



Bellevue EV Roadmap

Accelerating EV Adoption in Bellevue



2024-11-07

Let's



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- 02** Engagment
- 03** Projecting Demand
- 04** Equity Considerations
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- 06** Strategies & Metrics

Introductions



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01 Mission & Goals



Bellevue's EV Roadmap

Mission

Support a city where residents, workers, and visitors benefit from an accessible, efficient, and clean transportation ecosystem by guiding the deployment of charging infrastructure, incentives, and other sustainable modes of transportation to advance the Bellevue's mobility and equity goals.

Goals

Sustainability

- Environmental Stewardship
- Policy Action

Equity

- Charging Access
- Mobility Diversity

Partnerships

- Smart Funding
- Transit Electrification
- Coordination & Collaboration
- Leading by Example

Leadership

- National Leadership





02 Engagement



Outreach & Engagement

Phase 1 Outreach

- Conducted from Dec 2023 – Apr 2024
- Utilized both online tools & in-person events
 - Community EV Adoption Survey
 - EV Charging Map
 - Intercept Interviews
 - Property Manager Focus Group
- 620 connections made with community members, some participating in multiple engagement activities





Outreach & Engagement

Community Identified Barriers to Local EV Adoption

- **Charging Behavior:** 100% of EV owner respondents charged their vehicles most often at home
- **Interest in Other Forms of Mobility:** 52% of survey respondents expressed interest in other forms of mobility (EV carshare, e-bikes, and e-scooters)
- **Grid Limitations:** Electric grid and power access identified as key barriers to installing charging for multifamily buildings





Outreach & Engagement

Community Identified Barriers to Local EV Adoption



- Access to EV charging in multifamily buildings
- Public charging
- EV barriers
- Charging behavior
- Interest in other forms of mobility
- Grid limitations





03 Projecting Demand



EV Adoption Forecasting

Two Main Metrics:

1. **EV adoption:** the percentage of all registered vehicles that are EVs
2. **EV market share:** the percentage of new vehicle registration that are EVs

The goals of this effort were to:

- Determine what level of growth is needed
- Identify EV adoption forecasts
- Inform the charging needs analysis





EV Adoption Forecasting

Bellevue's current EV adoption rate is 3x the WA average

2023

- 8,100 EVs registered in Bellevue
- 152,000 registered EVs in Washington State
- ~24% of Bellevue's compared to 19% of Washington State's new vehicle registrations in 2023 were EVs (BEVs & PHEVs)

