# EV Public Charging Needs Analysis

## TAC Planning

METROPOLITAN COUNCIL

May 14, 2026

# Overview

## Presentation Topics

- Project objective and approach
- Background information and EV planning best practices
- Estimated charging needs and gaps
- Prioritized locations for investment
- Next steps

# Project Objective

## Planning an EV charging network for the region

- Planning level analysis of the remaining gaps in publicly available EV charging infrastructure beyond what already exists
- Identification of what part the public sector might play a role in

**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**

**Prioritize Locations for Public Investment & Develop Interactive Map**

# Background Information

- Reviewed federal, state, and industry guidance on planning public EV charging investments
- Analyzed dwell times to understand charging behavior across land uses
- Engaged electric utilities and private-sector charging providers to document existing plans
- Assessed needs for multifamily residents, underserved communities, and potential medium/heavy-duty charging use cases
- Evaluated seasonal and temperature effects on charging demand and incorporated community feedback

# EV Charging 101

## Different types of charging to meet different drivers' needs:

| Level | Power Output | Charging Time | Cost for Equipment, Installation, and Site Costs |
|---|---|---|---|
| **Level 1** | 1 kW | 1-3 miles range / 1 hour of charging | $0 to $1,800 per port |
| **Level 2** | 7 kW-19 kW | 15-30 miles range / 1 hour of charging | $800 to $33,000 per port |
| **Direct Current Fast Charger (DCFC)** | Low: 50-150 kW<br>Medium: 150-250 kW<br>High: 250-350 kW | 100-200+ miles range / 30 minutes of charging | $30,000 to $120,000+ per port |

# Using Dwell Time to Inform EV Planning

## Matching EV charging type to dwell times and land use

- Dwell time is time that vehicles spend parked in a location, which can be time spent charging an EV
- Dwell time is the key considerations for selecting the appropriate charging type
    - DCFC are appropriate in locations when EV drivers stop for less than an hour
    - Level 2 chargers are cost-effective when EV drivers stop for a longer period
- Used Replica data aligned to American Community Survey (ACS) data at the census tract level to capture dwell time in the region
    - Simulated typical day of trips at the census tract level
- Assumed multi-family housing residents always seek a charge, single family home owners sometimes seek public charging

