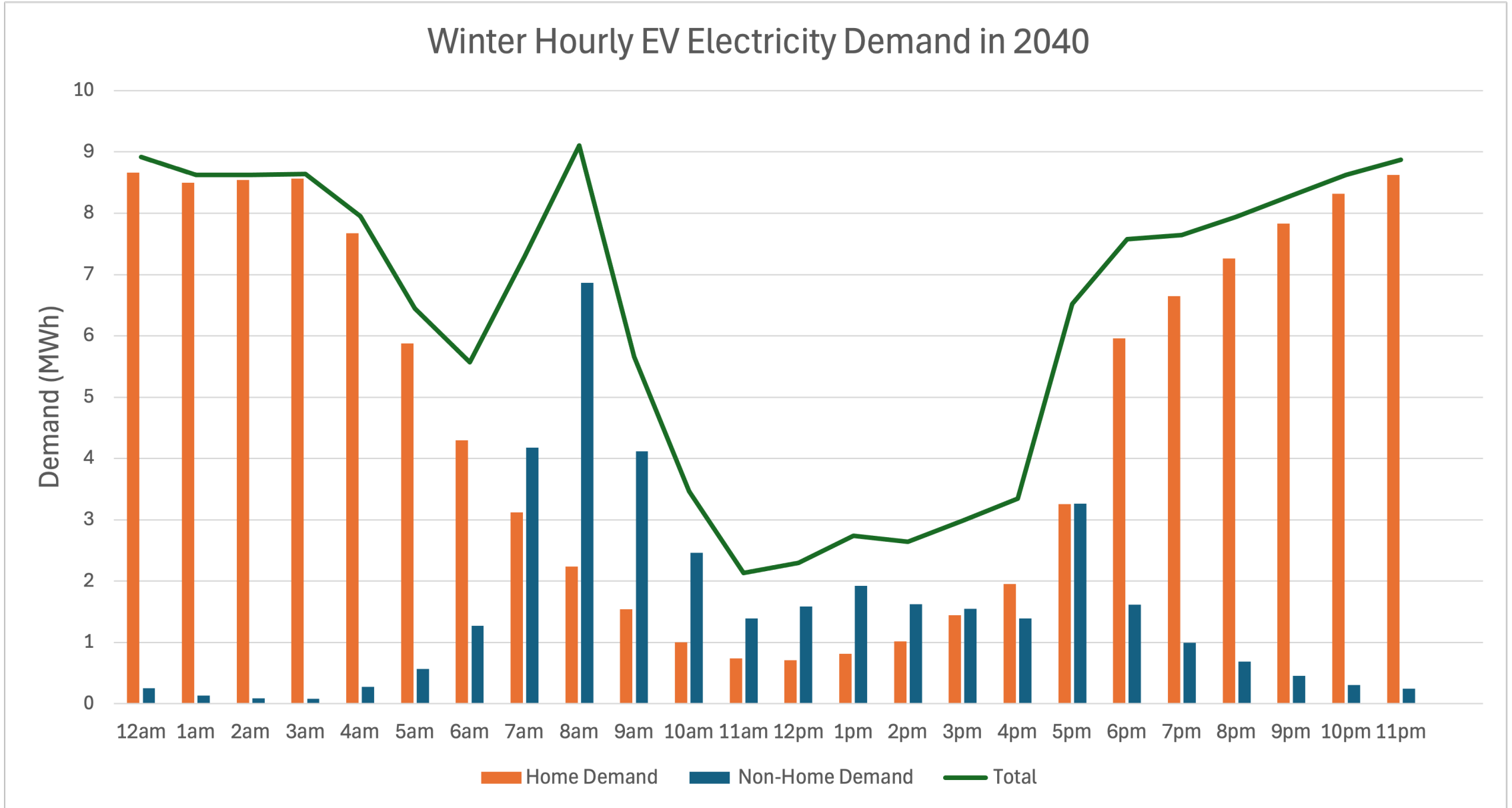
152 MWh



222 MWh



Peak Hourly Demand (MWh)



EV Charger Site Prioritization

electrotempo

Sites [TUTORIAL](#)

