COMMUNITY ELECTRIFIED TRANSPORTATION STUDY

January 2025

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

Photos used in this file are provided by Salt Lake City unless otherwise noted.

GLOSSARY OF KEY TERMS

ASPIRE: The ASPIRE (Advancing Sustainability through Powered Infrastructure for Roadway Electrification) Engineering Research Center at Utah State University is a National Science Foundation (NSF) research center that conducts research and development to pave the way for widespread adoption of electrified transportation.

Battery Electric Vehicle (BEV): BEVs are vehicles that are powered solely by electricity, relying entirely on a rechargeable battery for power. BEV batteries are recharged by plugging into an external power source.

Division of Air Quality (DAQ): Utah DAQ (Division of Air Quality) is a division of the Utah Department of Environmental Quality with a mission to safeguard and improve Utah's air, land, and water through balanced regulation (State of Utah, 2024).

Electric Vehicle (EV): EVs are vehicles powered entirely or partially by electricity, as opposed to internal combustion engines that rely on fossil fuels such as gasoline or diesel. For the purposes of this Study, the term EVs includes both BEVs and PHEVs.

Electrified Transportation: Electrified transportation refers to all electric-powered vehicles and transportation systems. This includes EVs, as well as electric-powered trains, buses, scooters, and bicycles.

Greenhouse gas (GHG) emissions: GHGs are gases that trap heat in the atmosphere and contribute to climate change. GHGs emitted by human activities include Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O) and Fluorinated gases (EPA, 2024).

Heavy-Duty Vehicle: For the purposes of this Study, the term heavy-duty vehicle refers to heavy trucks as defined in the Utah Tax Commission Vehicle Registration Data.

Hybrid Electric Vehicle (HEV): HEVs combine an internal combustion engine with a small electric motor and battery. HEVs cannot be plugged in and, instead, the battery is recharged by regenerative braking and the vehicle engine. The electric motor assists the gasoline engine to improve fuel efficiency.

International Olympic Committee (IOC): The IOC (International Olympic Committee) is the guardian of the Olympic Game and the leader of the Olympic Movement.

Level 1 EV Charging: Level 1 EV charging (120V/15A) can be provided through a typical 120V household electrical outlet. The cord has a standard three-prong household plug and a connector, which plugs into the vehicle. While Level 1 charging time depends on the vehicle make, model, battery size, and state of charge, it typically provides 2-5 miles of range per hour of charging, making it suitable for situations where the vehicle is parked for extended periods.

Level 2 EV Charging: Level 2 EV charging (240V/30-70A) is provided through a 240-volt AC plug and requires the installation of charging equipment, for example at a residence, workplace, or public location. Level 2 charging time depends on the vehicle make, model, battery size, and state of charge but typically delivers 10 – 60 miles of range per hour.

Level 3 (DC Fast Charging) EV Charging: Level 3 or DC Fast Charging (DCFC) is delivered using direct current (DC) at 400-900 volts. While charging time depends on the vehicle make, model, battery size, and state of charge, DCFC typically provides 60-300 miles of range in 20 to 40 minutes. These specialized stations are typically located along travel corridors or in other locations suitable for quick top-ups.

Light-Duty Vehicle: For the purposes of this Study, the term light-duty vehicle refers to standard passenger vehicles and light trucks as defined in the Utah Tax Commission Vehicle Registration Data.

Ozone: Ozone is a molecule composed of three oxygen atoms that occurs both in the Earth's upper atmosphere and at ground level. In the upper atmosphere (stratosphere), the "ozone layer" protects life on Earth by absorbing much of the sun's ultraviolet radiation. However, ground-level ozone is a harmful air pollutant created by chemical reactions between volatile organic compounds (VOCs) and nitrogen oxides (NOx) in the presence of sunlight. High levels of ozone are associated with significant health risks including respiratory problems.

Plug-In Hybrid Electric Vehicle (PHEV): PHEVs have both an internal combustion engine and a rechargeable battery. The battery can be recharged by plugging into an external power source and PHEVs can run on electricity alone before switching to gasoline once the battery is depleted.

PM2.5: PM2.5 is fine particulate matter with a diameter of 2.5 micrometers or smaller. Sources of PM2.5 include vehicle emissions, industrial processes, wildfires, and residential wood burning. Due to their small size, these particles can penetrate deep into the lungs and enter the bloodstream, posing significant health risks such as respiratory and cardiovascular issues.

Utah Department of Transportation (UDOT): UDOT is an agency of the state government of Utah with the mission to "Enhance quality of life through transportation" (UDOT, 2024).

Utah Inland Port Authority (UIPA): UIPA is a Utah state agency focused on developing and managing an inland port system. UIPA was created to "lead and implement sustainable logistics solutions that not only meet the needs of our growing population, but also protect our precious natural resources" (UIPA, 2024).

INTRODUCTION

This Community Electrified Transportation Study was initiated by Salt Lake City in 2023 and completed in 2025 as a tool to inform an equitable transition to electrified transportation.

The Study was developed within the context of unprecedented federal incentives, technological advancements, and commitments from automakers, with the intent to capitalize on momentum and accelerate the uptake and use of clean transportation within Salt Lake City. The Study, which is intended to build on and complement the city's broader climate, air quality, and transportation goals, documents existing conditions and current activities before identifying gaps and opportunities for the next phase of action.

The opportunities identified were informed by outreach and engagement with community leaders, industry practitioners, city staff, and the community at large to ensure that they are appropriate for Salt Lake City's unique circumstances and characteristics.

STUDY CONTEXT & OBJECTIVES

The purpose of this study is to identify innovative strategies, policies, and programs that:

CONTEXT 01 OBJECTIVE

Meet the commitments of Salt Lake City's 2020 Electrified Transportation Joint Resolution.

In 2020, Mayor Mendenhall and Salt Lake City Council passed the joint Electrified Transportation Resolution establishing a commitment to incorporate and promote clean energy transportation as an important solution in reducing carbon emissions and pollutants that impact air quality (Figure 1).

SLC FLEET	TRANSIT	SMART MOBILITY	PERSONAL VEHICLES
EV New Purchases 2023: Sedans 2025: SUVs 2027: Pickups Heavy- / Medium-Duty: Evaluate Charging Infrastructure	Encourage UTA to transition to electric buses Collaborate with UTA on other efforts	Rideshare Carshare Equitable access to affordable and clean transportation	Accelerate uptake above national average Support programs and policies to encourage EV purchases Encourage development of charging infrastructure

Note: SLC Fleet not covered as part of this study.

Figure 1. Components of Salt Lake City's 2020 Electrified Transportation Joint Resolution. Note that the fleet component is being covered by another effort and is not part of this study.

The Resolution established priorities for advancing electrified transit, smart mobility and personal vehicles in Salt Lake City and establishes fleet electrification goals as described in Figure 1. This Study recommends innovative strategies to advance electric vehicle (EV) adoption and charging infrastructure in line with the transit, smart mobility, and personal vehicle goals while fleet is covered under a separate effort.

CONTEXT
02
OBJECTIVE

Reduce community reliance on internal combustion engine vehicles.

Reducing reliance on internal combustion engine (ICE) vehicles in Salt Lake City aligns with interrelated climate and transportation goals, including:

Climate Positive 2040

VISION

"Salt Lake City is committed to protecting the public health and safety of its residents, including ensuring access to clean air, clean water and a livable environment."

GOAL

80% reduction in community GHG emissions by 2040, compared to a 2009 baseline

Connect SLC City-wide Transportation Plan

VISION

"We envision a Salt Lake City where everyone enjoys equitable, affordable and reliable transportation choices that support safety, health, and sustainability."

GOAL

Equity, Health & Safety, Reliable Options, Affordability, and Sustainability.

As discussed in **Appendix I: Salt Lake City Electrified Transportation Planning and Policy Landscape**, electrifying transportation is a key strategy to achieving climate goals of Salt Lake City, in tandem with mode-shifting priorities. In fact, Salt Lake City will not come close to meeting its climate goals without focusing aggressively on both of these pillars in its overall transportation planning.

CONTEXT
03
OBJECTIVE

Reduce the contribution of transportation to poor air quality.

Salt Lake City faces significant air quality challenges. In the winter, the Wasatch Front's unique geography leads to periodic temperature inversions which trap cold air underneath a layer of warm air. This acts like a "lid" on the Salt Lake Valley—causing particulate pollution to increase. In the summer, pollution from cars, industry, and a multitude of chemical products, combined with high temperatures and bright sunshine, lead to harmful ozone levels. While the Utah Division of Air Quality 2023 Annual Report tells a story of improving wintertime air quality, summertime ozone is now the primary air quality concern along the Wasatch front. Data from 2021 – 2023 indicates that the Northern Wasatch Front ozone Nonattainment Area that includes Salt Lake County has been reclassified from moderate to serious nonattainment (Utah Department of Environmental Quality, 2024b).

On-road mobile sources produce about 39% of the annual human-caused pollution along the Wasatch Front and a transition to electrified transportation with zero tailpipe emissions is a key strategy for reducing the air quality impacts of our current transportation system (Utah Department of Environmental Quality, 2023).

CONTEXT
04
OBJECTIVE

Equitably advance electrified transportation adoption at rates higher than the national average, particularly for low-income communities in Salt Lake City.

While Federal incentives and market forces are driving EV adoption nationwide, there is a need for policies and programs to address barriers to EV adoption specific to SLC.

To-date, most electrified transportation investments and adoption have been concentrated in well-resourced higher-income communities. The next phase of transportation electrification brings an opportunity to prioritize equity considerations and ensure that transportation electrification benefits all residents and visitors in Salt Lake City.

CONTEXT
05
OBJECTIVE

Inform the effective and equitable deployment of EV charging infrastructure over the next 10 years.

This Study will inform the development of a 10-year strategy for EV infrastructure deployment that encourages equitable advancement of electrified transportation, while also accounting for SLC's population growth and an increase in higher-density walkable neighborhoods with non-single family housing developments.

CONTEXT
06
OBJECTIVE

Build on and accelerate electrified transportation work already underway in Salt Lake City.

This Study outlines the next steps in a long journey to transportation electrification in Salt Lake City, and was developed in the context of significant existing work by the City, including:

- Adoption of an EV readiness ordinance to support future charging needs in new multi-family dwellings.
- The installation of 24 charging ports throughout downtown SLC, parks, and libraries and offering free charging at these public ports for the duration of the public parking limit.
- Supporting clean vehicle adoption through the Green Sticker program that offers free 2-hour parking at city meters for vehicles classified as top environmental performers through the SmartWay Elite program.
- Launching a pilot e-bike incentive program in July 2024 that funded 277 applications, equally dispersed across the seven City Council districts.
- Transitioning to alternative and clean fuel fleet vehicles, including:
  - » 40% of airport fleet transitioned to alternative and clean fuel vehicles, including close to 70 EVs
  - » Over 400 alternative clean fuel city fleet vehicles, including close to 60 EVs with more on order.
  - » Development of a 2024 fleet charging infrastructure study to inform the infrastructure needed to meet fleet electrification goals.

STUDY METHODOLOGY

The methodology for developing this study included a review of existing conditions related to transportation electrification in Salt Lake City; engagement with city staff, community leaders, transportation electrification practitioners, and the public; and an EV adoption and charging assessment including baseline analytics and forecast modeling for both EVs and charging infrastructure.

REVIEW OF EXISTING CONDITIONS

A review of existing transportation electrification plans, and related city efforts was conducted to create a comprehensive snapshot of the current policy landscape. This information can be found in **Appendix I: Salt Lake City Electrified Transportation Planning and Policy Landscape** and was used to inform the overall direction of the study, themes for outreach, and potential new policies and programs suited to SLC's unique situation.

ENGAGEMENT

Engagement was core to the development of this study, informing the review of baseline conditions, the analysis approach, and the identification of opportunities. A summary of the engagement approach is provided in **Figure 2** and a comprehensive summary of engagement results can be found in **Appendix II: Engagement Summary**.

ENGAGEMENT APPROACH AND TIMELINE

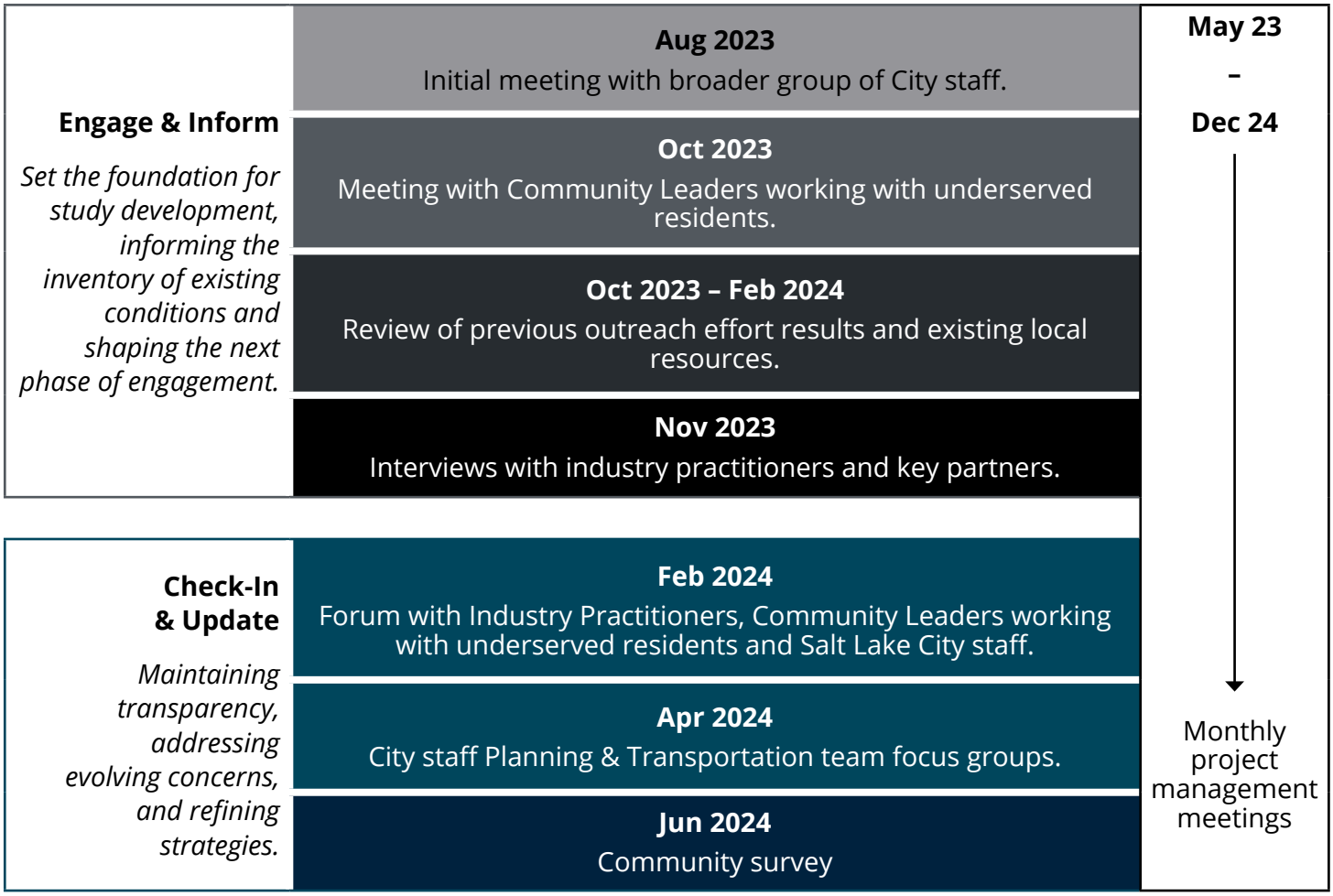


Figure 2. Summary of the engagement approach used to inform Salt Lake City's Community Electrified Transportation Study.

ENGAGEMENT OVERVIEW

A detailed summary of engagement results is provided in **Appendix II: Engagement Summary**. This section provides an overview of who was engaged and how, along with the purpose of engagement and key outcomes in the context of Study development.

Table 1. Summary of engagement used to inform study development.

Engagement Approach	Description and Purpose	Key Outcomes
City Staff Project Management Team Meetings	Regular meetings to inform study development.	Direction on the overarching approach and development of the study.
Broader City Staff Workshop	A wider group of 27 staff involved in transportation and sustainability work were engaged through a workshop at the outset of study development to review existing conditions and provide input on the study approach.	Gathered input on the study approach and direction. Reinforced the importance of integrated transportation planning that informed cross-cutting priorities for the study.
City Planning and Transportation Staff Focus Groups	City planning and transportation staff were strategically engaged through two focus groups to inform the development of planning and policy opportunities.	Gathered input on existing planning policies related to EV charging. Identified opportunities to support charging through code standards and guidelines
Community Leaders Working with Disproportionately Impacted Communities Workshop	With equity at the center of this study and the city's transportation electrification work, the project team engaged nine community leaders working to support disproportionately impacted communities within Salt Lake City through a workshop early in the study development.	Gathered insight to inform the overall engagement approach. Identified transportation electrification barriers facing community members including financial constraints, lack of knowledge, distrust, unfamiliarity with technology, and access to charging infrastructure.
Industry Practitioner Interviews	Ten industry practitioners working in the field of electrification and transportation were engaged through nine interviews to collect information on existing efforts and inform priorities.	Collected critical information about what other groups are working on in Salt Lake City. Identified gaps in existing work and opportunities for partnership and collaboration.

Engagement Approach	Description and Purpose	Key Outcomes
Community Electrified Transportation Forum	Approximately 70 Community Leaders, Industry Practitioners, and City staff were invited to a forum event held on February 15, 2024 to hear updates and provide input on key opportunities for electrification.	Attendees heard an update on the study progress and analytics. Collected feedback on draft opportunities and key steps for implementation.
Community Survey	The general public was engaged through a community-wide survey which received 828 responses. The survey was intended to solicit input on priorities from the community at-large.	Gathered input on motivations, barriers, and perspectives on community electrified transportation that informed the identification and prioritization of opportunities.
Previous Outreach Efforts	The study also leverages previous outreach efforts, including: Salt Lake City Climate Pollution Reduction Grant (CPRG) funded Climate Action Plan development process. Salt Lake City Connect SLC Transportation Master Planning process. Survey conducted by Advancing Sustainability through Powered Infrastructure for Roadway Electrification (ASPIRE).	A review of outreach conducted prior to this study was used to supplement the engagement conducted within the scope of the study.