# Estimating Charging Needs and Gaps

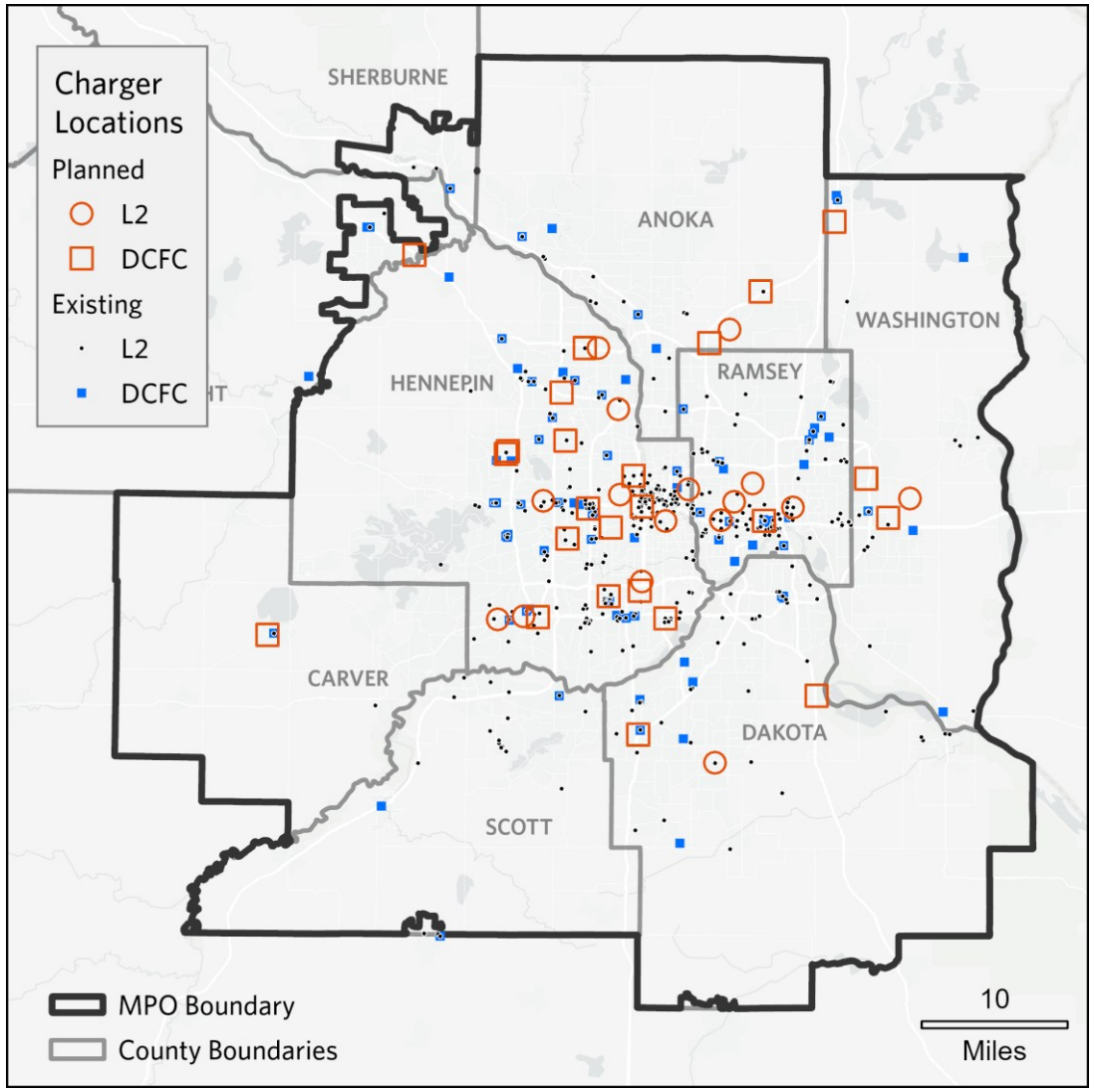
## Our Process

- ☑ Identify existing and planned stations
- ☑ Forecast future EV demand across the region
- ☑ Estimate publicly accessible charging needs across the region
- ☑ Distribute charger demand at the census tract level based on:
  - Housing Type and Household Income
  - Travel Behavior (Dwell Analysis)
  - Land Use

# Estimating EV Charging Needs

## Identify Existing and Planned Charging Stations

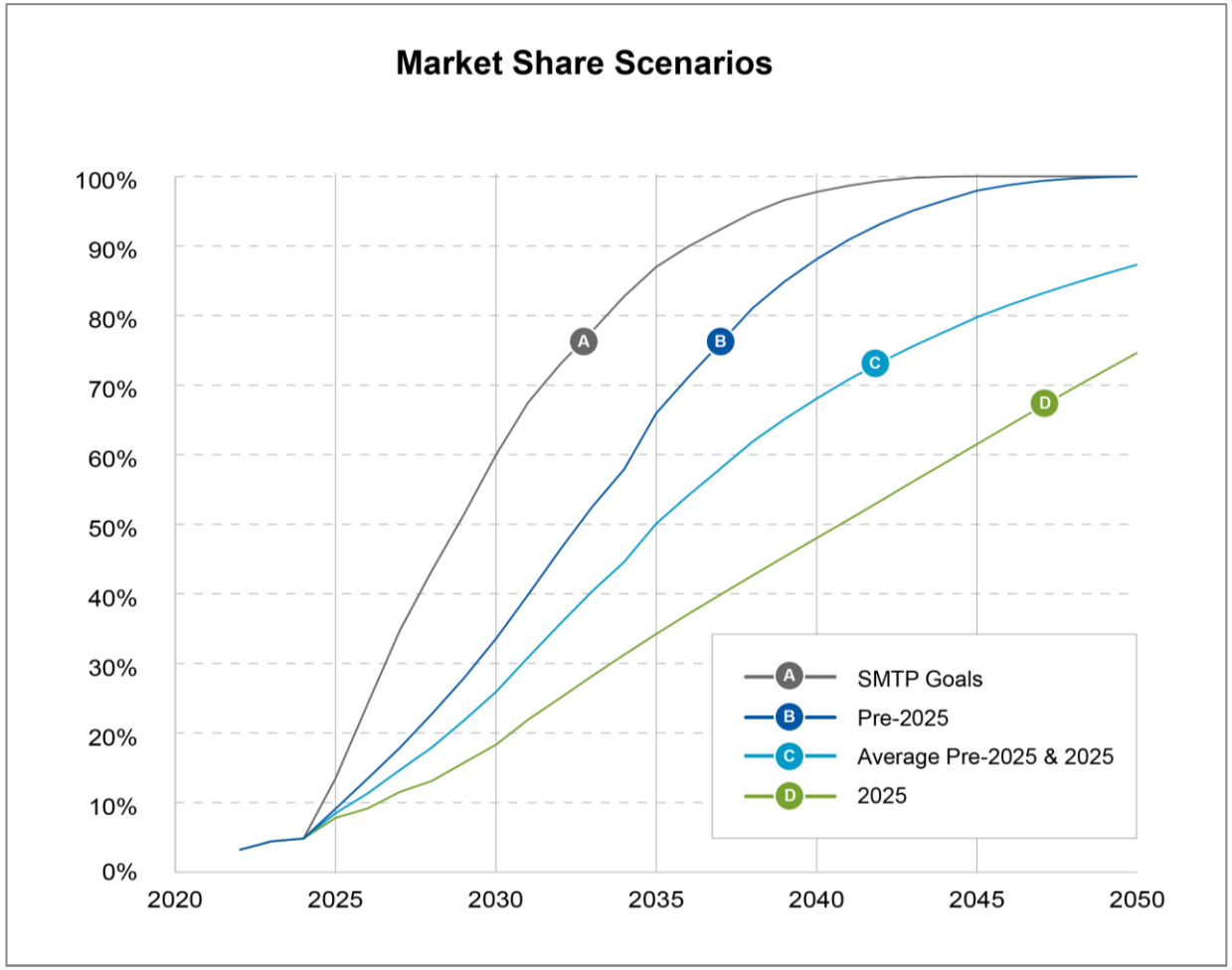
- **DCFC Stations**
  - Near major corridors
  - Primarily in or on the outskirts of Hennepin and Ramsey County
- **Level 2 Charging Stations**
  - Concentrated in Minneapolis, Saint Paul, Hennepin County, and Ramsey County
  - Periphery counties have few chargers, even along major corridors



