EV Public Charging Needs Analysis

Funding and Programming Committee

METROPOLITAN COUNCIL

November 2025

Overview

Presentation Topics

- Project objective and approach
- Project timeline
- Key draft background information
    - Existing guidance
    - Dwell time analysis
    - Electric utility engagement themes
    - Multi-family and historically underserved charging needs
- Approach to estimating charging needs and gaps
    - Priorities for regional charging network
    - Assumptions for future EV demand forecast

Project Objective

Planning an EV charging network for the region

- **Planning level analysis** of the remaining gaps in publicly available electric vehicle charging infrastructure beyond what already exists, and the prioritization of what part the public sector might play a role in

What part will the public sector play a role in?

- **Engage stakeholders** and **collect background data** to develop an **interactive online map** to describe the region's needs for publicly available EV charging stations in various categories by charging levels.

Project Results

- **Accommodate & Accelerate light duty EV Adoption**
- **Inform the award of federal funds via Regional Solicitation**
- **Inform charging infrastructure location needs and CFI fund usage**
- **Provide guidance to cities and other regional entities**

Approach

Focus Areas

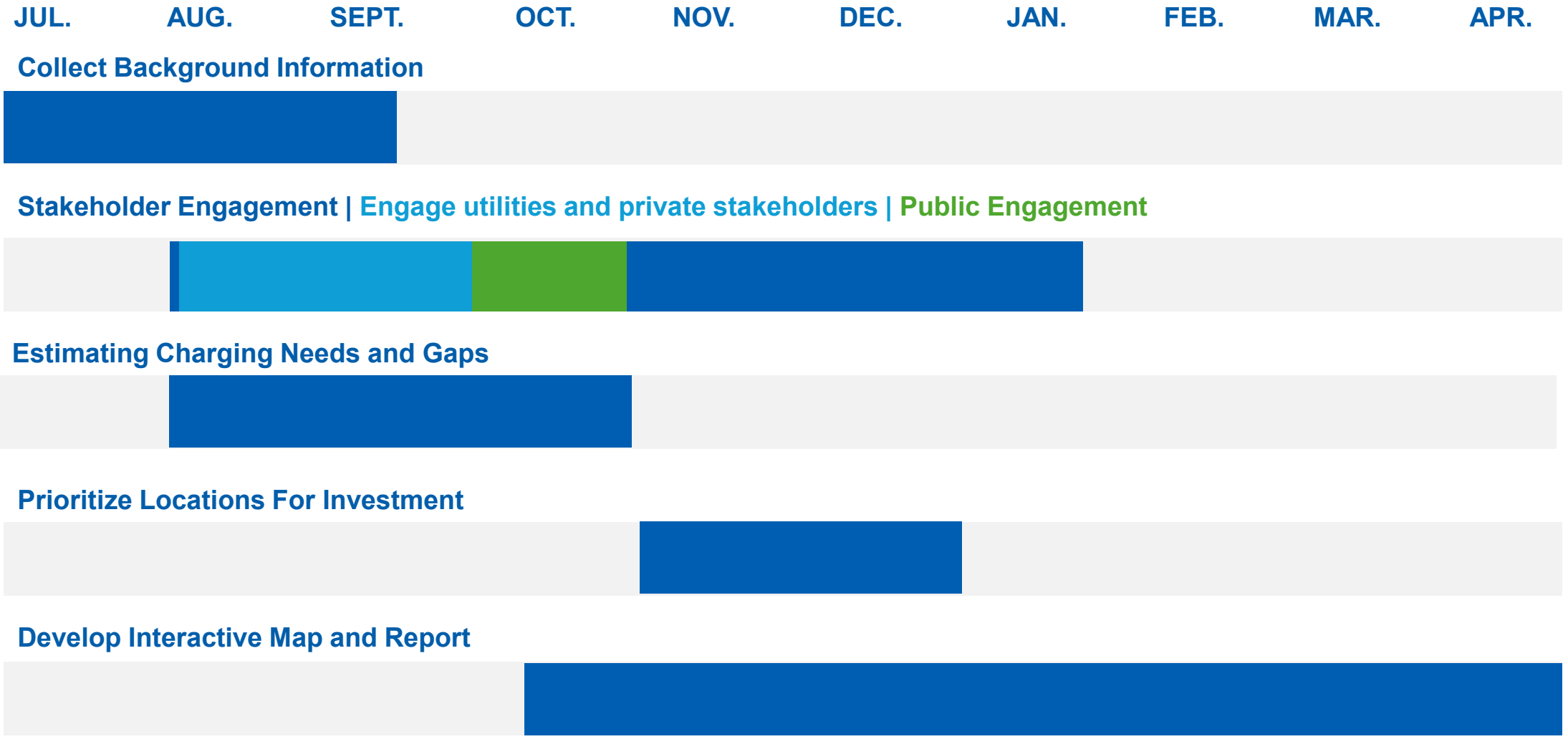
Collect Background Information

Engage Stakeholders and the Public

Estimate Charging Needs & Gaps

Develop Interactive Map & Report

Project Timeline



Draft Background Information

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Background Information: Existing Guidance

	Residential Charging	Community Charging	Destination Charging	Distance Charging	Depot Charging
					
Primary Land Uses	Primarily single-family homes, can include shared private charging in multifamily buildings	Public streets with on-street parking, prioritizing locations near existing or planned multifamily development	Retail, shopping, schools, transit stops, restaurants, grocery stores, workplaces; prioritizing Justice40 trip destinations	Highway exits and rest stops	Centralized depot facilities