2030

Projected
56,000 EVs,
requiring 2,900
charging ports

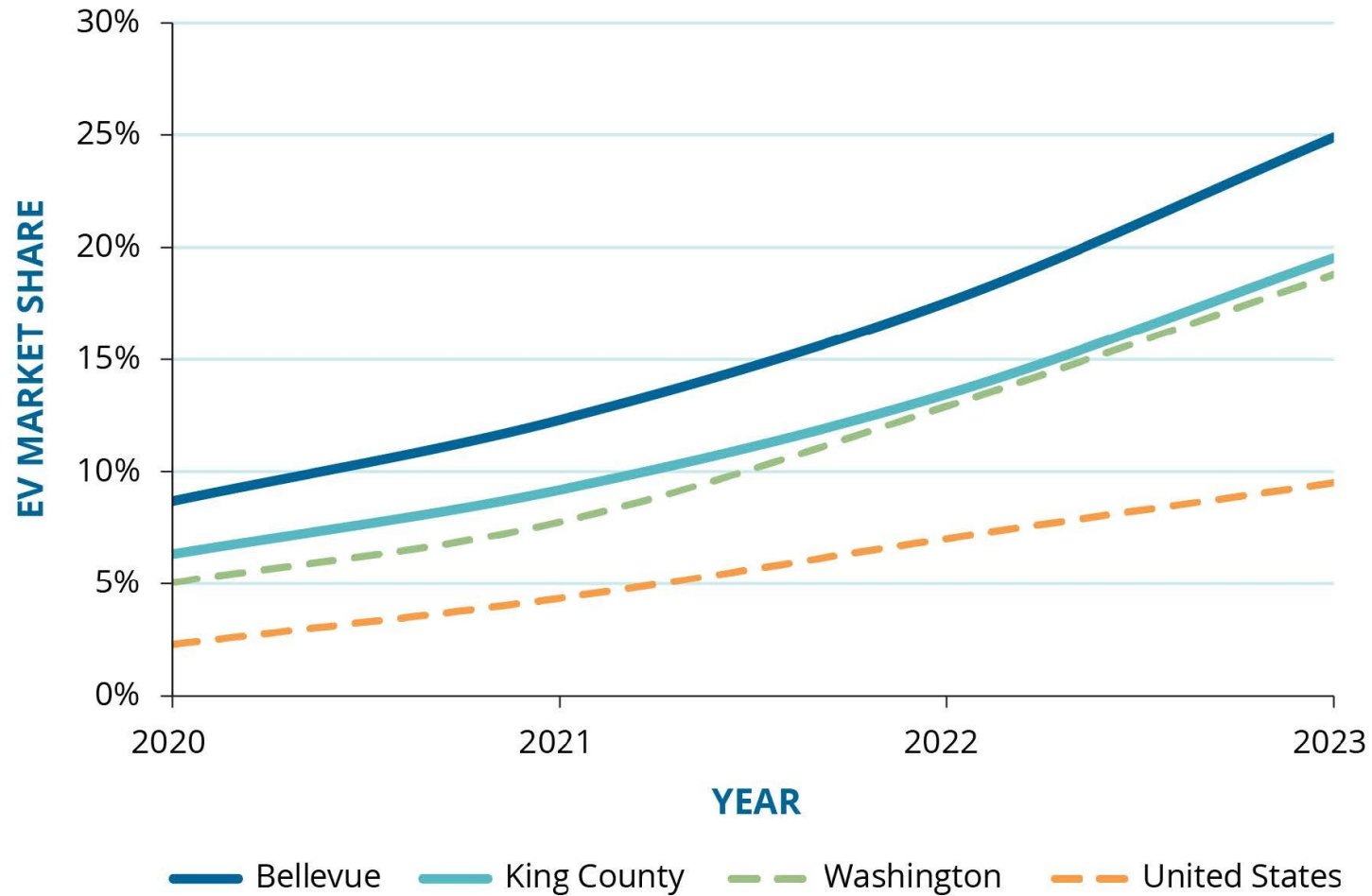
2050

Projected
200,000 EVs,
requiring over
10,000
charging ports



EV Adoption Forecasting

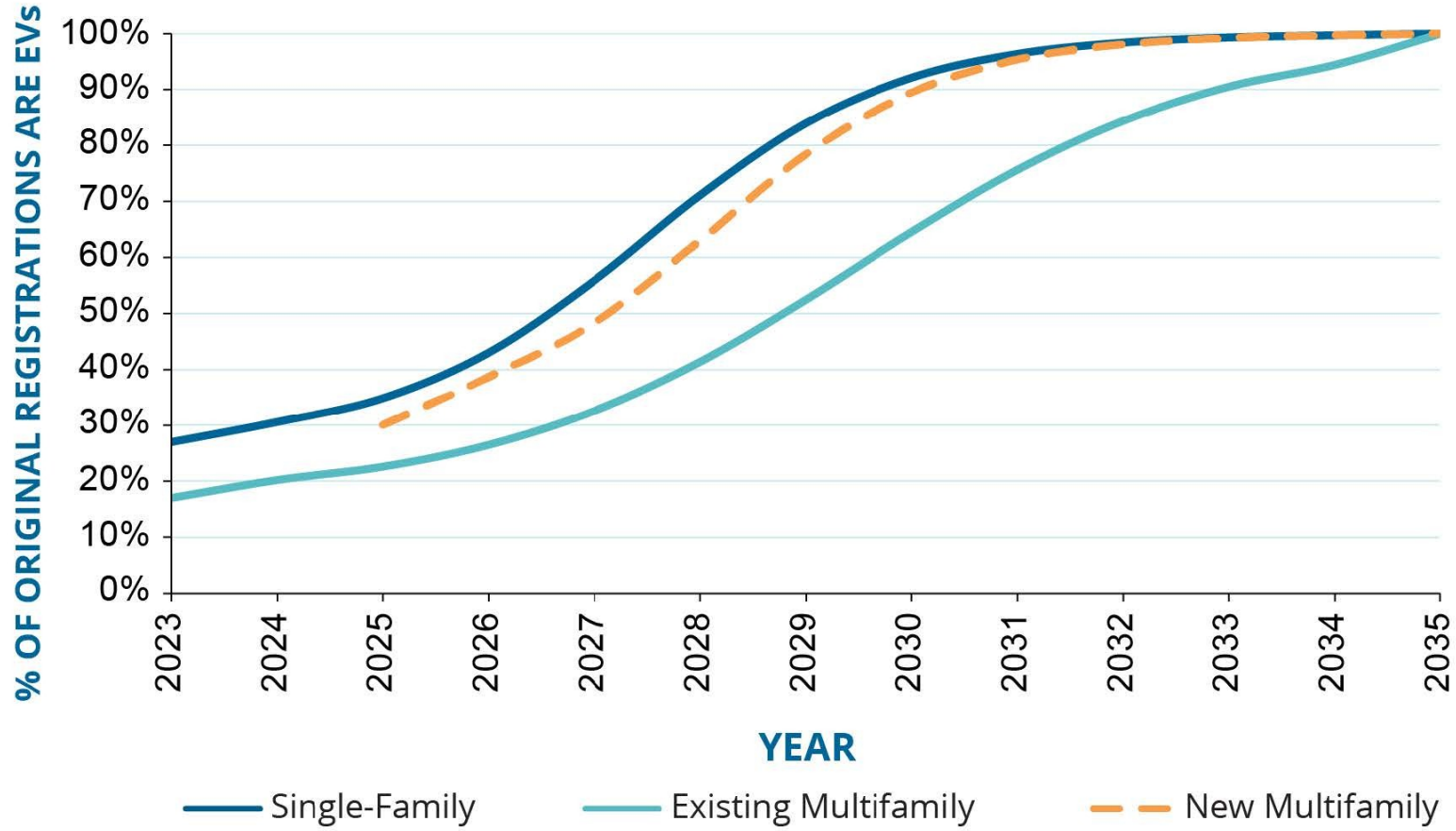
Comparison of Recent EV Market Share (annual sales) Trends





