

CHARGING INFRASTRUCTURE ACTION PLAN

ACCELERATING ELECTRIFICATION OF HIGH MILEAGE VEHICLES

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The City of Phoenix is collaborating with C40 Cities Climate Leadership Group Inc. to develop Charging Infrastructure Action Plan to accelerate electrification of high-mileage vehicles and has contracted WSP USA Inc. to support project goals and objectives. This project is funded by Uber Technologies Inc. Key personnel include:

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The WSP team is supported by specialized subcontractors: EVNoire and an independent consultant Matthew Daus. The project team extends its appreciation to participating public agencies, including the City of Phoenix Aviation Department, City of Phoenix Streets Department, City of Phoenix Planning Department, Arizona Department of Transportation, Maricopa Association of Governments, Maricopa County Air Quality Division, Valley Metro, Arizona Commerce Authority, Arizona Public Service, and Salt River Project. The team also thanks representatives from academic institutions, non-profit and advocacy organizations, community-based organizations, electric vehicle associations, mobility and technology companies, utilities, housing and real estate partners, and community members who contributed insights through interviews, meetings, focus groups, surveys, and other engagement activities during the project period.

For additional information, please visit project webpage at **www.c40.org/news/lets-accelerate-supporting-ride-hail-drivers-to-drive-electric-in-phoenix/** or contact **sustainability@phoenix.gov**.



C40 CITIES

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FOREWORD

Phoenix has never waited for the future; we have helped build it. We know that embracing innovation early is not simply about taking risks—it's how a desert city of 1.7 million people remains competitive, creates good jobs, and serves residents well.

The Charging Infrastructure Action Plan brings that same spirit of innovation to supporting electrification access for high-mileage drivers, including rideshare and delivery drivers. We worked with drivers to understand what they need to make the switch, and this plan is grounded in their insight and everyday experiences.

Electric vehicles, alongside affordable and accessible public transit, are an important part of the cleaner, more resilient transportation system we are building in Phoenix. They are efficient, quiet, clean, and help to reduce emissions, improve air quality, protect public health, and strengthen our response to the extreme heat and climate challenges facing the Sonoran Desert. Phoenix's landscape is unique, and our solutions must be tailored to address local needs.

Summer heat can reduce a driver's range by 20 to 30 percent, making shaded, reliable, and convenient charging essential. In a large and growing metro area, chargers must be available where and when drivers need them most, with practical amenities that make sense even on a 110-degree afternoon.

The City has an important role to play in making this transition possible. Through public charging infrastructure and partnerships with private companies, we can help accelerate the market while ensuring this infrastructure reaches communities across Phoenix. Rideshare and delivery drivers have much to gain from going electric, including lower operating costs, cleaner vehicles, and healthier air for everyone.

The support of C40 Cities and WSP in developing this plan has been invaluable, and it incorporates lessons learned from cities around the world. I am grateful for the collaboration with residents and other partners across our city who work every day to create a healthier community.

Together, we can keep building the Phoenix of the future.

Kate Gallego
Mayor, City of Phoenix

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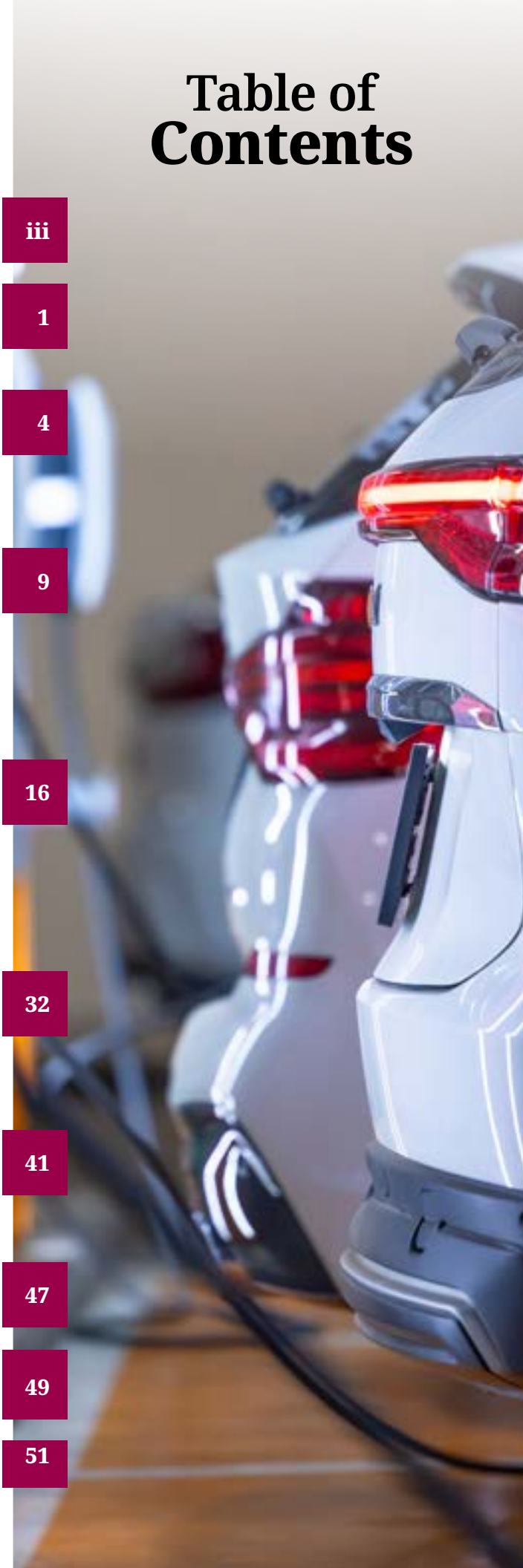
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Abbreviations

AC	Alternating Current
ACS	American Community Survey
ADA	Americans with Disabilities Act
ADOT	Arizona Department of Transportation
AMI	Advanced Metering Infrastructure
APS	Arizona Public Service
ASU	Arizona State University
AV	Autonomous Vehicle
C40	C40 Cities Climate Leadership Group
CBO	Community-Based Organization
CCS	Combined Charging System
CFR	Code of Federal Regulations
CO2e	Carbon Dioxide Equivalent
CPO	Charge Point Operator
DC	Direct Current
DCFC	Direct-Current Fast Charger
DOE	U.S. Department of Energy
ERC	Emission Reduction Credit
ESG	Environmental, Social, and Governance
EV	Electric Vehicle
EVIE	Electric Vehicle Insights and Enablement (Uber)
EVSE	Electric Vehicle Supply Equipment
FHWA	Federal Highway Administration
HMV	High-Mileage Vehicle
HVAC	Heating, Ventilation, and Air Conditioning
ISO	International Organization for Standardization
KII	Key Informant Interview
KPI	Key Performance Indicator
MERC	Mobile Source Emission Reduction Credit
NACS	North American Charging Standard
NEMT	Non-Emergency Medical Transport
NEVI	National Electric Vehicle Infrastructure (Program)
NOx	Nitrogen Oxides
NREL	National Renewable Energy Laboratory
OCPP	Open Charge Point Protocol
PM2.5	Particulate Matter (2.5 micrometers)
RFP	Request for Proposal
SBA	Small Business Administration
SRP	Salt River Project
TEAP	Transportation Electrification Action Plan
TEP	Tucson Electric Power
TNC	Transportation Network Company (Uber, Lyft)
TOU	Time-of-Use (electricity rate)
V2B	Vehicle-to-Building
V2G	Vehicle-to-Grid
VMT	Vehicle Miles Traveled
WSP	WSP USA Inc.
ZEV	Zero-Emission Vehicle

EXECUTIVE SUMMARY



Phoenix's high-mileage vehicle drivers—rideshare, delivery, taxi, and non-emergency medical transport drivers—are some of the best candidates for early electrification. They drive more miles than most households, spend more on fuel, and can deliver outsized air quality benefits when they switch to electric vehicles. Many are interested in making that transition, but the charging network around them has not kept pace with the realities of their work. Drivers need chargers they can count on: close to where they live, located near the places they wait between trips, simple to use, safe in extreme heat, and affordable enough to protect their earnings.

> ***"Electrifying Phoenix's high-mileage fleets is where climate progress and driver livelihoods meet. This Plan puts drivers first, with charging designed for our heat, our renters, and the places drivers already spend their working hours. We're committed to working with our partners to get this charging built site by site, and to sharing what we learn with cities facing the same challenge."***
>
> — CARLA DE LA CHAPA, CHIEF SUSTAINABILITY OFFICER, CITY OF PHOENIX

This Charging Infrastructure Action Plan, developed by the City of Phoenix with C40 Cities and WSP, provides a practical roadmap for expanding charging access for high-mileage vehicle drivers through 2030. The plan draws from direct driver and stakeholder engagement, including key informant interviews, focus groups, and driver survey. That input shaped a spatial demand model, a set of priority locations, and a phased implementation roadmap focused on the places where charging access can make the greatest difference for drivers and communities.

The plan identifies a clear near-term opportunity for Phoenix: align public policy, utility coordination, airport operations, private investment, and driver-centered design around a focused network of high-impact charging sites. By concentrating investment in priority ZIP codes and high-dwell locations, Phoenix can reduce one of the biggest practical barriers to HMV electrification while supporting lower operating costs, cleaner air, and a more reliable charging experience for drivers.

Key Findings

- **Charging access is growing, but unevenly.** As of early 2026, the Phoenix metropolitan area had approximately 943 charging station locations and 2,762 ports. Coverage is concentrated in higher-income East Valley corridors and remains thinner in the West Valley, urban fringe communities, and multifamily housing areas where many high-mileage drivers live.
- **Phoenix will need roughly 1,900 additional HMV-usable public ports by 2030 under the Moderate scenario.** The need is concentrated in fewer than 20 priority ZIP codes and should be addressed through a mix of near-home Level 2 charging for renters and targeted DC fast charging at high-dwell locations.
- **Sky Harbor is the clearest first-move opportunity.** The rideshare waiting lot has long, predictable driver dwell time but no on-lot charging today. A purpose-built DC fast charging bank would address a highly visible gap and create a model for airport-based HMV charging.
- **Drivers need reliability, affordability, and trusted information.** Engagement confirmed that upfront vehicle cost, charging reliability, lost earning time during charging, and limited plain-language guidance remain the main barriers to electrification.
- **Phoenix heat changes the design standard.** Summer conditions can reduce effective range by 20 to 30 percent for many drivers. Shade, lighting, cameras, restrooms, drinking water, indoor refuge, high-temperature-rated equipment, and summer-weighted uptime standards should be treated as core requirements.
- **The policy and partnership foundation is already in place. City zoning tools, Salt River Project and Ariz**ona Public Service programs, ADOT's NEVI corridor funding, and Sky Harbor's zero-emission vehicle) trip-fee discount can be coordinated into a practical deployment package.
- **Autonomous ride-hailing is already shaping demand.** Waymo's electric autonomous fleet shifts some charging demand toward private depots while raising broader workforce transition and driver equity considerations that should remain part of Phoenix's implementation strategy.



Strategic Recommendations

- **Prioritize ZIP codes where need and access are furthest apart.** Focus Tier 1 investment on communities with high port gaps, high renter shares, elevated Social Vulnerability Index scores, or named driver hotspots, with approximately 700 to 1,000 net-new Level 2 and targeted DC fast charging ports across six to eight ZIP codes.
- **Build destination hubs in parallel.** Advance Tier 2 destination charging at Downtown Phoenix, Old Town Scottsdale, ASU and Mill Avenue, Westgate, and Arrowhead, where driver activity, commercial demand, and mid-shift charging needs converge.
- **Coordinate City, utility, airport, platform, property owner, and charging operator actions.** Establish a standing City, Salt River Project, and Arizona Public Service working group to align interconnection timelines, demand charge structures, multifamily make-ready funding, and standard landlord-tenant agreement templates.
- **Pair airport policy with infrastructure investment.** Link Sky Harbor's zero-emission vehicle trip-fee discount and Green Curb access with charging deployment so airport incentives reinforce driver adoption and charging use.
- **Build and support high-leverage investments.** Advance a 12- to 20-stall DC fast charging bank at the Sky Harbor rideshare waiting lot, specified at 150 kW or higher per stall with power sharing, and launch a multifamily near-home Level 2 retrofit pilot in three Tier 1 ZIP codes in South Phoenix and the West Valley.
- **Set Phoenix-specific charging standards.** Require shade over every stall, liquid-cooled cables at 150 kW and above, high-temperature-rated cabinets, summer-weighted uptime standards, simple payment options, and contract terms that reflect heat, dust, monsoon exposure, and realistic equipment life.
- **Support drivers beyond the charger.** Develop plain-language communications through peer networks and community-based organizations, create driver financing pathways with credit union and point-of-sale support, and establish an autonomous vehicle coordination framework covering data sharing, curb standards, depot-grid coordination, and workforce transition.

Together, these recommendations create a practical pathway to add roughly 1,900 net-new HMV-usable public ports by 2030 under the Moderate scenario, concentrated in fewer than 20 priority ZIP codes and sized to serve approximately 11,800 HMV EVs projected on Phoenix roads by 2030. The benefits are tangible for drivers and communities: lower operating costs, more reliable access for renters and drivers without home charging, reduced emissions in high-traffic corridors, and a Phoenix-tested model that can inform peer cities through C40 and other city networks.

For Phoenix, the opportunity is immediate and practical. Every reliable charger placed in the right location helps a driver stay on the road, keeps more earnings in that driver's pocket, and reduces emissions in the communities most affected by transportation activity. By starting with the airport, renter-dense neighborhoods, and trusted driver networks, Phoenix can turn high-mileage vehicle electrification from a long-term climate ambition into visible progress drivers can use every day.

01 Introduction



Electrification is accelerating rapidly across the United States (US). More than 8.3 million plug-in electric vehicles, both battery electric and plug-in hybrid, have been sold nationwide since 2010, and about 7.3 million EVs are now on the road, roughly 2.5 percent of all light-duty vehicles in operation, a record high.[1] Electric vehicles made up 9.6 percent of new light-duty vehicle sales in 2025, up from about 2 percent in 2020.[2] Annual EV sales eased about 4 percent from their 2024 record after federal purchase credits expired in September 2025, yet the underlying market continues to mature, shifting from incentive-driven demand toward consumer choice, reflecting wider model availability, and more reliable charging.[3]

The City of Phoenix is over halfway to its goal of 500 electric vehicle (EV) chargers on city-owned properties by 2030,[4] which will support the City's Transportation Electrification Action Plan (TEAP) goal of supporting over 280,000 EVs in the city by 2030 and the Climate Action Plan's goal of carbon neutral transportation by 2050.[5] As one of the fastest growing metros in the US, Phoenix's ride hailing vehicle, taxi, and commercial delivery drivers, collectively categorized as high mileage vehicles (HMVs), log far more miles per vehicle than the average household.

Phoenix's HMV transition is unfolding alongside a broader shift in shared and demand-responsive mobility, where fleet electrification, automation, and dedicated charging infrastructure are converging across the transit and ride-hail sectors nationally, including private platforms whose own goals increasingly favor electrification.[6] Uber has committed to becoming a zero-emission mobility platform, targeting 100 percent electric or zero-emission rides in the US, Canada, and

Europe and its Green Future program pledged resources valued at $800 million to help hundreds of thousands of drivers switch to battery EVs, though the company scaled back several driver EV bonuses in late 2025.[7][8] Lyft has made a parallel commitment to reach 100 percent EVs on its platform by 2030, emphasizing that its highest-mileage drivers deliver the greatest emissions savings per vehicle converted.[9] Both platforms channel driver incentives through charging discounts (up to 45 percent off EVgo), premium EV ride categories such as Uber Comfort Electric and Lyft Green, and periodic earnings bonuses. Autonomous operators are also reshaping the same market: Waymo runs an all-electric fleet and operates its largest US service area in Phoenix metro area, at roughly 315 square miles, shifting a growing share of ride-hail trips into zero-emission vehicles charged at operator depots rather than public stations or at a driver's home.[10] Together these commitments signal strong private-sector demand for reliable, well-sited HMV charging, even as driver-level affordability and incentive stability remain uneven.

Electrifying HMVs offers Phoenix its strongest opportunities to cut transportation emissions, improve local air quality, and help protect driver earnings as fuel and vehicle markets evolve. In collaboration with the C40 Cities Climate Leadership Group (C40) and WSP USA Inc. (WSP), the City undertook development of this Charging Infrastructure Action Plan (herein the "Plan") to responsibly scale the electrification of HMV fleets building upon local climate goals while supporting fleet objectives and drivers' livelihood and pacing the transition to avoid adverse impacts. Grounded in feedback gathered from fleet drivers and operators about needs and constraints the electrification process could pose, the Plan aligns with available funding and market capabilities.