Click a site to see detailed information

Growth Scenario: Mercer CAP

Site Lists: Points of Interest

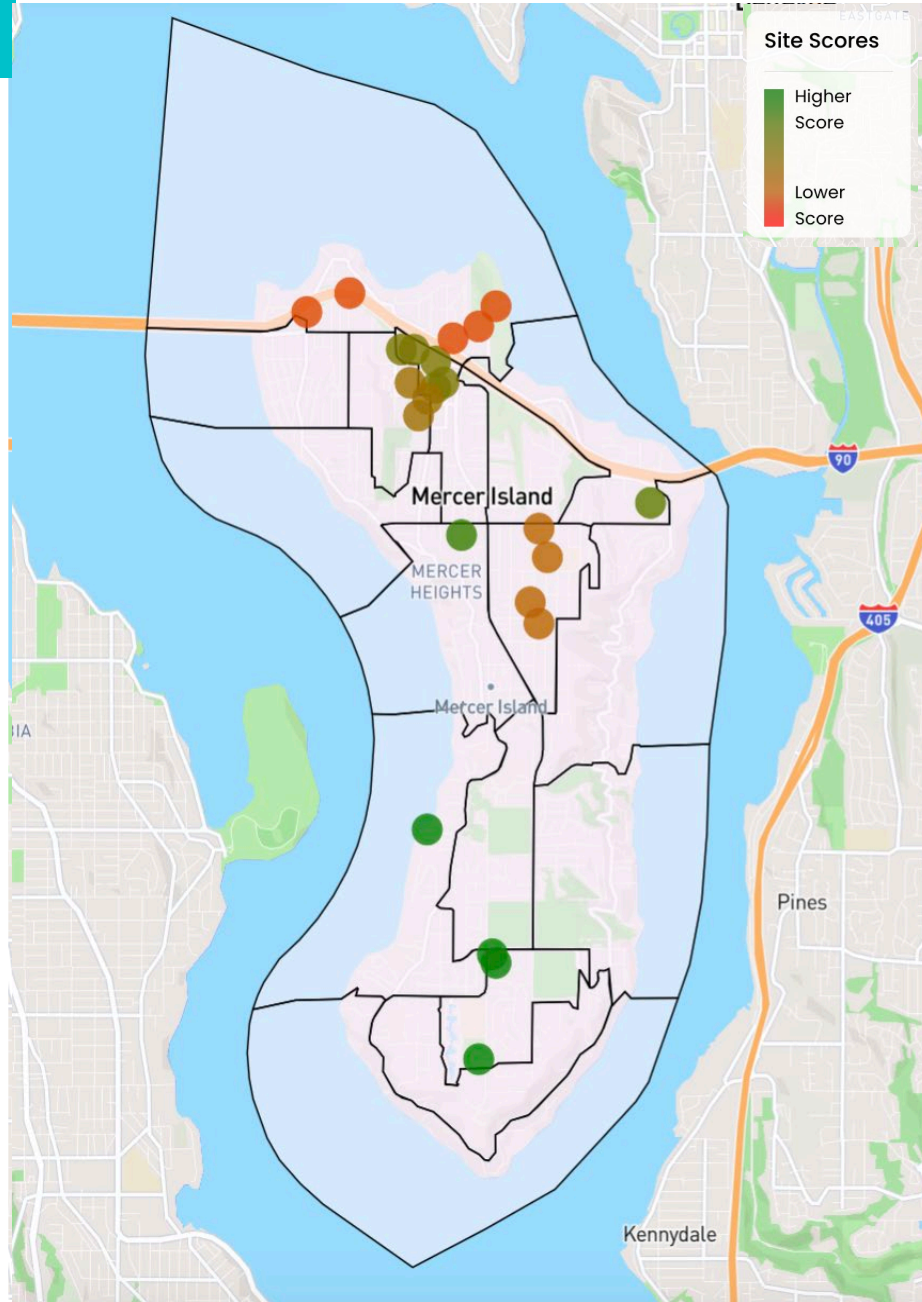
Horizon: 2025 - 2030 - 2035 - 2040 - 2045 - 2050

Controls

- [Manage Layer Controls](#)
- [Manage Filter Controls](#)

Ranking Weights

- Charger Coverage [?](#) 5
- Ranking Weight 1 [?](#) 5
- Ranking Weight 2 [?](#) 5