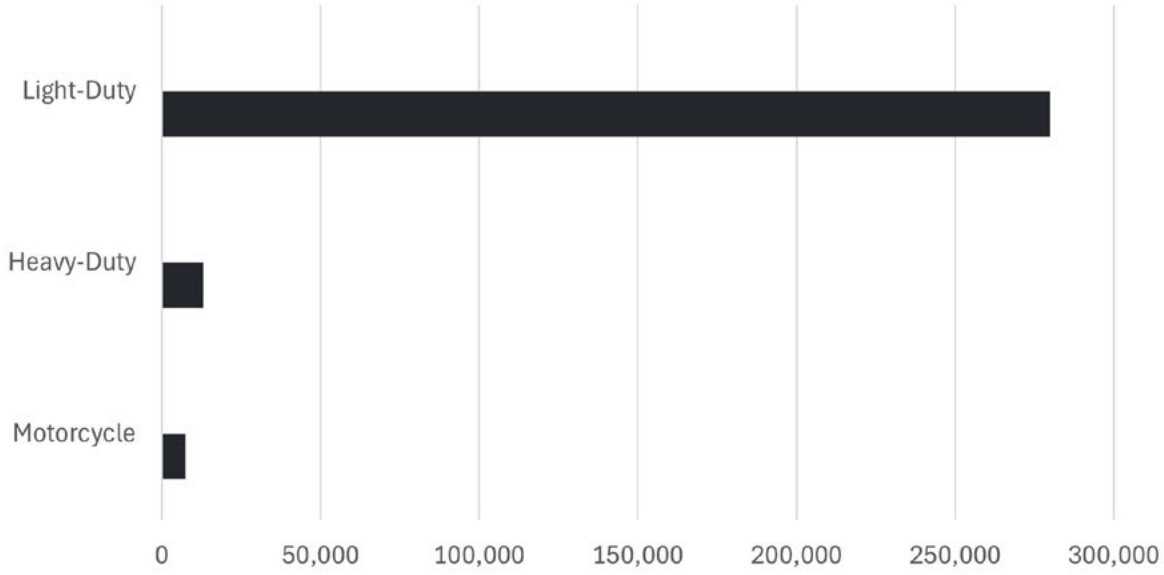
EV ADOPTION AND CHARGING ASSESSMENT

The opportunities identified in this study are informed by an analysis of EV adoption and charging trends in Salt Lake City. The full charging needs assessment can be found in **Appendix III: EV Charging and Infrastructure Needs Assessment**.

The study establishes a baseline for the number of EV charging stations, provides an analysis of the number of charging stations needed by 2030 to meet several EV adoption scenarios, and identifies priority areas for new charging infrastructure to meet the study objectives.

BASELINE AND TRENDS

The analysis for this study focused primarily on light-duty vehicles which account for 93% of all vehicles registered in SLC, as shown in **Figure 3** (Utah State Tax Commission (b), 2024). Light-duty vehicles are also the primary candidates for near-term electrification due to the number of models available today, when compared to heavy-duty vehicles.



	Motorcycle	Heavy-Duty	Light-Duty
Percentage of Total Registrations	2%	4%	93%
Number of Registrations	7,411	13,123	279,821

Figure 3. 2024 vehicle registrations in Salt Lake City, including number of motorcycles, light- and heavy-duty vehicles (Utah State Tax Commission (b), 2024). Light-duty vehicle registrations include standard and low-speed passenger vehicles, along with light trucks per the Utah State Tax Commission definitions. Vehicles classified as heavy trucks are included in the heavy-duty category.

EV ADOPTION IS INCREASING ACROSS THE US AND IN SALT LAKE CITY

The percent of light-duty EVs, including Battery Electric Vehicles (BEVs) and Plug-In Hybrid Electric Vehicles (PHEVs), has been increasing across the United States but varies widely by state and community. In 2016, about 0.2% of all light-duty vehicles in the country were EVs. By 2023 the percent had increased to 1.7% (U.S. Department of Energy, 2024).

In Salt Lake City the percent of all registered light-duty vehicles that are EVs has risen from 0.7% in 2019, to 2.6% in 2024 (Utah State Tax Commission (a), 2024) (Utah State Tax Commission (b), 2024). As shown in **Figure 4**, there were 7,413 battery electric and plug-in hybrid EVs registered in Salt Lake City in 2024, up from 2,012 in 2019 (Utah State Tax Commission (a), 2024) (Utah State Tax Commission (b), 2024).

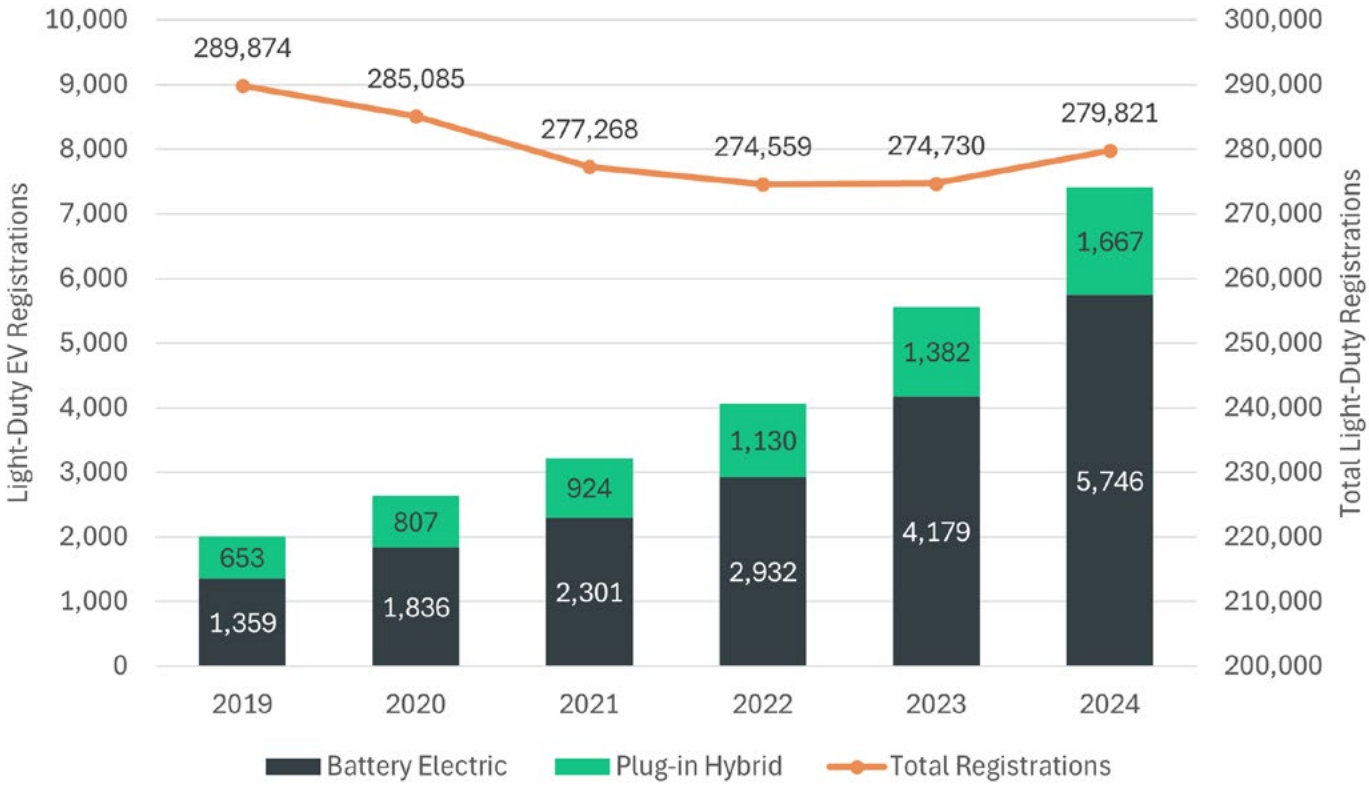


Figure 4. EV and total light-duty vehicle registrations in Salt Lake City, 2018 to 2024 (Utah State Tax Commission (b), 2024).

SALES OF NEW EVS ARE INCREASING ACROSS THE US AND IN SALT LAKE COUNTY

According to the Alliance for Automotive Innovation's 2023 third quarter quarterly EV report, nationwide in the first three quarters of 2023, EV sales represented 9.3% of the market. This is a 2.8% increase over the same period in 2022.

In 2023 and the first quarter of 2024, EV sales accounted for 8% of new vehicle sales to buyers in Salt Lake County, up from 4% in 2021 and just 2% in 2019 (Utah State Tax Commission (a), 2024) (**Figure 5**).

16% of community survey respondents stated that they were definitely planning to get an EV for their next vehicle, while 40% said they would consider getting an EV for their next vehicle.

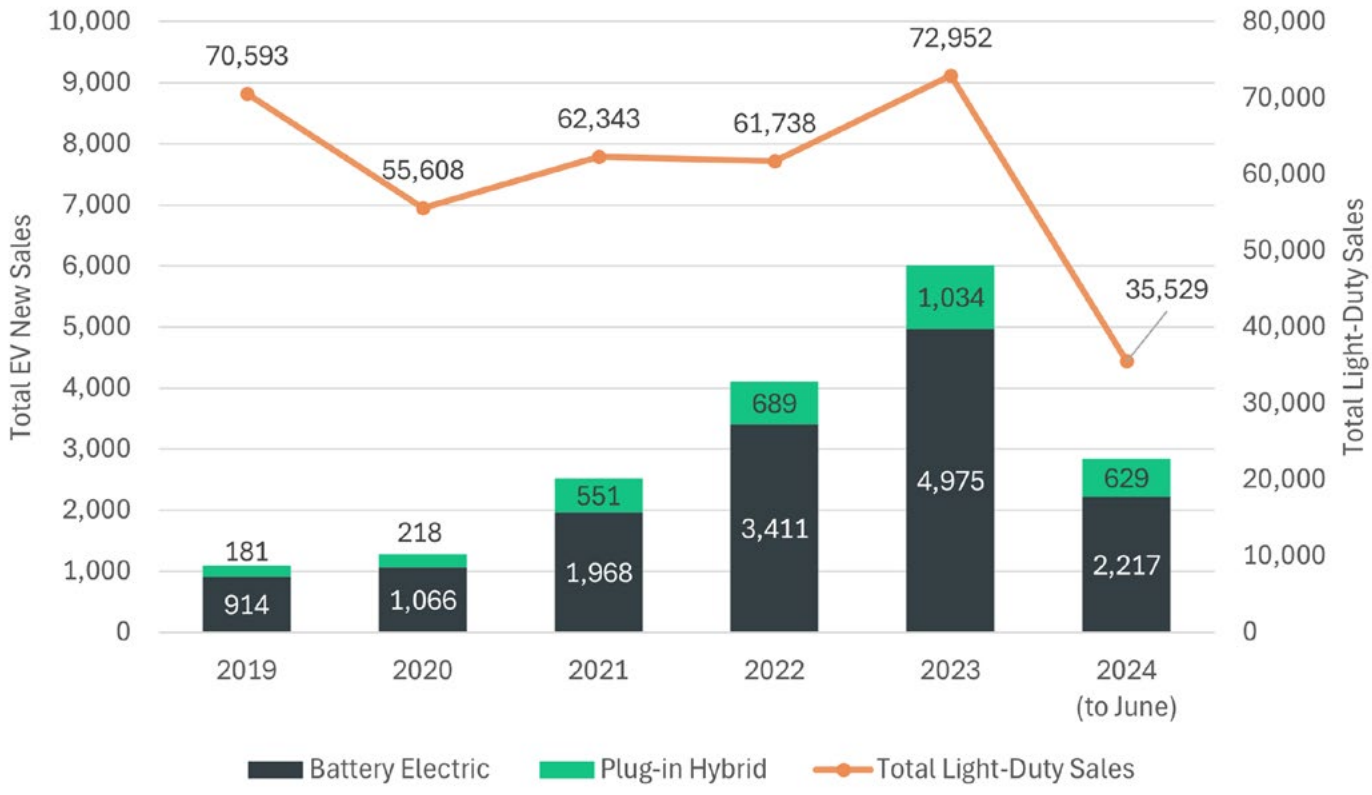


Figure 5. EV and total new light-duty vehicle sales to buyers in Salt Lake County, 2018 to 2024 (Utah State Tax Commission (a), 2024).

SALES OF USED EVS ARE INCREASING IN SALT LAKE COUNTY

The used EV market is lagging behind the new EV market but is now increasing (Ewing, 2024). In the first quarter of 2024, used EV sales accounted for 2.4% of total used vehicle sales to buyers in Salt Lake County, up from 1% in 2021 and just 0.5% in 2019 (Utah State Tax Commission (c), 2024) (**Figure 6**).

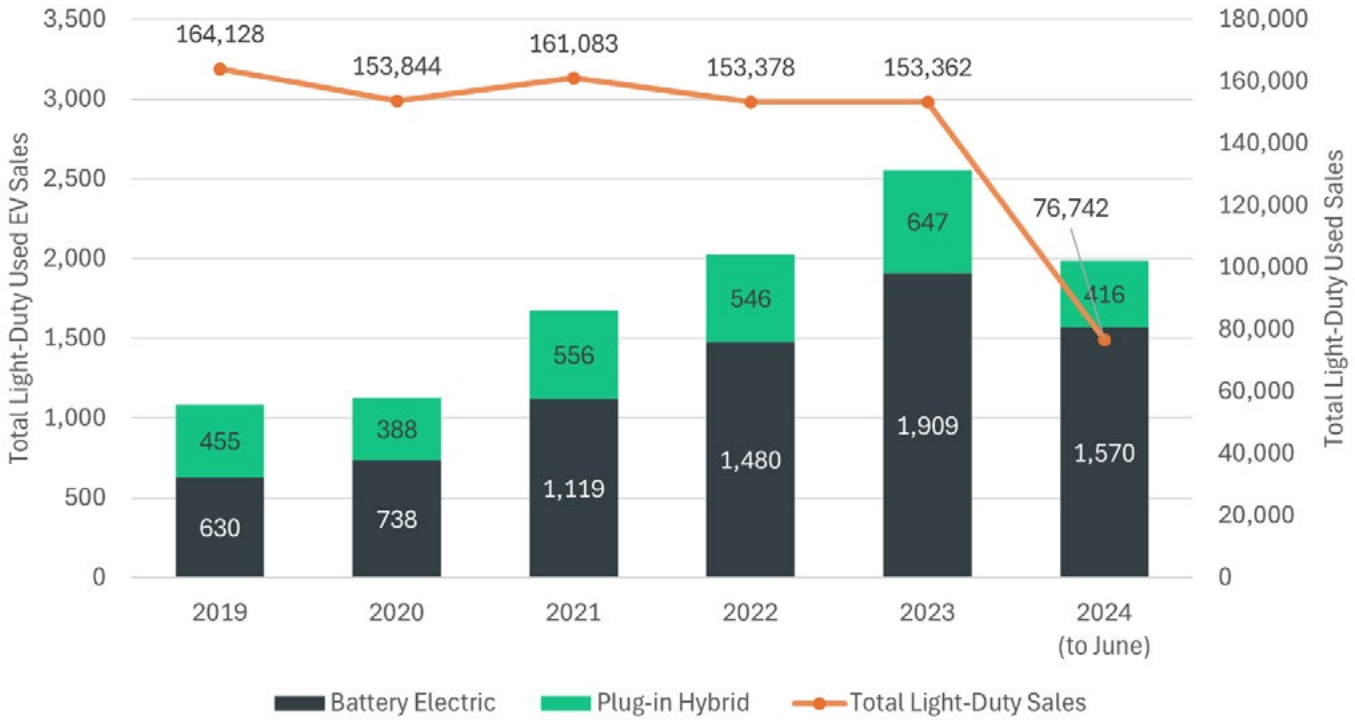


Figure 6. EV and total used light-duty vehicle sales to buyers in Salt Lake County, 2018 to 2024 (Utah State Tax Commission (c), 2024).

EV ADOPTION IS NOT EVENLY, OR EQUITABLY, DISTRIBUTED

While EV adoption is increasing, it is not evenly distributed across Salt Lake City, with adoption ranging from zero to 6% for Salt Lake City zip codes (Utah State Tax Commission (a), 2024). Higher adoption of EVs is found in the eastern portion of the city except in a couple of areas near the University of Utah and the very southeast corner near The Country Club which have lower adoption (**Figure 7**). The western portion of the city has lower EV adoption overall, particularly the area south of I-80.

Higher EV adoption is primarily outside of areas that are federally identified as "disadvantaged communities" under the Justice40 Initiative. Areas federally identified as disadvantaged communities have a lower percent of EV registrations (**Figure 7**).

The Federal government has identified disadvantaged communities across the country through the Justice40 Initiative. Generally, a census tract that meets the threshold for environmental, climate or other burdens, and an associated socio-economic burden will be marked as disadvantaged (Council on Environmental Quality, 2022). The eight categories of burden include climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development. To be classified as disadvantaged, census tracts must meet thresholds within these categories of burden and an associated socio-economic burden – high school education for workforce development and low income, defined as the percentage of households with income less than or equal to twice the federal poverty level, for all other categories.

LOWER INCOME COMMUNITIES ON SALT LAKE CITY'S WESTSIDE ARE SEEING LOWER RATES OF EV ADOPTION

As shown in **Figure 8,** the percentage of low-income households is correlated with federal disadvantaged community designation and lower rates of EV adoption. This correlation in Salt Lake City aligns with studies at the U.S. and global scale. A 2019 study found that households earning less than $100,000 per year represent 72% of new and used gasoline vehicle purchases, but only 44% of new and used electric vehicle purchasers (Muehlegger & Rapson, 2018). Similarly, 2020 data indicated that the rate of adoption of EV models as a proportion of all household vehicles was significantly higher in the top 20% of zip codes by income than for the lowest 20% of zip codes by income (Bauer, Hsu, & Lutsey, 2021). While some of the income-based discrepancy in EV adoption could be explained by the fact that many early EV models were considered luxury vehicles (Bauer, Hsu, & Lutsey, 2021), these local and national findings suggest that incentives and other programs to lower the cost of EVs may lead to increased adoption.