Purpose of the Plan

The Plan provides an evidence-based[11] roadmap for scaling HMV electrification across Phoenix over the next decade by addressing four key questions:

1. How can Phoenix close the gap between what HMV drivers need and what the public charging network offers today, particularly around equity, safety, and extreme heat?
2. Where is HMV driver-centered charging infrastructure needed most, and what should it look like?
3. Which funding stream, ownership model, and policy lever best fit each priority location?
4. What lessons can other cities and transport aggregators reuse as a practical roadmap for HMV electrification?

The Plan is organized around four pillars. First, **Assessing Driver Needs and Charging Network Gaps** establishes the evidence base for HMV charging in Phoenix, including how different HMV fleets operate, which vehicle and charger technologies fit each use case, the appropriate mix of Level 2 and DC fast charging, reliability and uptime expectations, the data used to guide siting decisions, the effects of extreme heat on equipment performance, and the emerging requirements of autonomous ride-hailing fleets. Second, **Building a Driver-Centered Charging Network** translates that evidence into a practical siting framework by examining the existing charging baseline, utility and grid feasibility, land use and curb management, safety and accessibility standards, modeled 2030 demand gaps, priority locations, and the policy, incentive, and funding levers needed to support deployment. Third, **Partnership and Financing Pathways** evaluates how HMV charging can be delivered without direct City subsidy, including charge point operator business models, Level 2 and DC fast charging economics for site hosts and taxi and transportation network company drivers, operators active in Phoenix and nationally, and initiatives the City can pursue to expand charger access. Finally, the **Implementation Roadmap** sets out phased near-, medium-, and long-term actions, supported by adoption enablement, monitoring, and financing pathways so progress can be tracked, adjusted, and sustained over time.

Goals and Equity Principles

This Plan sets five goals for HMV electrification in Phoenix through 2030 and applies equity as a practical screen for deciding where investment should go, how sites should be designed, and how drivers should benefit. Together, the goals define success for the drivers who log the most miles on Phoenix roads and for the communities most affected by transportation emissions. They are intentionally measurable so the City and its partners can use each annual review to assess progress, adjust course, and keep the transition grounded in driver needs.



GOALS

01 Grow the HMV EV fleet at a pace that meets Phoenix's climate goals without leaving drivers behind.

02 Close the public charging gap where HMV drivers actually dwell, work, and live.

03 Establish destination and airport based charging that serves HMV drivers.

04 Protect drivers from the cost and reliability risks of an immature charging market.

05 Build a workforce, financing, and policy stack that other C40 cities can reuse.

These goals are achievable with tools Phoenix already uses or can activate through partners, including Zoning Section 1206, the EV Charger Site Planning Submittal Process, Salt River Project and Arizona Public Service rate and rebate programs, ADOT's NEVI funding, and Sky Harbor's Green Curb and zero-emission vehicle fee discount. Where new authority, funding, or program design is required, the Implementation Roadmap identifies the responsible actions and partners.

Applying Equity Principles

Equity is embedded in the Plan's goals because the drivers most exposed to fuel prices, vehicle financing costs, unreliable charging, and lost earning time are often the least able to absorb those costs. Many also live in renter-dense or multifamily areas where private overnight charging is unavailable. For this Plan, equity is therefore not a separate consideration; it is a set of decision rules applied to site selection, program design, pricing, communications, and performance monitoring.

The City will apply the following principles when screening investments under this Plan and will seek partners that commit to the same approach:

- **Lead with driver experience and protect trust. Site selection, program design, and com**munications should reflect what drivers have reported through engagement and what they continue to report as the market evolves. Trusted community messengers and peer networks should carry information, and early sites must work reliably from the start because one poor charging experience can discourage many drivers.
- **Prioritize the largest gaps between need and access.** Investments should be screened against income, Social Vulnerability Index, multifamily housing density, walking access to existing chargers, and platform-reported EV adoption so that priority ZIP codes receive attention before the market fills only the easiest or most profitable locations.
- **Treat near-home charging as essential infrastructure for renters.** Drivers without garages cannot rely on a destination-only network. The Plan prioritizes Level 2 charging at or near multifamily housing in priority ZIP codes, supported by curbside and shared-lot solutions where on-site charging is not feasible.
- **Design for Phoenix conditions and driver dignity from day one.** Shade, lighting, cameras, restrooms, drinking water, and indoor refuge should be baseline requirements at sites where drivers are expected to dwell for more than 15 minutes. Reliability standards should reflect the consequences of a failed charge on a summer afternoon, not an average operating day.
- **Share value with the drivers who make the transition possible.** Public action should unlock private and platform investment, with resulting benefits flowing to drivers through lower session pricing, vehicle financing support, access to dedicated lanes, and fee discounts.





Measures of Success and KPIs

The Plan tracks five KPI families that connect directly to the goals and equity principles above. These measures are intended to help the City and its partners determine whether HMV electrification is expanding in the right places, improving the driver experience, and delivering measurable climate and air quality benefits. Detailed definitions, data sources, reporting cadence, and ownership are provided in the Implementation Roadmap and Appendix.

- **Adoption:** HMV EV count and share of the active HMV fleet by ZIP code, reported annually using platform and vehicle registration data.
- **Access:** Number of publicly accessible HMV-usable ports by ZIP code, share of priority ZIP codes meeting the access threshold, and walk time to the nearest Level 2 charger from multifamily housing in priority ZIP codes.
- **Reliability and driver experience:** Network uptime, successful session rate, average time to repair, and driver satisfaction, drawing from operator reporting, pulse surveys, and community-sourced data such as PlugShare.
- **Equity outcomes:** Share of new ports located in priority ZIP codes, share of incentive or financing support reaching low- and moderate-income drivers, and share of drivers reporting access to trusted, plain-language information.
- **Climate and air quality:** Estimated vehicle miles traveled electrified, tonnes of CO2e avoided, and NOx and PM2.5 reductions attributable to HMV electrification, reported every two years.

02 Assessing Driver Needs & Charging Network Gaps



The assessment of what Phoenix should build for HMV drivers begins with the people who use or would use the charging network every day. It draws on a structured engagement program with Phoenix high-mileage drivers, fleet and platform representatives, community-based organizations, and regulatory partners, including key informant interviews across rideshare, delivery, and non-emergency medical transport; focus groups; and a driver survey.

This section translates that input into technology and operational guidance for Phoenix's HMV charging network. It identifies the charger and vehicle options that best fit each HMV segment, the reliability and user experience standards drivers need, the data and tools that can support City and driver decisions, the equipment implications of Phoenix's extreme heat, and the distinct requirements of the autonomous ride-hailing fleet already operating in the region.

Vehicles and Operational Considerations for HMV Fleets

Phoenix's HMV market is not homogeneous. It is clear that the market has three segments with distinct duty cycles, vehicle profiles, and charging patterns, and technology specification and infrastructure investments should reflect those differences.

Rideshare (Uber, Lyft). Full-time rideshare drivers typically run 35 to 60 hours and roughly 500 to 4,000 miles per week, with heavy patterns around AM and PM peaks and airport queue-based shifts. Vehicle choice is skewing toward mid-range EVs (Tesla Model 3 and Y, Chevy Bolt, Hyundai Ioniq 5, Kia EV6) with usable range of 220 to 300 miles under Phoenix summer conditions. Rideshare drivers repeatedly said they lean on Tesla Superchargers because reliability and payment are predictable, and they avoid third-party fast chargers when they can. Multi-stall DCFC at Sky Harbor and freeway hubs must match Supercharger reliability and payment simplicity, and support of the NACS charging standard is not optional.

App-based delivery (DoorDash, Uber Eats, Grubhub, Amazon Flex, Instacart). Delivery drivers typically operate 6 to 30 hours and about 100 to 1,000 miles per week, with more part-time and split-shift patterns. Vehicle choice skews toward smaller EVs, hybrids, and used vehicles, and apartment residence is the dominant charging constraint. Near home Level 2 in multifamily corridors is the primary lever for this segment, not more DCFC.

Non-emergency medical transport (NEMT). NEMT drivers show clinic-centric patterns with lower EV familiarity and preference for visible, amenity-rich hubs. Vehicle needs include accessible passenger loading and reliable HVAC for medically vulnerable riders, which pushes toward larger vehicles with higher HVAC-driven range loss. Charger siting near medical clusters and Level 2 depot access at NEMT operator facilities matters more than corridor DCFC for this segment.

> *"We were constantly having to stop and recharge, which is why we went back to the hybrid."*
>
> —ANONYMOUS RIDESHARE AND DELIVERY DRIVER (2025)



Charging Technology Options

Phoenix's HMV charging network should be built around how drivers actually charge during a shift and overnight. That requires a mix of three charger classes, each matched to a specific demand type and driver use case.

Level 2 AC charging (7.2 to 19.2 kW) is the workhorse for near-home overnight charging and workplace top-ups. It also serves destinations where drivers already wait, such as airport queue lots, though for HMV drivers these are opportunistic top-ups during natural downtime rather than the full overnight sessions that near-home Level 2 provides. At 7.7 kW, a Level 2 port delivers roughly 25 to 30 miles of range per hour, which fully replenishes a typical HMV driver's daily consumption over an 8-hour overnight window. Level 2 is the right technology for the 85 percent Level 2 and 15 percent DCFC split assumed for near-home demand, and for the 30 percent Level 2 share of near-destination demand. Smart, networked Level 2 chargers with load management are preferred so that multifamily and workplace hosts can add ports without triggering service upgrades. The market is shifting from the older J1772 connector for Level 2 charging and CCS connector for fast charging toward the North American Charging Standard (NACS), which most major automakers have now adopted for new vehicles. Level 2 plug type should therefore be J1772 with a NACS adapter path, or NACS native as the market shifts.

Mid-power DC fast charging (50 to 150 kW) is the right choice for shorter dwell retail and grocery forecourts, big-box lots, and gas station co-locations where HMV drivers already stage for 20 to 40 minutes. At 150 kW, a modern EV can add roughly 150 to 200 miles of range in 25 to 30 minutes, which matches the operating pattern that drivers described for mid-shift top-ups. Dispensers should support both CCS and NACS to serve the mixed HMV fleet, which is a market direction ADOT has already codified for new National Electric Vehicle Infrastructure (NEVI) stations.[12]

High-power DC fast charging (150 to 350 kW) is the right specification for hub sites such as the Sky Harbor rideshare waiting lot, freeway-adjacent multi-stall banks, and future AV depot connections. Higher power is not always better because it depends on vehicle acceptance rate and duty cycle, but it futureproofs the site as vehicle platforms shift and reduces per-stall dwell time when demand is high. Power sharing across multiple ports is the practical way to balance this: it lets a site deliver up to 350 kW to a vehicle that can accept it while holding down near-term installation cost, since most vehicles today cannot accept more than 150 to 200 kW.[13]

Battery-buffered DCFC pairs onsite storage with a smaller grid connection, which cuts demand charges and can accelerate deployment at sites where feeder upgrades are the constraint. This works best at sites with sporadic demand across the day rather than very high-volume, sustained-use sites like Sky Harbor, where continuous throughput can outpace what onsite storage can buffer. Vehicle-to-grid (V2G) and vehicle-to-building (V2B) are further out for HMV use cases but may be relevant at AV depots.[14]

Reliability, Uptime, and User Experience Considerations

For HMV drivers, reliability is not a convenience feature; it determines whether electrification is workable during a paid shift. Third-party DCFC reliability was the most frequently cited source of stress after upfront vehicle cost, and Phoenix drivers already route around networks they do not trust. This Plan sets a 95 percent uptime target at City-supported sites and calls for a transparent, plain-language driver information channel that shares site openings, reliability status, pricing, and incentive updates through peer networks, community-based organizations, and platform apps. The technology specifications below show how that goal gets met on the ground.

Contract-level standards for any City-supported HMV site should include the following:

- Uptime measured as station-level availability of any working dispenser, with reporting cadence at least monthly and public dashboard visibility. For reference, federal NEVI rules set a 97 percent minimum reliability standard at the individual port level. A summer-weighted uptime floor (May through September) is recommended in addition to the annual average, because a failed August session costs a driver a shift.
- Successful session rate, measured by sessions that start and complete without fault, should be tracked alongside uptime, since a station can technically be "up" while failing paying customers. Uptime definitions must therefore cover the full transaction, including payment processing and network connectivity, not just the charge dispenser, because a working plug that cannot take payment is a failed session from the driver's point of view.
- Mean time to repair, with contract penalties for extended outages, and 24/7/365 monitoring and remote diagnostics as a bid requirement.
- Payment simplicity: tap-to-pay, debit and credit card readers meeting FHWA NEVI standards, and no app-required workflows for a session to start.[15]
- Plain-language on-dispenser signage covering wait times, pricing, and how to report a fault. These mirror existing NEVI requirements for contactless payment and plain-language signage, so City-supported sites and NEVI-funded corridor sites hold to a consistent standard.

User experience minimums build on the site design standards in the Safety and Accessibility subsection (shade, lighting, cameras, restrooms, water, indoor refuge). On the technology side, they also include cable length that reaches vehicles regardless of port location, high-visibility screen contrast in bright sun, and audible feedback for drivers who are not standing next to the dispenser during a session.

> *"Third-party chargers are crap half the time."*
>
> —ANONYMOUS RIDESHARE DRIVER

> *"I don't want to waste my time charging. What am I going to be doing when my vehicle's charging if I'm not able to work?"*
>
> —ANONYMOUS HIGH-MILEAGE DRIVER FOCUS GROUP PARTICIPANT (2025)

Data and Tools That Support Technology Selection

Good charging decisions depend on timely, usable data for both planners and drivers. The City and its deployment partners need data to guide siting, sizing, and reliability tracking, while drivers need data to decide where and when to charge during a shift. These tools support both purposes. Some informed this Plan directly, and Phoenix can continue using them to refine siting and monitor performance as the market changes.

City and planner-facing tools. These support siting, sizing, and reliability tracking.

- Ride-hail near-trip and near-home charging demand data provided by platforms and companies, such as Uber's Electric Vehicle Insights and Enablement (EVIE) tool, integrated into the demand model when available. Over time the City could seek comparable data from other platforms as well.[16]
- DOE Alternative Fuels Data Center for the existing public station and port inventory [17]
- Vehicle registration data for spatial distribution of EVs by ZIP, such as S&P Global, with the option to draw on other registration data sources as available.
- Utility AMI and load data from SRP and APS for feeder headroom, demand charge modeling, and TOU savings estimation.
- NREL EVI-Pro Lite and the National Charging Network model for scenario cross-checks against national benchmarks
- City ESG dashboard for tracking EV-relevant indicators including city-hosted port counts, which is already publicly available.
- Network operator uptime dashboards at contract level so the City can monitor reliability against Goal 4 without relying on operator self-reporting.

Driver-facing tools. These support session-level decisions and were repeatedly requested in the outreach.

- PlugShare, ChargeHub, and A Better Route Planner for real-time station availability, plug type, and community-sourced reliability signals.
- In-vehicle navigation with live station status, increasingly bundled with major EV platforms.
- Platform apps. Uber and Lyft both surface charging discounts (up to 45 percent at EVgo through Uber and Lyft partnerships) and battery-aware trip matching that reduces range-risk stress. These apps are increasingly integrating third-party tools like PlugShare directly, and platforms such as Uber have signaled a longer-term goal of in-app charging and payment, which would reduce drivers' reliance on separate apps.

Extreme Heat Impacts on Equipment Performance and Operations

Phoenix's summer conditions make equipment performance a core planning issue, not a technical afterthought. The Safety and Accessibility subsection addresses site-level heat mitigation, including shade, lighting, indoor refuge, and restrooms. This subsection focuses on the equipment side: how extreme heat affects charger hardware, cables, and battery systems, and how procurement contracts and partnership agreements should reflect that reality. Drivers consistently report summer range loss of 20 to 30 percent and adjust their shifts around it, targeting covered parking and pre-cooling to avoid mid-afternoon fast charging in direct sun. These lived conditions set the equipment and site standards below.

Ambient design range: Phoenix regularly sees ambient temperatures above 110°F, and asphalt lot surface temperatures often exceed 140°F.[18] Standard charger cabinets rated for 104°F or

113°F ambient will derate or shut down under those conditions. Contracts for City-supported sites should specify cabinet ratings of at least 122°F ambient with continuous operation, third-party validation of the tested ambient range, and warranty terms that reflect actual Phoenix exposure rather than a national average.