# Forecast Future EV Demand

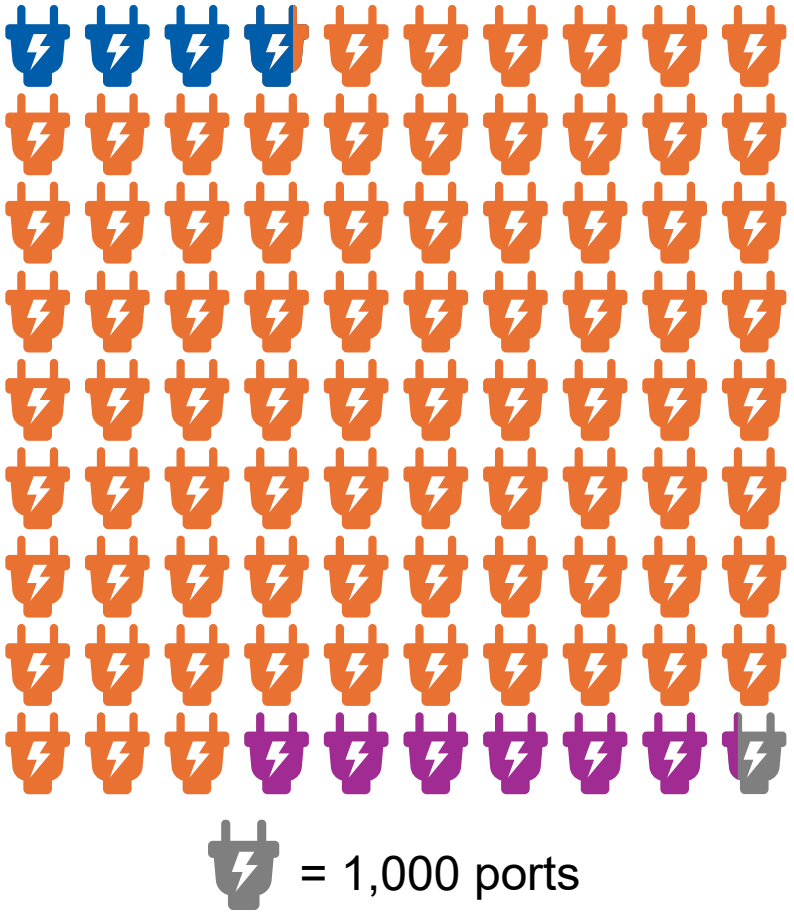
- Using **historic vehicle registration data** + **national EV market share trends**, developed **four scenarios** to project estimate of light-duty electric vehicles on the road in 2025

- **Average of Pre-2025/2025** chosen as forecasting input
  - **~In 2040, about 30%** of light-duty vehicles on the road estimated to be battery electric
  - **~1,222,600 EVs** (main input for estimating future charger demand)