EV Adoption Timeline

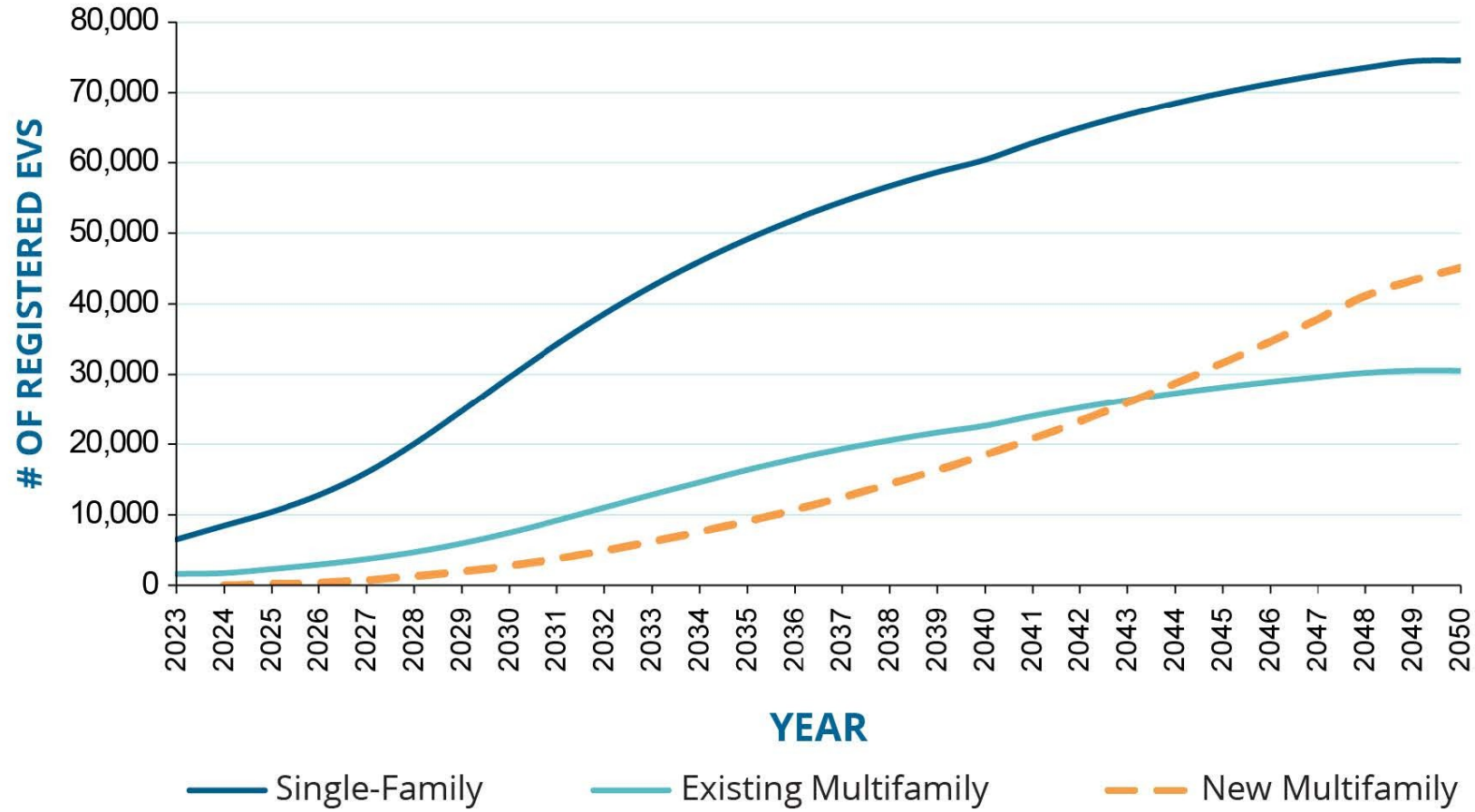
Projecting Future EV Market Share





EV Adoption Timeline

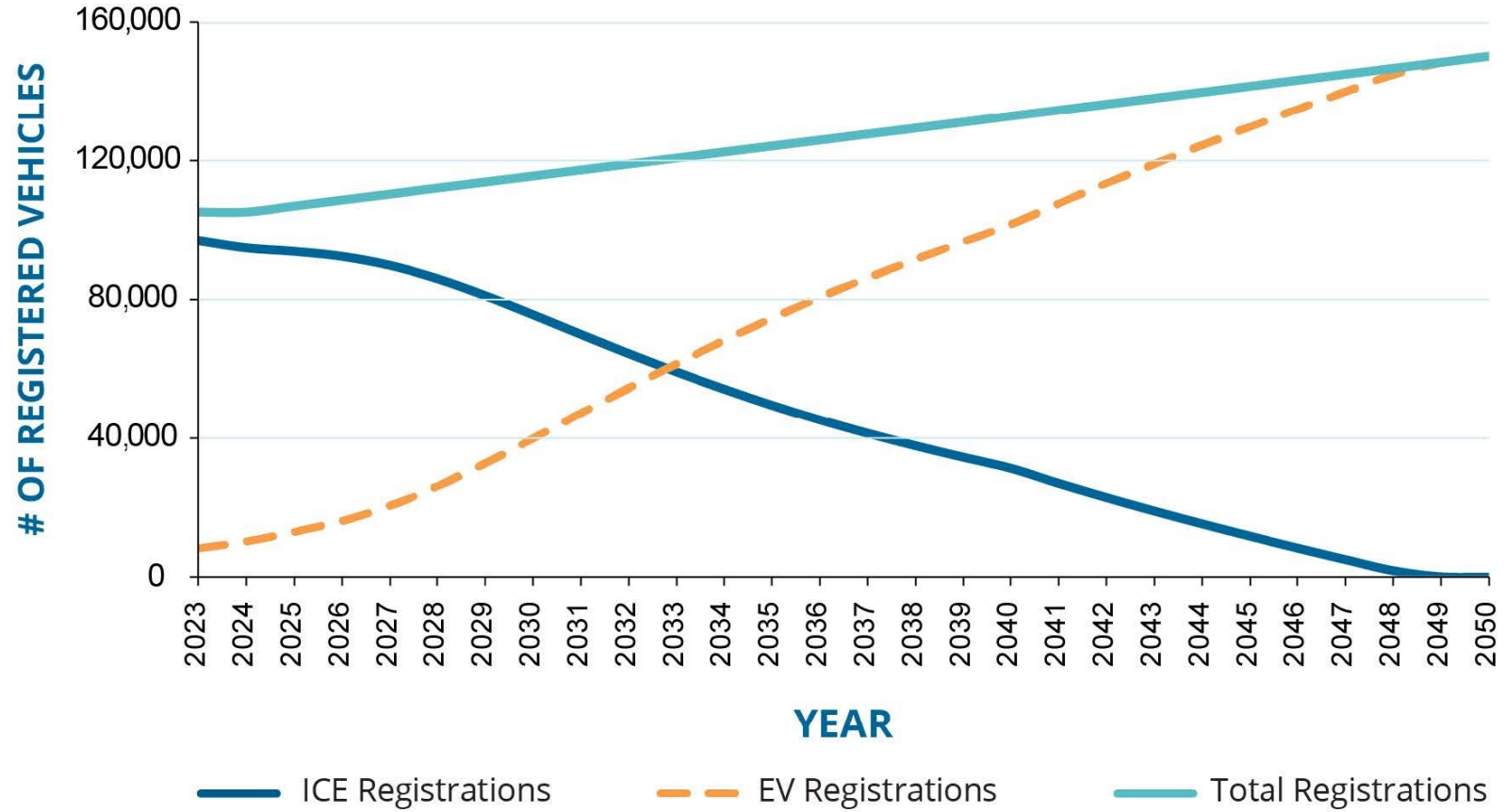
Translating Market Share to EV Adoption





EV Adoption Timeline

Translating Market Share to EV Adoption





04 Equity Considerations



Equity Considerations

Affordable Housing

- Align electrification efforts with current housing conditions and typologies

Health Disparities

- Address disproportionate health impacts from air pollution in vulnerable communities