Cabinet cooling: Active liquid cooling of power electronics is preferred over passive or forced-air cooling in Phoenix ambient conditions. Passive-cooled cabinets tend to derate output at high ambient temperatures, which means an advertised 150 kW dispenser may deliver 90 to 110 kW during peak summer afternoons, exactly when HMV demand is highest.

Cable and dispenser derating: Liquid-cooled DCFC cables are effectively required at 150 kW and above to prevent thermal derating during back-to-back sessions in summer. Un-cooled cables at these power levels risk overheating, session interruption, and accelerated insulation wear. Cables should be specified with tested duty cycles that match HMV use, which is closer to fleet duty than passenger EV duty.

Battery health and vehicle-side effects: High ambient temperatures reduce battery acceptance rate, especially for vehicles that have already been driving in the sun and arrive at the charger with elevated pack temperatures. Reported Phoenix summer range loss of 20 to 30 percent is largely HVAC-driven, but sustained high-power charging into a hot pack accelerates long-term degradation. Site design that includes shade during the charging session (not just pre-charge parking) helps vehicle performance as well as driver safety.

Dispenser lifecycle: Phoenix heat, dust, monsoon storms, and UV exposure shorten dispenser service life relative to milder climates. Procurement should assume a 6 to 8 year effective service life rather than the 10 year manufacturer-typical assumption, and lifecycle cost models should include replacement and refurbishment in the operating pro forma. Service and maintenance contracts should include cabinet inspection at intervals tied to monsoon season and summer peak, not just annual visits.

> *"If I'm doing a lot of highway, I'm lucky to hit 180 to 220 miles. It's a substantial decrease."*
>
> —ANONYMOUS HIGH-MILEAGE DRIVER FOCUS GROUP PARTICIPANT (2025)



Unique Requirements of Autonomous Ride-Hailing Fleets

Autonomous ride-hailing is already part of Phoenix's HMV landscape and must be considered alongside human-driven fleets. Phoenix hosts the largest autonomous ride-hailing service area in the United States, and Waymo's electric fleet represents a material share of local trip demand. AV fleets differ from human-driven HMVs in ways that affect charging technology, siting, curb management, grid coordination, and driver equity.

Curb access and pickup dynamics: AVs use different pickup and drop-off patterns than human-driven rideshare, with more precise curb positioning, longer initial acceptance delays, and different passenger accessibility profiles. This has downstream implications for airport Green Curb design, downtown loading zones, and event venue queues. The City should coordinate with AV operators on curb management that works for mixed fleets rather than optimizing for one operator.

Deadhead and empty-mile implications: AV fleets deadhead differently than human drivers, since a vehicle can be routed back to depot for charging without incurring driver income loss. This changes the economics of on-site charging at HMV dwell nodes. Empty AV miles between trips add congestion and VMT even as tailpipe emissions drop, which is a broader climate and mobility policy question that this Plan flags but does not resolve.

HMV driver displacement: The rise of the AV fleet in Phoenix has direct equity implications for the drivers this Plan is meant to serve. Interviewed drivers noted the presence of Waymo at Sky Harbor and its impact on queue economics. The City should track the pace of displacement, advocate for a slow and managed transition, ensure that adoption enablement efforts—education, financing, and workforce pathways—help drivers transition rather than get left behind, and consider whether HMV-specific policies should differentiate between human-driven and autonomous zero-emission vehicles for benefits such as the ZEV trip fee discount.

City coordination with AV operators: AV operators are important partners for HMV electrification because their fleet is already largely electric and their depot investments demonstrate feasibility at scale. Practical coordination points include:

- Data sharing. Aggregated trip and charging data from AV operators would materially improve demand modeling and siting decisions, similar to the Uber EVIE integration path.
- Depot and grid coordination. AV depot loads are large single-site consumers that benefit from the same utility make-ready and interconnection engagement as public DCFC hubs.
- Curb and airport policy. Fee structures, Green Curb access, and staging area rules should be reviewed jointly so they work for mixed AV and human-driven ZEV fleets.
- Workforce partnership. AV operators could partner on and fund driver retraining pathways, such as technician certification for high-voltage systems, and community engagement in the corridors where displacement pressure is highest.
- Emergency response and public safety. AV operations require coordinated protocols for police, fire, and traffic incident response, which is a technology-adjacent City capability.

Taken together, these technology, reliability, data, heat, and autonomous fleet considerations define the operating standard for Phoenix's HMV charging network. The next section uses this standard to assess the existing charging baseline, identify where access gaps are most acute, and translate driver needs into priority locations and buildable projects.

> ***"They take a $5 fee from us every time we drop somebody off at the airport, and we have no say in what our rate is."***
>
> —ANONYMOUS HIGH-MILEAGE DRIVER FOCUS GROUP PARTICIPANT (2025)



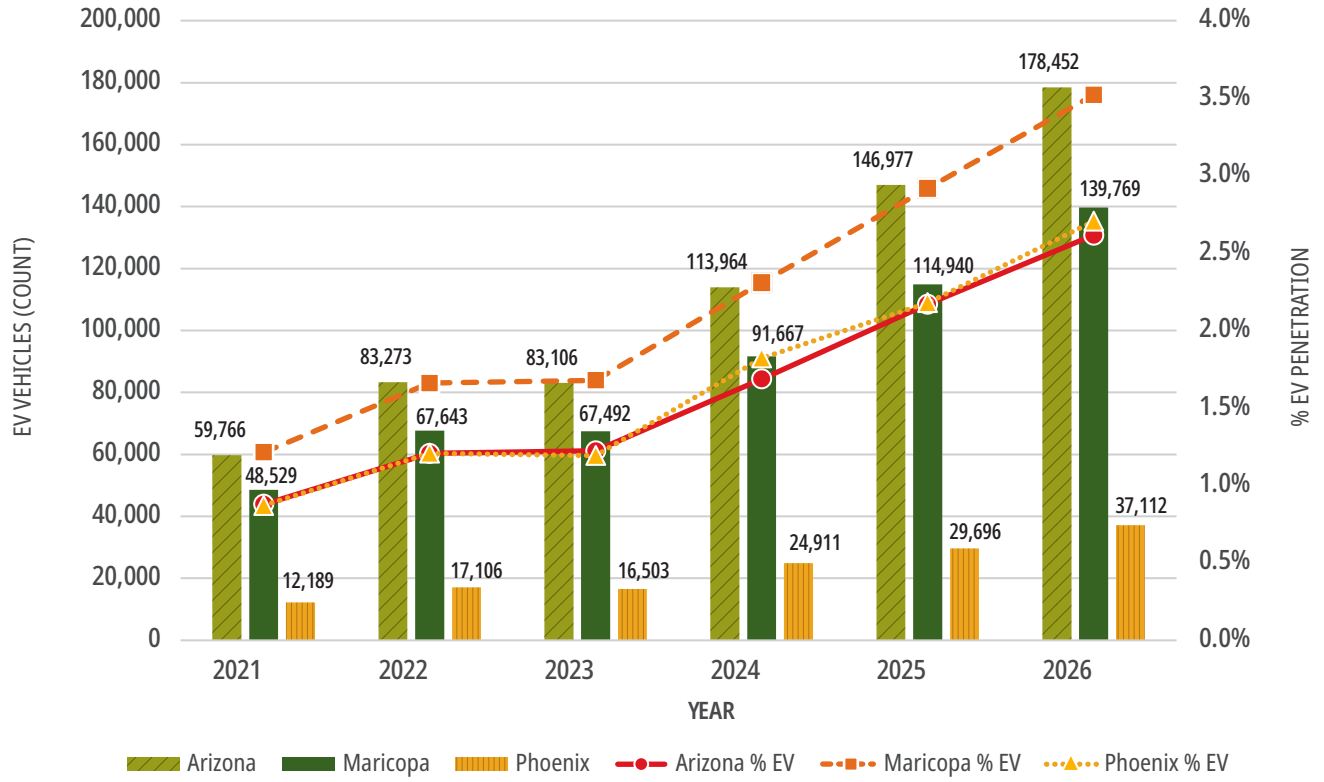
03 Building Driver-Centered Charging Network



As of early 2026, the Phoenix metro area hosts 943 charging station locations with about 2,762 ports, including at the Sky Harbor Airport, the Phoenix Convention Center, and on City-owned parks, libraries, parking garages and other properties.[19] While Phoenix's charging network has grown quickly, it was not built with HMV drivers in mind. This section translates the stakeholder engagement findings and the preliminary EV demand analysis into a planning framework the City and its partners can use to decide where, what, and how much to build between now and 2030. The analysis is organized around six lenses: today's network baseline, utility and grid readiness, land use and curb access, safety and accessibility, the demand gap by location, and the policy, incentive, and funding stack that makes deployment possible.

EV adoption across the Phoenix region has grown steeply over the past five years (**Figure 1**), roughly tripling at every geographic scale. Statewide, registered EVs climbed from about 59,800 in 2021 to 178,500 in 2026, while Maricopa County grew from 48,500 to 139,800 and the City of Phoenix from 12,200 to 37,100 over the same period. After a brief plateau between 2022 and 2023, growth accelerated sharply from 2024 onward, with each region adding more EVs in the last two years than in the first three combined. The penetration lines tell the more decisive story for charging strategy. EV share of registered vehicles nearly tripled everywhere: Maricopa County led at 3.5 percent in 2026 (up from 1.2 percent), followed by the City of Phoenix at 2.7 percent (up from 0.9 percent) and Arizona statewide at 2.6 percent. Maricopa's consistent lead over both the city and the state reflects adoption concentrated in higher-income suburban communities, where public charging supply is already densest, and away from the renter-dense, multifamily corridors where many HMV drivers live. That gap between where EVs are being adopted and where HMV drivers are based frames the analysis in the subsections that follow.

FIGURE 1. Total EV Number and EV Penetration Percentage by Region (2021–2026)



Source: S&P Global; City of Phoenix

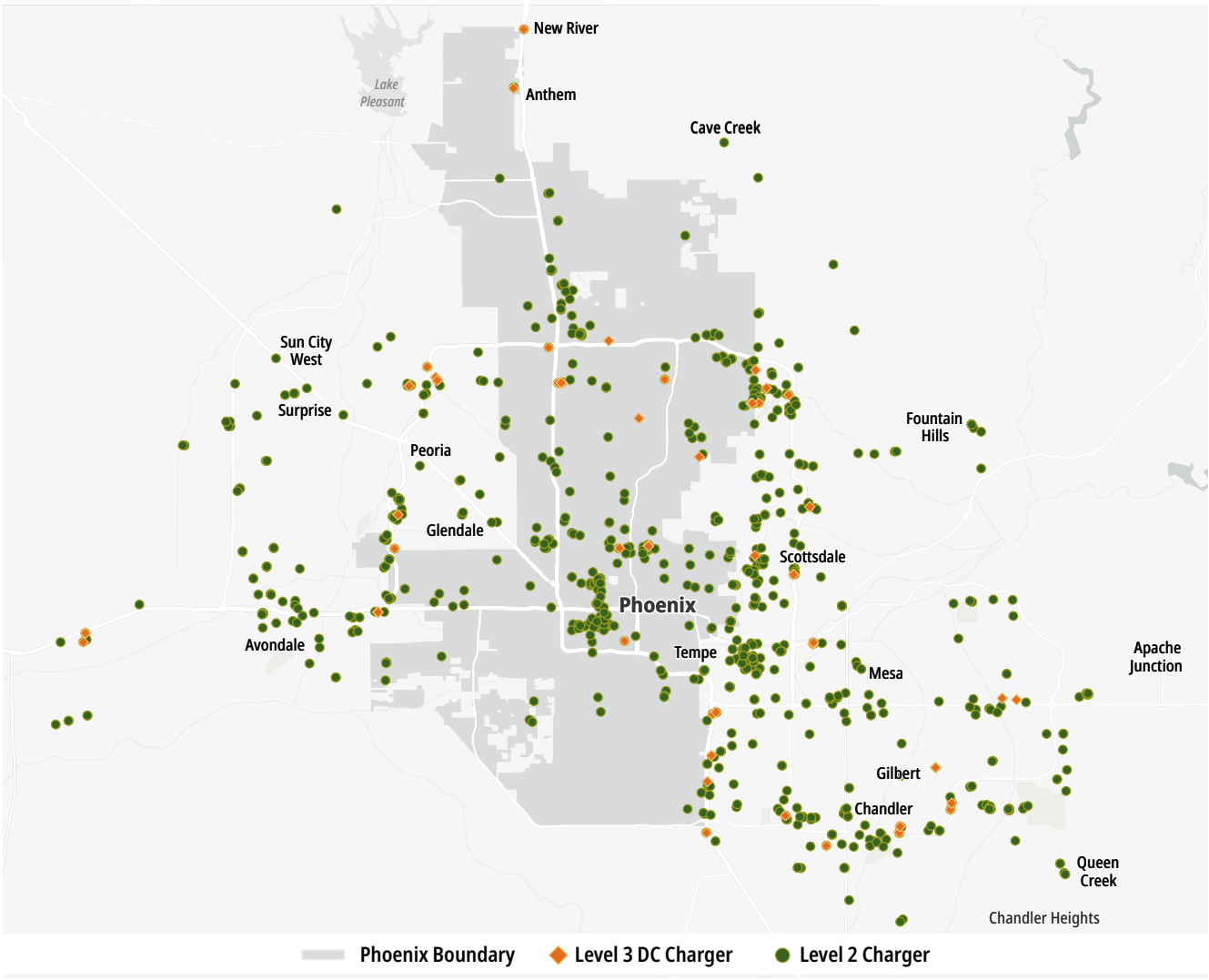


Network Baseline and Charging Access

Level 2 ports dominate the number of chargers in the Phoenix metro area, while DC fast charging is concentrated along major corridors and at a small number of high traffic retail and fuel sites. Coverage skews toward higher income East Valley communities and corridors that already serve commuter EV adopters. It thins out in the West Valley, on the urban fringes, and around the multifamily housing where many HMV drivers live. The result is a network that works well for a single car household charging overnight at home, and less well for a driver who logs 200 plus miles a day, lives in an apartment, and needs predictable mid shift top ups.