# Estimate Charging Needs

## Total Ports Needed by 2040 (EVI Pro-Lite)



= 1,000 ports

**89,338**
**PORTS**

**Level 1: 3,810 ports**

**Level 2: 80,002 ports**

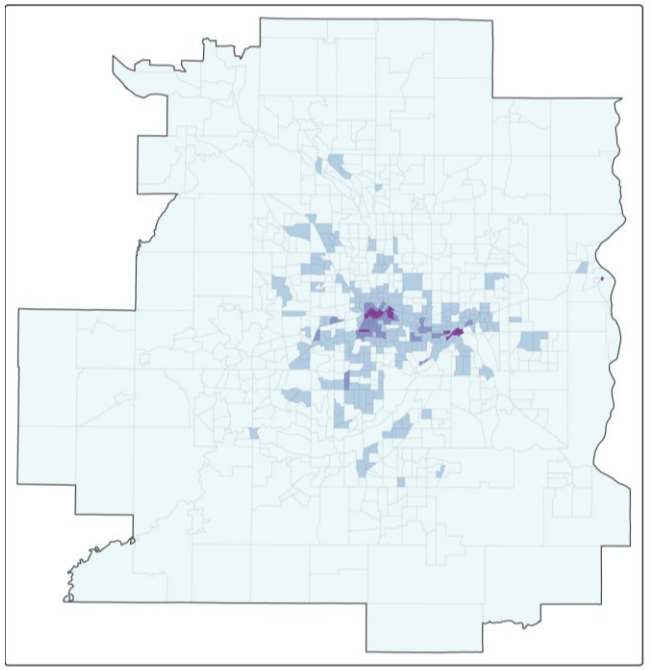
**Level 3 (DCFC): 6,236 ports**

**Existing Ports Account for about ~2% of Total Demand by 2040**

# Match Charging to Land Use, Dwell Time and Future Demand

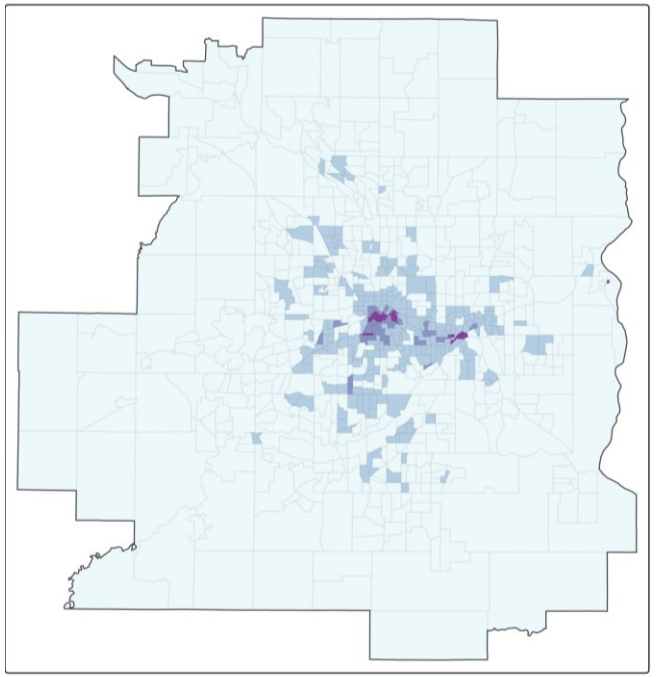
1. **Develop demand weights** by census tract based on dwell analysis and land use suitability
2. **Disaggregate regional totals** (from EVI Pro-Lite analysis) to census tracts, proportional to the demand weights
3. **Subtract existing ports** from each census tract to determine the net charging needs for each tract