Primary Vehicle Types	Privately owned vehicles charging at home	Privately owned vehicles without home charging access	Privately owned vehicles charging at destinations	Publicly and privately owned vehicles needing a rapid charge	Public transit and other fleets
Typical Charging Configuration	Level 1 or Level 2	Utility pole drop-down or pedestals in sidewalk or furnishing zone, prioritizing locations with excess grid capacity	Clusters of Level 2 chargers in parking lots and select DCFCs where dwell times are short	Clusters of DCFCs enabling long-distance travel, likely paired with services like a typical fueling station	Clusters of Level 2 chargers and/or DCFCs depending on operating needs
Typical Dwell Time	Up to 16 hours overnight	2-12 hours	Varies from <1 hour up to 8-10 hours	Short en-route stops of 20-30 minutes	Varies but typically >12 hours overnight
Access Type	Private	Public	Public	Public	Private
Power Requirement	Low	Low	Medium	High	High
Level of Financial Investment	$1,500-5,000 per Level 2 port; Level 1 charging equipment typically included with EV purchase	$5,000-$15,000 per port	$3,000-$15,000 per Level 2 port (6.6-19.2 kW) or $1,250-1,750 per kW (typically 50-350 kW per port)	$1,250-1,750 per kW (typically 50 to 350 kW)	$5,000-$20,000 per Level 2 port (6.68-19.2 kW) or $1,500-2,000 per kW (typically 50-350kW per port)

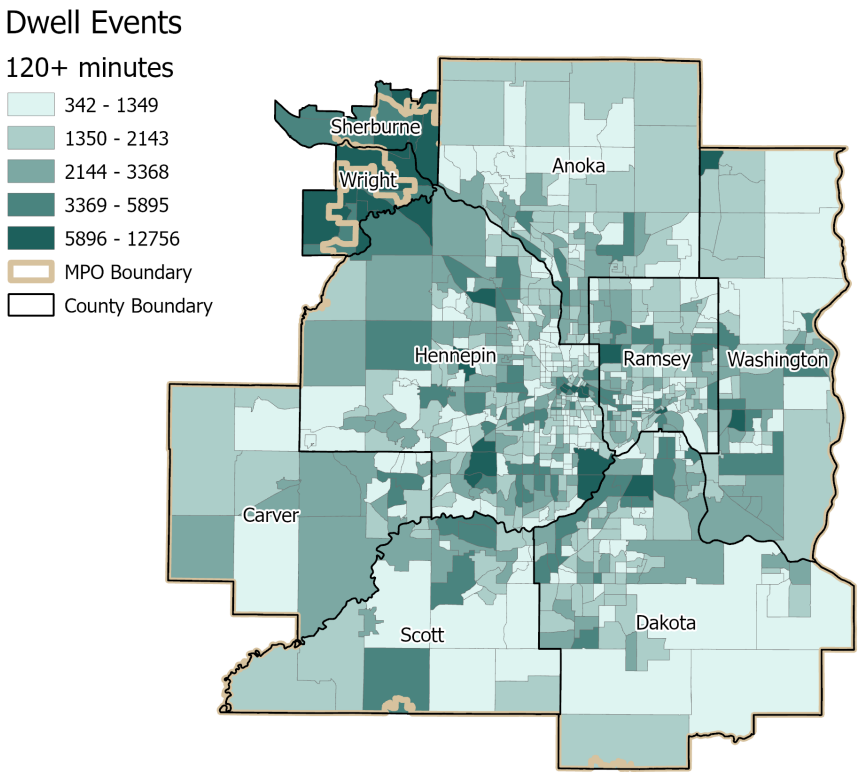
Background Information: Dwell Times

Assumptions

- Multifamily residents will always seek a charge.
- Residents of pre-1920 buildings with a detached garage will seek a charge 80% of the time
- In post-1920 single-family homes:
  - 25% of home-owners will always seek a charge
  - 75% of single-family home renters will always seek a charge.
- After 150 miles of driving in a day, every driver will seek a charge, regardless of housing profile.