A recent behavioral study of the City's own charging network sheds light on how these public ports are actually used, and the patterns reinforce the case for HMV oriented siting.[20] The study analyzed session level data from 30 city owned locations and 79 ports, mostly libraries, parks, community centers, and a downtown parking garage, at an EV to port ratio of roughly 1 to 25 during the first quarter of 2025. Three findings stand out. First, most sessions are short to medium in length with the bulk of charging occurring within the first two hours (0 to 120 minutes) and tailing off sharply after that, and the average session delivers only about 47 miles of range, which means drivers are topping off

FIGURE 2. Existing public charging supply in the Phoenix metro



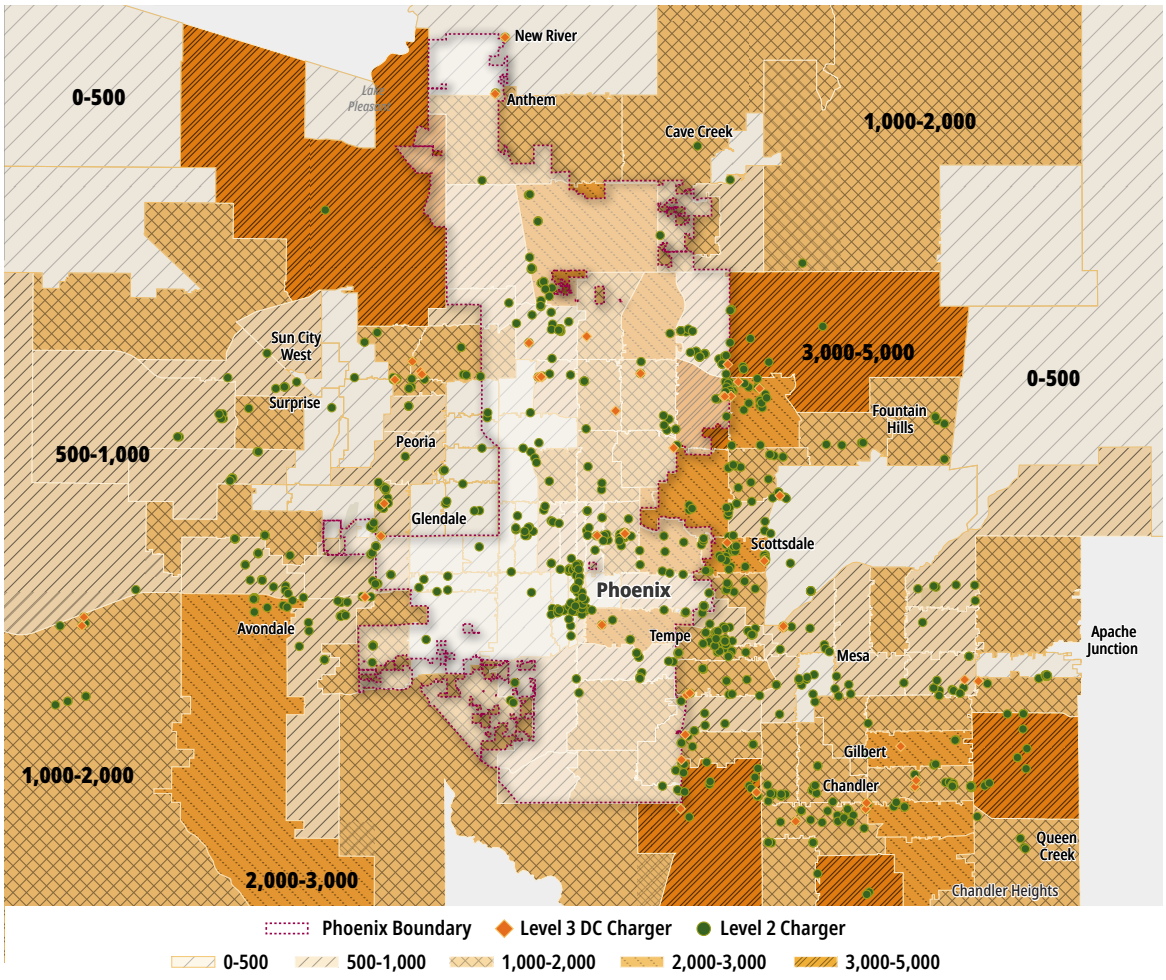
Source: Alternative Fuel Data Center, 2026

> *"I'm visualizing the five miles around me and I can only think of one charging station that I've seen, and it's at a Porsche dealership."*
>
> —ANONYMOUS HIGH-MILEAGE DRIVER (2026)

rather than filling up from empty. Second, roughly 80 percent of vehicles sit idle at the port for less than a minute after charging ends, so occupancy time is not the main constraint on these municipal Level 2 sites. Third, demand is heavily concentrated in working hours, peaking between 9 and 11 a.m. at nearly 3,500 to 4,000 kWh and 280 to 300 sessions, with minimal overnight activity.

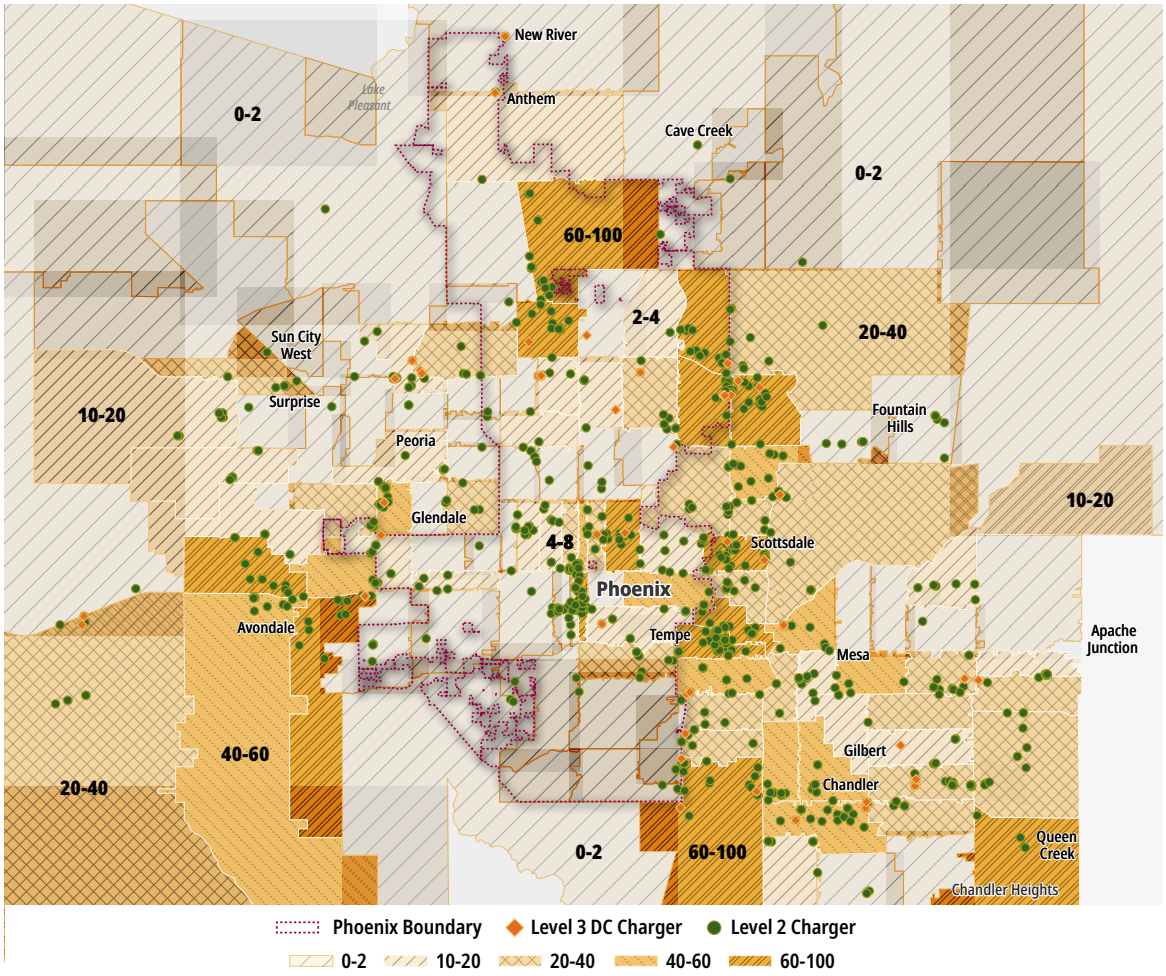
These patterns matter for HMV planning in two ways. The top up behavior and midday peak confirm that near destination Level 2 and fast charging at natural dwell points, not just overnight residential charging, is where public infrastructure earns its keep. The heavy daytime concentration also validates the near destination demand assumptions used later in this section and in Appendix A, where destination charging is modeled at 35 miles per day with a six hour Level 2 dwell.

FIGURE 3. EV registrations by ZIP code, 2023 to 2026 growth, overlaid with existing public charging stations



Source: Alternative Fuel Data Center, 2026; S&P Global, 2026

FIGURE 4. Number of Chargers by ZIP, 2026



Source: Alternative Fuel Data Center, 2026

The registration and network baseline together reveal three structural gaps that shape the rest of this section. First, EV growth has been steepest in central Phoenix and north Maricopa ZIPs, but public charging supply has grown along commercial corridors instead of following residential adoption. Second, DCFC is thin at the natural HMV dwell nodes, most notably the Sky Harbor rideshare waiting lot. Third, multifamily corridors in South Phoenix, the West Valley, and the urban fringes around Cave Creek and Queen Creek combine high renter share with sparse near home Level 2, which prevents drivers without garage access from electrifying at all.

Utility and Grid Considerations

Phoenix sits inside two utility service territories that shape almost every siting decision. Salt River Project serves most of the East Valley, parts of North Phoenix, Tempe, and Mesa, while Arizona Public Service serves the West Valley, South Phoenix, Downtown, and the outer ring including Cave Creek and Queen Creek. The two utilities run different rate designs, rebate programs, and interconnection processes, so the mix of Level 2 and DCFC that pencils at a given site depends heavily on which utility is behind the meter.

Rate design shapes when HMV drivers can charge affordably. SRP's Electric Vehicle Price Plan offers super off-peak residential rates that materially lower home charging costs for drivers who can charge overnight, but the plan is closed to new enrollments and will sunset after the November 2029 billing cycle, so new SRP EV drivers will move to standard time of use structures with narrower savings windows. APS offers an EV overnight charging plan with off peak windows from 11 pm to 5 am on weekdays, plus the SmartCharge program that pays a 25 dollar enrollment credit and 5 dollars per month for participating in either grid supportive charging or data sharing. For public DCFC hosts, both utilities pass demand charges through to the operator, which is the single largest driver of session pricing in Phoenix and the reason low utilization DCFC sites often lose money even when energy costs are low.

Interconnection timelines and capital contribution rules drive DCFC feasibility. APS opened its 2026 interconnection submission window with tighter requirements around ready to run models, study deposits, and aligned engineering assumptions, which raises the bar for developers but also shortens study cycles for well-prepared applications. Site hosts planning multi stall DCFC banks should assume 9 to 18 months from initial screening to energization for sites requiring service upgrades and should engage utility account managers before finalizing site plans. SRP's Fleet Electrification Program and APS's fleet team can flag substation and feeder headroom early, which can move a site from a costly service upgrade to a lower cost make ready if a different corner of the same parcel is used.

Grid capacity is currently adequate but is tightening. All Arizona utilities reported to the Corporation Commission's 2025 Biennial Transmission Assessment that existing and planned transmission is sufficient to meet demand, but every utility is also planning for significant load growth tied to data centers, industrial reshoring, and electrification. APS listed 50 transmission projects with 22 planned and 24 conceptual, and SRP listed 27 total projects with 21 new planned and 12 conceptual. For HMV charging, this means the near-term window (the next 24 to 36 months) is the most favorable for placing DCFC sites into planned upgrade zones, while later deployments may face queue congestion as data center loads consume feeder capacity. As the City weighs these competing demands on constrained feeder capacity, it can use its convening role with SRP and APS to signal where HMV charging and other public-serving loads should be prioritized alongside large private loads.

Solar and storage can reduce grid dependence at high dwell sites. Sky Harbor has already deployed solar powered EV ARC units to serve Aviation Department fleet vehicles, which is a useful model for HMV DCFC banks at sites where overhead structures are already planned for shade. Pairing solar canopies with battery storage at the rideshare waiting lot and at freeway adjacent hubs can flatten peak demand charges, add resilience during summer grid stress, and double as shade infrastructure. Larger deployments elsewhere show the model at scale: in Porterville, California, a school district paired 763 kW of parking-lot solar canopies with a 1.6 MWh battery to power 35 DC fast-charging ports on a microgrid that can island from the grid during peak demand or outages.[21]

Land Use and Curb Management

Land use and curb access decide whether a good demand ZIP can actually host chargers, and Phoenix's toolkit is largely in place but underused for HMV specific needs. Zoning Section 1206 and Section 702 set the baseline for private lot deployment. Section 1206 clarifies how EV charging spaces count toward downtown parking minimums and maximums, and Section 702 governs off-street parking across the rest of the city. The current framework treats EV stalls as flexible substitutes for required parking, which lowers the friction for retail forecourts and multifamily projects to add chargers without triggering a variance. However, the codes do not currently mandate a minimum share of EV ready spaces for new construction, which means near home Level 2 supply for renters in high growth corridors depends on developer initiative and utility rebate uptake rather than a code floor. Adopting an EV ready share requirement for multifamily and mixed use projects in priority ZIPs would close this gap without new zoning categories.

Curb and right of way access is the unused lever for near home charging. Phoenix does not currently have a citywide curbside EV charging program in its zoning framework, and there is no standardized on-street EV charging in place today. The right of way permits for on street EVSE are handled case by case. For the South Phoenix, West Valley, and Downtown multifamily ZIPs where garage access is scarce, curbside Level 2 in combination with shared apartment lot deployments is often the only feasible pathway. A pilot curbside program in two or three priority ZIPs, with standard designs, signage, and enforcement rules, would test both technical feasibility and community acceptance before a citywide rollout. Downtown Section 1206 already restricts surface parking within frontage zones and encourages structured parking, which creates natural pairing opportunities for DCFC inside downtown garages that are already visible and lit.

Multifamily retrofit is the single highest leverage supply intervention outside the airport. The driver research was unambiguous that home charging is the make or break factor for HMV viability, and that renters in multifamily housing are the group most exposed. ConnectDER's meter socket adapter is now approved by APS, SRP, and TEP, which cuts installation cost and timeline by avoiding main panel upgrades in many single meter units. A retrofit program targeted at priority ZIP multifamily properties reaches drivers faster than a building code change, which only affects new construction, and it addresses the existing housing where HMV drivers already live

> ***"Every parking lot should have an EV charger in it. It should be in the multifamily building. It should be standard in any development, by building code."***
>
> —ANONYMOUS, CBO AND REGULATOR FOCUS GROUP PARTICIPANT (2026)

> ***"I benefit greatly by being able to charge at home, and if you don't have that access, then you're at a real disadvantage."***
>
> —ANONYMOUS HIGH-MILEAGE DRIVER (2025)

Safety and Accessibility

Safety and accessibility standards for Phoenix HMV sites need to reflect the specific conditions drivers named, not generic charging network guidance. Phoenix summer heat cuts effective range by 20 to 30 percent for many drivers, and drivers described tactical routing around covered parking, delayed shifts, and preemptive top ups to avoid mid afternoon fast charging in direct sun.

Baseline design standards for any HMV serving public site should include:

- Shade over every stall through solar canopies, engineered shade sails, or integration with existing structures. Uncovered stalls in Phoenix summer are functionally unusable for a 30 minute fast-charging session.
- High lumen lighting across the full charging footprint and pedestrian paths, with light levels that support after dark security camera performance.
- Continuously recording security cameras with clear signage, sited to cover the payment interface, cables, and vehicle stall
- Restrooms and drinking water within a short walk, ideally inside an air conditioned space that stays open during expected dwell hours.
- Indoor refuge with seating during summer months, whether inside a co located retail tenant, an airport lobby, or a dedicated driver room at the Sky Harbor rideshare lot.
- ADA accessible stalls in compliance with the Phoenix Building Construction Code and the site's total stall count, with accessible routing from stall to indoor amenities.
- Clear wayfinding from the nearest arterial or freeway ramp, so a driver ending a trip nearby can decide within seconds whether to route to the site.

> *"Arizona shade is critical. A place to sit and relax and shade."*
>
> —ANONYMOUS HIGH-MILEAGE DRIVER (2025)

> *"I would like to see security cameras. If they had better lighting and security, I would feel a little bit safer."*
>
> —ANONYMOUS HIGH-MILEAGE DRIVER (2025)

Extreme heat also drives operational and reliability standards. Ambient temperatures above 110 degrees Fahrenheit derate many DCFC dispensers, reduce battery acceptance rates, and stress cabinet cooling systems. Contracts for City supported sites should specify liquid cooled cables at 150 kW and above, tested cabinet cooling for the Phoenix ambient design range, and warranty terms that reflect the actual heat exposure. Uptime standards should be measured against a summer weighted baseline, not an annual average, because a failed charge on an August afternoon costs a driver a shift.