A community survey conducted as part of this study asked respondents what the key factors preventing them from getting an EV were. The top answer was the upfront purchase price.

A 2022-2023 survey conducted by ASPIRE on the Westside of SLC found that economic equity related to the cost of vehicles was the most often cited barrier to EV adoption (ASPIRE, 2023) .

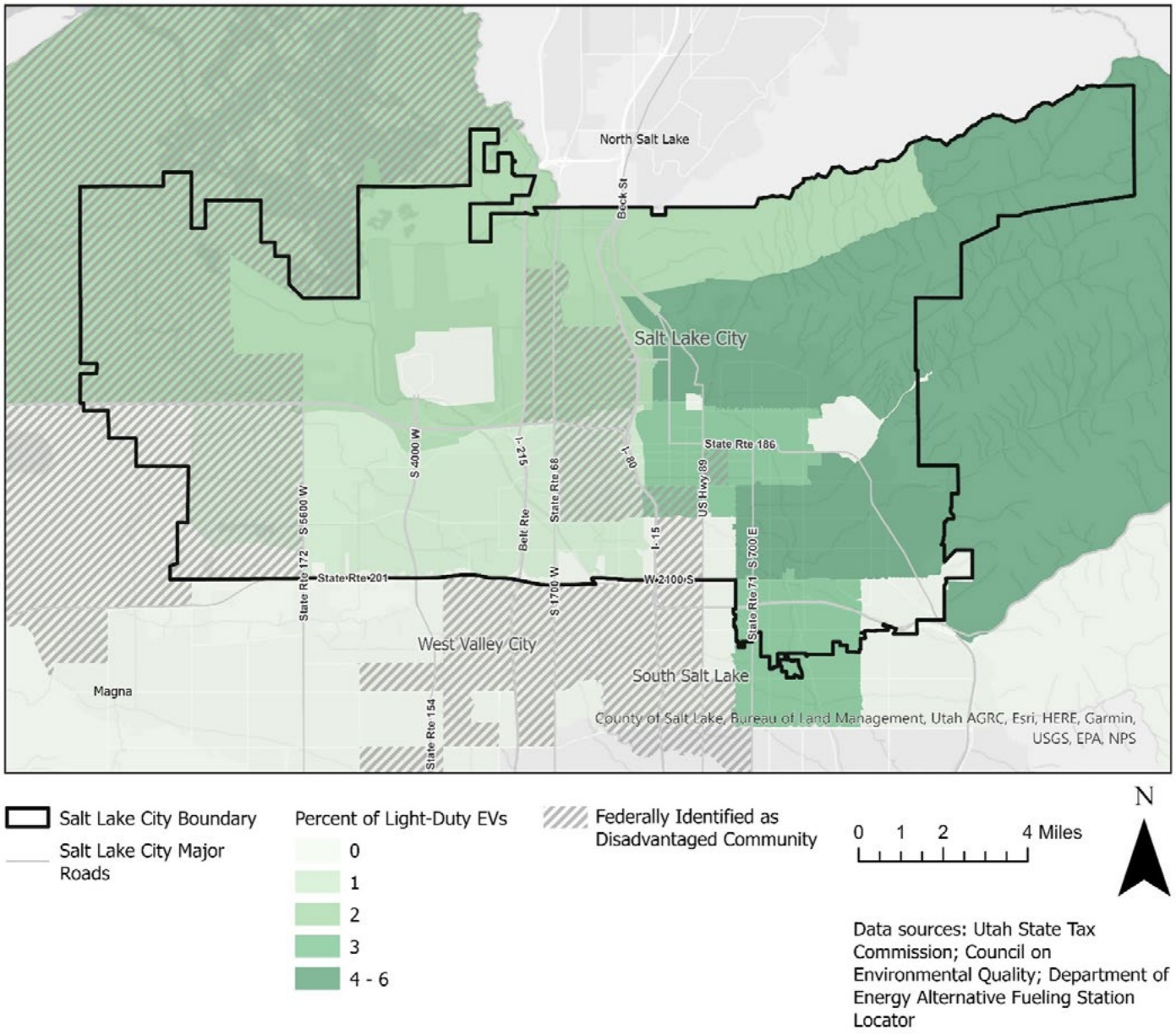


Figure 7. Percent of registered light-duty EVs by ZIP code, census tracts identified as disadvantaged by the Justice40 Initiative, in Salt Lake City.

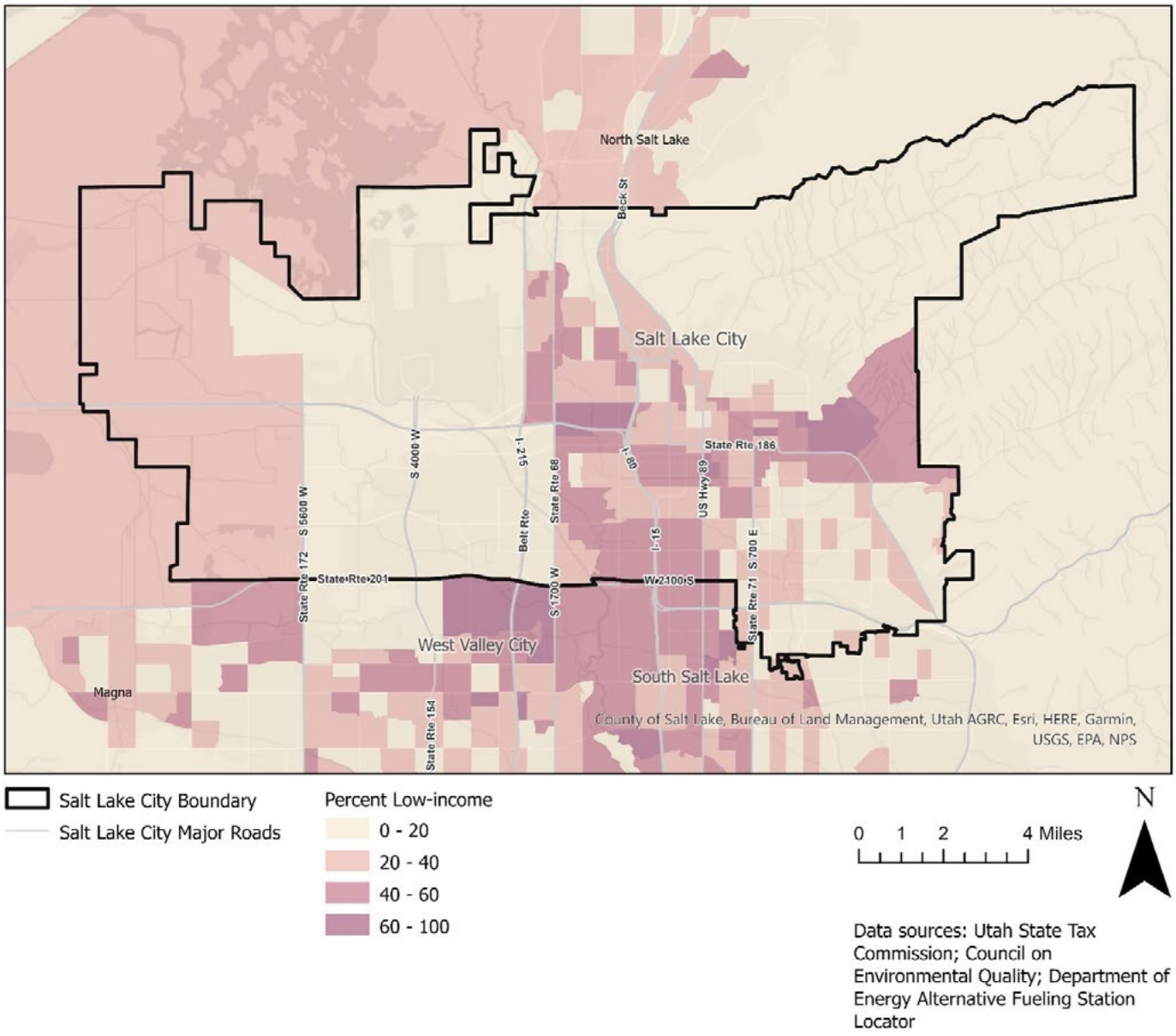


Figure 8. Percent low-income population in Salt Lake City.

THE BURDENS OF SALT LAKE CITY'S EXISTING TRANSPORTATION SYSTEM ARE NOT EQUITABLY DISTRIBUTED

Disadvantaged communities in Salt Lake City, as identified through the Justice40 Initiative, are exposed to higher levels of pollution caused by vehicle emissions, such as nitrogen oxides, sulfur dioxide, volatile organic compounds, and particulate matter (**Figure 9)**. These pollutants contribute to the formation of ozone in the summer and $PM_{2.5}$ inversion events in the winter. On-road mobile sources produce about 39% of the annual man-made pollution along the Wasatch Front. Increasing the share of zero emission vehicles such as EVs is an important strategy for lowering air pollution.

MEDIUM- AND HEAVY-DUTY VEHICLES ACCOUNT FOR A DISPROPORTIONATE SHARE OF AIR POLLUTANTS AND GHGS.

Heavy-duty vehicles represent just 4% of the vehicles registered in Salt Lake City (Utah State Tax Commission (b), 2024 and account for 7.5% of the vehicle miles traveled on the Wasatch Front, but produce 30% of the mobile source pollution (Utah Department of Environmental Quality, 2023). The impacts of pollution created by medium- and heavy-duty vehicles are disproportionately concentrated in communities close to major transportation corridors. As new medium- and heavy-duty electric vehicle models become available, supporting adoption by both vehicles registered in and traveling through Salt Lake City has the potential to provide air quality benefits, while creating opportunities for fleet operators.

Along major roadways such as Interstate I-15, I-215, and I-80 are some of the areas with higher PM 2.5 concentrations (**Figure 9**).

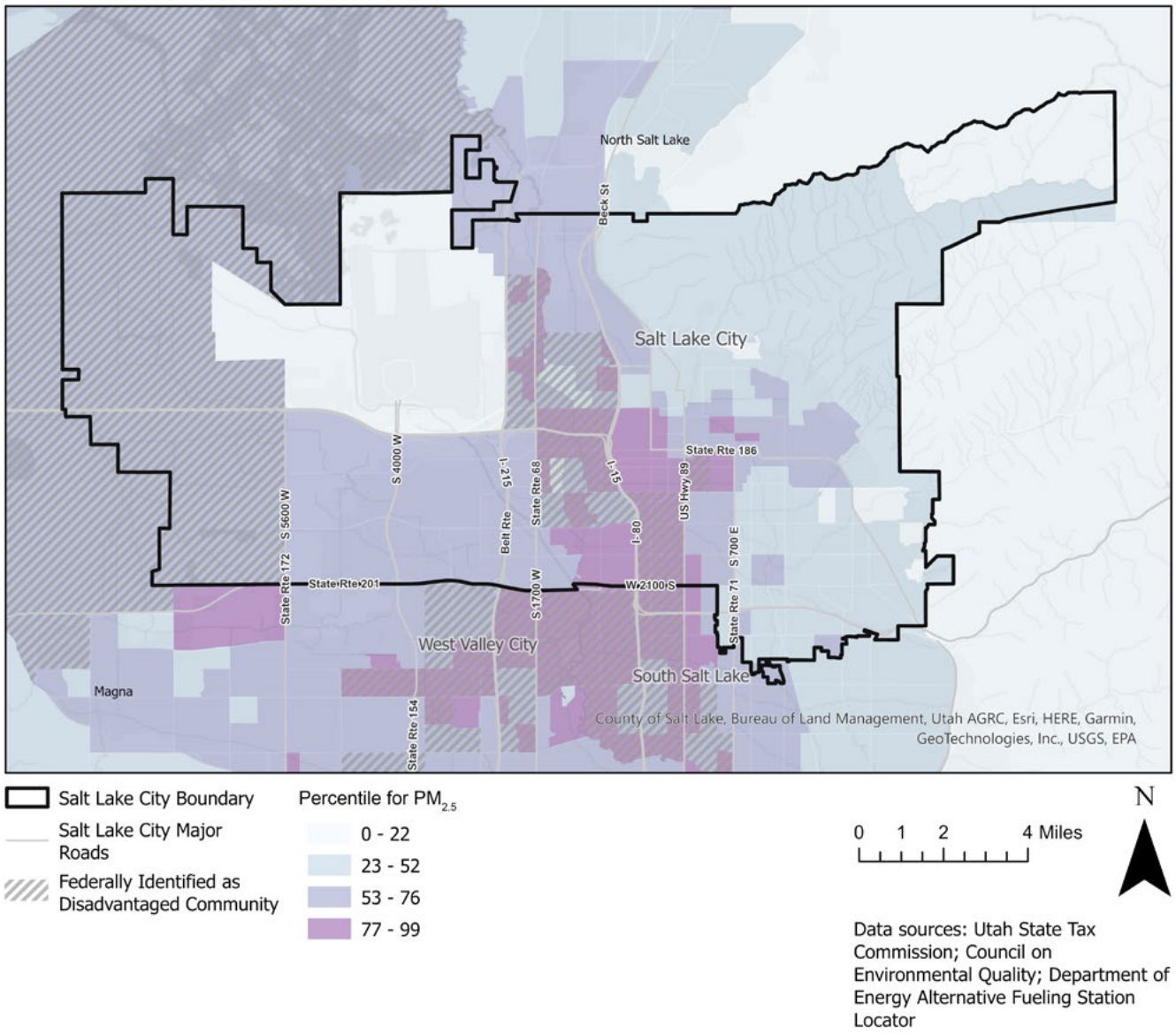


Figure 9. Percentile of $PM_{2.5}$ exposure, census tracts identified as disadvantaged by the Justice40 Initiative, and EV chargers in Salt Lake City.

SALT LAKE CITY HAS A WELL-ESTABLISHED CHARGING NETWORK, BUT THERE ARE GAPS IN EQUITABLE ACCESS

A robust charging network that is reliable, convenient, accessible, and affordable is important to the adoption and widespread use of EVs among residents and fleet operators alike.

As of July 2024, there are 451 publicly available Level 2 charging ports or plugs and 55 publicly available DC fast charger ports within Salt Lake City, including 24 chargers (48 ports) installed and owned by the City (**Figure 10**). The chargers are primarily concentrated in and around downtown and east of downtown to the University of Utah. There is a cluster of charging stations near the confluence of I-15 and I-80 and the commercial areas nearby. More charging is also available near where I-80 and I-215 meet. There are still large gaps in the geographic locations of charging stations, with very few charging stations located on the west side of the city, an area that is home to a larger concentration of communities defined as disadvantaged under the Federal Justice40 initiative (**Figure 10**).

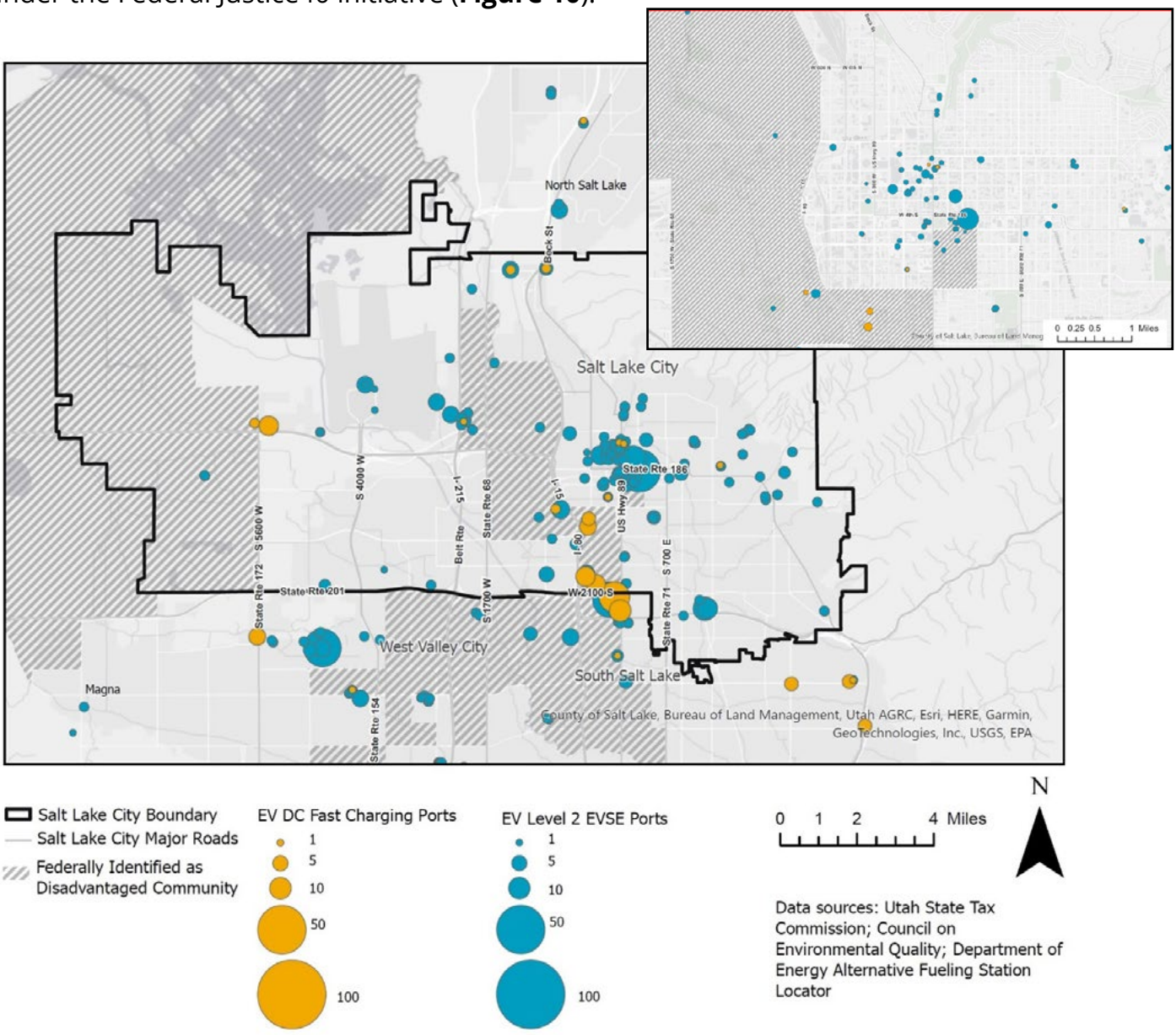


Figure 10. Communities defined as Disadvantaged under by the Federal Justice40 initiative and locations of EV chargers in and around Salt Lake City.