Level 1



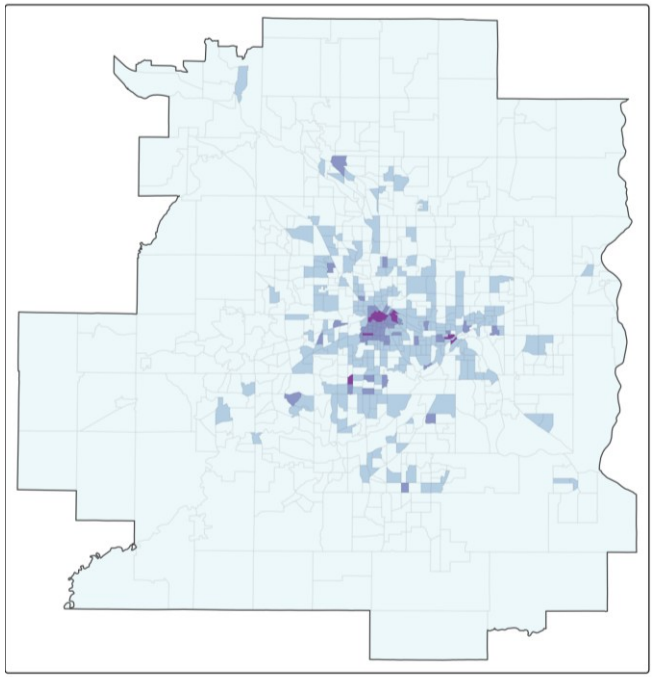
**Total:** 3,810 ports

Level 2



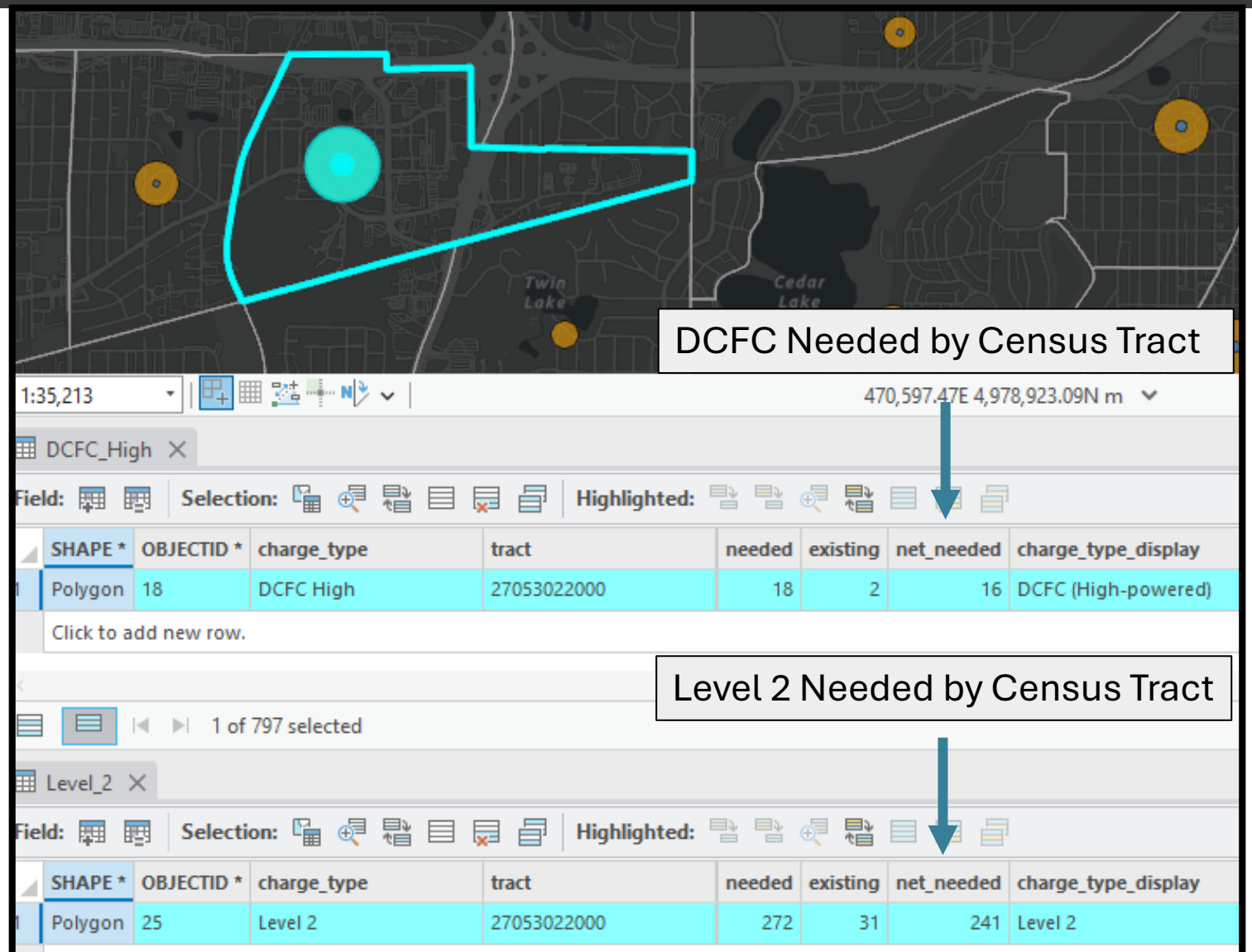
**Total:** 78,601 ports

DCFC (All)