Charging Demand Gap and Prioritized Locations

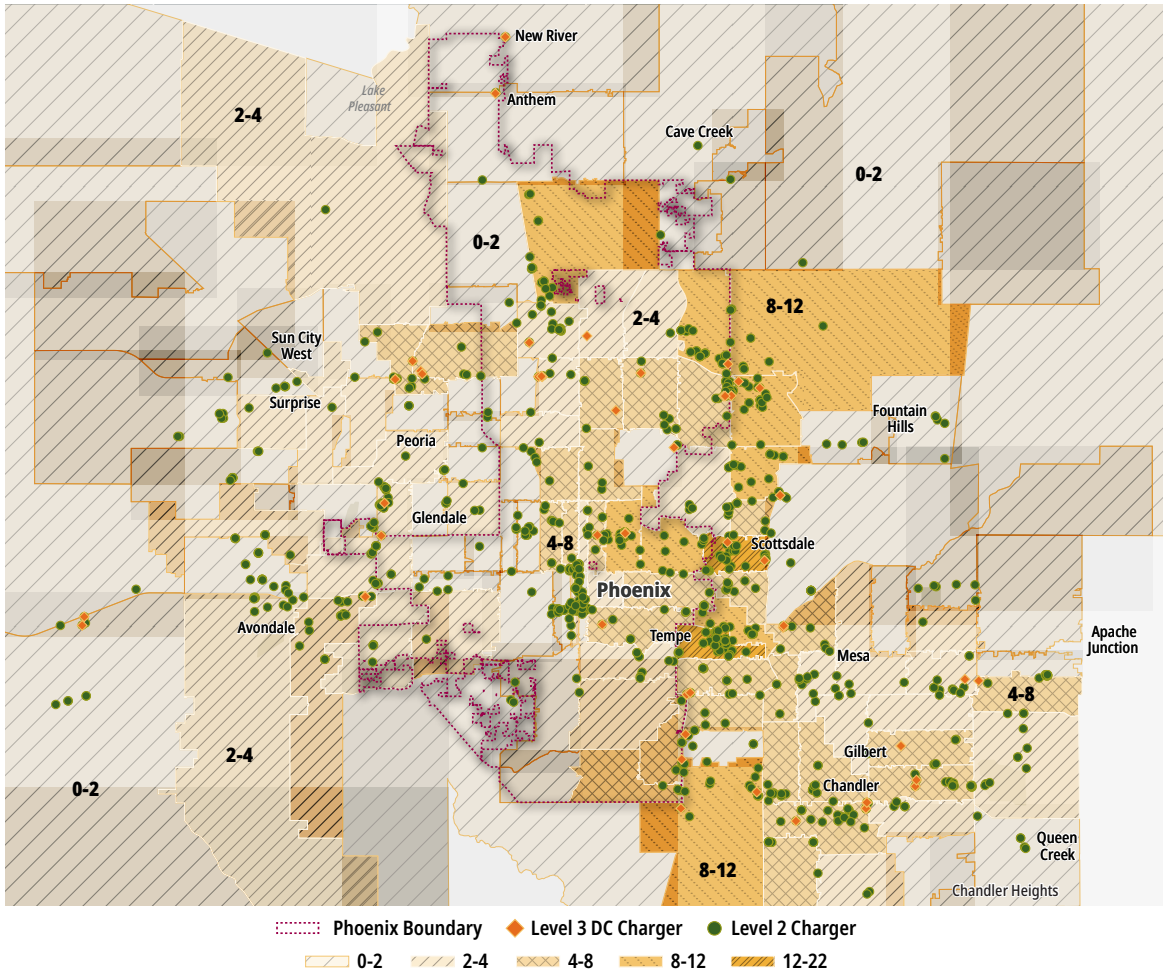
Phoenix will need on the order of 1,300 to 1,900 net new HMV usable public ports by 2030 under the Moderate scenario, concentrated in fewer than 20 priority ZIP codes and anchored at a small set of high dwell sites. The number is not a construction target for the City alone. It is a shared target for the utility, airport, platform, and private sector partners whose sites, dollars, and permits actually stand up chargers. This subsection walks through how the gap was estimated, where it is largest, and which anchor sites should move first.

The demand model estimates 2030 port need by ZIP code as the sum of near home Level 2 and DCFC ports plus near destination DCFC and workplace

Level 2 ports, then subtracts existing public supply reported by the DOE Alternative Fuels Data Center to arrive at a net gap. Near home demand is driven by multifamily and renter share within each ZIP, with an assumed 85 percent Level 2 and 15 percent DCFC split, reflecting that overnight charging where drivers live is predominantly Level 2, with a smaller DCFC share for drivers who lack any reliable overnight access (see Appendix A). For each ZIP, the model estimates the share of resident EVs that cannot rely on private home charging, using two datasets: multifamily housing share from the 2024 land use parcel data, and renter share from the Census ACS 5-year tenure data. Near destination demand is modeled on an H3 resolution 8 hex grid weighted by commercial and employment land (40 percent), job centers (25 percent), airport within 5 miles (20 percent), and schools (15 percent), then consolidated to ZIP. A commercial registration cap scales down fleet-heavy ZIPs above 4 vehicles per household by residential share so that logistics and rental car concentrations do not distort HMV oriented siting. Full assumptions, port sharing ratios, and grid parameters are in Appendix A.

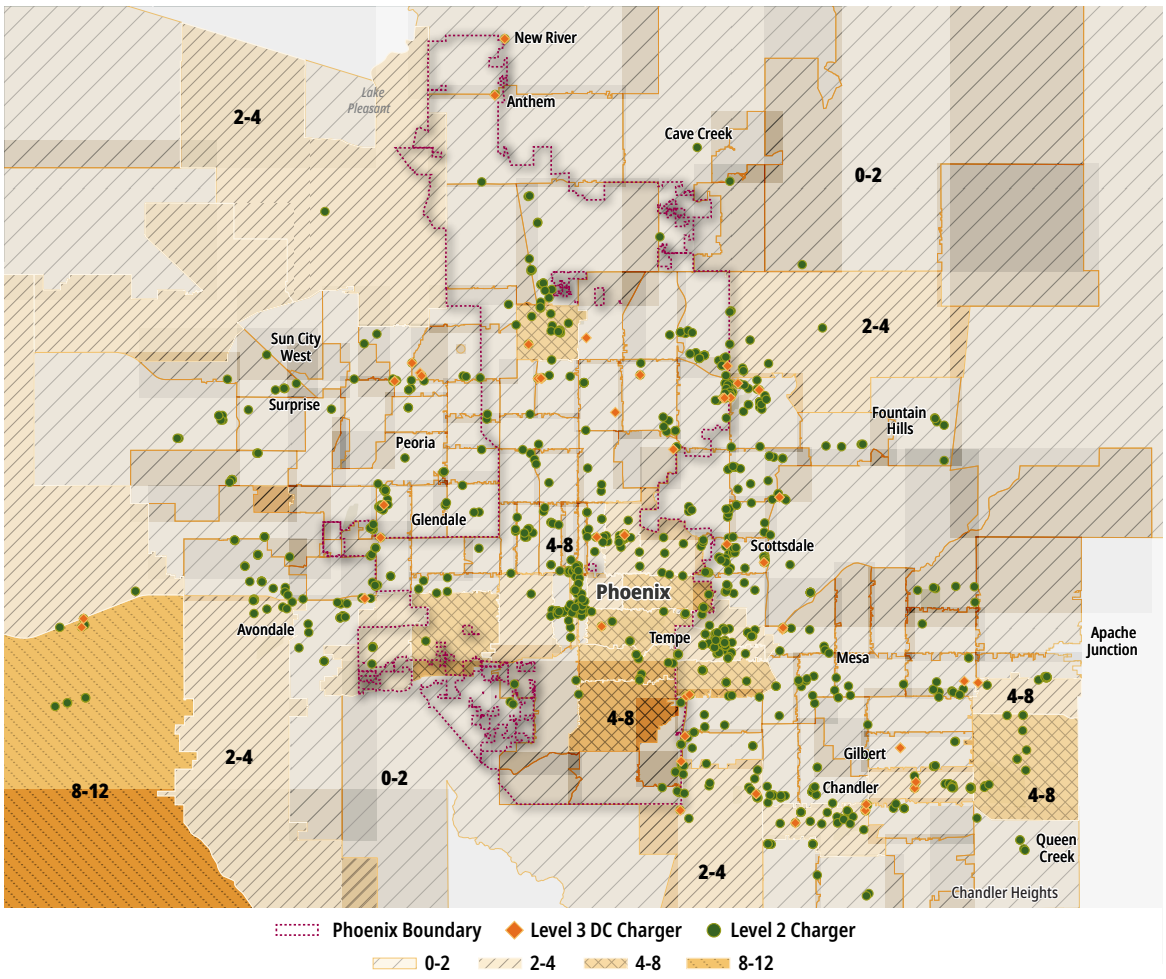
The model separates demand into two lenses because they call for different infrastructure and different partners. **Figure 5** maps near home charging demand by ZIP under the Moderate scenario, and the pattern is that the deepest need sits in renter dense, multifamily corridors where drivers cannot charge in a private garage overnight. **Figure 6** maps near destination demand, which follows a different logic, clustering around the commercial cores, job centers, and airport adjacency where drivers stage between trips. Read together, the two maps show that no single charger type solves the problem. Near home Level 2 keeps drivers in the game, while near destination DCFC keeps them earning during a shift.

FIGURE 5. Near home L2 charging demand by ZIP, 2030 Moderate scenario



Source: Alternative Fuel Data Center, 2026; S&P Global, 2026; Maricopa County Open Data

FIGURE 6. Near destination charging demand, 2030 Moderate scenario



Source: Alternative Fuel Data Center, 2026; S&P Global, 2026; Maricopa County Open Data

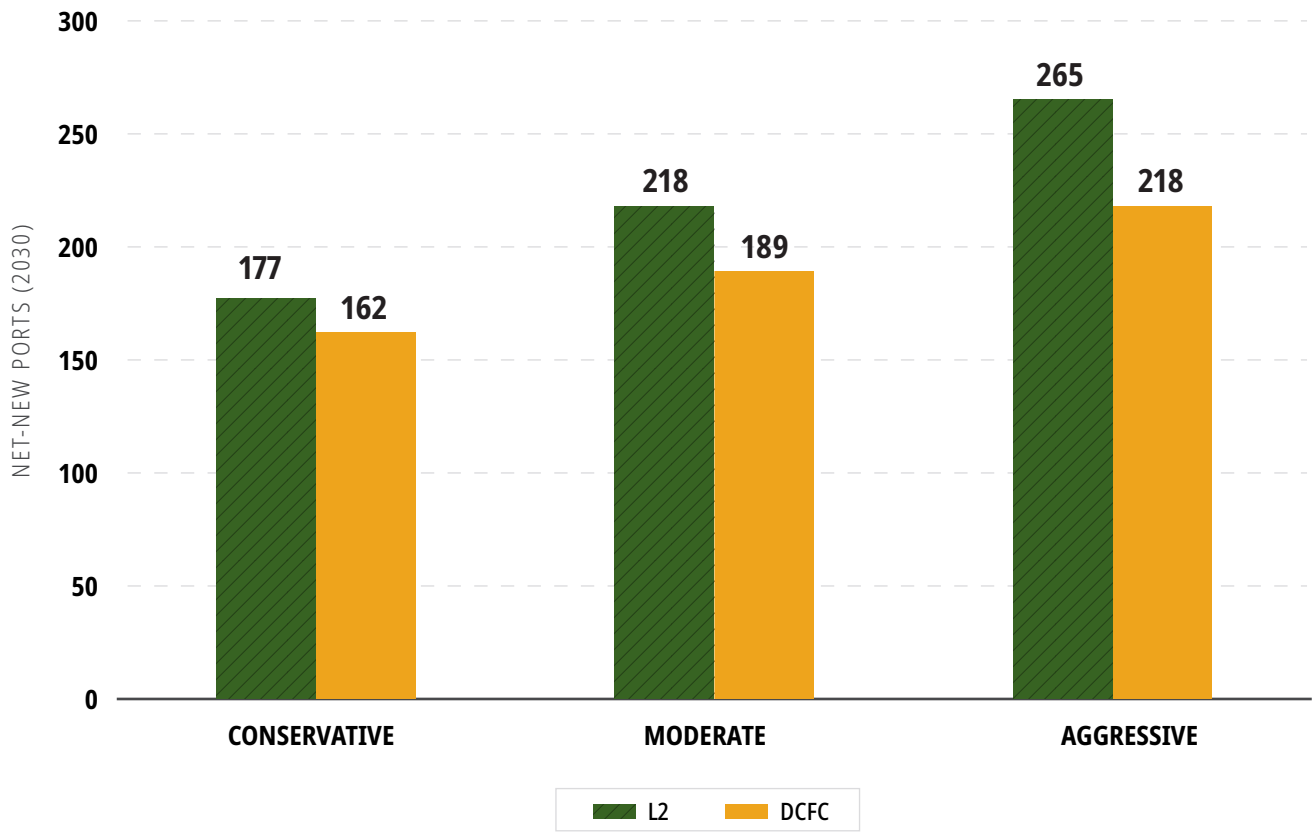
The scenario range brackets the plan, and the Moderate scenario is the planning baseline. **Figure 7** and **Figure 8** combine the two demand lenses and net out existing public supply to produce the total 2030 port gap, first as a continuous surface and then consolidated to the ZIP level for planning use. Across scenarios, the biggest port gap is not evenly distributed. It concentrates in three geographies that map directly onto the findings.

- South Phoenix and West Valley multifamily ZIPs carry the largest near home gap because they combine high renter share, high multifamily density, and thin existing Level 2 coverage. These ZIPs also carry the highest equity weight in the tiering framework.
- Central Phoenix, Downtown, Tempe, and Old Town Scottsdale carry the largest near destination DCFC gap because they combine top quartile trip attractor scores with dwell patterns that HMV drivers already use for staging.
- Sky Harbor airport and its adjacent ZIPs carry a concentrated, single site gap that is disproportionately large relative to its ZIP area because the rideshare waiting lot generates predictable, long duration dwell with no on lot charging today.

> *"We have all these waiting lots for Uber and Lyft drivers, and there's no charging, there's none."*
>
> —ANONYMOUS HIGH-MILEAGE DRIVER FOCUS GROUP PARTICIPANT

> *"If we could get a bank of charging at the Uber lot, if I didn't have to leave to go find a charger, that would make it so much easier."*
>
> —ANONYMOUS HIGH-MILEAGE DRIVER FOCUS GROUP PARTICIPANT

FIGURE 7. **Combined 2030 net port gap, Moderate scenario, net of existing public supply**



Source: Alternative Fuel Data Center, 2026; S&P Global, 2026; Maricopa County Open Data

FIGURE 8. 2030 net L2 charger gap by ZIP, Moderate scenario, net of existing public supply