Income Levels

- Guide targeted investments in communities facing socioeconomic challenges

Air Quality

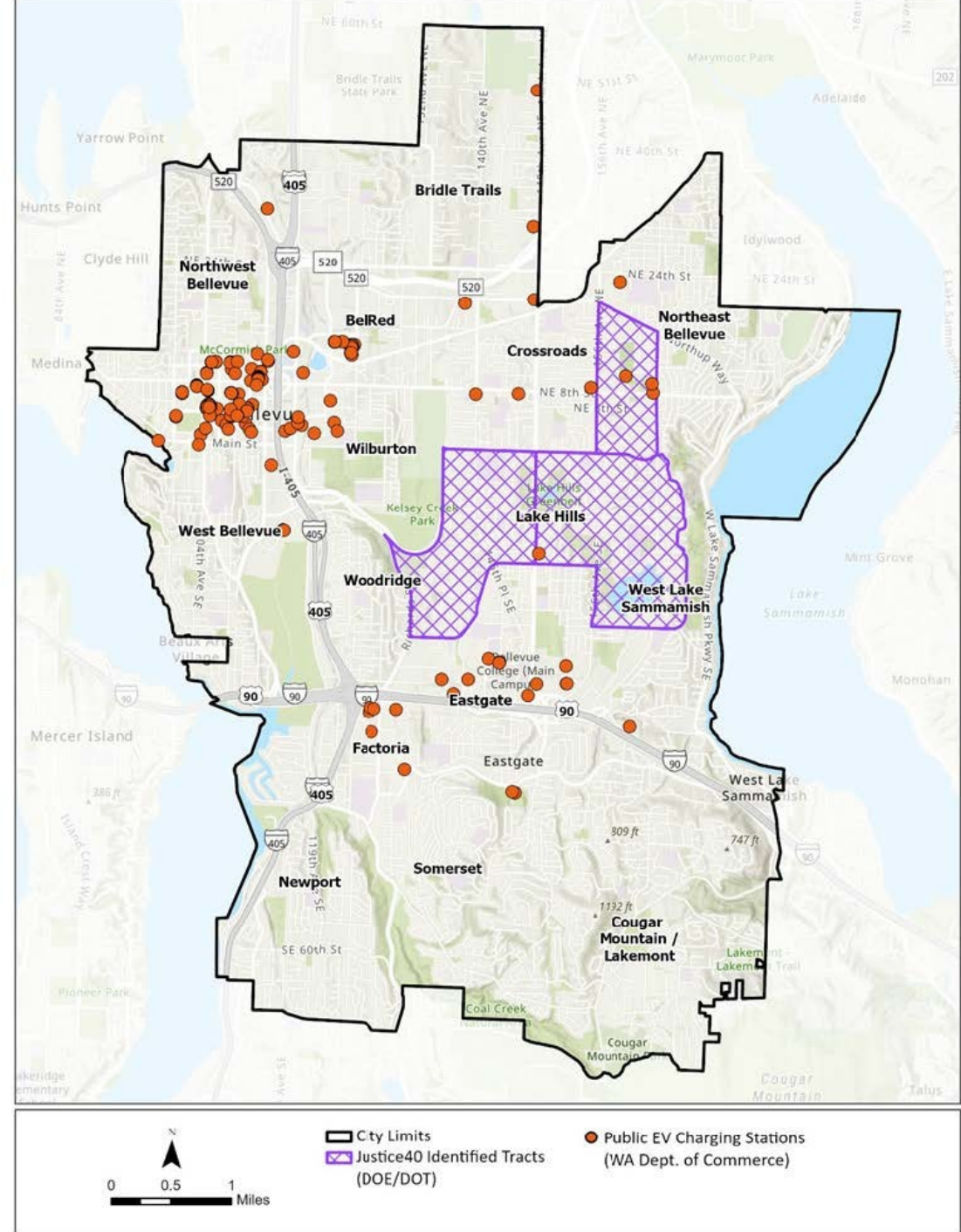
- Prioritize electrification in areas with higher pollution levels



Equity Considerations

Justice40 Census Tracts & Publicly Accessible EV Charging Stations

- 596 publicly accessible charging ports within Bellevue city limits
 - 574 Level 2 ports and 22 DCFC ports
- Charging station hubs in Downtown Bellevue, Eastgate and Factoria
- Minimal overlap between existing charging station locations & Justice40 census tracts
 - 1% of these ports are within Justice40 census tracts





05 Charger Considerations








Bellevue's EV Charging Framework

EV Charging Transect



- Transect presents 5 categories of charging
 - Focus on Community Charging + Destination Charging for City of Bellevue
- Regional charging framework
- Different EV users create different charging use cases

| | 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 w/ on-street parking, prioritizing locations near existing or planned multifamily development | Retail, shopping, schools, transit stops, restaurants, grocery stores, workplaces; prioritizing J 40 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 Configurations | Level 1 or Level 2 | Utility pole drop-down or pedestals in sidewalk or furnishing zone, prioritizing locations w/ excess grid capacity | Clusters of L2 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 L2 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 L2 port; L1 charging equipment typically included with EV purchase | \$5,000-\$15,000 per port | \$3,000-\$15,000 per L2 port or \$1,250-\$1,750 per kW | \$1,250 - \$1,750 per kW, (typically 50 to 350 kW) | \$5,000-\$20,000 per L2 port or \$1,500-\$2,000 per kW |