**Total:** 5,668 ports

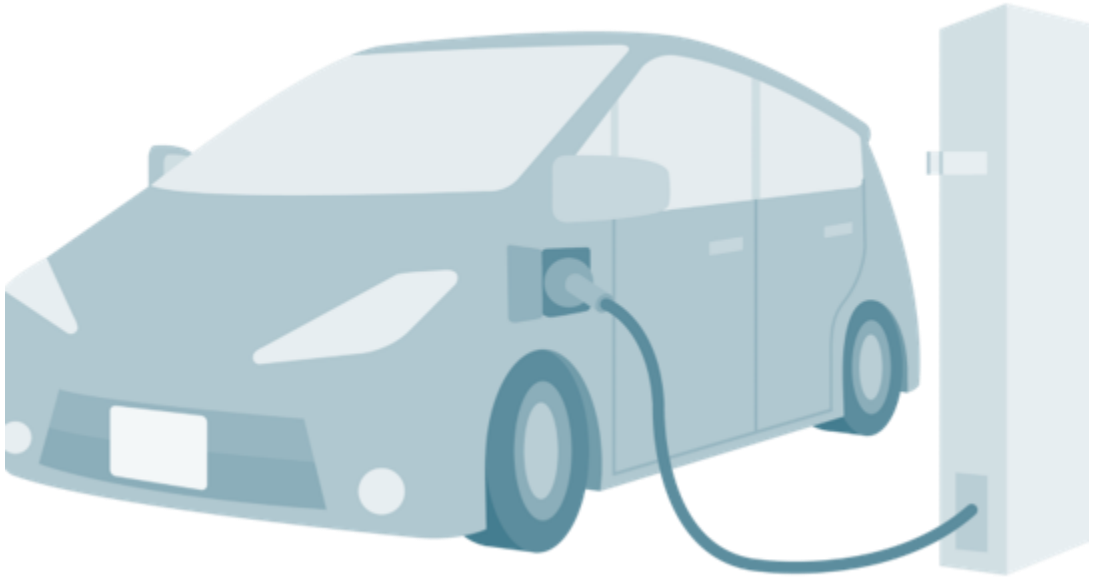
# Sample Results at the Tract Level



# TPP Regional Goals & Charging Network Priorities

## Regional Goals & Priorities

- We lead on **addressing climate change**
  - Charging Network Priority: Site chargers at high traffic locations
  - Charging Network Priority: Consider geographic coverage
- 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 charging network~~



# Stakeholder Engagement Summary (1)

## Approach & Activities

The community engagement approach centered perspectives of people most likely to rely on public charging. To achieve this, the project team focused on engaging two primary audiences:

- Community groups, organizations, and leaders who work closely with residents and could provide insight into equity considerations and charging access barriers.
- Community members who are less likely to have access to at-home charging, such as renters, residents of multifamily housing, and people living in older homes (pre-1925 homes without garages), as well as existing EV users who rely on public charging.

**Activities (298 engagement touch points)**

- 13 one-on-one interviews
- Online open house and survey (262 participants)
- 23 presentations to neighborhood organizations and residents' groups

***All engagement was led by Bellwether Consulting***

# Stakeholder Engagement Summary (2)

## Findings

- There is strong support for prioritizing future public chargers in locations for residents without access to home charging.
- Everyday and long-dwell time destinations are the most preferred charging locations because they allow people to integrate charging into their daily schedules rather than making a separate trip solely to charge.
- Charger reliability, safety, and maintenance are as important as charger location. Public charging is essential, not supplemental, for many EV users and future users.
- Affordability and price transparency are barriers to EV adoption.
- Public charging investments should align with transportation and community goals.

# Prioritization Approach: Combining the Measures

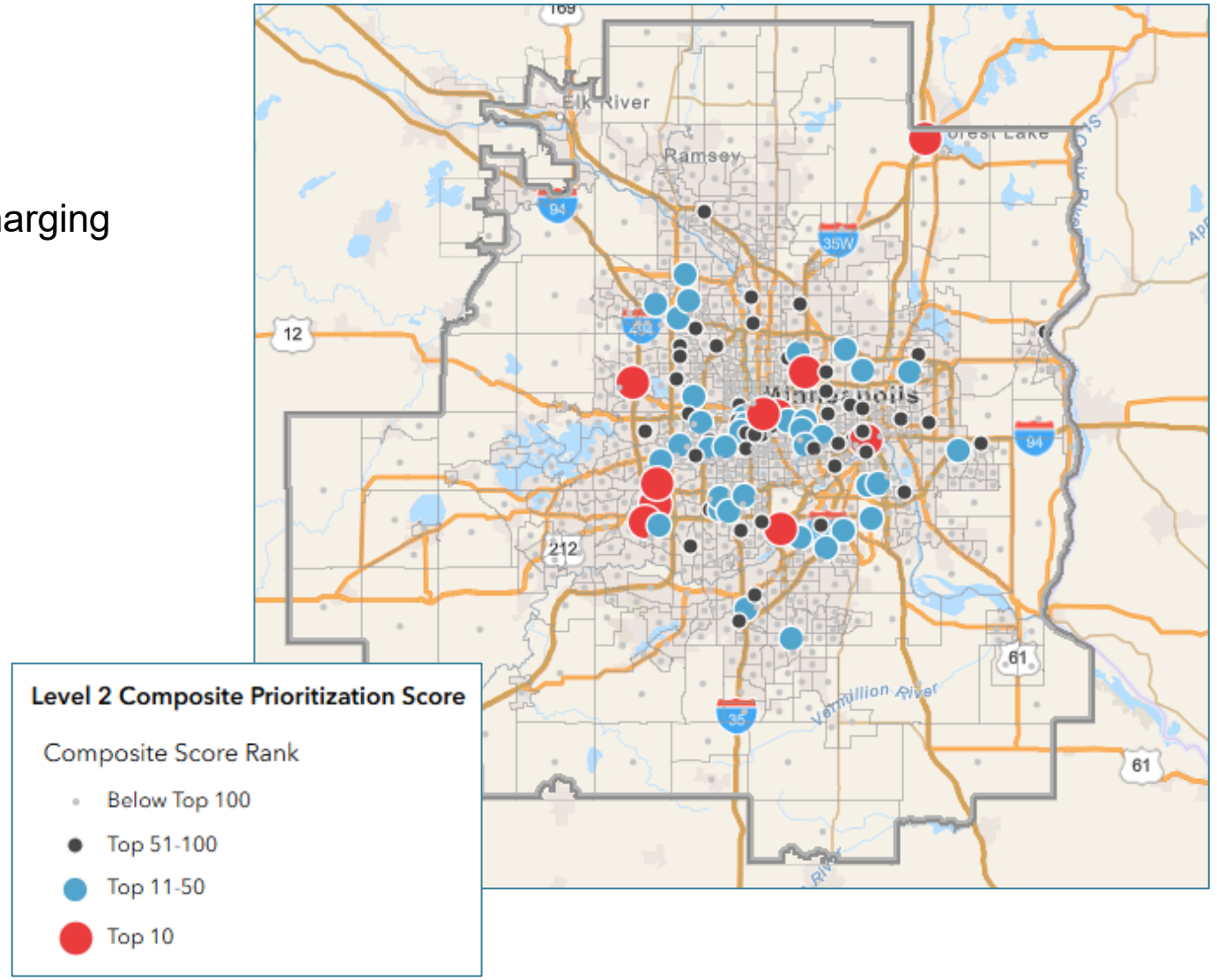
## Translating Goals & Priorities into Measures