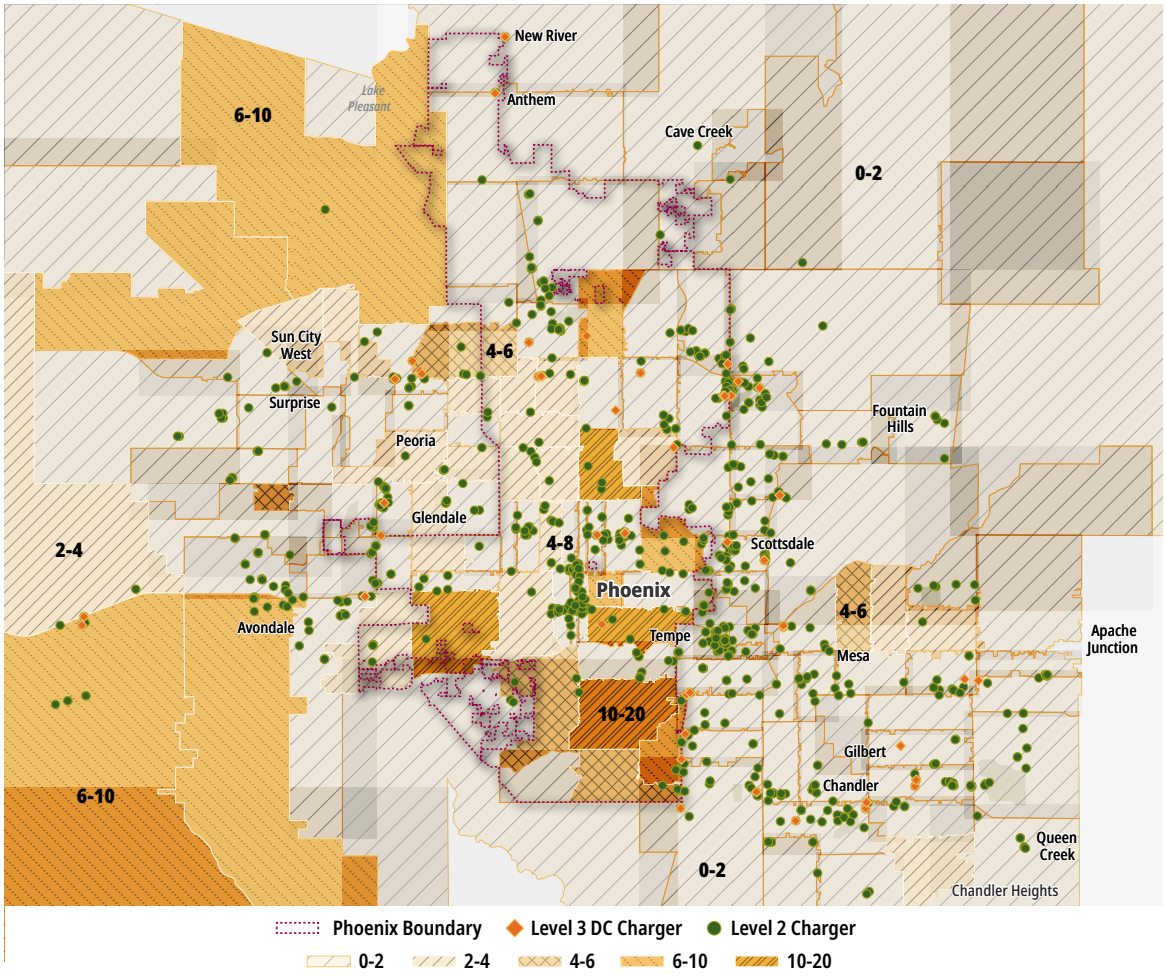
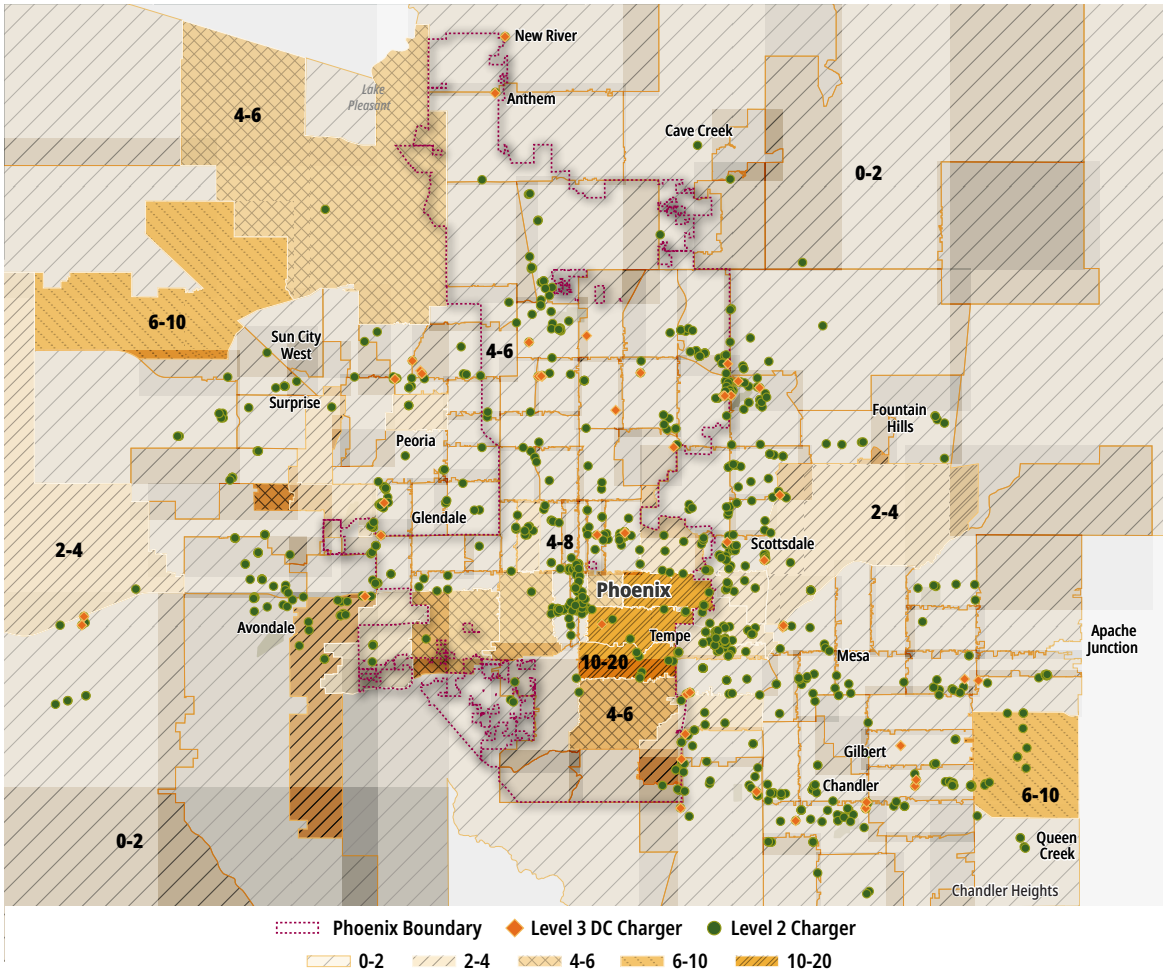




FIGURE 9. **2030 net DCFC gap by ZIP, Moderate scenario, net of existing public supply**

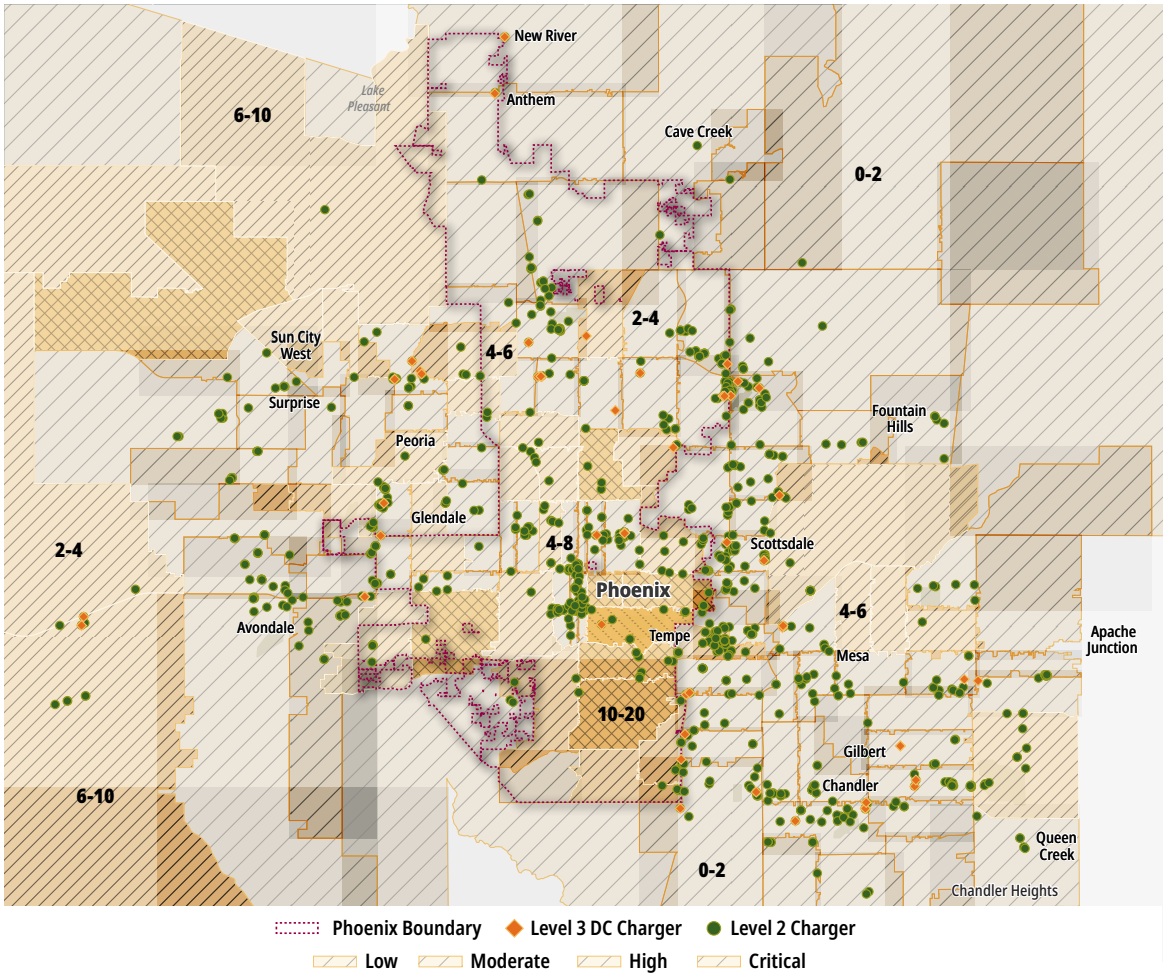


Source: Alternative Fuel Data Center, 2026; S&P Global, 2026; Maricopa County Open Data



Figure 10 pulls the analysis together, overlaying the tiered ZIP priorities with the named anchor sites that convert those priorities into buildable projects. The ten highest priority ZIP codes carried forward for early action are 85034 (Central City and Sky Harbor), 85042 and 85040 (South Phoenix and South Mountain), 85043 (southwest Phoenix near Laveen), 85006 (central Phoenix, Garfield and Coronado), 85008 (east Phoenix near Sky Harbor), 85020 (north Phoenix, Sunnyslope), 85387 (Surprise), 85354 (Tonopah), and 85337 (Gila Bend). Together these span the South Phoenix and airport-adjacent core, central and east Phoenix, north-central Phoenix, and the outer West Valley corridors, which together capture the intersection of high port gap, high renter share, and named driver dwell that defines Tier 1 need. Each of these ZIPs should be the first place the City, utilities, and private hosts look when matching a funding stream to a site.

FIGURE 10. Prioritized ZIP tiers with named HMV anchor sites



Source: Alternative Fuel Data Center, 2026; S&P Global, 2026; Maricopa County Open Data

The tier framework combines demand model output with equity screening and driver signals so that a ZIP does not qualify for Tier 1 on port gap alone. It must also carry equity weight or match an HMV dwell pattern.

Tier	Selection criteria	Approximate 2030 port target under Moderate	Primary demand type
Tier 1: Move first	Top quartile net port gap AND (high renter share OR high Social Vulnerability Index OR named hotspot)	~700 to 1,000 net new ports across 6 to 8 ZIPs	Near home Level 2 and some targeted DCFC
Tier 2: Build in parallel	Top half port gap OR named destination hotspot, without Tier 1 equity flag	~400 to 600 net new ports across 6 to 10 ZIPs	Near destination DCFC, and some workplace Level 2
Tier 3: Complete the network	Positive net gap under Moderate, closes coverage on urban fringe and secondary corridors	~200 to 300 net new ports across the remaining priority ZIPs	Balanced mix, corridor focused

The anchor sites below convert the ZIP tiers into concrete first move investments. Each is matched to a demand type, a tier, the driver signal that supports it, and the primary partner and funding lever that will actually get it built. Sequencing matters here: the Tier 1 anchors, led by the Sky Harbor rideshare waiting lot and the South Phoenix and West Valley multifamily ZIPs, are where the largest single site gap and the largest structural gap overlap. Building on the City's early public investment already in the ground, these sites carry the strongest case for the next round of public, private, and platform investment to move together.. The primary partners named below are the public-sector and planning partners best positioned to initiate each site. Each site will also require private partners, including charge point operators, property owners, and platforms, to finance, build, and operate the charging

Anchor site	Demand type	Tier	Notes	Public and Planning Partner
Sky Harbor rideshare waiting lot	Near destination DCFC bank, 12 to 20 stalls	Tier 1	Highest impact single site gap named by drivers, long predictable dwell with no on lot charging	Aviation Department, APS
Downtown Phoenix core	Near destination DCFC in structured parking	Tier 1	High evening rideshare volume, natural dwell at nightlife venues	City parking operations, APS
Old Town Scottsdale and North Scottsdale	Near destination DCFC at retail forecourts	Tier 2	Tourism and nightlife anchor named by multiple drivers	Retail landowners, SRP
ASU and Mill Avenue corridor	Near destination DCFC plus workplace Level 2	Tier 2	Student trip demand and airport connections	ASU, City of Tempe coordination, APS
Westgate and Cardinals stadium area	Near destination DCFC with event peaking	Tier 2	Regional West Valley entertainment anchor	Venue operators, APS
Arrowhead Mall and Northwest Valley multifamily	Near home Level 2 and mid shift DCFC	Tier 1	Named by drivers as combining housing, shopping, and entertainment demand	Multifamily property owners, SRP
South Phoenix multifamily ZIPs	Near home Level 2 retrofit	Tier 1	Structural renter disadvantage without near home access	Multifamily property owners, APS, CBOs
West Valley multifamily corridors (Glendale, Tolleson, Avondale)	Near home Level 2 with targeted DCFC	Tier 1	Renter density along I-10 and I-17 corridor, thin coverage	Multifamily property owners, APS
Cave Creek and Queen Creek urban fringe	Corridor DCFC and near home Level 2	Tier 3	Fringe coverage gap named by drivers	APS, ADOT (NEVI adjacent)

Policies, Incentives, and Funding Opportunities

The policy and funding stack determines whether the prioritized sites in the previous subsection actually get built and whether drivers can afford the vehicles that use them. It is catalogued the full policy landscape; this subsection focuses on the levers most relevant to HMV deployment and the timing considerations that shape near term action.

Federal support has narrowed. The vehicle purchase credits that supported HMV affordability, the Clean Vehicle Credit (30D), the Credit for Previously Owned Clean Vehicles (25E), and the Commercial Clean Vehicle Credit (45W), along with the Alternative Fuel Vehicle Refueling Property Credit (30C) for charging infrastructure, have all now sunset. With those federal credits no longer available, the near-term financing weight shifts to state, utility, airport, and platform levers, which the rest of this section focuses on. NEVI corridor funding remains the main active federal program for charging and is covered below.

NEVI is restarting under streamlined federal guidance. FHWA approved ADOT's 2025 Deployment Plan in October 2025, which released FY 2026 funds for obligation. The 2025 update proposed 21 new or upgraded stations across nine additional corridors, and construction on the first 18 stations began in early 2026 with operations expected to start in summer 2026.[22] The updated August 2025 NEVI guidance gives states more flexibility on station spacing and allows chargers on any public road once corridors are complete, which opens the door for Phoenix to advocate for HMV serving hubs at freeway adjacent locations that also meet corridor needs.

State and utility programs remain the workhorse for HMV economics. SRP's Marketplace offers a 250 dollar rebate on Level 2 smart chargers, and APS's SmartCharge program provides the 25 dollar enrollment plus 5 dollars per month for grid supportive or data sharing enrollment. Both utilities offer time of use structures that can lower home charging costs materially for drivers who can shift load overnight. The highest-leverage near-term intervention is a joint City, SRP, and APS HMV package that brings these existing programs together into a single-window offer, so a multifamily owner or driver can access make-ready dollars, charger rebates, and a standard landlord-tenant agreement template through one coordinated application rather than navigating each program separately.

Airport levers are direct and already in code. Under City Code Section 4-78, Sky Harbor applies a 40 percent per trip discount for zero emission vehicles and a 10 percent discount for alternative fuel vehicles across all authorized providers on their monthly trip fee invoices. The Green Curb program at Terminals 3 and 4 provides EV pickup priority and wayfinding. Combining these fee signals with an on lot DCFC bank would materially improve HMV EV economics at the airport.

Platform incentives are dynamic and should be treated as a watchlist. Uber and Lyft both offer charging discounts (up to 45 percent at EVgo), category incentives (Comfort Electric, Lyft Green), and periodic time limited earnings bonuses that have historically included Phoenix. The City should track eligibility windows and stand ready to co-market when Phoenix appears in a new offer, since a two-week outreach window can meaningfully increase adoption.

04 Partnership and Financing Pathways



The City of Phoenix's TEAP established ambitious goals and a thoughtful strategy for expanding availability of EV charging stations. Many of the recommendations and strategies identified in the TEAP are aligned with the objective of identifying financing options to facilitate the installation of EV chargers that would be available for taxi and for-hire drivers.

Chargers are generally suitable candidates for public capital funding if they are owned by the city.[23] Accordingly, costs directly tied to acquisition, installation, site preparation of chargers can be bundled into the asset's capitalized cost, and the project can be financed at terms that are more favorable than what is available on the private market. However, by financing the installation and retaining ownership of these charging stations, the City would assume risks that might be more effectively evaluated and managed by the private sector, including:

- **Obsolescence risk:** Rapid technological evolution within the EV industry could result in advancements over the next decade—such as battery swapping, or advanced high-speed charging systems— that may render the City's capital investments obsolete within an unexpectedly short-time horizon.
- **Utilization risk:** Conversely, there is a potential, albeit low, risk that the deployed EV charging infrastructure could prove unpopular among taxi and TNC drivers, or other vehicle owners.

Such underutilization risk is increased when the city inevitably chooses locations using factors other than expected return on investment.

- **Project delivery risk:** Unlike municipalities, the private sector is not bound by public procurement regulations, domestic production requirements, or similar constraints that could delay or impede innovative and efficient operational approaches in this field.
- **Maintenance obligations:** Ongoing responsibilities for addressing vandalism, executing repairs, and managing component replacements would be the City's sole responsibility.

Accordingly, the Plan identifies and assesses potential viable funding and financing frameworks for HMV charging that would not require municipal subsidies. If public funding should become available, it can be leveraged in a manner that minimizes the downside risks outlined above. For instance, relatively small amounts of taxpayer investment can "prime the pump" on revolving loan funds, obtain more favorable financing rates and otherwise facilitate much larger private lending capacity. Similarly, city staff can provide enormous benefit by expediting permits for CPOs, providing technical assistance for SBA loan applicants, or managing partnership outreach to potential EV charger hosts.