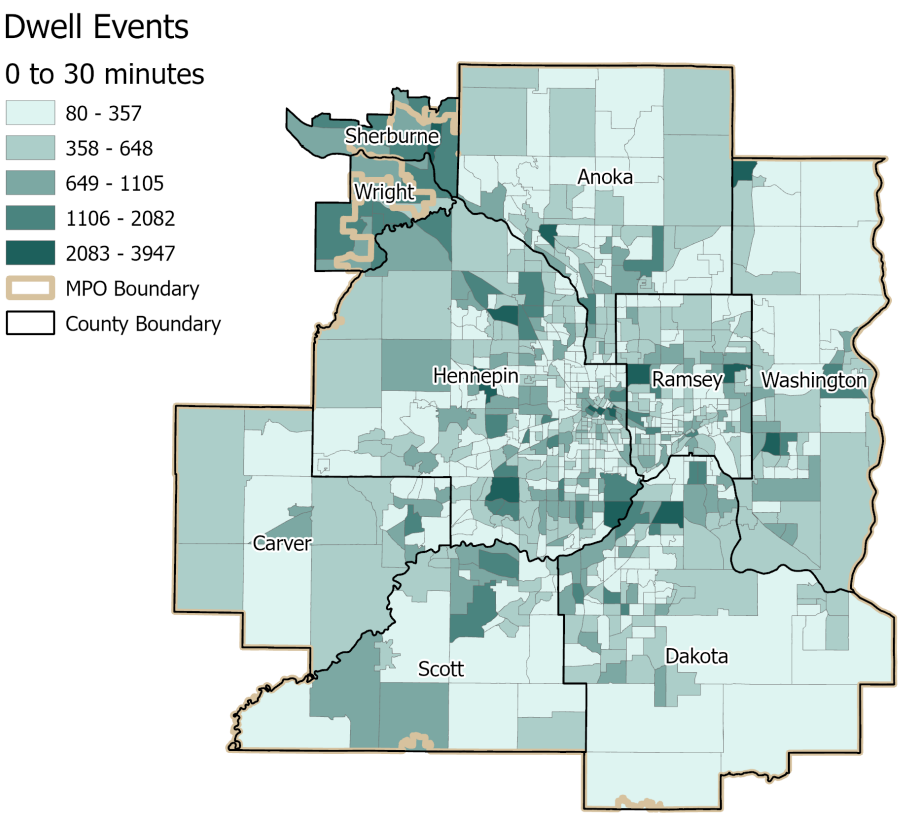
Residents with incomes above the median will be less likely to seek public charging (assumption under development)