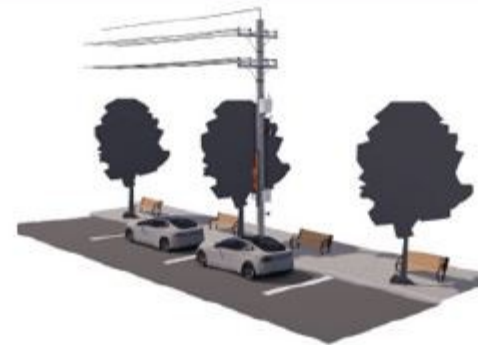
Bellevue's EV Charging Framework

Curbside Charging in the Public Right-of-Way

Ground-Level Curbside Charging



Pole-Mounted Curbside Charging



| | | |
|----------------|---|--|
| Context | Areas where on-street parking, power and drivers with a need for charging all exist | Areas where on-street parking, utility poles, power and drivers with a need for charging all exist |
| Charger | Level 2 charging, typically at 7.2 kW but ranging up to 19.2 kW | Level 2 charging, below 10 kW and varying based on power availability |
| Power | Can draw from surplus capacity or new feed; may require upgrades | Draws from surplus capacity already available; unlikely to require upgrades |
| Cost | Highly dependent upon several site- and application-specific factors | Estimated at about \$5,000-\$15,000 per port, including equipment and installation |



Bellevue's EV Charging Framework

Destination Charging

- Charging that is sited at popular trip destinations
- Can double as community charging if it is close to existing developments whose residents can use the charger

Level 2 Destination Charging

- Can be added to publicly and privately owned parking areas
- Ideal for sites with dwell times of 2-6 hours
- Land uses include public buildings, schools, transit facilities, restaurants, and workplaces

DC Fast Destination Charging

- Locations with dwell times of up to an hour e.g. grocery stores, shopping centers, and convenience stores

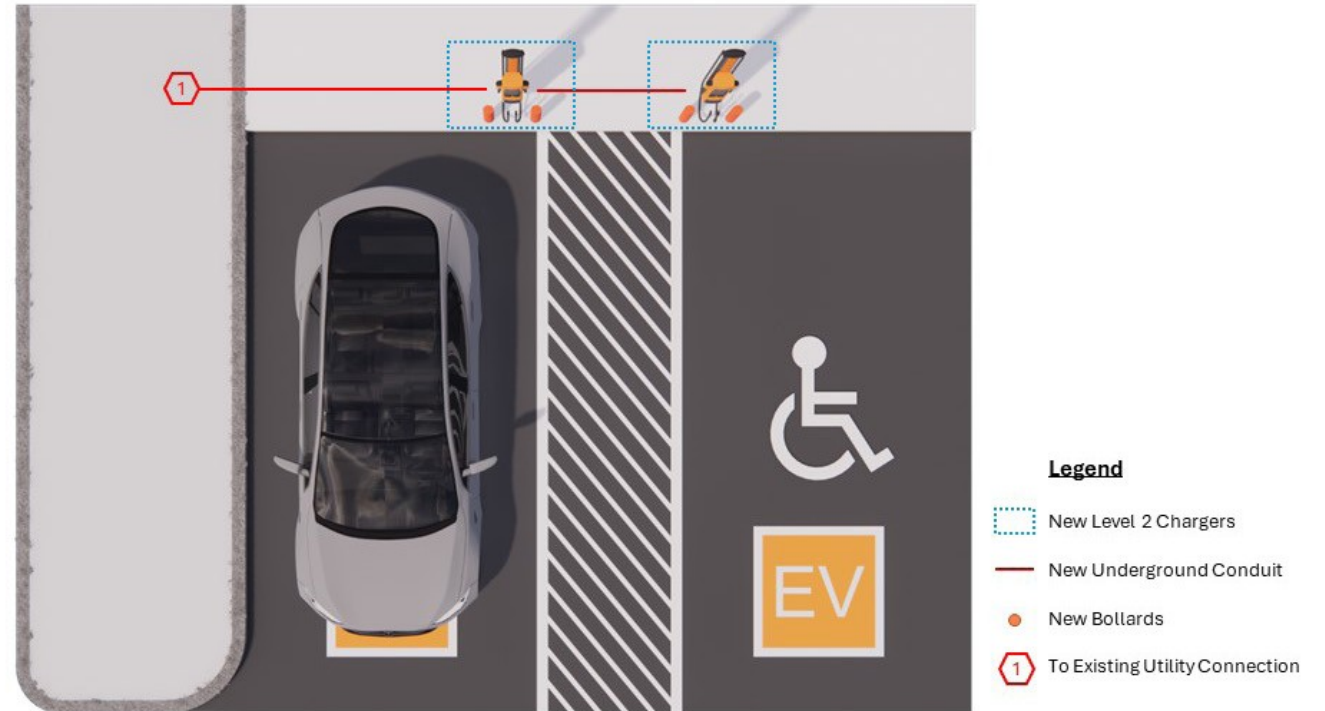




Bellevue's EV Charging Framework

Level 2 Community Charging

(2) 7.2-kW Level 2 dual-port chargers (no utility upgrades)