Fortunately, local governments across the nation have developed creative approaches to stack multiple funding sources—combining utility incentives, federal funds, advertising, revenue-sharing agreements and other incentives—to make these projects attractive for hosts and CPOs alike.

Partnerships with CPOs

CPOs are responsible for the end-to-end development, ownership, operation, and management of EV charging infrastructure. While the scope of responsibilities may vary by provider, and decision-making authority can be shared with clients, CPOs typically oversee the full lifecycle of charging station deployment and performance.

- **Site Development and Construction:** Identifying and evaluating viable locations based on demand, grid capacity, and commercial considerations; negotiating site host agreements; conducting feasibility studies; securing zoning approvals, permits, and utility interconnections; and managing design, procurement, and installation of charging equipment. Where the City is a partner, it will expect this work to be done in collaboration with City staff and in alignment with the goals and priorities set out in this Plan.
- **Financing and Commercial Structuring:** Securing capital via their own investment, arranging third-party financing, or application of public grants and incentive programs; structuring revenue-sharing or lease agreements with site hosts; and ensuring compliance with applicable funding requirements.
- **Operation and Performance Monitoring:** Continuously monitoring charger utilization and uptime; optimize pricing; and managing customer support functions, including issue resolution and user communications.
- **Maintenance and Field Service:** Conducting routine inspections, preventative maintenance, and software updates; manage equipment repairs and replacement;
- **Regulatory Compliance and Reporting:** Adhering to local, state, and federal regulatory requirements; complying with utility tariffs and interconnection rules; meeting reporting obligations tied to public funding or incentive programs; and maintaining documentation for audits and performance verification.
- **Stakeholder and Partnership Management:** Coordinating with public agencies, site hosts, utilities, equipment manufacturers, and software providers; negotiating service-level agreements; and supporting expansion through strategic partnerships.

Funding and financing arrangements between CPOs and hosts are, simply, a decision as to how risk, responsibility and profit will be allocated. The table below describes the general distinction between the three main models along a few key parameters, however each arrangement is unlikely to adhere to these categories.

Key Parameters	Host Owned	Lease	CPO Owned
Who is responsible for pricing, customer experience, customer support, and other operational decisions?	Host is responsible for operational decisions, but may pay CPO to provide maintenance and operation services.	Host cedes responsibility for decisions and maintenance and operation services.	Host cedes responsibility for decisions and maintenance and operation services.
Who bears the risk of loss or retains the profit?	The host bears the risk and keeps the profit.	The host and CPO share risk and profit under the lease terms.	The CPO bears the risk and keeps the profit.
When does this model work best?	When the City is the host, at public buildings, garages, or curbside sites, it can use any of the three models: host-owned gives the most control over pricing and access for equity goals, while a CPO-owned concession shifts capital cost and risk to a private partner in exchange for a lease or revenue share. Later sections detail how to structure these on City property.	When the host runs a business expecting moderate, steady demand, such as a chain restaurant.	When the CPO expects the location to generate high demand, such as a large shopping complex.

In host-owned arrangements, the host can often borrow from the CPO to pay for the equipment. This is convenient and can speed things up, but it comes with trade-offs. The loan usually has to be repaid within three to seven years, which makes the monthly cost higher than many other financing options. It also covers only the charger hardware and its installation, not the site preparation or construction work that comes first. And because the loan is unsecured, the interest rate depends heavily on the host's credit, so a weaker credit profile means a more expensive loan.

Level 2 and 3 chargers- Host,taxi, and TNC driver Perspectives

For hosts, Level 3 chargers are attractive because they can be major traffic generators, especially at high demand sites where a quick turnaround is valued (e.g., retail locations near busy highways). However, Level 3 chargers usually require major electrical upgrades, permitting, and major construction so the capital stack and project timeline can be complex. A Level 3 station typically costs between $75,000 and $150,000 USD ($25,000-$50,000 for equipment, and $50,000-$100,000 for electrical service upgrades).[24] However, a study of 54 California Department of Transportation Level 3 charger installations chargers found that the cost ranged from $122,000 to as much as $440,000 apiece, though the more expensive stations had atypical configurations.[25] CPOs are therefore less willing to enter arrangements where they share the risk of underutilization with hosts for Level 3 chargers.

A Level 2 charger is much cheaper to install, typically between $3,000 and $14,000 ($1,000-$4,000 for equipment, and $2,000-$10,000 for construction), because it is easier to integrate with existing electrical infrastructure. The lower cost and simpler permitting, less disruption during installation, and more predictable operations. These factors make a host-owned Level 2 charger quite feasible. However, the slow rate of charging (approximately 30 miles an hour),[26] suitable for a convenient "topping up" of the battery in most cases. It's only practical to fill a battery when the vehicle is parked for several hours (e.g., overnight at or near home, or at the office parking lot during the workday).

HMV drivers must maximize their active driving time when they are working; any time lost whilst charging represents lost wages. Some taxi and limousine drivers drive fleet vehicles that are provided by their employer. Those vehicles may be adequately serviced by Level 2 chargers when it is off-shift.

Leading Charge Point Operator Profiles in Phoenix and Nationally

According to DOE Alternative Fuel Station Locator data,[27] ("DOE dataset") there are approximately 916 charging points available for public use in Phoenix. Importantly, this dataset has errors,[28] and does not align with consumer-facing resources like Plugshare, due to definitional differences.[29] As shown in Figure xx, the DOE dataset shows that at least 83% of the ports are allocated between three CPOs: ChargePoint network (43%), Blink Network (23%), and Tesla (17%).[30] The dataset also shows that Tesla operates the vast majority of the City's Level 3 chargers (65%), EVgo Network operates another 13%, and no other firm operates more than a handful.

Network	Locations	Level 2 Ports	Level 3 Ports	Ports/Total Ports
ChargePoint Network	232	388	3	43%
Blink Network	68	215	-	23%
Tesla	19	41	112	17%
Non-Networked	11	43	3	5%
AmpUp	9	17	-	2%
eVgo Network	5	-	22	2%
EV Connect	3	3	1	0%
Loop	3	13	-	1%
Circle K	2	-	8	1%
Electrify America	2	-	8	1%
Evoke	2	11	-	1%
EVgateway	1	6	-	1%
Ford Charge	1	-	2	0%
HyperFuel	1	-	8	1%
Red E	1	4	-	0%
Rivian Adventure	1	-	6	1%
SWTCH	1	2	-	0%
Grand Total	**362**	**743**	**173**	**100%**

The below five firms represent, according to the DOE dataset, collectively, approximately 75% of the nation's Level 3 charging stations, and 70% of the nation's Level 2 and 3 charging stations.

Tesla



Tesla's Level 3 charging network is regarded as the country's most comprehensive system, with over 3,000 "Supercharger" locations.[31] According to the DOE dataset, Tesla operates more than half of the nation's, and 65% of Phoenix's, Level 3 chargers. Tesla allows property owners to buy their Level 3 chargers through their host-owned "Supercharger for Business program." A property owner that seeks to install four Tesla Level 3 ports in Phoenix should expect to pay $250,000 in hardware and approximately $220,000 for installation.[32] Tesla defers to equipment owners on pricing. Tesla also appears to offer a CPO-owned program,[33] where property owners apply to have Tesla install an EV charger at Tesla's expense, where Tesla maintains operational control, but the company appears to have de-emphasized it with the recent expansion of their host-owned program. so Supercharger session prices are not centrally standardized. What drivers consistently praise is not uniform pricing but the reliability and seamless payment experience, which reinforces this Plan's finding that dependable uptime and simple payment matter more to HMV drivers than the headline price per kilowatt-hour.

EVgo



EVgo, which offers Level 2, 3 chargers, operates 7% of the Level 3 chargers nationally according to the DOE dataset. Five of these Level 3 charging locations are in Phoenix. EVgo offers Uber and Lyft drivers significant discounts on fees for charging at their stations. EVgo offers two models for property owners looking to add Level 3 chargers: the CPO-owned "Owner-Operator Model" where EVgo chooses the site and fully funds, installs, and manages the chargers at zero cost to the host, and the host-owned "EVgo eXtend," which enables the property owner to set custom pricing and keep charging revenue while EVgo handles setup, maintenance, and ongoing operations.[34] EVgo offers significant discounts to Lyft[35] and Uber[36] drivers on charging fees. The company says about one-quarter of their customers are TNC drivers.[37]

Electrify America



Electrify America, which exclusively offers Level 3 chargers, operates nearly 8% of Level 3 chargers nationally according to the DOE dataset. Only a handful of these chargers are in Phoenix. The firm frequently sites their chargers in big-box store and shopping malls parking lots. One of Electrify America's key hallmarks is the development of large "flagship stations," showcase locations that feature a large number of Level 3 Chargers, climate-controlled customer lounges, wi-fi, solar canopies and other amenities.[38] This model is especially well suited to HMV drivers in Phoenix, where the combination of high-power charging, shade, and an air-conditioned place to wait directly addresses the heat and dwell-time needs documented earlier in this Plan.

Chargepoint



ChargePoint operates the largest Level 2 charging footprint across Phoenix, primarily at office parks, shopping centers, and parking garages. Chargepoint offers financing for host-owned, lease and CPO-owned arrangements. They are also the largest CPO nationally, according to the DOE dataset, with about one-third of the nation's ports. Almost all Chargepoint's publicly available ports in Phoenix and nationally are Level 2. Chargepoint does maintain over 320 DC charging locations nationally;[39] it's unclear why so few are located in Phoenix.

Blink Network



Blink Network is similar to Chargepoint – they provide a network of Level 2 chargers, they offer no Level 3 chargers in Phoenix, and maintain a range of host-owned, lease and CPO-owned arrangements.[40] Interestingly, Blink Network offers more than 700 Level 3 charging locations nationally, or about 3 percent of the national total,[41] but many of them appear to be at car dealerships and not publicly accessible. Blink Networks' DC fast chargers are only available via a CPO ownership model.[42]

A number of innovative startups are also developing curbside charging models worth watching. One example, itselectric, uses a "behind-the-meter" approach in which charger posts connect through conduit under the sidewalk to a host building's electrical panel, reducing the permitting and utility coordination that curbside charging usually requires and lowering installation costs, with host building owners sharing in the revenue. Similar behind-the-meter and curbside approaches are emerging from other providers as well. Whether this model is permissible in Phoenix would need to be confirmed against the City's right-of-way and utility interconnection rules before deployment.[43]

Measures To Facilitate EV Charger Availability For HMV Drivers

CPO partnership, funding, and financing frameworks offer potential to expand HMV drivers' access to EV chargers. The initiatives outlined below do not require direct public funding for EV chargers, though most of them will undoubtedly involve public expense in the form of staff time. Many of these initiatives would complement each other.

INITIATIVE 1:

Partner with Arizona Capital Source to help commercial property owners obtain Small Business Administration (SBA) financing for EV chargers

SBA 504 and 7(a) loans work well for owner-operators building or expanding EV charging facilities because they offer up to 90% financing with a below-market fixed rate.[44] Further, due to a 2026 rule change, these loans can be stacked in some instances, potentially unlocking $10 million in financing.[45] Both programs treat EV charging infrastructure as eligible equipment and associated property improvements but require the property owner to demonstrate the business viability of the charging operation. Phoenix businesses already work with Arizona Capital Source (ACS), a private non-profit lender that facilitates SBA loans for Arizona businesses. The City should collaborate with ACS to develop a program that helps commercial property owners submit loan applications for EV chargers that have a high likelihood of approval. This approach is especially suitable for commercial establishments that seek Level 3 chargers, given the high loan limits, and for fleet operators who seek to install Level 2 or 3 chargers.

INITIATIVE 2

Solicit Corporate Social Responsibility Funding from National TNCs

Uber and Lyft both frame their EV goals as central to their broader corporate social responsibility agendas, citing vehicle electrification as the main way they will decarbonize ride-hailing. Uber's sustainability strategy commits to becoming a zero-emission mobility platform, with targets for 100% zero-emission rides in US markets by 2030. Uber has allocated $800 million in incentives, EV partnerships, and renewable-energy initiatives towards this end.[46] $100 million of Uber's investment is specifically aimed at encouraging the construction of new vehicle chargers.[47] Our research has not uncovered any instances of how Uber's $100 million commitment has been deployed. Lyft has made a similar pledge to reach 100% EVs on its platform by 2030, but has not made a similar announcement regarding the construction of new chargers. These firms' investment in Phoenix EV charger deployment could include bolstering financing and funding options for Level 2 or 3 hosts.

INITIATIVE 3

Work with Utilities to Launch On-Bill Financing/ Repayment Programs and Expand Incentive and Rebate Programs

On-bill loan programs allow utility customers to finance clean energy and energy efficiency improvements. These programs offer low- or zero-interest financing to property owners who then repay the loan over time directly through their regular utility bills. The program requires a small amount of public money, ratepayer funds, or other funds (such as a grant from Uber or Lyft) to "prime the pump," but once they get started the high rate of repayment reliably replenishes the fund and enables them to scale steadily. In an on-bill financing program, the utility itself acts as the lender; in on-bill repayment programs, an intermediary like a bank or credit union originates the loan while the utility manages collection through monthly billing. The rates are generally more favorable than equipment loans offered by CPOs. Neither SRP nor APS offer on-bill loan programs, even though, upon preliminary review, they could be launched via a vote by those utilities and would not require state authorization. Nearby Maricopa's Electrical District 3 does offer on-bill financing for Level 2 vehicle chargers.[48] This approach works best for Level 2 chargers for taxi and TNC drivers. On-bill financing works most directly for drivers or property owners with a utility account and dedicated parking. Extending it to multifamily housing is more complex,

since the billing relationship sits with the property owner rather than the tenant, so multifamily use would likely pair on-bill repayment with the landlord-tenant agreement template described earlier.

SRP offers substantial utility rebates and incentives for Level 3 installations, ranging from $20,000 to $45,000 depending on customer type and station count. Additional prewiring allowances help offset initial site preparation and installation costs.[49] The City should encourage both utilities to expand and better publicize these rebates for HMV-serving sites, and advocate for a comparable APS offering, so that rebate levels keep pace with the higher installation costs documented earlier in this Plan.

INITIATIVE 4

Taxi & TNC Ride Surcharge to Fund EV Chargers on Public Property or Bolster Financing Programs

A surcharge, which could be achieved via a fare increase on taxis and a voluntary assessment from TNCs, or via a tax authorized by the State Legislature, represents a straightforward method of generating significant revenue that could be used to fund EV chargers. A relatively small surcharge on trips to and from Skyharbor, on the order of $0.50 or $1.50, would generate $3.4 million to $10.3 million annually,[50] and in alignment with existing fees.[51] A similar fee on non-airport taxi and TNC trips is perhaps advisable, however those trips are taken by Phoenix residents which may raise some concerns of inequitable impact on lower-income residents who need to regularly take taxis and TNCs.[52] This funding is best used to fund the installation of chargers on public property, including Skyharbor, because it is generally illegal to use public funds to provide a direct benefit, or "gift," to residents. Portland, Oregon, for example, applies a per-ride surcharge on TNC trips that helps fund transportation programs, demonstrating that a modest trip fee is administratively workable and publicly accepted.

INITIATIVE 5

Obtain Siting Data from Taxi and TNC Companies

The City should pursue data-sharing partnerships with taxi and TNC companies to inform charger siting, since these companies hold real-world mobility data that public datasets cannot match. Uber's Electric Vehicle Infrastructure Estimator (EVIE) is a leading example: it draws on millions of rideshare trips to generate heatmaps of projected Level 2 and Level 3 charging demand based on actual driver movement and energy use, with scenarios adjustable for EV adoption and home-versus-on-the-go charging. Access to EVIE is controlled by Uber and its data is not intended for public redistribution, so the City would need a data-sharing arrangement to use it. The broader goal is to secure comparable data from multiple platforms over time, not to rely on any single company.

INITIATIVE 6

Coordinate an EV Charger Task Force with Phoenix, Salt River Project and Arizona Public Service to encourage CPO participation

The City and utilities could expand their joint permitting teams to streamline permitting processes and reduce application down time. California undertook a similar initiative and shaved considerable dead-time from EV charger applications.[53] In addition, Phoenix should encourage its utilities to compile desk-based suitability reports to identify parcels where Level 3 chargers are likely to be infeasible.[54] These reports could be developed by overlaying data regarding capacity, proximity to three-phase power, land use/zoning, and other factors which can help predict interconnection complexity. These reports would enable CPOs like Electrify America and Tesla to make informed decisions about where they hope to site Level 3 chargers.