Dwell Times, Over 2 hours, Twin Cities MPO Area

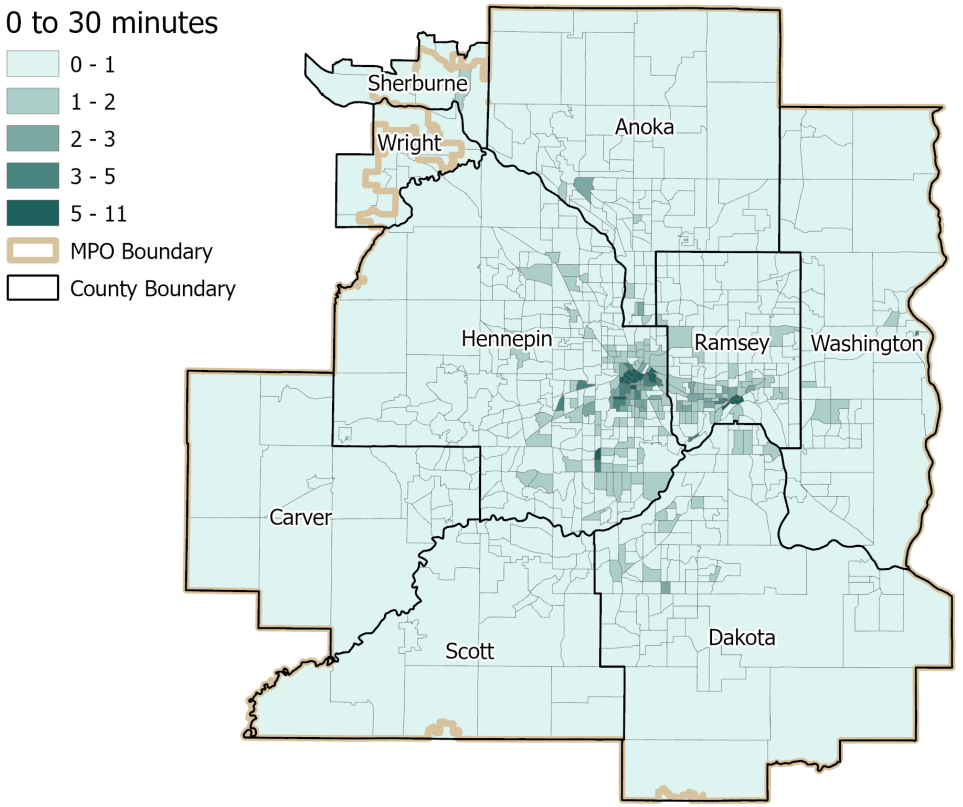


Background Information: Dwell Times

Dwell Times, 30 min or less, Twin Cities MPO Area



Dwell Times, 30 min or less, Twin Cities MPO Area (Normalized)



Background Information: Dwell Times

Preliminary Recommendations

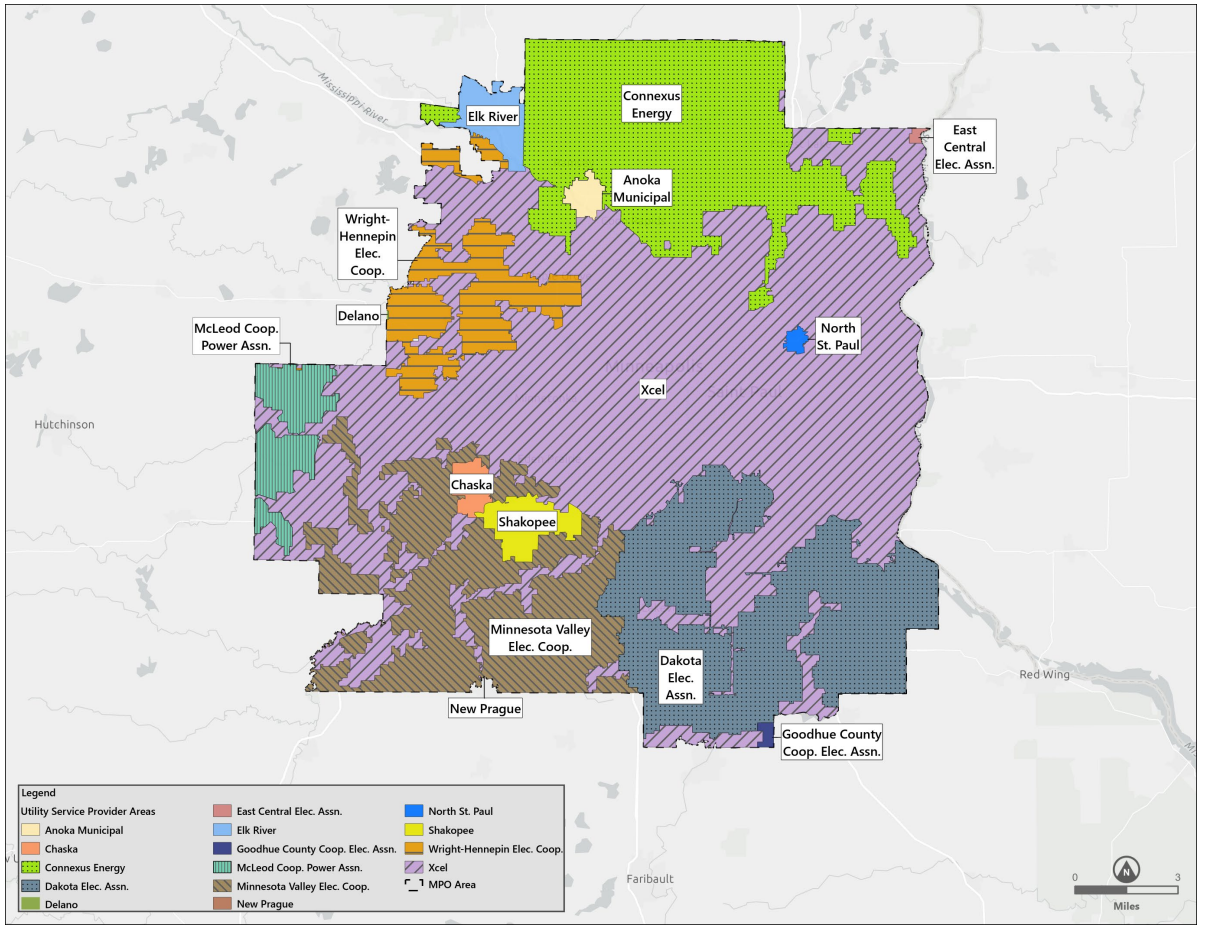
- Use the normalized data to determine number of chargers
- Use the raw dwell events to prioritize locations:
    - Consider DCFC in areas with up to 2 hour dwell times, including the Mall of America, shopping centers such as those in Maple Grove, Coon Rapids, and St. Anthony, and at large commercial/industrial parks in Plymouth, Eagan, and Eden Prairie.
    - Consider Level 2 chargers in areas with dwell times over 2 hours, including the Minneapolis–Saint Paul International Airport, Downtown St. Paul, as well as a mix of residential, agricultural, industrial, and retail locations in Sherburne and Wright County.