ADOPTION FORECAST AND CHARGING NEEDS

FUTURE EV ADOPTION

According to the 2024 BloombergNEF Electric Vehicle Outlook report, the long-term outlook indicates a continued increase in EV adoption. Though the U.S. market slowed down in 2024 due to political uncertainty with the upcoming presidential election in November 2024, the report indicates that 29% of cars sold in the U.S. will be electric by 2027 (BloombergNEF, 2024).

This study estimated the number of EVs expected to be on the road in Salt Lake City in 2030 by scaling results for the Salt Lake City metro area presented in a National Renewable Energy Laboratory (NREL) study estimating the U.S. light-duty demand for EV charging infrastructure by 2030 (Wood & Borlaug, 2023).

The study modeled the baseline, low, and high scenarios of EV adoption (**Figure 11**). The baseline scenario forecasts that an estimated 42,300 vehicles in Salt Lake City will be electric by 2030, meaning that 34,887 internal combustion engine vehicles will be replaced by EVs by 2030, in addition to the 7,413 EVs registered in Salt Lake City in 2024. The low and high scenarios estimate 38,600 and 50,600 EVs respectively. Also calculated was the estimated number of light-duty EVs needed on the road by 2030 to be on target to meet the City's 80% greenhouse gas (GHG) emissions reduction by 2040 which is 116,200. This estimate illustrates the gap between the impact of forecasted electrification of light-duty vehicles registered in Salt Lake City and the impact needed to achieve the city's emission goals. **This indicates that meeting adopted emissions goals will likely require a combination of strategies to accelerate high rates of EV adoption while also shifting travel away from personal vehicles and supporting the electrification of vehicles traveling through, but not registered in, Salt Lake City.**

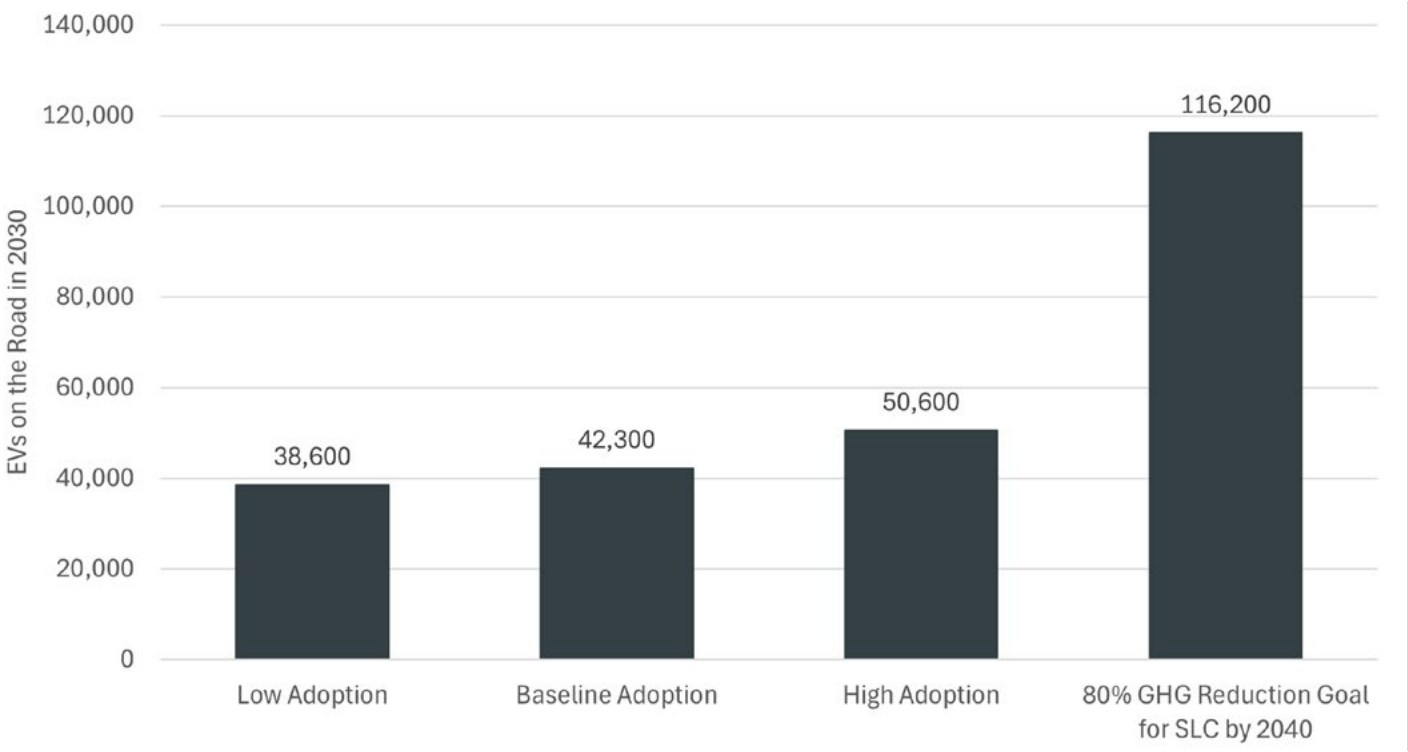


Figure 11. Estimated EVs on the Road in Salt Lake City by 2030 based on different scenarios.

FUTURE CHARGING NEEDS

As EV adoption increases, more charging infrastructure will be needed at homes, workplaces, public locations, and along travel corridors.

The U.S. Department of Energy reports that more than 80% of EV charging occurs at home (Lepre, 2021) and it will continue to be important to support home charging infrastructure as the most convenient and cost-effective charging location for most EV drivers. However, it will also be critical to develop more workplace and public charging, particularly to serve those facing barriers to charging at home such as renters and multifamily residents. Additionally, ride-hail and delivery fleets will require public charging to operate regularly.

54% of EV drivers who responded to the community survey indicated that they charge at home either with a standard outlet or a level 2 charger, 25% charge at work either with a standard outlet or a level 2 charger, and 29% charge at a public level 2 or DC fast charger.

The ability to charge at home was the second top key factor that community members replied in the study survey that would encourage them to get an EV, and the lack of access to charging away from home was the second highest factor preventing people to get an EV.

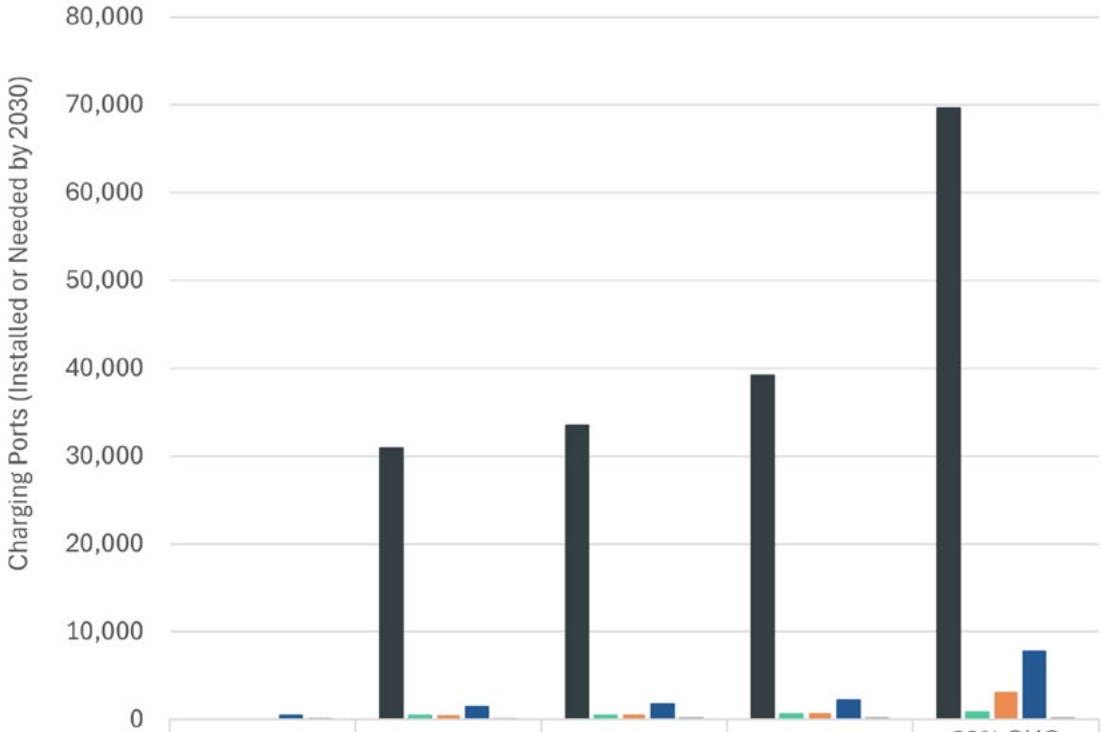
Using the NREL study noted in the future EV adoption section above, this study scaled the estimated number of charging ports needed for different location types in Salt Lake City by 2030 and the results are shown in **Figure 12** (Wood E. , et al., The 2030 National Charging Network: Estimating U.S. Light-Duty Demand for Electric Vehicle Charging Infrastructure, 2023).

For the low adoption, baseline, and high adoption scenarios, single-family home charging will need to be the most common charging type, with tens of thousands of ports needed to meet demand (30,900-39,200 depending on the scenario). Public level 2 charging ports are the next most needed type with between 1,500 and 2,200. As described in the **EV Adoption and Charging Assessment** above, Salt Lake City had 451 Level 2 charging ports in July 2024, with between 1,049 and 1,749 additional ports needed by 2030, depending on the EV adoption scenario. In July 2024, there were 55 public DC fast charging (DCFC) ports in Salt Lake City, with between 45 and 145 additional ports needed by 2030 to meet demand associated with the low and high scenarios respectively.

In addition to single family home and public charging, there are also 500-600 multifamily charging ports and 500-700 private workplace charging ports needed to meet demand in the low adoption, baseline and high adoption scenarios.

Most community survey respondents indicated they park their car in a garage or private driveway, indicating an opportunity for filling the home charging port need.

To serve the number of light-duty EVs needed to meet Salt Lake City's GHG emissions goals, even more charging ports will be required. The number of single-family home ports needed is estimated at 69,600, public level 2 charging port need is around 7,800, private workplace port need is estimated at 3,200, multifamily ports need is about 900, and the needed DCFC ports are about 200. More details about the charging analysis and methodology are described **in Appendix III: EV Charging and Infrastructure Needs Assessment.**



	July 2024 Installed	Low Adoption	Baseline Adoption	High Adoption	80% GHG Reduction Goal for SLC by 2040
Number of single-family home ports	N/A	30,900	33,500	39,200	69,600
Number of multifamily ports	N/A	500	500	600	900
Number of private workplace ports	N/A	500	600	700	3,200
Number of public level 2 ports	451	1,500	1,800	2,200	7,800
Number of public DCFC ports	55	100	200	200	200

Figure 12. Estimated total number of single-family home, multifamily, private workplace, and public Level 2 and DCFC charging ports needed in Salt Lake City by 2030.

TRANSPORTATION ELECTRIFICATION OPPORTUNITIES

CROSS-CUTTING PRIORITIES

Through an evaluation of existing conditions, community engagement, and analysis of future charging needs, several cross-cutting priorities emerged for Salt Lake City. These priorities informed the identification of, and approach to, electrified transportation opportunities in Salt Lake City that is presented in the following sections of this study. The connection to cross-cutting priorities is described throughout the Study using the icons below.

Air Quality

Air pollution is a key issue for Salt Lake City and transportation electrification efforts can be structured to maximize the air quality benefits.

Air quality is a core motivator for local residents, emerging as the most common answer to the question of what would encourage people to purchase or lease an electric vehicle in the community survey.

Equity

The burdens of Salt Lake City's existing transportation system are inequitably distributed and transportation electrification policy and programs must intentionally address equity considerations.

Collaborative Partnerships

There are many organizations working on transportation in Salt Lake City and collaborative partnership will be key to efficiently maximizing impact.

Integrated Mobility

Electrified transportation options are just one part of broader transportation goals and must be considered in the context of other efforts in order to maximize benefits and avoid unintended consequences.

HOW TO READ THIS STUDY

The opportunities to advance the objectives for this study are organized into four action areas:

Advocacy, Convening and Collaboration

Opportunities in this action area maximize impact by leveraging existing and emerging opportunities in Salt Lake City.

Community Adoption

Opportunities in this action area aim to 1) advance community understanding through education and outreach; 2) prioritize resources and support for underserved and disproportionately impacted communities, and 3) close the equity gap in electrified mobility adoption and ensure that the benefits of transportation electrification are equitably distributed.

Charging Infrastructure

Programs, policy, planning, and code opportunities to remove barriers and encourage installation to increase access to public and workplace electric vehicle charging infrastructure where it is needed most.

Medium- and Heavy-Duty Vehicles

Opportunities to encourage medium- and heavy-duty fleet electrification.

NEAR-TERM OPPORTUNITY ORGANIZATION

For each of the near-term opportunities, this study identifies:

- **Description of Opportunity**: A high-level description of the context and specifics of the opportunity.
- **Connection to Cross-Cutting Priorities:** Description of how the opportunity connects to, or supports each of the cross-cutting priorities, where relevant:

 Air Quality  Equity  Collaborative Partnerships  Integrated Mobility

- **Examples and Resources:** Case studies from other communities that have implemented similar actions and/or other resources that may help guide implementation.
- **Potential Funding Opportunities:** Federal, state, local and other funding streams that may support implementation of the opportunity.
- **Potential City Role:** Identification of potential roles and first steps for the City in supporting or leading implementation of the opportunity described.

SUMMARY OF OPPORTUNITIES

Near-Term Opportunities (2025 – 2026)	*Longer-Term Opportunities (2027 – 2030)*
Advocacy, Convening and Collaboration (ACC)	
• **ACC-1:** Create a platform for ongoing collaboration between key stakeholders on electrified transportation topics and opportunities. • **ACC-2:** Integrate electrified transportation priorities across city planning, policy, and future opportunities. • **ACC-3:** Advocate for clean vehicle standards at the state level. • **ACC-4:** Leverage upcoming opportunities to catalyze electrified transportation adoption in Salt Lake City.	• **ACC-5:** Targeted education campaign to auto dealers about SLC EV programs.
Community Adoption (CA)	
• **CA-1:** Community outreach, education, and resources related to electrified transportation benefits and opportunities, including prioritized support for disproportionately impacted communities. • **CA-2:** Continue to administer an e-bike incentive program • **CA-3:** Consider the adoption of policies and/or programs to support electrification of ride-hailing vehicles. • **CA-4:** Explore opportunities to support transit electrification.	• **CA-5:** Provide rebates or vouchers to support the purchase or lease of EVs. • **CA-6:** Explore the creation of an equitable EV carshare pilot program. • **CA-7:** Explore load management pilot projects to support the integrated electrification of transportation and buildings.
Charging Infrastructure (CI)	
• **CI-1:** Adopt EV make-ready building code standards for additional building types. • **CI-2:** Develop a policy for allowing right-of-way (ROW) charging. • **CI-3:** Develop a pilot for right-of-way (ROW) charging. • **CI-4:** Adopt requirements for EV charging station design. • **CI-5:** Install EV charging on public property in underserved and disproportionately impacted communities. • **CI-6:** Prioritized outreach to potential private charging site hosts. • **CI-7:** Develop and implement equitable and effective charging fees for city-owned stations.	• **CI-8:** Create a standalone EV charging permit. • **CI-9:** Right-to-charge policy adoption. • **CI-10:** Require new light pole installations to meet electrification requirements for light pole EV charging. • **CI-11:** Explore implementation of emissions-based tolls or congestion charges.
Medium- and Heavy-Duty Vehicles (MHD)	
• **MHD-1:** Install charging for medium- and heavy-duty private fleet vehicles. • **MHD-2:** Support electrification of medium- and heavy-duty fleet vehicles registered in SLC. • **MHD-3:** Zero-emission off-road heavy-duty vehicles. • **MHD-4:** Zero-emission inland ports and warehouse districts.	• **MHD-5:** Zero-emissions zones for all trucks and smart loading zones. • **MHD-6:** Explore the creation of pilot low or zero emissions zones.

ADVOCACY, CONVENING AND COLLABORATION (ACC)

There are many organizations working to advance electrified transportation in Salt Lake City. This opportunity area focuses on exploring opportunities to scale up impact through advocacy and collaborative efforts that work to support opportunities in the other areas identified.

NEAR-TERM OPPORTUNITIES

ACC-1: Create a platform for ongoing collaboration between key stakeholders on electrified transportation topics and opportunities.

DESCRIPTION OF OPPORTUNITY

To inform the development of this Study, Salt Lake City hosted a dedicated forum to gather input from key stakeholders and partner organizations on the opportunities for community electrified transportation and seek feedback on proposed policies and programs. Several participants highlighted the benefits of collaboration, convening, and networking between attendees and organizations at the forum.

This opportunity involves the creation of a structure for ongoing collaboration; for example through establishing a regional community electrified working group and/or networking event.

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Air quality is an inherently regional issue with much of the air pollution affecting Salt Lake City residents attributed to vehicles registered outside of the city. Improving air quality outcomes within Salt Lake City will require collaboration at a regional scale to meet shared objectives.

Equity: Including community-based organizations working with disproportionately impacted groups in ongoing conversations and collaboration related to transportation electrification will help to ensure that diverse perspectives are represented and that solutions appropriately reflect the needs of the community.

Collaborative Partnerships: Creating a structure for ongoing collaboration will enhance partnerships and maximize the impact of regional electrified transportation work.

Integrated Mobility: Creating a forum for interdisciplinary coordination and creativity at a regional scale will help to ensure that transportation electrification efforts are integrated with broader mobility priorities.

EXAMPLES AND RESOURCES

- **Boulder County, Colorado Regional Transportation Electrification Planning**: Boulder County communities came together to develop a Regional Transportation Electrification Plan in 2022. Communities, non-profits, and key stakeholders continue to meet and collaborate on plan implementation.

POTENTIAL FUNDING OPPORTUNITIES

- No anticipated funding needed unless City funds used to procure facilitation services to support working group.