| TPP Goal | Charging Network Priority | Measure | L2 Weight | DCFC Weight |
|---|---|---|---|---|
| Addressing Climate Change | Site chargers at high traffic locations | **Future Public Charging Needs:** Estimated number of charging ports needed to support forecasted publicly accessible EV charging in 2040 by census tract | 15% | 25% |
| Equitable & Inclusive | Prioritize charging for residents without access to home charging | **Multi-family Housing Trips:** Estimated number of trips associated with multi-family housing trips aggregated at the census tract level. | 45% | 40% |
| Equitable & Inclusive | Prioritize charging for residents without access to home charging | **Low-Income Trips:** Estimated number of trips taken by residents with household income <$75K aggregated at the census tract level. | 15% | 10% |
| Healthy & Safe | Support air quality improvements | **Traffic-Specific Air Pollutants:** Concentration of traffic-specific air pollutants in census tract | 15% | 15% |
| | Consider geographic balance | **Rural Trips:** Estimated number of trips to destinations in census tracts in Rural Town Centers | 10% | 10% |

# Prioritization Results (1)

## Level 2 Charging

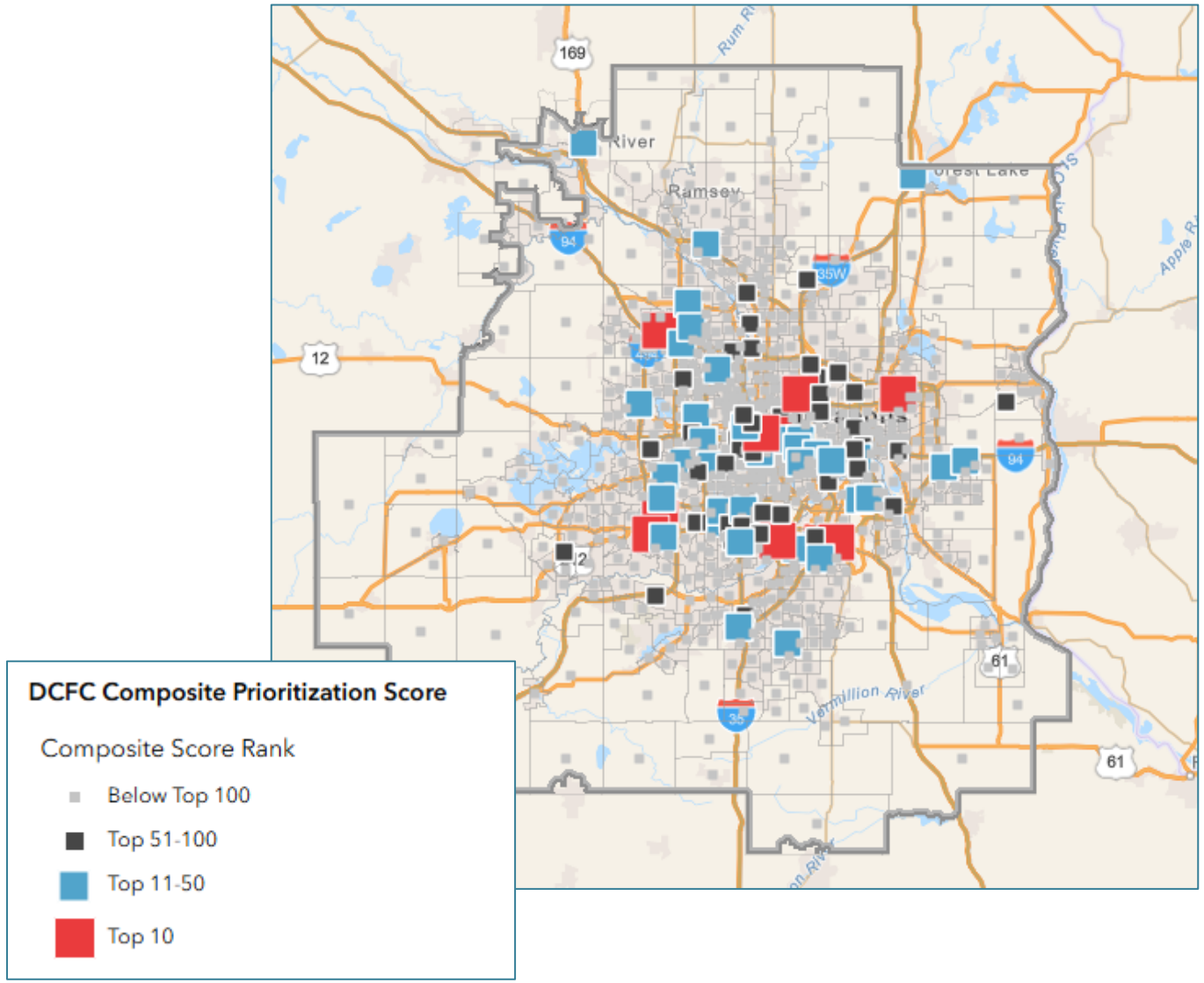
- Top 100 census tracts for Level 2 charging
- Composite score of all measures