Background Information: Utility Considerations

Engagement Themes

- **Utilities support coordinated planning** for EV chargers
- Level 2 chargers and smaller installations of DCFC are **not expected to pose challenges**
- Maps of available utility capacity are typically not publicly available. However, **most utilities are willing to review list of locations**
- Utility pole-top chargers are **not allowed or not desired** in most utility territories in the region
- While load management is an ongoing issue for utilities in the region, it will be challenging to match EV charging station types with excess capacity on the grid.
  - Several utilities indicated **time-of-use pricing is preferred** for load management

Utilities Serving the Twin Cities MPO Area



Background Information: Multi-family and Historically Underserved Charging Needs

Research Summary

At home charging:

Less important

Top reason for EV adoption:

Reduced Costs

Top Concern:

Personal safety

Workplace charging:

Of Interest

Barriers:

Extreme Weather

Most willing to drive EV without home access:

Multifamily residents

Approach to Estimating Charging Needs and Gaps

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Estimating Charging Needs and Gaps

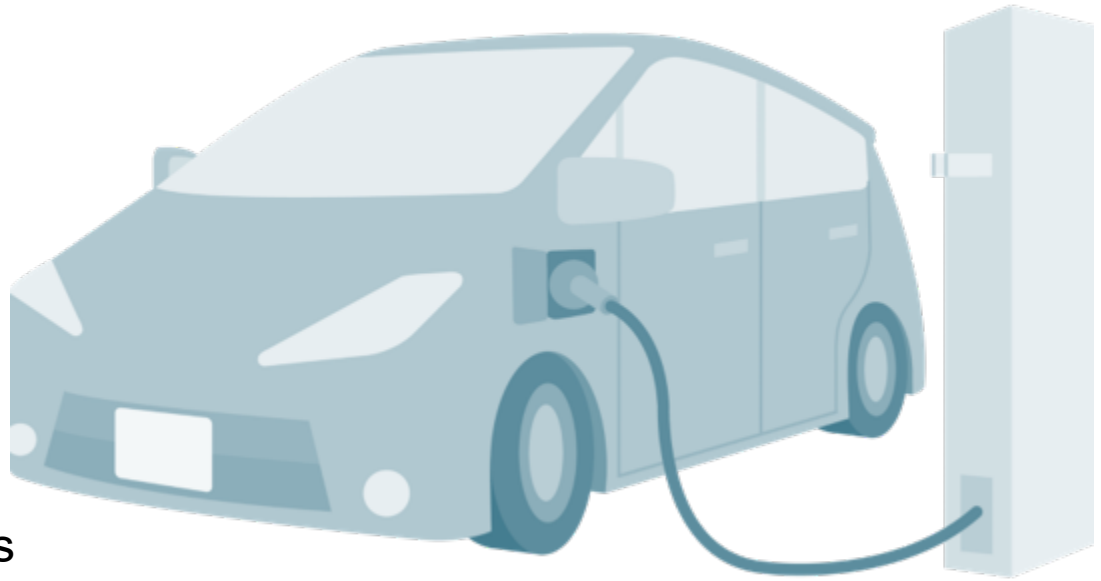
Our Process

- Identify existing stations
- Analyze current dwell times
- Forecast future EV demand
- Match charging types (L2 or DCFC) to land use, dwell times, and forecasted future demand
- Adjust the mix to reflect the region's objectives