POTENTIAL CITY ROLES

Supporting/Partnering	*Leading*
• Attend a working group or networking event led by another local organization, e.g., Utah Clean Energy. • Stay abreast of community developments related to transportation electrification and provide udpates as relevant.	• Lead the convening and hosting of a working group or networking event, potentially in partnership with another local organization such as Utah Clean Energy.

ACC-2: Integrate electrified transportation priorities throughout related city planning and policy development

DESCRIPTION OF OPPORTUNITY

As community plans are updated, there is an opportunity to integrate and align them with transportation electrification considerations in order to ensure consistency and reinforce priorities. Community plan efforts with an existing or potential connection to electrified transportation are identified in **Appendix I: Salt Lake City Electrified Transportation Planning and Policy Landscape**.

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Air quality is a priority for Salt Lake City, and this is reflected across multiple planning efforts. Alignment on this shared objective creates opportunities for collaborative efforts to reduce the inequitable impact of air pollution.

Equity: Equity is also identified as a core value in planning efforts such as Connect SLC. Integrating equity-based transportation efforts across City departments will maximize impact and reduce the potential for unintended conflicts or inequitable outcomes.

Collaborative Partnerships: Even within the City organization, there are multiple departments whose work touches transportation electrification. Aligning goals and strategies across departments creates opportunities for collaboration and shared learning.

Integrated Mobility: This study will inform electrified transportation work in the context of existing planning and policy efforts. Integrating this work into existing initiatives will ensure that it aligns with transportation and mobility values and goals established through other planning and community engagement efforts.

EXAMPLES AND RESOURCES

- Whole-of-Government Approach to Electric Vehicles is a Governing.com article that cites examples from cities using cross-departmental approach

POTENTIAL FUNDING OPPORTUNITIES

- Planning and Local Technical Assistance Program

POTENTIAL CITY ROLE

Leading

- The City sustainability team could act as a convener for other city departments (e.g., Transportation and Planning), spearheading collaborative efforts that consistently integrate equitable electrified transportation priorities.

ACC-3: Advocate for clean vehicle standards at the state level

DESCRIPTION OF OPPORTUNITY

As more states adopt clean vehicle standards requiring vehicle manufacturers to sell a certain percentage of electric vehicles, vehicle manufacturers will likely focus sales and the release of new EV models in those states. At the state level, adoption of the Advanced Clean Cars II and the Advanced Clean Truck rules would provide a pathway to reduce vehicle emissions and ensure EV model availability. Additionally, adopting the Heavy-Duty Omnibus standard would ensure that new medium- and heavy-duty combustion engine vehicles meet stricter NOx emissions requirements. As the capital and the most populous city in Utah, Salt Lake City is in a position of influence to represent community values at the state level.

At the request of the Utah Legislature the University of Utah Kem C. Gardner Policy Institute developed The Utah Roadmap: Positive Solutions on Climate and Air Quality released in January 2020. The report builds upon the 2007 Blue Ribbon Advisory Council on Climate Change. The report lists seven areas of focus called milestones and positioning Utah as the market-based EV state is one. It recommends the state expand Utah's network of EV charging stations, incentivize EVs and other alternative fueled vehicles, and involve Utah auto dealers to increase the zero-emissions vehicle supply.

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Legislation to advance transportation electrification and stricter emissions standards would contribute to improved air quality in Salt Lake City and across the state.

Equity: Since the burden of transportation-related air pollution is currently inequitably distributed, state-level legislation to improve air quality would reduce negative impacts for disproportionately impacted communities.

Collaborative Partnerships: Local organizations such as Utah Clean Cities, Utah Climate Action Network, and other community-based organizations can advocate to the Utah Legislature for clean vehicle standards.

EXAMPLES AND RESOURCES

- Updates on States acting on the Advanced Clean Car Standard
- Resources and updates on States working on clean truck policies

POTENTIAL FUNDING OPPORTUNITIES

- None identified

POTENTIAL CITY ROLE

Supporting/Partnering	*Leading*
• Support advocacy efforts by other organizations, for example by promoting opportunities to get involved • Partner with other organizations on coordinated advocacy efforts and consistent, collaborative messaging. • Participate in collaborative advocacy efforts at the state and federal level, for example through National League of Cities.	• City staff could engage directly with the legislature to advocate for policy in support of electrified transportation and related goals.

ACC4: Leverage upcoming opportunities to catalyze electrified transportation adoption in Salt Lake City

DESCRIPTION OF OPPORTUNITY

Salt Lake City is preparing to host the 2034 Olympic and Paralympic Winter Games and has submitted a bid to host the 2027 Sundance Film Festival. Additionally, the City recently approved a participation agreement with Smith Entertainment Group to create a downtown sports, entertainment, culture and convention district surrounding a remodeled Delta Center. These major events and initiatives present opportunities to create lasting changes in the way that people travel around Salt Lake City, including accelerating community transportation electrification.

Salt Lake City's winning bid to host the Olympic Games involved 10 federal guarantees, 2 pieces of state legislation, 2 state guarantees, and 10 guarantees from 6 cities and 4 counties. The bid met a requirement from the International Olympic

Committee (IOC) to host a carbon neutral games and focused on the core sustainability vision of the Olympic Movement: hosting resilient games with minimized carbon emissions in alignment with science-based targets and creating lasting solutions. The Salt Lake City 2034 Olympic and Paralympic Winter Games sustainability approach consists of three key focus areas: to reduce, compensate, and influence.

- Reduce and Minimize: Salt Lake City will strive to reduce emissions and waste to the extent feasible, thereby aligning with local, state, and national goals as well as international efforts including science-based targets (SBTs) and the Paris Agreement. SLC-UT aims for a 70% reduction in emissions by 2034.
- Compensate and Remove Carbon: Salt Lake City will strive to remove more carbon from the atmosphere than the Games emit. Some emissions are avoidable, and any remaining emissions will be compensated for via permanent removal of emissions from the atmosphere through technical, credible, and verified means.
- Influence: Salt Lake City can leverage reduction and compensation methods along with the international spotlight to develop high profile showcase examples of best sustainability practices, thereby influencing the growth of these practices across the globe. SLC-UT will develop and education and communications strategy to support this goal.

Within the emissions reduction focus area, travel is a key area targeted to reduce emissions. The Olympic Committee will be working closely with host communities and transportation service providers to address airline decarbonization, long-distance ground transportation, and short-distance transit to and from venues. These short distance trips in particular will require significant investment that, if planned correctly, will leave a lasting legacy of sustainable transportation, thereby addressing this short-term need with a long-term solution with lasting benefits for the Salt Lake City community. Electric busses, trams and trains, micromobility and personal EVs all may have their place as the plan takes shape.

The Olympics and other events create a unique opportunity to leverage intergovernmental cooperation, accelerate investment, and showcase best practices in electrified transportation that contribute to air quality, transportation efficiency, and reduced greenhouse gas emissions.

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Air quality has become a defining factor of the Olympic and Paralympic Games and other sporting events from the 2022 FIFA World Cup in Qatar (FIFA, 2022) to the 2023 cricket World Cup in Delhi, India (Kawoosa, 2023). Host cities are now frequently factoring in strategies to temporarily alleviate air pollution during these events for the benefit of athletes, spectators, and the global spotlight. However, the effects of these event-based strategies may dissipate shortly after the event (Liu & Ogunc, 2023) and Salt Lake City has an opportunity to maximize impact, not only for its temporary visitors from all over the world, but also to create lasting benefits for people who live and work in the community year-round.

Equity: When intentionally managed, large events and redevelopment initiatives have the potential to create lasting equity benefits. The recently endorsed Capital City Revitalization Zone Project Area and Participation Agreement related to the creation of a downtown sports, entertainment, culture and convention district includes provisions for community support and workforce development. The 2034 Olympic and Paralympic Winter Games bid includes a focus on unity and inclusion.

Collaborative Partnerships: Large events and initiatives present unprecedented opportunities for public-private partnerships and collaborations across multiple agencies to achieve shared goals and create lasting change. The Olympic Games and Sundance Festival present opportunities for investment in infrastructure that aligns with Salt Lake City's transportation and climate goals. Similarly, the downtown sports, entertainment, culture, and convention district creates opportunities for sales-tax funded development within the 100-acre project area.

Integrated Mobility: Large events, initiatives and redevelopment opportunities have the potential to accelerate progress toward already identified community priorities and goals, if these processes are integrated and managed in an intentional way. Ensuring that Salt Lake City's transportation and mobility vision and priorities are represented in conversations and planning around these upcoming opportunities will help to ensure directional alignment and maximize lasting impact.

EXAMPLES AND RESOURCES

- **Paris 2024 Olympic and Paralympic Summer Games:** Toyota delivered a fleet of more than 3,650 electric vehicles and 700 electric last-mile mobility solutions to the 2024 Paris Olympic Summer Games (International Olympic Committee, 2024).
- **Los Angeles 2028 Olympic and Paralympic Summer Games:** The Los Angeles Clean Tech Incubator (LACI) Transportation Electrification Partnership (TEP) Zero Emissions 2028 Roadmap 3.0 sets out targets to reduce greenhouse gas emissions and air pollution by 25% by the time of the 2028 Games. The LACI TEP is a public-private partnership between local, regional, and state stakeholders committed to accelerating transportation electrification and zero emissions transportation through the Los Angeles region ahead of the 2028 Olympic and Paralympic Games (LACI Transportation Electrification Partnership, 2023). The Roadmap includes a target for 129,000 public and workplace charging stations and for 45% of school buses and 100% of school bus sales to be electric by 2028.

POTENTIAL FUNDING OPPORTUNITIES

- Dedicated funding sources, including for 0.5% sales tax for the Capital City Revitalization Zone.
- Funding guarantees from local government, state, and federal partners associated with the Olympic Games, including for electric bus deployment in the host city.

POTENTIAL CITY ROLE

Supporting/Partnering	*Leading*
• Participating in planning and decision making processes led by other entities (e.g., Capital City Revitalization Committee, Salt Lake City-Utah Commitee for the Games, Smith Entertainment Group, Sundance Film Festival) to ensure that Salt Lake City transportation and sustainability goals are represented in large, transformational events and initiatives.	• Leading advocacy at the regional and state level to influence the prioritization of investment in projects and programs with lasting benefits. • Leading the development of a collaborative roadmap for the integration of sustainable transportation and electrification priorities into upcoming events and initiatives.

COMMUNITY ADOPTION (CA)

Electrified transportation has the potential to create multiple benefits for all Salt Lake City residents and one of the core objectives of this study is to identify ways to equitably advance electrified transportation adoption at rates higher than the national average, particularly for low-income communities.

As described in this Study's **EV Adoption and Charging Assessment**, disadvantaged communities in Salt Lake City are currently seeing low rates of EV adoption compared to other areas of the community, but can and should be able to enjoy the pollution-reduction and cost-saving aspects of transportation electrification. This opportunity area focuses on ways to accelerate community adoption of electrified transportation by making it more equitably accessible.

Specifically, near-term opportunities within this area focus on ways to advance transit, micromobility, and ride-hailing vehicle electrification as accessible alternatives to personal electric vehicle ownership. These opportunities also support the City's broader transportation and climate goals by prioritizing mode shift and integrated mobility options.

NEAR-TERM OPPORTUNITIES

CA-1: Community outreach, education, and resources related to electrified transportation benefits and opportunities, including prioritized support for disproportionately impacted communities.

DESCRIPTION OF OPPORTUNITY

While multiple organizations in Salt Lake City have done community outreach and education on electrified transportation, this opportunity focuses on expanding and consolidating existing efforts. Developing a coordinated community outreach campaign could help address misconceptions related to electrified transportation and raise awareness of the benefits and existing programs. Additionally, outreach may go beyond EVs alone to include other forms of electrified mobility such as e-bikes, scooters, and EV carshare opportunities as they arise.

First steps to expanding education and engagement could include developing an outreach plan, including:

- identification of priority audiences
- development of key messages, informed by community engagement (see study survey results above)
- identification of existing communication channels
- creation of a timeline for outreach that takes into account seasonality and the potential to raise awareness of air quality benefits during the winter inversion season
- development of programs to offer tangible benefits to residents, e.g., group buy program, EV purchase incentives.

A community survey conducted as part of this study asked respondents what information would help them to make a decision about getting an EV. The top responses, that could be a focus for future education and engagement efforts were:

1. Home charging and installation requirements
2. How to apply for incentives or rebates
3. Cold-weather performance of EVs
4. Vehicle battery lifetime
5. Public charging options

Only 3% of respondents felt they had all the information they need to make a decision about getting an EV.

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Connecting the timing of messaging and outreach related to transportation electrification with poor air quality days could attract greater attention and maximize impact by tapping into community concern about air pollution.

Equity: Prioritizing underserved and disproportionately impacted communities for education, outreach, and programs has the potential to realize benefits for those facing the greatest burdens from Salt Lake City's existing transportation system. However, community leaders working with disproportionately impacted groups have consistently emphasized that outreach needs to be paired with tangible benefits and outcomes for residents. Opportunities to do this could be to align electric vehicle education with programs such as:

- new incentives
- EV group buys
- basic EV owner maintenance training and information
- tax advice and other technical support to help residents navigate EV rebates and charging installation.

Collaborative Partnerships: There are a number of organizations already doing outreach and engagement related to transportation electrification, and trusted community organizations already working with disproportionately impacted communities. There are therefore opportunities for partnership to avoid duplication and maximize the reach and impact of engagement through existing channels.

EXAMPLES AND RESOURCES

- Drive Electric Utah is a statewide program dedicated to increasing EV adoption, infrastructure development, and workplace charging to further advance Smart Mobility in Utah's rural and urban communities.

POTENTIAL FUNDING OPPORTUNITIES

- Vehicle Technologies Office (VTO) Funding Opportunities - Supports high-impact projects that can significantly advance its mission to reduce petroleum reliance by developing and deploying more energy efficient and sustainable transportation technologies. VTO regularly updates its Funding Opportunity Announcements (FOAs) with information on available VTO grant opportunities.

POTENTIAL CITY ROLE

Supporting/Partnering	*Leading*
• Suport the distribution of education and outreach materials produced by other organizations, such as Utah Clean Energy, Utah Clean Cities, and Leaders for Clean Air. • Partner with other local organizations/ jurisdictions to develop a communications plan and co-branded outreach materials. • Partner with organizations already offering ride and drive events, information, and programs such as group buys.	• Lead the development of a communications plan and outreach materials, including a guide to incentives, rebates, and home charging. • Establish the city as the hub for local electrified transportation information. • Develop programs to offer tangible benefits to residents such as group buys.

CA-2: Continue to administer and evaluate the e-bike incentive program

DESCRIPTION OF OPPORTUNITY

In July 2024, Salt Lake City launched an e-bike incentive program, as part of the program Clean Air SLC, to provide a limited number of vouchers to support the purchase of e-bikes by community members. The vouchers provide a point-of-sale discount on eligible bikes, with enhanced incentives for moderate- and low-income individuals.

The City will monitor the impact of this program in order to inform potential future rounds. The first round of the e-bike program garnered significant interest, with the City receiving over 2,000 applications, amounting to $1.4 million in requests from residents. However, with a budget of $200,000 allocated for this round, only 277 applications could be approved. The City is optimistic that this strong response will highlight the importance of prioritizing future funding for the e-bike incentive program.

Community survey results revealed that 37% of respondents would consider buying an e-bike to use for transportation while 34% would not.

Price, followed by insufficient bike lanes and infrastructure were the most common barriers to e-bike ownership. Opportunities to safely store and charge an e-bike was the most commonly cited factor that would enable respondents to use an e-bike as a primary means of transportation.

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: A mode shift from single occupancy vehicles to e-bikes would help reduce congestion and traffic-related air pollution. However, it is also important to consider the health and equity impacts of encouraging e-bikes and other modes of active transportation during poor air quality events.

Equity: The 2024 e-bike incentive program is prioritizing equity through the provision of enhanced incentives for income-qualified individuals and by offering program materials in both English and Spanish. Additionally, e-bikes offer a more affordable pathway to transportation electrification for many residents compared to electric vehicles.

Collaborative Partnerships: The City is partnering with local bike shops to offer the e-bike incentive program.

Integrated Mobility: E-bikes have the potential to replace or supplement personal vehicles as a primary mode of transportation for many shorter trips. However, e-bikes face many of the same access, safety, and comfort challenges as bicycles and other forms of active transportation. Connect SLC highlights an increase in traffic deaths as one of the city's key transportation challenges and states that changes to policy and public infrastructure are critical to protect and ensure the safety of Salt Lake City's most vulnerable road users. Beyond addressing the up-front cost of an e-bike purchase, widespread adoption will therefore be closely tied to the vision and goals identified in the Connect SLC plan.

EXAMPLES AND RESOURCES

- UCAIR E-bike Voucher Program
- City of Denver E-bike Rebate Program
- Salt Lake City E-bike Incentive Program

POTENTIAL FUNDING OPPORTUNITIES

- None identified

POTENTIAL CITY ROLE

Supporting/Partnering

- Support communication and promotion of a future e-bike incentive program offered by another organization such as UCAIR or Utah Clean Energy.