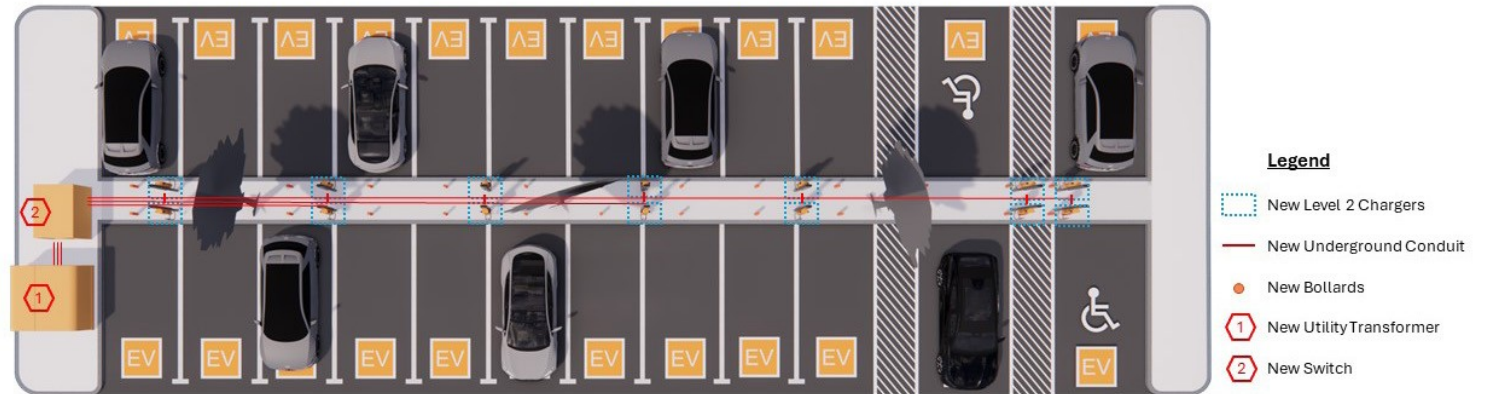




Bellevue's EV Charging Framework

Level 2 Destination Charging

(12) 7.2-kW Level 2 dual-port chargers (utility upgrades)

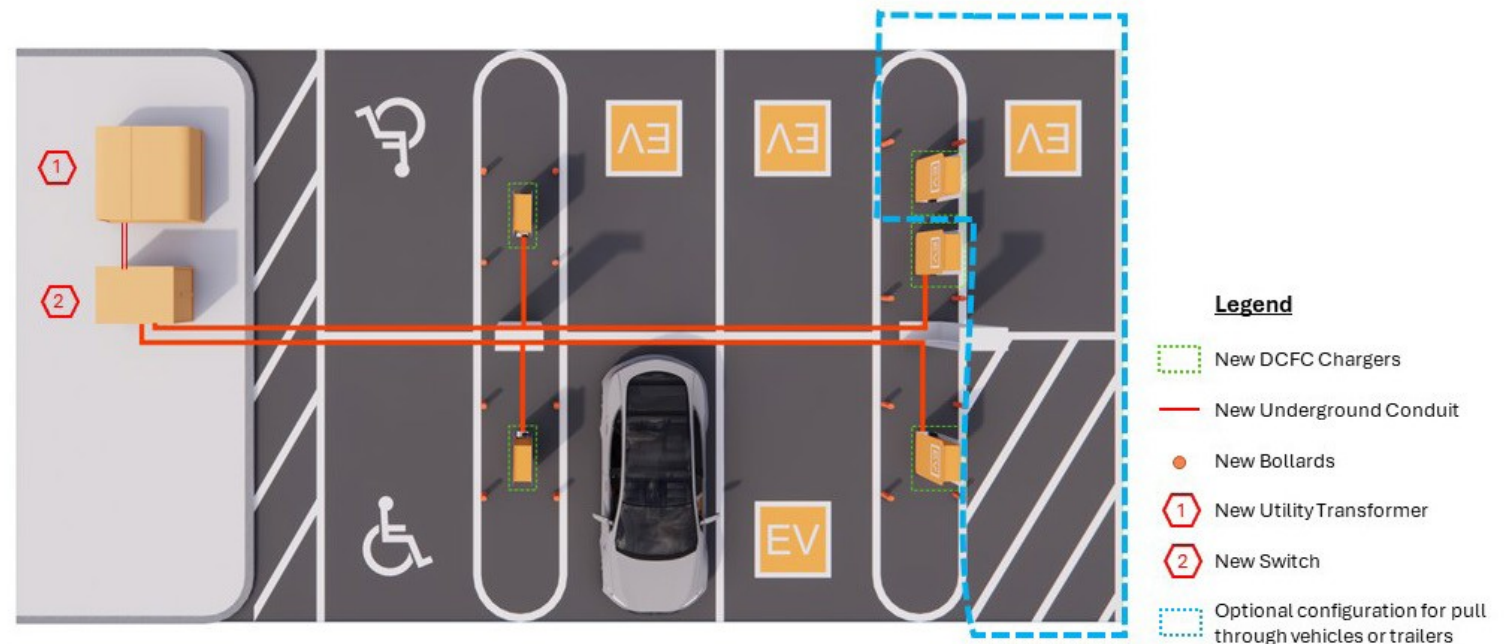




Bellevue's EV Charging Framework

DC Fast Destination Charging

(4) 150-kW single-port DC Fast Chargers (utility upgrades)