TPP Regional Goals & Charging Network Priorities

Regional Goals & Priorities

- **Our region is equitable and inclusive**
  - Charging Network Priority: Prioritize charging for residents without access to home charging
- **Our communities are healthy and safe**
  - Charging Network Priority: Support air quality improvements
- **Our region is dynamic and resilient**
  - Charging Network Priority: Promote redundancy in the network
- **We lead on addressing climate change**
  - Charging Network Priority: Site chargers at high traffic locations
  - Charging Network Priority: Consider geographic coverage

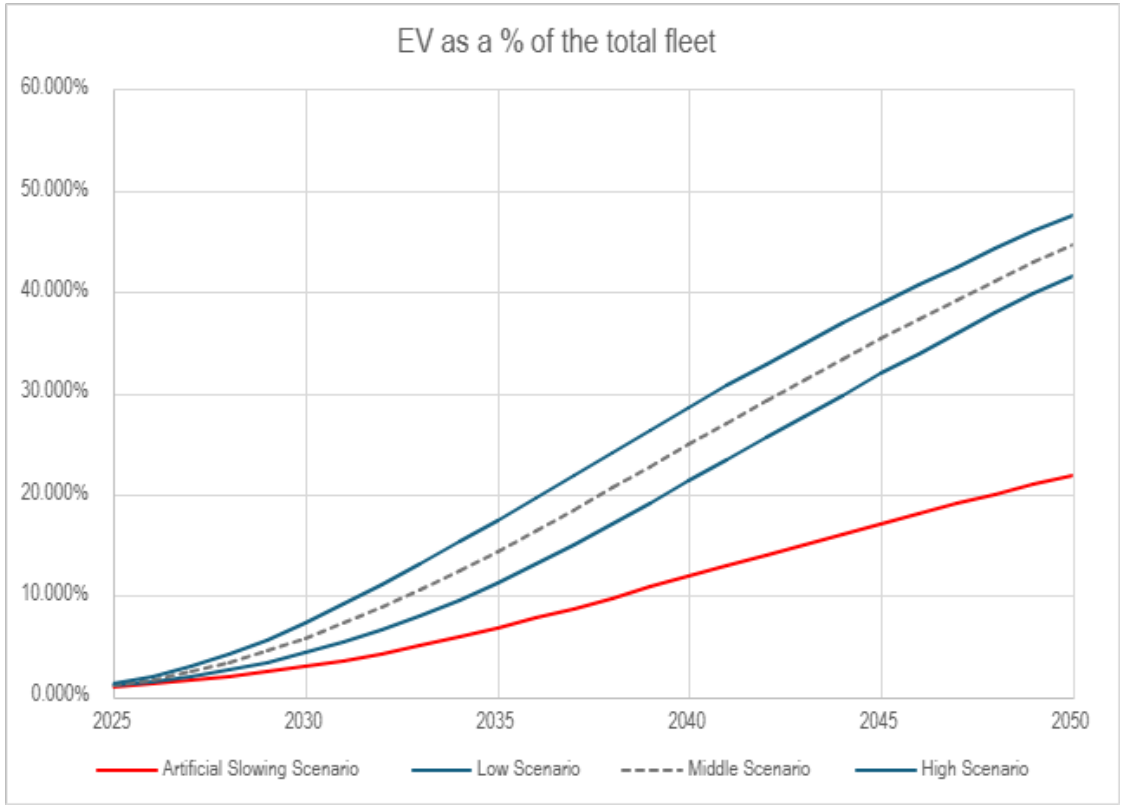


Draft Future EV Demand Forecast

Draft Assumptions

- High scenario is based on SMTP target of 60% sales by 2030, smoothed using spline fitting technique
- Low scenario is based on an aggregate of 12 forecasts from academia, non-profits, and private partners
- Middle scenario is an average of low and high
- Artificial slowing scenario is 50% reduction from the low scenario in 2030, with curve fitting technique

EV as % of Total Fleet, Twin Cities MPO Area (2025 – 2050)



Thank You

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