Leading

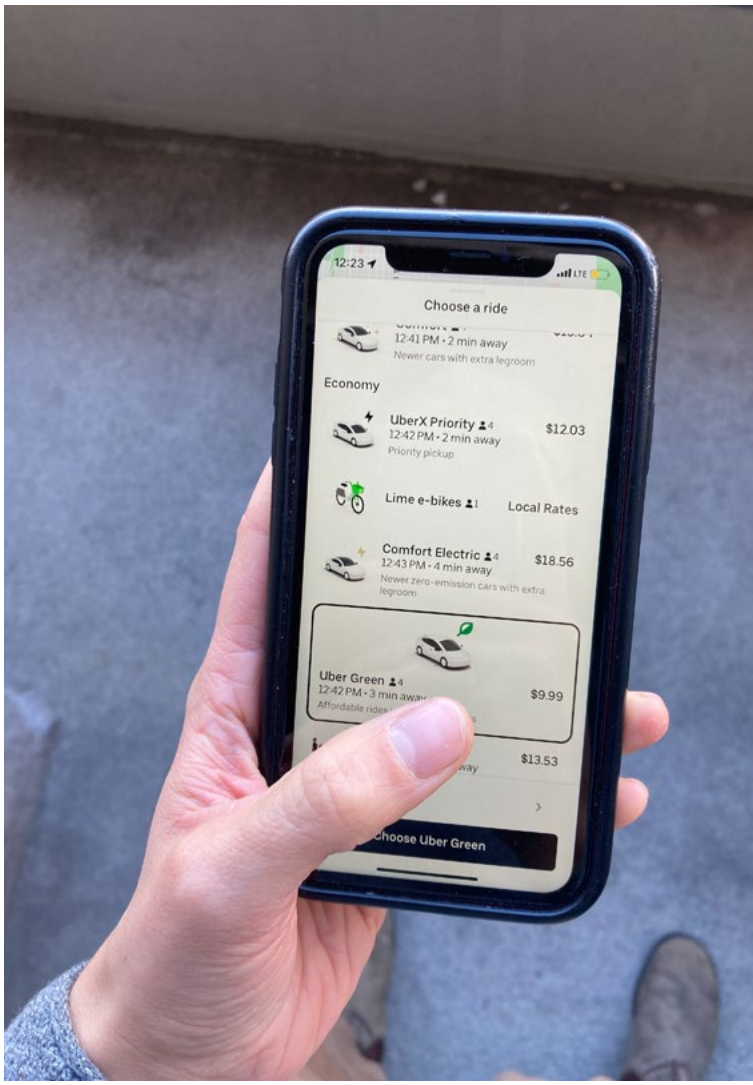
- Continue to lead the development, funding, administration and promotion of an e-bike incentive program, in partnership with local bike shops.

CA-3: Consider the adoption of policies and/or programs to support electrification of ride-hailing vehicles

DESCRIPTION OF OPPORTUNITY

Ride-hailing vehicles may account for up to 13% of total vehicle miles traveled in US Cities (Fehr & Peers, 2019) and the vehicles tend to be high-use, therefore presenting a significant opportunity for electrification and emissions reduction.

As Salt Lake City prepares to host the 2034 Olympic and Paralympic Winter Games, ride-hailing vehicles will be critical to moving hundreds of thousands of visitors around the region each day of the Games, and there may be opportunities to accelerate progress through partnership with transportation network companies (TNCs) such as Uber and Lyft ahead of the games.



Uber found that 40-69% of drivers are interested or open to electric vehicles but face systemic barriers to adoption, primarily cost and access to charging (Uber, 2023). The company also developed a list of "win-win" preferred policies to support EV adoption by drivers (Uber, 2021). The list includes public policy to support EVs more generally and also ride-hailing specific policies.

Opportunities to advance the electrification of ride-hailing vehicles in Salt Lake City could include:

- Convening TNCs, rideshare and cab drivers to understand barriers to electrification and collaborate on policies and programs to accelerate adoption.
- Offering incentives for EV adoption by ride-haling drivers, such as vouchers for vehicle purchase or reduced charging or other fees.
- Prioritizing charging locations with the potential to serve ride-haling drivers at high pick-up and drop-off locations or close to driver homes, through a partnership with TNC providers to obtain locally-relevant data.

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Data collected by Uber suggests that rideshare vehicle electrification could have up to four times the emissions savings compared to average car owners due to the number of trips and volume of miles driven (Uber, 2023).

Equity: A case study of Uber drivers in California found that those who drive EVs are 2 to 3 times more likely to represent lower income households and communities of color (Uber, 2023). This indicates that existing strategies to accelerate EV adoption by ride-hailing drivers may be having an impact and the continuing potential for strategies specifically prioritizing ride-hailing drivers and vehicles to contribute to equitable transportation electrification goals.

Policies to encourage EVs for taxis and ride-hailing could be developed alongside provisions to ensure that the workforce is not negatively impacted and/or incentives to support vehicle purchase by drivers. Data show that prioritizing charging close to rideshare driver homes can support the dual goals of increasing rideshare electrification and making charging more accessible for low-income and disproportionately impacted communities (Uber, 2023).

Collaborative Partnerships: During the development of this study, Uber offered to provide locally-specific data on high pick-up and drop-off locations and areas with a high density of drivers.

EXAMPLES AND RESOURCES

- **California Electric Ride-Hailing Requirement:** In 2018, the California Governor Gavin Newsom signed the Clean Miles Standard Act requiring that rideshare companies operating in California meet annual GHG and electrification targets. By 2030, rideshare companies must achieve zero greenhouse gas emissions and ensure that 90% of vehicle miles are fully electric (California Air Resources Board, 2021).
- **Washington State:** The Washington Interagency EV Coordinating Council Transportation Electrification Strategy proposes convening rideshare and cab drivers, transportation network companies (TNCs) and taxi companies to develop policies for reducing emissions (Washington Interagency Electric Vehicle Coordinating Council, 2024)
- **New York City:** The City of New York has proposed rules requiring rideshare fleet to be made up of either zero-emission vehicles or wheelchair accessible vehicles by 2030 through the Green Rides Initiative (New York City, 2024).
- **Uber** was an Advisory Group Associate Partner in the development of the LACI Transportation Electrification Partnership Zero Emissions 2028 Roadmap ahead of the 2028 Los Angeles Olympic and Paralympic Summer Games.

POTENTIAL FUNDING SOURCES

- None identified

POTENTIAL CITY ROLE

Supporting/Partnering	*Leading*
• Support existing electrification goals and efforts by transportation network companies, for example through promoting and communicating opportunities to drivers within Salt Lake City.	• Engage transportation network companies and ride-hailing drivers to understand the barriers to electrification and inform the development of policies and/or programs to support electrification.

CA-4: Explore opportunities to support transit electrification

DESCRIPTION OF OPPORTUNITY

Electric buses offer a way to reduce single-occupancy vehicles, mitigating traffic congestion and air pollution. Utah Transit Authority (UTA) currently has 34 battery electric buses in its fleet, 23 of which operate within Salt Lake County. The buses are charged using high-powered overhead chargers located at key transit centers as well as overnight chargers at two bus garages (UTA, n.d.). The transit authority partnered with the University of Utah to participate in a joint procurement to acquire five electric buses, three of which belong to UTA's fleet and two of which are operated and maintained by the University of Utah.

UTA also partners with Via Mobility to offer UTAH On Demand on Salt Lake City's Westside, which is funded by Salt Lake City. It also operates in southern Salt Lake County, Tooele County, and South Davis County. There are currently 10 Ford E-transit electric passenger vans serving the Tooele County zone that are supported by in-system Level 3 chargers and Level 2 chargers at the garage for overnight charging (UTA, n.d.). There is interest and opportunity in electrifying the on-demand service within Salt Lake City.

UTA has a Zero-Emission Bus Transition Plan providing a roadmap for moving toward a 50% alternative-fuel powered bus fleet by 2034, including over 200 battery electric buses, and is currently looking at expanding the use of compressed natural gas (CNG) vehicles. There may be opportunities for the City to support UTA in prioritizing electrification over CNG for future vehicle and infrastructure investments.

Advancing Sustainability through Powered Infrastructure for Roadway Electrification (ASPIRE) is facilitating strategic planning to guide Utah to an electrified and intelligent transit system (UTA, n.d.).

Additionally, Salt Lake City School District was the first in Utah to integrate electric school buses into its fleet using grant funds from the Utah Department of Environmental Quality (Salt Lake City School District, n.d.) and the District has committed to 100% clean electricity by 2030 and carbon neutrality by 2040 (Salt Lake City School District, n.d.).

This opportunity focuses on ways that the City could support or accelerate the transition to an electrified transit system.

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Transit adoption has the potential to contribute to improved air quality by reducing the number of vehicle miles traveled within Salt Lake City. Making transit more accessible and affordable to Salt Lake City residents is a core tenet of Connect SLC and a key strategy in reducing community emissions and improving air quality.

However, buses do produce air pollution. Transit riders, the communities through which the vehicles drive, and people who live or work close to bus depots breathe those exhaust fumes. Electrifying transit presents an opportunity to maximize the impacts of increased transit use and reduce exposure to mobile source air pollution.

Equity: Electrified buses benefit the drivers, riders, and the communities through which the buses drive since they have zero-tail pipe emissions. Electrification of the SLC Westside neighborhood micro-transit system, UTA on Demand, could create benefits for over-burdened and underserved communities.

Collaborative Partnerships: Partnering with UTA, ASPIRE and other organizations already working on transit electrification in the Salt Lake City area will be key.

Integrated Mobility: Transit presents a key opportunity to integrate electrification objectives with Salt Lake City's broader transportation vision and goals.

EXAMPLES AND RESOURCES

- Electrifying Transit: A Guidebook for Implementing Battery Electric Buses
- Washinton, DC Circulator Battery Electric Bus Pilot Report

POTENTIAL FUNDING SOURCES

- U.S. Department of Transportation's Grants for Buses and Bus Facilities Formula Program
- U.S. Department of Transportation's Grants for Buses and Bus Facilities Discretionary Program

POTENTIAL CITY ROLE

Supporting/Partnering

- Support existing work by UTA, Salt Lake City School District, ASPIRE and others to advance transit system electrification in Salt Lake City by engaging in planning processes and advocating for an accelerated transition.
- Work with UTA and Salt Lake City School District to explore the potential for partnerships that accelerate transit electrification and transit access.

CHARGING INFRASTRUCTURE (CI)

Access to convenient, reliable, and affordable EV charging infrastructure is a critical component to supporting EV adoption in Salt Lake City and beyond for residents and visitors alike.

The U.S. Department of Energy reports that more than 80% of EV charging occurs at home (Lepre, 2021). However, not all residents have equal access to home charging which is easiest for homeowners and single-family home residents. Those who rent, live in multifamily housing developments, or do not have access to off-street parking frequently face barriers to charging at home that may discourage or prevent EV ownership. Additionally, older homes may present challenges with installing at-home charging, especially if wiring and panel upgrades are necessary.

Access to both workplace and public charging can help alleviate barriers for those who cannot charge at home. Workplace charging can provide a convenient and cost-effective alternative (or supplement) to home charging, while public charging stations are critical to ensuring charging access for longer-distance commuters, visitors, and transportation services (e.g., ride-hailing and delivery fleets) as well as residents. Similar to gas stations, public charging locations provide convenient options for those who need to recharge on their route. They are also a visible indicator of a community's EV commitment and may reduce range anxiety by assuring those interested in purchasing an EV that charging is easily available.

Figure 13 shows that a high percentage of renters live in the downtown area where there is an existing concentration of public chargers. However, as EV adoption increases, more convenient and cost-effective charging may be needed to serve renters and multifamily residents in the downtown core as well as in areas that have received less investment in charging infrastructure to-date.

This opportunity area focuses on opportunities for the City to lead or support the installation of new charging infrastructure, while also developing policies that encourage installations, improve the user experience, and ensure public charging is economical for EV drivers who lack access to cheaper home charging.

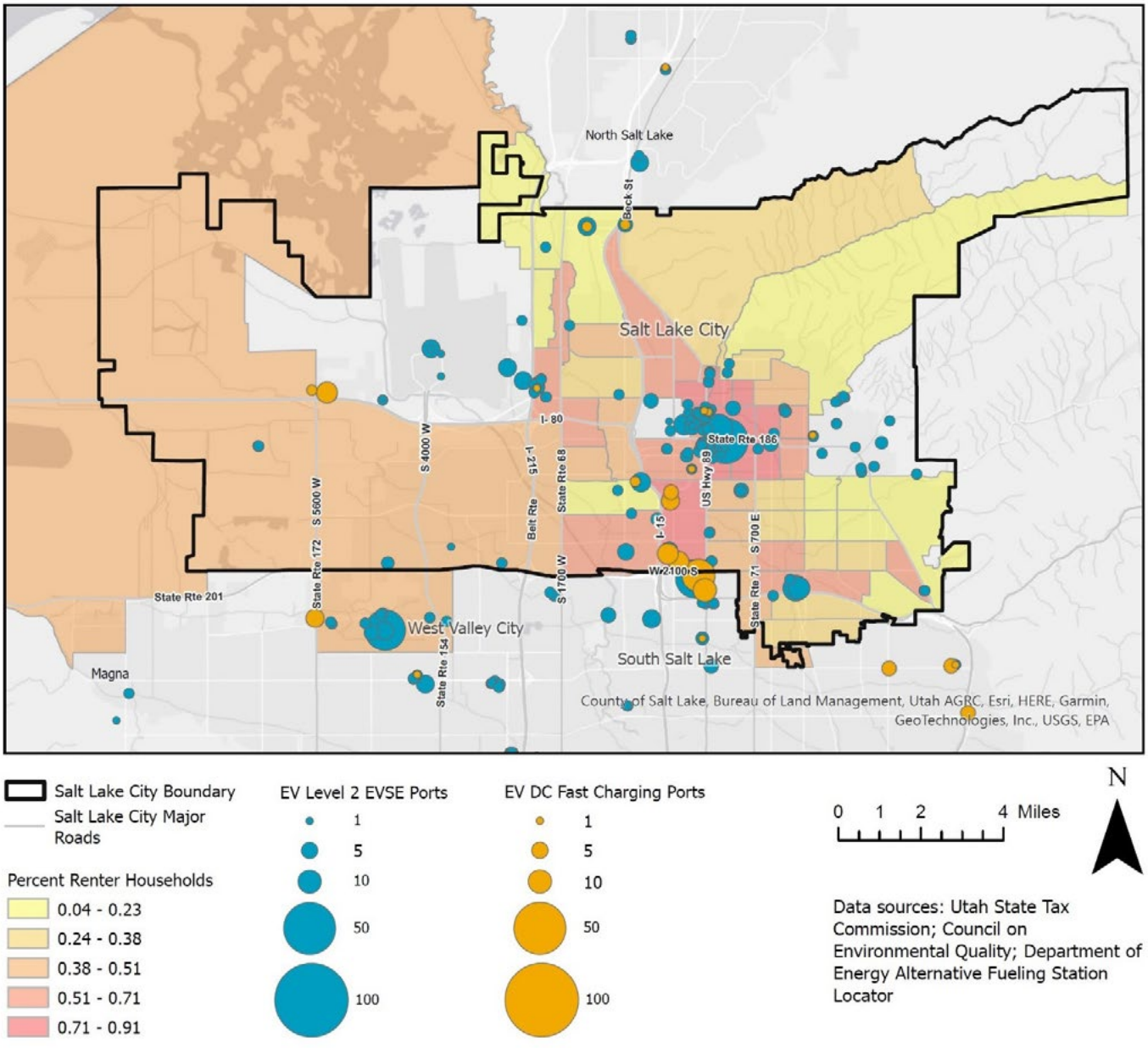


Figure 13. Percent of Renter Households and EV Charging Stations.

CI-1: Adopt EV make-ready building code standards for additional building types

DESCRIPTION OF OPPORTUNITY

Installing the electrical infrastructure to support future charging during construction or major renovation captures savings by avoiding costly future retrofits to install chargers. Retrofitting electric vehicle infrastructure has been shown to be substantially more expensive than installation during new construction (Energy Solutions, 2016).

Salt Lake City has adopted EV Make-Ready Standards for multifamily housing, most recently in 2023, in order to prioritize accessible at-home charging since this is where most EV drivers do most of their charging. The City considered including commercial buildings during development of its first EV readiness ordinance (2015-2017 timeframe). The City's first EV readiness ordinance was adopted in 2017 and only applied to multi-family housing. The commercial building component did not move forward due to significant pushback. However, engagement since that time indicates that there may now be an opportunity to adopt minimum standards for other use cases, such as new parking lots, hotels, grocery stores or other large commercial developments. Additionally, the City may consider opportunities to require charging infrastructure readiness at developments with medium- and heavy-duty fleet vehicles.

Salt Lake City could consider adopting EV readiness requirements based on model code language in line with those developed by the International Code Council.

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Ensuring charging is required as part of building codes allows for charging infrastructure that will in turn, encourage more EV adoption and contribute to improved air quality.

Equity:

- Allowing for or requiring EV charging in more locations around the city will increase the accessibility of charging, with particular benefits for those who face barriers to adequate and convenient home charging, for example:
- Multifamily residents, residents in areas with no off-street or garage parking, and those facing long commutes.
- Requiring charging for certain types of development can help to ensure that the distribution of charging stations is equitable across the community, rather than driven solely by current EV ownership and demand.
- While installing EV charging infrastructure during development is significantly less expensive than retrofitting later, there is an incremental cost to developers that may ultimately be passed on to property owners, tenants and/or those using installed charging stations.
- Providing development incentives or financial support for certain use cases may help to avoid this and minimize the unintended perpetuation of existing inequities in access to housing and electrified transportation.

Collaborative Partnerships: This opportunity area will require collaboration with developers to develop and implement effective code requirements appropriate for Salt Lake City.

EXAMPLES AND RESOURCES

- Park City, UT
- Denver, CO
- National Initiative to Advance Building Codes
- State of Colorado Model Electric Ready Code

Table 2. Colorado Model Electric and Solar Ready Code requirements (Colorado Energy Office, 2023)

Building Type / Space Type	EVSE Installed Space	EV Ready Space	EV Capable Space	EV Capable Light Space
All commercial buildings, except for R-2 occupancies with 10 or less parking spaces	0	2 spaces	0	0
Commercial buildings, except for R-2 occupancies, with greater than 10 parking spaces	2% of spaces	8% of spaces	10% of spaces	10% of spaces
R-2 occupancies with 10 or less parking spaces	0	15% of spaces	10% of spaces	10% of spaces
R-2 occupancies with greater than 10 spaces	5% of spaces	15% of spaces	10% of spaces	30% of spaces

POTENTIAL FUNDING OPPORTUNITIES

- U.S. Department of Energy Resilient and Efficient Codes Implementation

POTENTIAL CITY ROLE

Leading

- Leading the development, adoption, and enforcement of additional EV Readiness standards.

CI-2: Develop a policy for allowing right-of-way (ROW) charging

DESCRIPTION OF OPPORTUNITY

Residents without off-street home charging access or those who rent or live in multifamily homes, will need convenient charging access. Taxi, ride-hail, and other delivery drivers likely will require charging during their shift. The ROW is one potential location for the installation of charging infrastructure. ROW charging in neighborhoods could provide a familiar and reliable place for residents to charge and in more commercial areas these chargers could be highly visible and support high-mileage drivers.

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The City does not currently have a strategic approach for the installation of public chargers in the ROW. To date, the City has installed ROW chargers at five locations (four downtown locations and one in Sugarhouse). In a couple of instances where interest was expressed, the City has allowed the installation by private property owners with requirements such as making it available to the public for free.