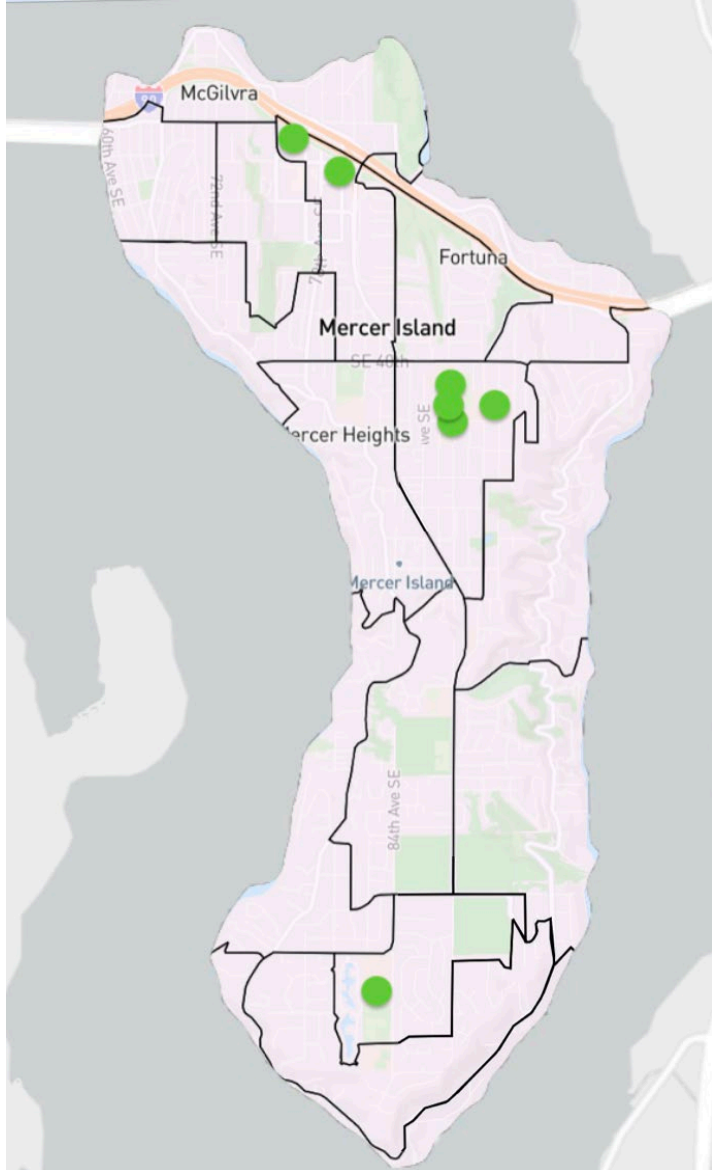


Ranking Weights

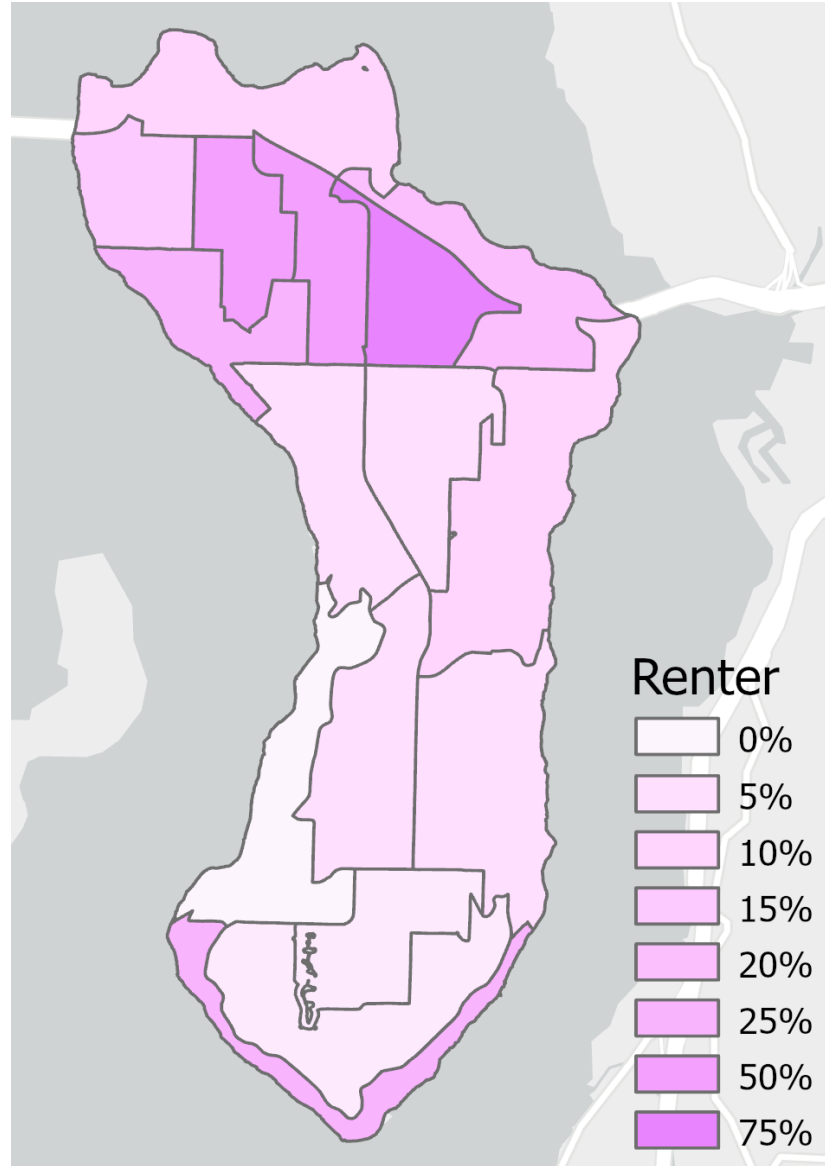
Considerations for site ranking include:

- Feasibility of installation (i.e. site readiness)
- Prioritizing access to historically under-represented groups
- Sites that will provide the greatest benefit to community members
- Proximity to existing chargers

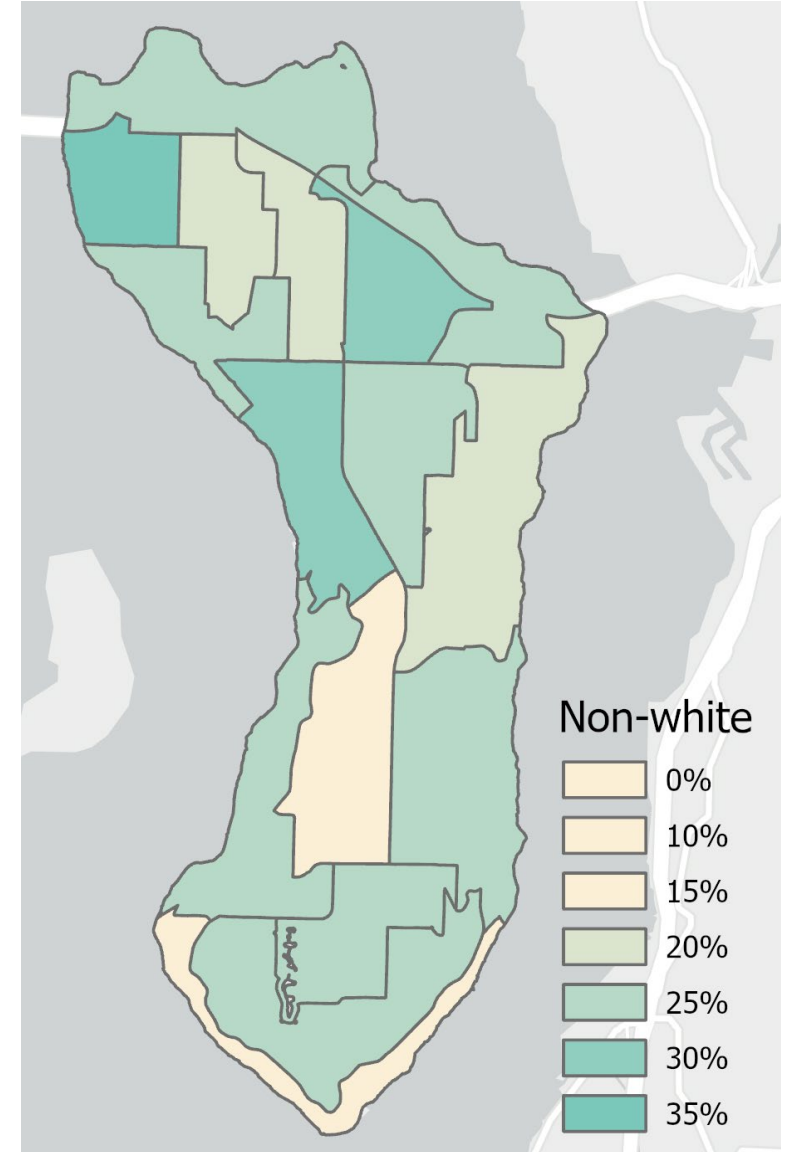
Existing chargers



Renters



Non-White



Public Sites

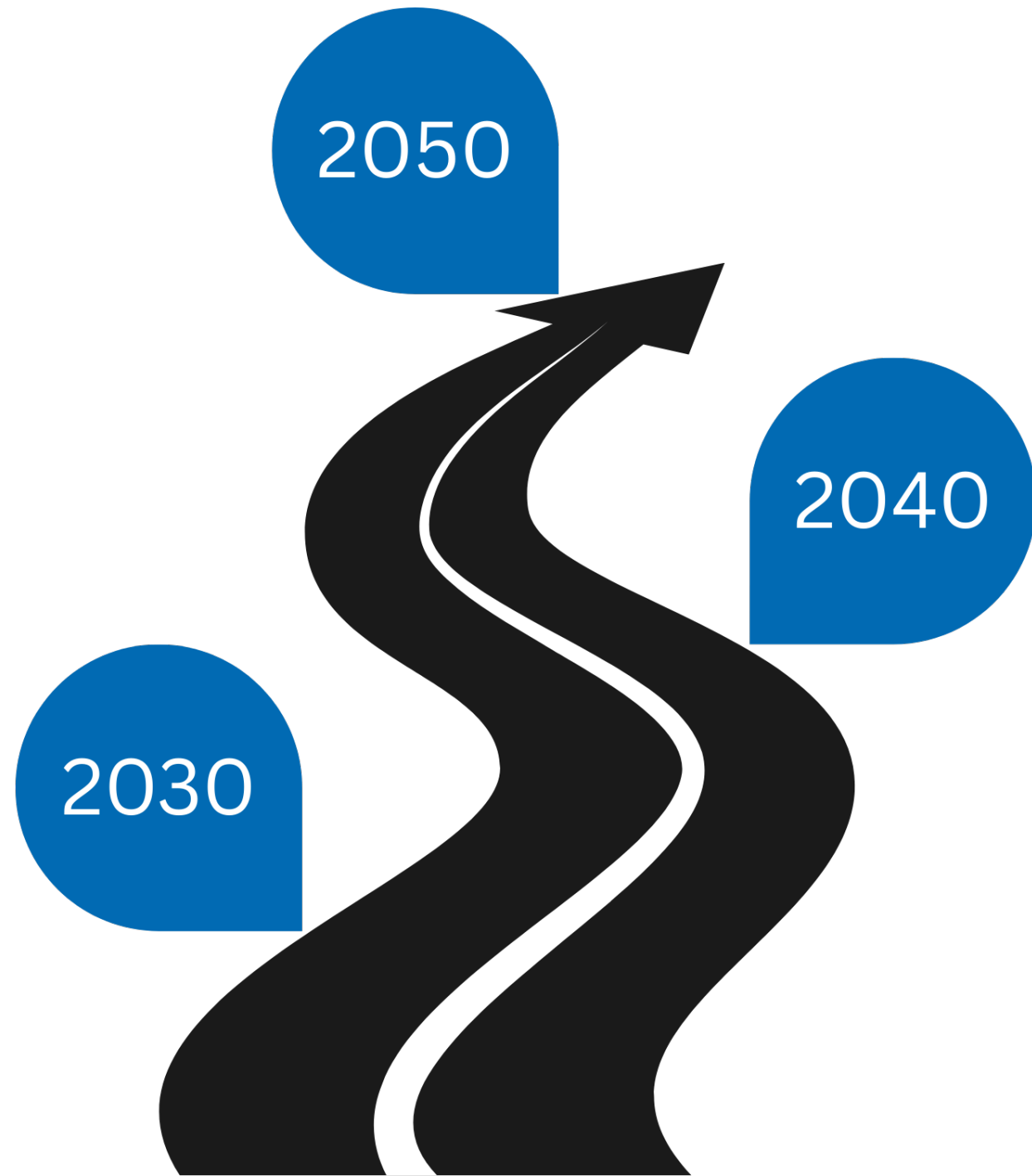
- PSE Site Evaluations in progress
- Final site prioritization currently underway. XX sites under evaluation to develop ranked list.

Private Sites

- Working with private owners to support EV infrastructure installation and maintenance
- Outreach planning: the final strategy will include recommendations for educational outreach

Implementation Strategy

- Will include recommendations for how Mercer Island can support implementation of the Community EV Charging Strategy
 - Policy and Code Recommendations
 - Potential Funding Strategies
 - Detailed implementation timeline & projects list
 - Recommendations for management and ownership of charging infrastructure



Next Steps

- Finalize prioritized site list
- Create long-term outreach strategy & materials
- Finalize Implementation Strategy recommendations