06 Strategies & Metrics



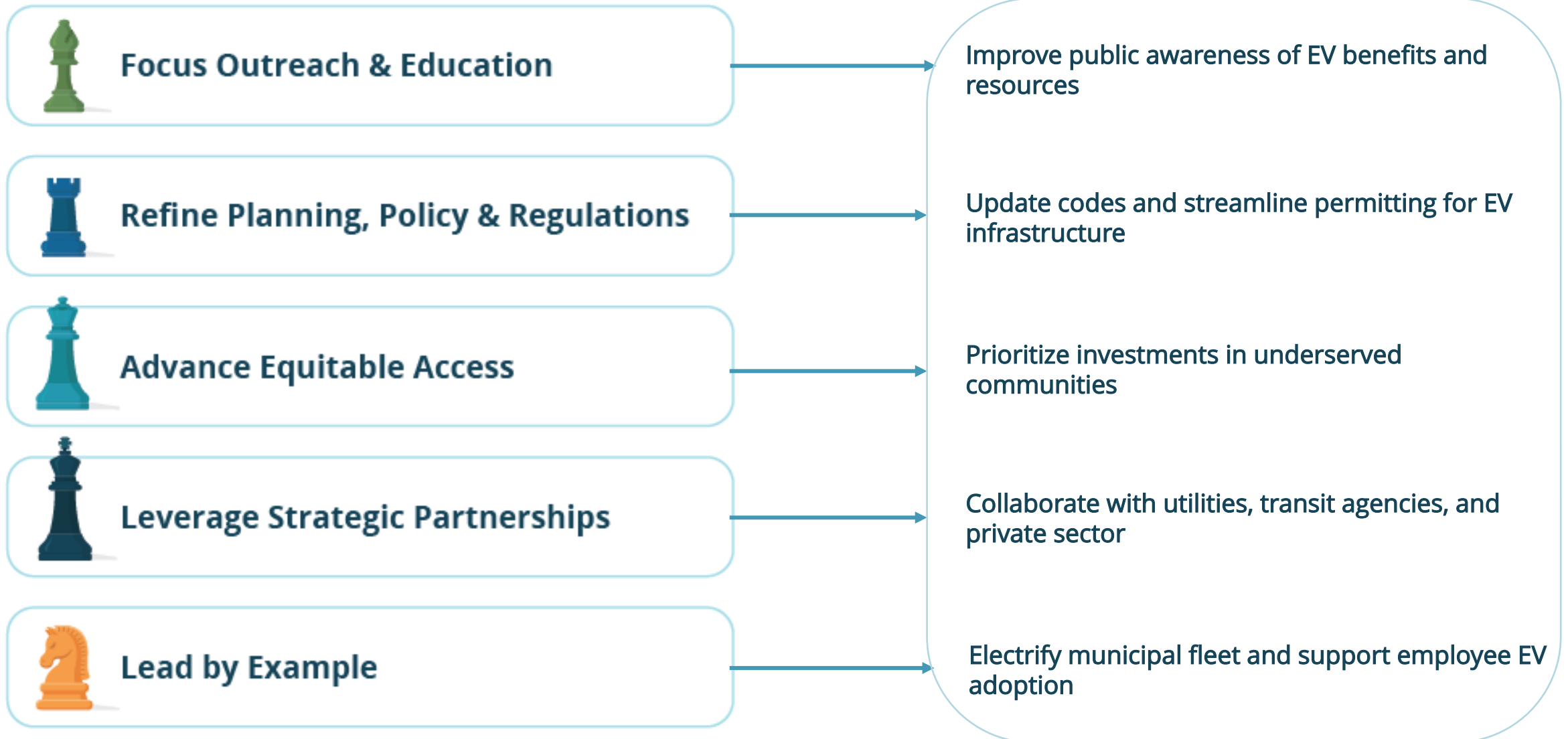
City Investment

- **Private Sector:** Focus on high adoption areas, rapid deployment
- **Public Sector:** Fill gaps in disadvantaged communities, support equity
- **City Target:** 194 new publicly accessible charging ports by 2030





Implementation Strategies





Performance Metrics

- EV Adoption Rate
- Public Charging Ports per EV
- City Installed or Facilitated Public Chargers
- City Installed/Facilitated Private Chargers
- Expanded Access to EVs
- Reduced On-Road GHG Emissions





Next Steps — Roadmap Implementation

Assess New Sites

- Evaluate potential charging locations with a focus on equity

Establish Incentives

- Create funding programs for multifamily buildings and property owners

Maximize Partnerships

- Leverage existing programs and collaborations

Expand Used EV Access

- Increase knowledge and availability of affordable used EVs



Thank you
Questions?