The City could consider developing a policy to create a consistent approach for the installations of public charging in the ROW including city- and privately-owned stations with new downtown development and/or in neighborhoods with older multifamily or single-family residences without off-street parking.

Factors to consider in the development of a policy include:

- ensuring that policy goals align with the City's long-term vision for ROW management
- building in flexibility in ROW management and considering long-term curbside demand and interaction with other access uses (e.g., bus routes, bike lanes, other mobility options, ADA accessibility, loading zones, evacuation or snow routes, road maintenance)
- identifying areas of the City for the prioritization of ROW installations, or where charging should not be allowed
- developing a process for incorporating ROW chargers as part of City construction projects
- factoring in the potential for future technologies, such as wireless charging
- defining roles and responsibilities and requirements for ownership, operations, maintenance, and insurance, including consideration of public-private partnerships
- using existing infrastructure when possible
- defining and documenting permitting factors for ROW charging (e.g., identifying who has jurisdiction over curbside permitting and excavation; how accessibility impacts permitting; and specifying signage requirements).
- developing fee structures appropriate for the parking availability and charging utilizations rates in different areas of the City (e.g., different rates and policies at different levels of adoption, scalability, potential to only charge a fee when plugged in to start)
- incorporating public feedback to support equity
- identifying a process for tracking ROW chargers and policy changes.

The City could develop pilot programs to test policies related to ROW charging installations. Pilot program considerations are described in CI-3.

The City may also consider formalizing the policy into an ordinance to further support a successful ROW charging program.

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Encouraging more EV charging will allow for more EV adoption from consumers as well other high-mileage drivers in fleets. Reducing miles driven in internal combustion engines will reduce air pollution caused by these vehicles.

Equity: Efforts to support ROW charging could enhance equity through:

- providing options for EV drivers without a dedicated parking space at home
- supporting high-mileage drivers such as taxis, ride-hail, food and other delivery drivers, enabling them to take advantage of the premium benefits that companies may have for driving electric.

Collaborative Partnerships: This opportunity will require collaboration and partnership with multiple entities, including:

- city departments
- Rocky Mountain Power
- EV charger providers
- community leaders
- local businesses in identified areas.

Integrated Mobility: The City will need to consider long-term transportation planning and land use to evaluate impacts for other curbside use and ROW charging siting.

EXAMPLES AND RESOURCES

- Forth developed a guide for cities, Right-of-Way Charging: How Cities Can Lead the Way that provides best practices and examples.
- Portland, Oregon initiated a project to create new policy to enable the installation of EV chargers in the public right-of-way. The report details the process the City took to update code to set location and siting requirements.
- Clean Cities and Communities compiled Project Lessons: Curbside EV Charging
- New Orleans passed an ordinance where EV owners can apply for permits for chargers for personal, noncommercial use in the right-of-way in front of their house. Some of the requirements include how much space must remain on the sidewalk for pedestrians to pass and how close the devices can be to fire hydrants. A permit is $300 with a yearly renewal fee of $100.

POTENTIAL FUNDING OPPORTUNITIES

- No anticipated funding needed

POTENTIAL CITY ROLE

Supporting/Partnering

- City departments develop a ROW charging policy for designated areas.

Leading

- Partner with the utility to understand the implications for installing charging in the ROW.
- Partnering with other City departments to coordinate internally on ROW processes.
- Engage residents, busniesses, and ride-hail companies to understand potential charging need and concerns.

CI-3: Develop a pilot for private installation of right-of-way (ROW) charging

DESCRIPTION OF OPPORTUNITY

After a ROW policy has been developed to determine eligible areas and the requirements for the process, a pilot program could be developed to verify that the policy is working as intended. To reduce the burden to the City of installing and managing EV chargers, the City could consider a pilot program to facilitate the private installations of EV chargers in the ROW. A public-private partnership pilot program would allow a private sector partner to own and manage charging in the ROW. This may unearth where there are still challenges or unintended consequences before formalizing the policy with an ordinance, if warranted.

Recommendations and best practices for ROW charging program design include:

- identifying existing city projects where ROW charging may be readily integrated
- identifying and understanding the program's audience before selecting charging technology
- pre-selecting areas where right-of-way charging will be considered
- ensuring that applicants are ready to build soon after permit approval
- balancing parking and charging demands in residential neighborhoods
- considering longer-term, easily renewable permits for charger installation
- identifying a single point of contact for your program
- considering innovative approaches, such as "bring you own cord" and "peer-to-peer" solutions.

Several cities have implemented ROW EV charging programs for private installation, with lessons learned for the different programs. Programs in Philadelphia and Washington, D.C., allowed the installation of chargers by individual homeowners or a group of neighbors. Philadelphia learned from their residential focused pilot that ownership was complex when a homeowner moved, with a risk of the charger becoming a stranded asset or not wanted by the next homeowner (City of Philadelphia, 2018). The program in Washington, D.C., found low uptake for their ROW charging because the coordination with residents and the permit process is onerous making a business case hard for EV charger providers (Emerine, 2023).

Other cities allowed the installation of chargers by a private charger provider or power utility provider. Boston and New York City have recently partnered with Itselectric, a charger provider, to allow installations of chargers in the ROW powered by adjacent buildings. Several other cities have partnered with local power providers to install chargers in the ROW. These installations range from typical standalone chargers to light or utility-pole mounted chargers. Typical challenges with these programs include vandalism and parking enforcement (i.e. ensuring that non-EV drivers don't park in designated EV parking spots).

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Encouraging more EV charging will allow for more EV adoption from consumers as well other high-mileage drivers in fleets. Reducing miles driven in internal combustion engines will reduce air pollution caused by these vehicles.

Equity: Efforts to support ROW charging could enhance equity through:

- Providing options for EV drivers without a dedicated parking space at home.
- Supporting high-mileage drivers such as taxis, ride-hail, food and other delivery drivers, enabling them to take advantage of the premium benefits that companies may have for driving electric.

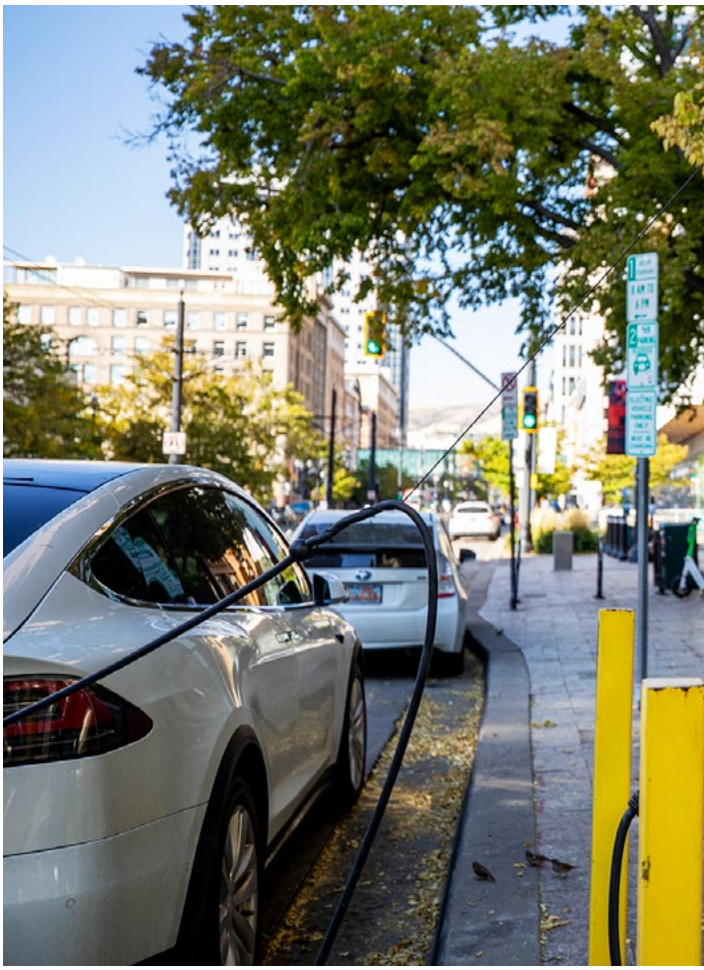
Collaborative Partnerships: This opportunity will require collaboration and partnership with multiple entities, including:

- Rocky Mountain Power
- EV charger providers
- residents
- local businesses
- ride-hail companies
- food delivery companies
- other light-duty fleets.

Integrated Mobility: Ride-hail users may not own a vehicle but still need a ride at times and offers an option to connect to other transportation options such as micromobility or transit.

EXAMPLES AND RESOURCES

- Berkeley Law complied a few case studies in How Can Cities Deliver Equitable EV Charging to the Curbside and Public Right of Way?
- Architecture and urban design studio WXY Studios developed a resource for curbside charging, Curb Enthusiasm: Deployment Guide for On-Street Electric Vehicle Charging
- Virgina Clean Cities developed a model ordinance guide, Curbside Charging: A Model Ordinance for Cities and Counties
- Portland, OR Electric Vehicle Charging in the Public Right-of-Way
- Washington, D.C. Electric Vehicle Charging Station Program
- Joint Office of Energy and Transportation, Community Charging: Emerging Multifamily, Curbside, and Multimodal Practices



POTENTIAL FUNDING OPPORTUNITIES

- U.S. Department of Transportation's Charging and Fueling Infrastructure (CFI) Grant Program

POTENTIAL CITY ROLE

Supporting/Partnering	*Leading*
• Devlelop a pilot program for ROW charging from policy develped in CI-2, coordinating with the utility and EV providers.	• Partner with the utility to create a streamlined process for any requirements including permitting in the ROW. • Colloborate with businesses and event venues along corridors to support high mileage drivers with easy charging locations.

CI-4: Adopt requirements for EV charging station design

DESCRIPTION OF OPPORTUNITY

Establishing EV charging station design standards can enhance the consistency and accessibility of EV charging. This strategy involves the creation of voluntary guidelines to encourage charging hosts and installers to incorporate certain features and considerations into charging station design, including EV parking signage, EV parking location, and EV charging accessibility.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This is an internal priority for the City. As part of this effort, the City will develop charging station design guidelines to be used for installing City-owned charging stations. The guidelines can also be shared as a resource for private sector entities considering the installation of charging stations. This could be incorporated into the City's Parking Standards Manual or as a standalone document.

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Consistent and reliable public EV chargers can alleviate range anxiety and encourage more EV adoption.

Equity: Developing standards for accessible charging stations ensures EV drivers with disabilities can use public EV chargers.

Collaborative Partnerships: The development of EV charging station design requirements creates opportunities for partnership with EV charging station providers and developers.

Integrated Mobility: Integrated design standards can be used at transportation hubs creating a consistent experience for users across different modes.

EXAMPLES AND RESOURCES

- Siting and Design Guidelines for Electric Vehicle Supply Equipment
- Technical & Design Guidelines for EV Charging Infrastructure
- MUTCD 11th Edition: What's New in Signage for Electric Vehicle Charging and Parking?
- Signage for EV Charging Stations
- Embedding Equity Into Electric Vehicle Charging Station Design
- U.S. Access Board Accessible Charging Station Design Guidelines
- Minimum standards and requirements for projects funded under the National Electric Vehicle Infrastructure (NEVI) Formula Program

POTENTIAL FUNDING OPPORTUNITIES

- None identified

POTENTIAL CITY ROLE

Leading

- City to develop and consider requirement that at least City-owned stations comply with adopted guidelines.
- Consider requirement for all public EV charging stations to comply with adopted guidelines.

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CI-5: Install EV charging on public property in underserved and disproportionately impacted communities

DESCRIPTION OF OPPORTUNITY

Expanding charging access where the market may lag is important to ensure that all residents are included in electrification of transportation. There is federal funding available for installing EV chargers in disproportionately impacted communities. The City can install EV chargers on City property and can support multifamily developers, businesses, and other private entities to install EV chargers in eligible communities.

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Public chargers increase charging access for EV drivers without access to home charging and may encourage more EV adoption. EV chargers don't pose the same environmental hazards as a gas station since there is no fuel brought onsite.

Equity: Communities that have been historically underserved will need additional support building the needed charging infrastructure to support residents who want to transition to EVs. Residents without access to home charging benefit from public charging infrastructure that is convenient, reliable, and affordable.

Collaborative Partnerships: This opportunity will require partnership and collaboration with:

- local businesses
- community-based organizations
- multifamily developments
- healthcare facilities.

EXAMPLES AND RESOURCES

- Federal Justice40 Initiative

POTENTIAL FUNDING OPPORTUNITIES

- U.S. Department of Transportation's Charging and Fueling Infrastructure (CFI) Grant Program
- Beehive Emission Reduction Plan: Implementation Grant Program, an awarded Climate Pollution Reduction Grant

POTENTIAL CITY ROLE

Supporting/Partnering	*Leading*
• Connect priviate entities with funding opportunities. • The City can create public-private partnerships to install EV chargers on City property.	• The City can apply for funding and install EV chargers on City property.

CI-6: Prioritized outreach to potential private charging site hosts

DESCRIPTION OF OPPORTUNITY

Private entities may not be aware of the benefits and opportunities for installing EV chargers. The City can provide information and support to organizations in key locations to support the robust buildout of EV charging infrastructure.

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Encouraging public charging will reduce range anxiety and may increase EV adoption.

Equity: Engaging with multifamily property owners and workplaces can help increase convenient access to charging. Public charging at locations people frequent can also provide convenient charging access. Additionally, engaging with a variety of businesses and venues can help ensure that organizations of all types are encouraged to install charging, thus providing access to different communities and groups.

Collaborative Partnerships: This opportunity will require partnership and collaboration with:

- local businesses
- educational institutions
- healthcare facilities
- community-based organizations
- Utah Clean Cities
- Leaders for Clean Air.

EXAMPLES AND RESOURCES

- ChargePoint has a guide to , EV Charging: What Businesses Need to Know

POTENTIAL FUNDING OPPORTUNITIES

- U.S. Department of Transportation's Charging and Fueling Infrastructure (CFI) Grant Program

POTENTIAL CITY ROLE

Supporting/Partnering

- Support outreach from community-based organizations or organizations focused on transportation electrification.
- Coordinate with local organizations providing information and material.

Leading

- The City does direct outreach.


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CI-7: Develop and implement equitable and effective charging fees for City-owned stations.

DESCRIPTION OF OPPORTUNITY

Multifamily residents, renters, or homeowners without off-street parking may not have access to low-cost home charging. Salt Lake City currently offers free charging at city-owned Level 2 charging stations. However, City Council has signified legislative intent for the Public Services and Sustainability Departments to coordinate on studying the options for eliminating free charging stations and shifting to a paid service run by a contractor.

In developing an equitable and effective fee structure for public charging stations, the City could develop a program where individuals who qualify for certain income-based programs are able to receive a reduced rate at the City's chargers where payment is required. This could mirror Utah's Home Energy Assistance Target (HEAT) Program.

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Ensuring that public charging is affordable and accessible may support increased EV adoption.

Equity: An equitable fee structure could ensure that low-income households without home charging have access to affordable charging.

Collaborative Partnerships: This opportunity will require partnership and collaboration with:

- Utah Department of Health & Human Services
- community-based organizations
- Rocky Mountain Power
- charging providers.

EXAMPLES AND RESOURCES

- None identified

POTENTIAL FUNDING OPPORTUNITIES

- None identified

POTENTIAL CITY ROLE

Supporting/Partnering	*Leading*
• The City could partner with the State of Utah to develop a program similar to the Home Energy Assistance Target (HEAT) Program. • The City could work with Rocky Mountain Power and charging providers to implement at public charging stations.	• The City coudl develop a program to reduce the cost of public charging for income-eligible residents.

MEDIUM- AND HEAVY-DUTY VEHICLES (MHD)

Medium- and heavy-duty vehicles account for a disproportionate share of air pollutants and greenhouse gas emissions. Heavy-duty vehicles account for only 7.5% of the vehicle miles traveled and represent just 4% of the vehicles registered in SLC but produce 30% of the mobile source pollution on the Wasatch Front (Utah Department of Environmental Quality, 2023). The impacts of pollution created by medium- and heavy-duty vehicles are also disproportionately concentrated in communities close to major transportation corridors (Zhang & Batterman, 2013). Electrification will be key to reducing the air pollution and greenhouse gas emissions associated with medium- and heavy-duty vehicles and this opportunity area focuses on ways that Salt Lake City might support this transition.

The actions in this opportunity area complement work underway by Utah Clean Energy and others to explore the potential for medium- and heavy-duty fleet electrification.

MHD-1: Support the expansion of charging infrastructure for charging for medium- and heavy-duty fleet vehicles

DESCRIPTION OF OPPORTUNITY

Medium- and heavy-duty electric vehicles have large battery packs and require high-power charging networks separate from those serving light-duty vehicles. Investment in EV charging has been heavily focused on light-duty vehicles to date but as more medium- and heavy-duty electric vehicles reach the market, ensuring that there is a robust network of charging will be essential to supporting adoption.

There are two primary charging models for medium- and heavy-duty vehicles:

- depot charging where fleets are charging at a depot, typically overnight
- on-route or "opportunity" charging at stops along a route.

This opportunity focuses on ways that Salt Lake City may directly or indirectly support the installation of charging infrastructure to serve medium- and heavy-duty fleet vehicles registered in, or passing through, Salt Lake City, for example through:

- installation and ownership of charging stations to serve medium- and heavy-duty municipal fleet vehicles
- providing incentives for the installation of medium- and heavy-duty fleet charging stations for private fleets in priority areas, particularly close to disproportionately impacted communities on Salt Lake City's Westside
- coordinate and provide or promote technical assistance and education for fleet operators and developers interested in medium- and heavy-duty fleet charging
- support and facilitate deployment of future charging technologies, such as wireless charging.

The Federal Highway Administration (FHWA) has designated alternative fuel corridors to support installation of EV charging, and other fueling infrastructure at strategic locations along major national highways. **Figure 14** shows the designated Alternative Fuel Corridors within Salt Lake City and the Inland Port area. These corridors and areas are likely routes for medium and heavy-duty vehicles and where charging infrastructure investment may be needed.