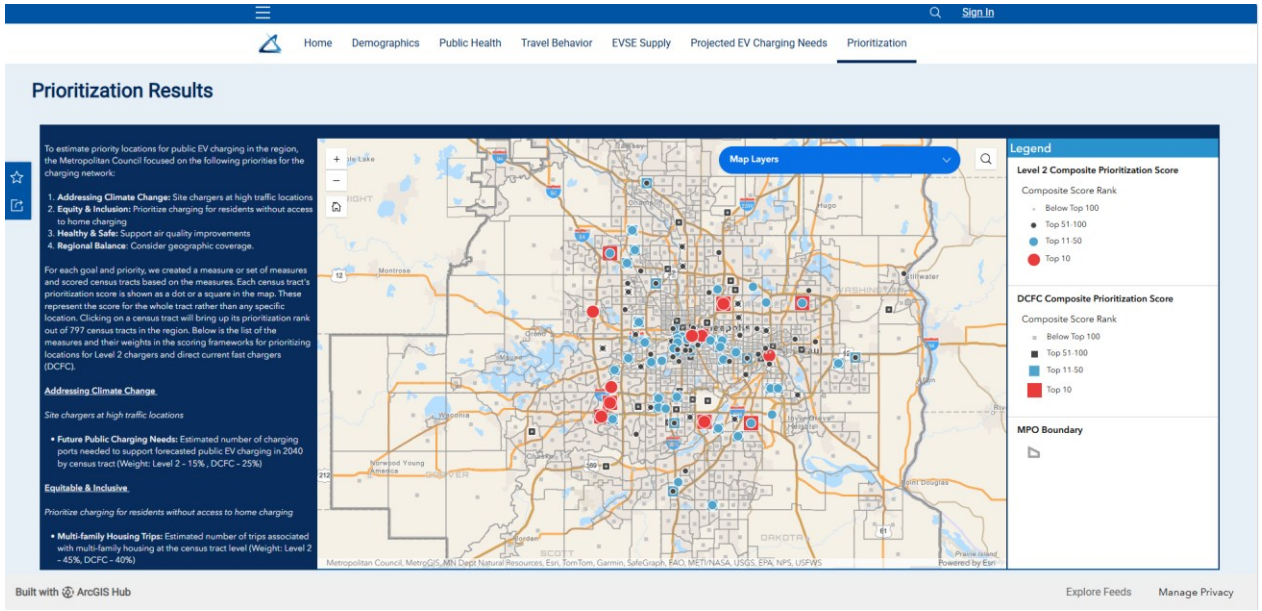


# Prioritization Results (2)

## DC Fast Charging

- Top 100 census tracts for DCFC
- Composite score of all measures



# What's Next?

- Final report and interactive map to be published this summer
- Planning for $7m solicitation in 2028
  - Data updates including air pollutants
- EV City Support Project began March 2026
- EV Public Engagement RFP Q3 2026
- Draft 2027 UPWP includes EV Curbside Charging Implementation Cohort