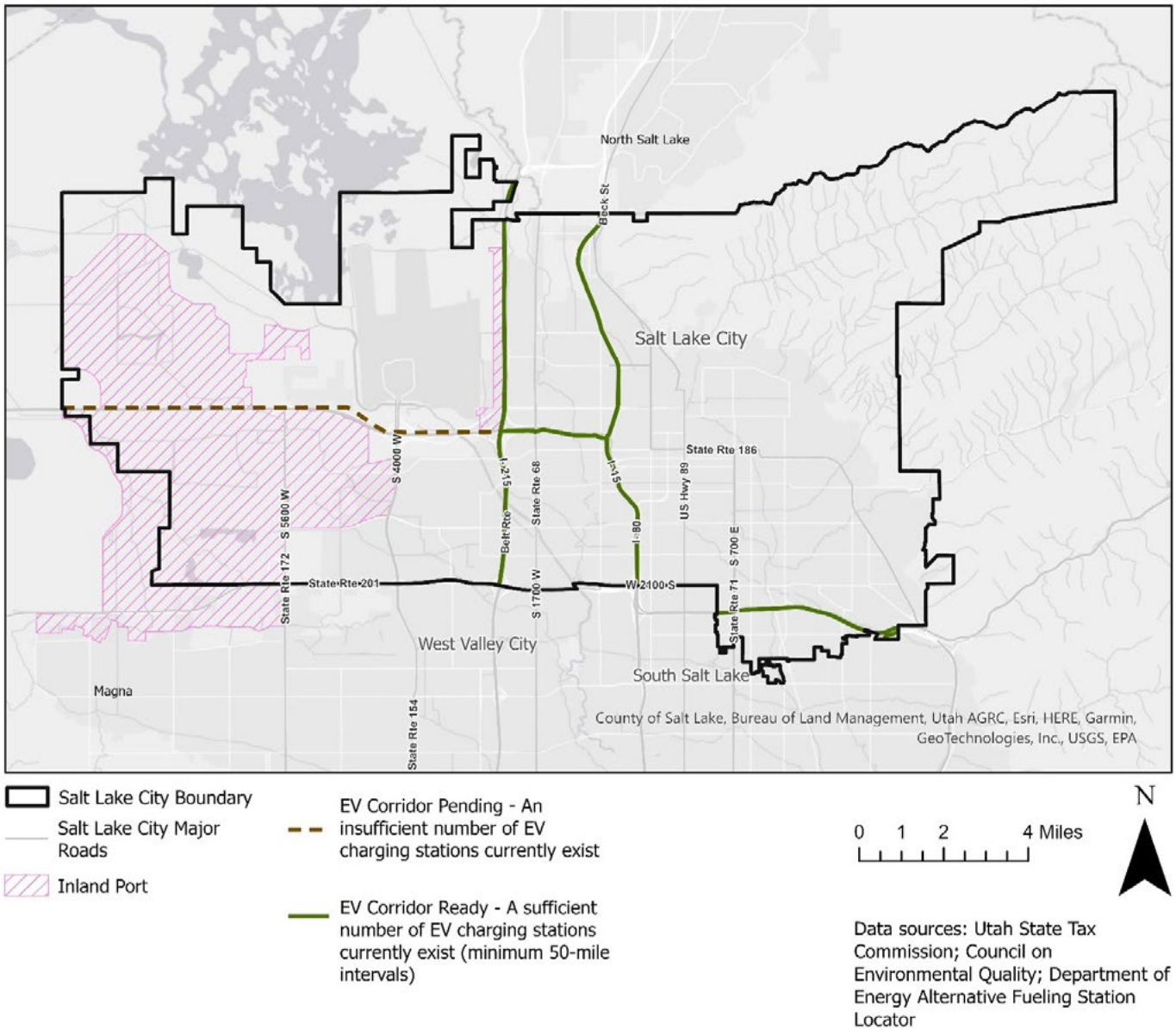

Figure 14. Federal Highway Administration designated Alternative Fuel Corridors by status through round 7 within Salt Lake City and the inland port area.

The Federal Highway Administration established a National Highway Freight Network to strategically direct Federal resources and policies toward improved performance of highway portions of the U.S. freight transportation system. In and around Salt Lake City are freight corridors that provide additional opportunities where medium- and heavy-duty vehicle charging could be prioritized (**Figure 15**).

The ASPIRE Engineering Research Center at Utah State University has received funding through the U.S. Department of Energy to accelerate the creation of electrified transportation corridors. The funding includes an initiative titled the "Wasatch Front Multimodal Corridor Electrification Plan" which will develop a community, state and industry action plan to improve air quality in the Salt Lake City area communities most impacted by high density traffic (Sydney Dahle, 2023). Potential pilot projects currently include wired and wireless charging solutions for trucks in partnership with the Utah Inland Port Authority, a battery electric train, and multimodal charge management solutions with UTA (Sydney Dahle, 2023).

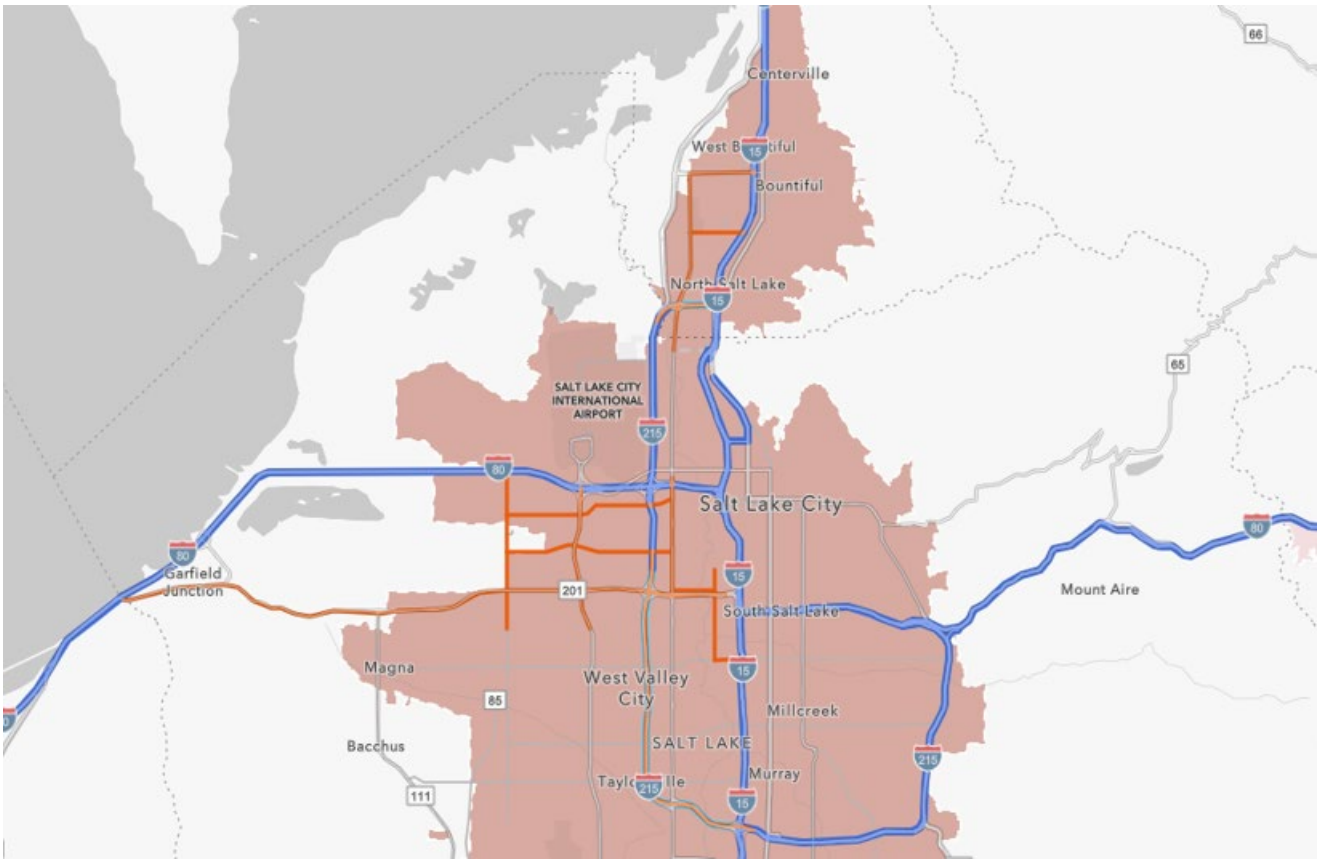

Figure 15. National Highway Freight Network in and around Salt Lake City (Source: FHWA National Highway Freight Network Map)

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Because medium- and heavy-duty vehicles cause a disproportionate amount of air pollutants, supporting an accelerated transition to zero emissions alternatives could contribute to significant air quality improvements in high-pollution areas.

Equity: Communities of color and areas of low-income are disproportionately located close to high-pollution areas such as roads, highways, ports, and other commercial traffic hubs. Additionally, communities located near fleet depots, truck stops, and gas stations are exposed to air pollution from vehicles entering, fueling and idling at these locations. Not only does electric vehicle charging pose fewer risks than fossil fuel infrastructure but supporting an accelerated transition to electric medium- and heavy-duty vehicles could create benefits for communities disproportionately impacted by poor air quality.

Collaborative Partnerships: This opportunity will require collaboration and partnership with:

- ASPIRE
- U.S. Department of Transportation (UDOT)
- Utah Clean Cities
- Utah Clean Energy
- Utah Trucking Association
- Utah Division of Air Quality (DAQ)

POTENTIAL FUNDING OPPORTUNITIES

- National Electric Vehicle Infrastructure (NEVI) Formula Program
- Federal Transit Administration Low- or No-Emission Grant Program
- U.S. Environmental Protection Agency Clean School Bus Program
- U.S. Environmental Protection Agency Clean Heavy Duty Vehicles Program
- Reduction of Truck Emissions at Port Facilities
- Federal Alternative Fuel Vehicle Refueling Property Credit
- Utah's Clean Trucks Incentives Program (recently approved, details forthcoming)

POTENTIAL CITY ROLE

Supporting/Partnering	*Leading*
• Utah Clean Energy • Business partnerships e.g., Home Depot rental trucks, U-haul, freight	• Developing partnerships with motor carriers traveling through the City. • Partnerships to develop medium- and heavy-duty infrastrucure within the City

MHD-2: Support the electrification of medium- and heavy-duty fleet vehicles registered in SLC

DESCRIPTION OF OPPORTUNITY

This opportunity focuses on supporting existing activities to pilot the adoption of medium- and heavy-duty fleet vehicles in Salt Lake City. For example, in 2024, Utah Clean Energy is offering a comprehensive Fleet Electrification Analysis to fleet operators in order to help them understand how electric medium- and heavy-duty vehicles would perform in their fleets (Goupil, 2024).

Utah Clean Energy has also been active in encouraging the State of Utah to adopt an Advanced Clean Trucks rule that would require manufacturers of medium- and heavy-duty vehicles to sell a certain percentage of electric vehicles by a given year. Adoption of this rule would gradually increase the percentage of medium- and heavy-duty vehicles in Utah and ensure that manufacturers prioritize the state when rolling out new models (Utah Clean Energy, 2022). However, Utah is currently one of 16 states suing California over their Advanced Clean Fleets rule due to the fact that it will place fleet electrification requirements on vehicles travelling to California from other states (St. George News, 2024).

Under Salt Lake City's 2020 Electrified Transportation Joint Resolution, the City has committed to evaluate electric options of medium- and heavy-duty vehicles and off-road vehicles before making new purchases. This commitment positions the City as a potential leader in this sector. As the City works to electrify its own fleet, it can also support other municipalities on their fleet electrification efforts through UCAN's Electrified Community of Practice and other similar groups.

The Inland Port development also presents opportunities to support medium and heavy-duty fleet electrification. Specifically, UIPA is planning to conduct two studies: a Baseline Study and a Preferred Scenario Development Study. The Baseline Study will provide an analysis of how current development trends will impact the inland port jurisdictional area and adjacent communities. The Preferred Scenario Development Study will consider the Baseline Study and strategies related to logistics, sustainability, and other areas to recommend an optimal development scenario. This will include a list of preferred projects to help bring about the preferred scenario and mitigate impacts of development on the community and the environment. The City can advocate for fleet electrification through its involvement in these Studies.

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CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Because medium- and heavy-duty vehicles cause a disproportionate amount of air pollutants, encouraging and providing resources to fleets to transition their vehicles to electric could accelerate the transition to zero-emission vehicles.

Equity: Areas of low-income, in which higher proportions of communities of color live, are often adjacent to roads, highways, ports, and other commercial traffic hubs, exposing them to large amounts of transportation-related air pollution. The more vehicles that are electric, the less pollution will be emitted in these areas.

Collaborative Partnerships: This opportunity will require collaboration and partnership with:

- Utah Clean Cities
- Utah Clean Energy
- Utah Trucking Association
- Salt Lake City School District.

EXAMPLES AND RESOURCES

- Colorado Medium- and Heavy-Duty Vehicle Study
- California's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)
- New York Truck Voucher Incentive Program (NYTVIP)
- New York City's Clean Trucks program
- The Port Authority of New York and New Jersey's Truck Replacement Program (TRP)
- New Jersey's Zero-Emission Incentive Program (ZIP)
- Massachusetts Offers Rebates for Electric Vehicles (MOR-EV) Program
- City of Seattle's Heavy Duty Vehicle Electrification Incentive Pilot

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POTENTIAL FUNDING OPPORTUNITIES

- VW Settlement Funding
- Federal Transit Administration Low- or No-Emission Grant Program
- U.S. Environmental Protection Agency Clean School Bus Program
- U.S. Environmental Protection Agency Clean Heavy Duty Vehicles Program
- U.S. Environmental Protection Agency Diesel Emissions Reduction Act
- Reduction of Truck Emissions at Port Facilities
- Federal Commercial EV Tax Credit

POTENTIAL CITY ROLE

Supporting/Partnering	*Leading*
• Support existing work to electrify medium- and heavy-duty fleet vehicles through partnership with Utah Clean Energy, UIPA, ASPIRE and others. • Participate in ASPIRE's Transportation Electrification Action Plan and other regional or statewide planning efforts. • Participate in UCAN's Electrified Fleets Community of Practice group.	• Lead the way by electrifying municipal medium- and heavy-duty vehicles.

MHD-3: Zero-emission off-road heavy-duty vehicles

DESCRIPTION OF OPPORTUNITY

Off-road heavy-duty vehicles are often powered by diesel engines and include construction equipment, agricultural equipment, mining trucks, and locomotives. While the majority of Utah's diesel emissions come from on-road mobile sources (66%), non-road mobile sources is the next largest sector with about 24% of diesel emissions (Utah Department of Environmental Quality Air Quality, 2024). These sectors have historically been characterized as "hard to decarbonize." The complex challenge is matching vehicle technology options with the needed work requirements while integrating with clean energy systems at remote sites. The U.S. Department of Energy and other entities are collaborating with industry to facilitate decarbonization in these sectors.

UIPA and DAQ received a grant from EPA's Clean Ports program to introduce zero-emissions drayage trucks, switcher locomotives, and cargo handling equipment. This will be an important initiative to kick start the adoption of zero-emission off-road technology in Salt Lake City.

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Electrifying off-road vehicles will reduce air pollution near the sites where they are used. Construction equipment is more likely to be in the city affecting people. Other equipment may be further away but will still reduce air pollution.

Equity: Workers will be exposed to fewer emissions in the industries that use these vehicles.

Collaborative Partnerships: This opportunity will require collaboration and partnership with:

- Construction companies
- UDOT

EXAMPLES AND RESOURCES

- U.S. National Blueprint for Transportation Decarbonization
- Off-Road Vehicle Decarbonization and Energy Systems Integration: R&D Gaps and Opportunities
- Electrification Of Off-Highway Vehicles: An Opportunity to Be Grasped

POTENTIAL FUNDING OPPORTUNITIES

- None identified

POTENTIAL CITY ROLE

Supporting/Partnering

- Encourage local construction, argricultural, and mining industries to get involved in decarbonization efforts.
- Engage with the U.S. Department of Energy and federal entities working to advance off-road decarbonization efforts.

Leading

- As off-road technology becomes available, integrate zero-emission vehcles into fleet assets.

MHD-4: Zero-emission inland ports and warehouse districts

DESCRIPTION OF OPPORTUNITY

Hubs of commercial and freight activity including inland ports and warehouse districts produce high concentrations of particulate emissions detrimental to human health and are large producers of greenhouse gas emissions. Zero-emission ports and hubs that electrify freight trucks (drayage and regional haulers) and freight handling equipment such as yard haulers have a vast potential to improve emissions. Policies can set goals for zero-emissions vehicles and other equipment, and authorize the purchase and deployment of electric vehicles and charging infrastructure. Agencies can fund the work by setting facility impact fees related to mobile source pollution. Relevant actions are often in connection with State Implementation Plans (SIPs) to improve air quality. This could also be an outcome or a consideration in UIPA's Preferred Scenario Development Study (see above).

CONNECTION TO CROSS-CUTTING PRIORITIES

Air Quality: Ports are huge contributors of air pollution and greenhouse gas emissions. Electrifying will help reduce those impacts.

Equity: Communities of color and low-income areas are often located near to these areas of commercial activity and stand to benefit from the reduction of transportation-causing air pollution.

Collaborative Partnerships: This opportunity will require partnership with:

- Utah Inland Port Authority (UIPA)
- companies at the port.

Integrated Mobility: The port facilitates multi-modal transportation and there are growing opportunities for electrification.

EXAMPLES AND RESOURCES

- The Ports of Los Angeles and Long Beach (California), under the Clean Air Action Plan, set a goal in 2017 to transition cargo equipment and drayage trucks to zero emission by 2030 and 2035.
- The Port of Houston (Texas) established a CO_2 reduction program based on a 100% renewable energy contract, efficiency improvements and port equipment upgrades. The port also was awarded nearly $27 million for a clean truck program to help fund 30 new zero-emission short-haul trucks, and portable electric chargers for battery electric vehicle trucks, to make zero-emission technology accessible and more affordable to owners and operators of small trucking fleets.

POTENTIAL FUNDING OPPORTUNITIES

- Environmental Protection Agency's Clean Ports Program – certain dry ports are eligible

POTENTIAL CITY ROLE

Supporting/Partnering

- Partner with UIPA and private companies to identify opportunities for electrification and identify opportunities for the City to provide support.

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