INITIATIVE 7

Site Level 3 Chargers at City Owned Parking Facilities

A 2022 parking study of Downtown Phoenix identified approximately 15 city-owned surface lot and garage facilities which provide 9,000 parking spots.[55] This directly addresses concerns raised that the City has little remaining vacant land for new charging: existing parking facilities are an already-owned, already-paved asset that can host chargers without acquiring new land. The study did not consider parking facilities attached to City owned offices, libraries, parks, schools and other properties within that segment of the City. The true number of parking facilities operated by the City when those properties are included, and all of the City is considered, is probably an order of magnitude higher. CPOs would be thrilled to have the opportunity to install their chargers among this portfolio of locations. In order to operationalize this approach, Phoenix should work with the utility companies to compile interconnection profiles for city-owned parking facilities, and solicit bids from CPOs like Electrify America and Tesla to provide publicly accessible Level 3 charging stations, funded by the CPO with land rental or revenue share agreements to the city. This is a common model internationally. This is a common model internationally. In London, Transport for London awarded its first contract in 2023 to install EV chargers on public land through a concession structure.[56] In Curitiba, Brazil, the city issues a "Grant of Permission of Use" to charge point operators on public land, with its selected CPO for the first pilot site providing the city a 28 percent revenue share.

INITIATIVE 8

Offer Vacant Land for CPOs to Build Level 3 Hubs

As of 2023, Phoenix ranked third among US cities in terms of city-owned vacant properties – over 16,000 parcels.[57] Many of these are state-owned and cannot be readily sold, and the City's priority is to develop housing wherever it can. However, some centrally located lots that are unsuitable for housing, and perhaps near commercial corridors or highway offramps, may be attractive to a CPO that was offered a long-term, lease at low or no cost where needed to make a site viable to build a Level 3 Hub. Again, the City would compile the portfolio of eligible or priority sites, informed by the priority ZIP and equity analysis in this Plan and by fleet-demand data, and launch a competitive solicitation for bids from CPOs to enter a long-term lease for the subject parcels for cheap or at no cost, in exchange for their construction of publicly accessible Level 3 charging stations. In exchange for discounted or free land, the City can attach conditions that advance equity goals, such as discounted charging rates for ride-hail or low-income drivers, a maximum session price, and enforceable uptime standards. To steer investment toward underserved areas, the City can offer more favorable lease terms, such as longer terms or lower rates, for hubs sited in environmental justice communities or areas with the least existing charging access.



INITIATIVE 9

Build a Level 3 TNC Fast-Charging Hub at Skyharbor.

Airports are ideal hubs for EV fast charging because taxi and ride-hail drivers frequent them daily. Further, these drivers experience severe time sensitivity, making fast charging on-site far more economically viable than off-site detours.[58]

Taxi and TNC drivers routinely make nearly 7 million trips to and from Skyharbor every year. [59]These trips often involve waiting in a queue for their turn to service a passenger. Phoenix, which operates Skyharbor, should implement a "virtual queue" for Taxi and TNC drivers who are waiting their turn while charging the vehicle. They also should construct a Fast-Charging Hub, with two dozen or more Level 3 chargers are available, along with driver amenities such as shade, restrooms, coffee, vending machines, etc.

The San Francisco Airport Commission and the San Francisco Board of Supervisors recently approved the construction of a Fast-Charging Hub facility with 24 ultrafast Level 3 chargers. The plaza is designed to serve Taxi and TNC drivers as well as airport travelers, and will feature a convenience store, driver lounges, restrooms, and dedicated support staff to maximize user comfort during dwell times. San Francisco Airport's partner, Skycharger, will handle 100 percent of the project lifecycle—including land lease, permitting, engineering, financing, construction, maintenance, and operation—eliminating upfront capital expenditures for the airport authority[60] Skycharger will pay the San Francisco Airport Commission at least $190,000 annually, and as much as 7 percent of gross revenues achieved over $5,000,000.[61]

Similar Level 3 Superhub projects have launched at airports across the country, including 48 Level 3 chargers at LaGuardia Airport[62] and 46 Level 3 chargers at John F. Kennedy Airport.[63]

INITIATIVE 10

Rest & Recharge Spots

Taxi and TNC drivers need areas to rest, use the restroom, and eat in the areas where trip activity is the highest. The Rest & Recharge Restaurants ("R&R Restaurants") concept would identify restaurants, cafés and similar establishments that seek to increase patronage by taxi and TNC parking drivers by making available the amenities that the amenities available. Through a partnership between the City and a financing body, the establishment owner would obtain preferential financing for a Level 3 charger, and in exchange they would cater to these driver's needs – coffee, food, restroom access, a comfortable place to rest and perhaps socialize with other drivers. The locations would be well-lit during the night and offer shade or climate-controlled lounge areas during the day. These R&R Restaurants help establishment owners attract footfall from drivers, and make it more feasible to obtain a Level 3 charger; Taxi and TNC companies win because their drivers are well-positioned whilst waiting for trips; and the drivers win because charging is addressed while their human needs are being addressed.



05 Implementation Roadmap



The roadmap converts the Plan's findings into a practical sequence of actions across three time horizons. For high-mileage vehicle drivers, the implementation strategy focuses on two complementary infrastructure needs: enabling Level 2 charging where vehicles are parked during off-hours, including driver homes, multifamily properties, and taxi business depots; and expanding Level 3 fast charging at high trip-demand locations where drivers need quick, reliable charging during shifts. Each phase is scoped so action owners can move within current planning and budget cycles, with named owners, partners, funding sources, and KPIs to make progress auditable.

The roadmap follows the same sequencing logic used in the Prioritized Locations subsection: move first on Sky Harbor and the highest-equity multifamily ZIPs, build the destination network in parallel over years one through three, and complete corridor and fringe coverage in years three and beyond.

Phased Actions and Targets

The Near Term is about proving the model and unlocking the biggest gaps. The Medium Term is about scaling what works and closing the destination network. The Long Term is about sustaining the network, integrating autonomous fleet dynamics, and exporting the Phoenix playbook to peer cities.

NEAR TERM: 1 MONTH TO 1 YEAR

The Near Term is scoped to actions the City and its partners can start inside the current fiscal year. Phase 1 findings and the demand model both flag same priorities: a purpose-built DCFC bank at the Sky Harbor rideshare waiting lot, and a multifamily near home Level 2 pilot in the Tier 1 South Phoenix and West Valley ZIPs. In parallel, the City sets up the funding matrix, utility coordination, and driver information channel that every later action depends on.

#	Action	Key partners	Funding source
N1	Launch multifamily near home Level 2 retrofit pilot in 3 Tier 1 ZIPs (South Phoenix and West Valley)	APS, SRP, multifamily property owners, CBOs	APS and SRP make ready dollars,
N2	Publish HMV funding matrix and site host toolkit (federal, state, utility, platform, airport levers with timing)	WSP, C40, SRP, APS, ADOT	Existing project budget
N3	Convene joint City / SRP / APS HMV working group to align on 2026 interconnection window, make ready programs, and demand charge structures	SRP, APS	Existing utility program budgets
N4	Launch plain-language driver information channel (site openings, reliability status, incentive windows) delivered through peer networks and CBOs	CBOs, TNC platforms	City communications budget, C40 knowledge sharing support

MEDIUM TERM: 1 TO 5 YEARS

The Medium Term scales what the Near Term proves. The destination DCFC network fills in around named anchor sites (Airport, Downtown Phoenix, Old Town Scottsdale, ASU / Mill Avenue, Westgate, Arrowhead) with a mix of retail forecourt, structured parking, and mid-power hub deployments. The multifamily retrofit pilot expands citywide with a standard landlord and tenant agreement template and utility make ready funding built in. Corridor coordination with NEVI reaches the urban fringes, and a City-endorsed curbside Level 2 pilot tests the last major gap for renters without garage access.

The City should also test whether the air quality benefit of HMV electrification can be monetized through emission reduction credits (ERCs) or mobile source emission reduction credits (MERCs). In parallel, a land lease credit framework, developed with the City, could lower the entry cost for private charging operators by trading reduced lease rates on City owned or public land for committed HMV serving capacity. This is particularly useful where land availability, not capital, is the binding constraint for a private operator.

#	Action	Key partners	Funding source
M1	Scale multifamily retrofit program citywide across all Tier 1 and Tier 2 ZIPs with standard landlord and tenant agreement, ConnectDER meter adapter option, and utility make ready funding (the APS/SRP programs that cover the electrical infrastructure up to the charger)	APS, SRP, multifamily owners, CBOs	APS and SRP make ready, City retrofit grant, private capital
M2	Deploy destination DCFC hubs at Downtown Phoenix, Old Town Scottsdale, ASU / Mill Avenue, Westgate, and Arrowhead. City's role is to convene landowners and operators, streamline permitting and interconnection, and steer siting toward these priority anchors	Retail landowners, ASU, venue operators, APS, SRP	Private capital, utility rebates, service based contracts
M3	Pilot curbside Level 2 program in 2 to 3 priority ZIPs with standard designs, signage, and enforcement rules	APS, SRP, CBOs, community councils	Utility make ready funding
M4	Adopt EV-ready share requirement for new multifamily and mixed-use construction in priority ZIPs via zoning amendment	City Council, developer stakeholders	Regulatory (no direct cost)
M5	Coordinate with ADOT on NEVI corridor buildout serving West Valley, Cave Creek, Queen Creek, and Sky Harbor-adjacent freeway hubs	ADOT, APS, SRP, corridor operators	NEVI formula funds
M6	Explore emission reduction credits (ERCs) and mobile source emission reduction credits (MERCs) as a funding stream for HMV charging, and develop a land lease credit framework that lets private operators offset lease costs on City or publicly owned parcels.	City Office of Sustainability, Maricopa County Air Quality Department, private charging operators.	ERC/MERC monetization, land lease credits, private capital.
M7	Institutionalize HMV workforce transition program (technician certification, driver retraining, community engagement in high displacement corridors)	City Office of Sustainability	ASU, community colleges, Waymo, TNC platforms, CBOs
M8	Formalize AV operator coordination framework (data sharing, curb standards, depot grid coordination, ZEV fee policy)	City Office of Sustainability / Aviation Department	Waymo, other AV operators, APS, SRP
M9	Issue RFP and select operator for Sky Harbor rideshare waiting lot DCFC bank (12 to 20 stalls, 150 kW+, NACS and CCS)	City Office of Sustainability, APS, TNC platforms	Airport concession revenue, charging as a service contract

LONG TERM: 5+ YEARS

The Long Term completes coverage on the urban fringe, builds the workforce and financing stack that keeps the network sustainable, and integrates the autonomous fleet transition into HMV policy. The actions focus on institutional durability, rather than one-off deployments.

#	Action	Owner	Key partners	Funding source
L1	Complete Tier 3 fringe and corridor DCFC coverage, including Cave Creek, Queen Creek, and outer West Valley multifamily corridors	City Office of Sustainability	ADOT, APS, SRP, private hosts	NEVI, private capital
L2	Establish HMV driver financing pathways (leases, group buys, credit union partnerships, point-of-sale support)	City Office of Sustainability	Credit unions, CBOs, TNC platforms, dealer partners	Philanthropic capital, platform contributions, revolving loan fund
L3	Publish and export Phoenix HMV playbook through C40 network with peer city engagement	City Office of Sustainability	C40, WSP, peer C40 cities	C40 knowledge sharing, project budget



Adoption Enablement

Actions do not stand up on their own. Adoption Enablement is the set of parallel programs that build driver, community, and market readiness so that when infrastructure comes online it actually gets used and drivers can afford the vehicles that use it. Four workstreams run continuously across all three phases.

Education and driver information: The plain-language driver channel launched in the Near Term becomes the backbone of adoption enablement. Content is delivered through peer networks, CBOs, and platform partners rather than glossy campaigns, matching what Phase 1 drivers repeatedly asked for. Ride-and-drive events at driver hubs, at Sky Harbor breakrooms, and through digitial platform outreach are scheduled quarterly starting in year one, expanding to twice per quarter by year three. Content is bilingual (English and Spanish) and updated as incentive windows change.

> *"Going through those established organizations that are already trusted sources that know the right people to talk to."*
>
> —ANONYMOUS CBO AND REGULATOR FOCUS GROUP PARTICIPANT

Partnerships with CBOs, utilities, and platforms: The joint HMV working group in Near Term action N4 becomes the standing coordination table for utility, airport, City, and platform actions. CBO partnerships extend the reach of every education and financing action into South Phoenix, West Valley, and multifamily corridors that City communications do not naturally reach. Platform partnerships with Uber and Lyft are treated as a rolling watchlist: eligibility windows for charging discounts and vehicle purchase promotions can move quickly, and the City stands ready with two-week outreach cycles.

> *"The ecosystem is massive, so no one's going to be able to solve all of it on their own. It does take all of those groups working together."*
>
> —ANONYMOUS CBO AND REGULATOR FOCUS GROUP PARTICIPANT

Pilots and demonstrations: Three pilots anchor the enablement workstream. The Sky Harbor rideshare lot DCFC bank (N1) demonstrates the airport model at scale. The multifamily retrofit pilot (N2, M1) demonstrates the near home model. The curbside Level 2 pilot (M3) tests the last major gap for renters. Each pilot includes a formal evaluation with a public findings memo so that lessons feed into policy adjustments and the Phoenix HMV playbook.

Financing pathways: Driver financing is the single lever most drivers named as the primary barrier to EV adoption, and platform-based earnings incentives were called out as helpful but not sufficient. The Long Term financing pathway (L4) is designed to combine point-of-sale support, credit union partnerships, and platform earnings boosts into a package that lowers upfront cost without pushing drivers into unfavorable loans. The pathway is developed in parallel with leading peer cities through city networks, to inform best practice and so that other cities can adopt the same structure.

> *"It would be cheaper for me to buy a gas burner. All electric vehicles seem to be a large investment to get into right now, and they got to fix that part of it."*
>
> —ANONYMOUS RIDESHARE DRIVER

Monitoring and Adaptation

The Plan tracks five KPI families that connect directly to the five Plan goals. Definitions, data sources, reporting cadence, and responsible parties are in the table below. Annual public reporting keeps the Plan accountable, and a formal biennial review triggers course correction.

The City publishes an annual HMV Electrification Progress Report each spring covering the previous calendar year, with KPI dashboards, action status, and lessons from pilots. The report is posted on the City ESG carbon transition dashboard and shared with peers to allow for continued exchange of best practice.

Every two years, the joint City / SRP / APS / Aviation Department / CBO working group conducts a formal review of Plan progress, updates the demand model with fresh registration and driver platform and public sector data, supplemented by driver platform data such as EVIE where it remains available, and adjusts action sequencing based on what pilots have shown and what market conditions require.

Three trigger events prompt out-of-cycle Plan updates: a material change in federal or state incentive availability, a step change in AV fleet operations that shifts the destination demand model, and any material change in SRP or APS rate structure that affects HMV economics. A short regular driver survey delivered through platform channels and CBO networks captures reliability, satisfaction, and information access trends between annual reports.

Financing shows up in every phase action table under Funding Source, but the through-line matters. The Near Term relies heavily on time-limited federal credits (30C), utility make ready dollars, and airport concession revenue. The Medium Term shifts weight to private capital, service based contracts (charging as a service, electrification as a service), and platform contributions. The Long Term establishes a durable revolving loan fund and credit union partnership for driver financing (L4), builds AV operator contributions into the coordination framework (L3), and formalizes the City's own capital and grant pipeline for network sustainment. The financing stack is designed to move gracefully from public subsidy to market-supported operation as the network matures, without a cliff in year five when federal credits expire.



06 Conclusion



Phoenix starts this work with advantages few cities have: a fast-growing EV market, an airport and two utilities willing to engage, private platforms whose own targets point toward electrification, and a driver community that told the City directly what it needs. This Plan turns those advantages into a sequence of fundable actions rather than a statement of intent.

The evidence points to a clear priority order. Phoenix needs roughly 1,300 to 1,900 net-new HMV-usable ports by 2030 under the Moderate scenario, concentrated in fewer than 20 ZIP codes rather than spread evenly across the metro. Two gaps stand out: near-home Level 2 charging for renters who cannot plug in overnight, and fast charging where drivers already dwell, above all the Sky Harbor rideshare waiting lot. The first moves follow from that finding. A purpose-built DCFC bank at the airport lot and a multifamily retrofit pilot in three Tier 1 ZIPs can both start inside the current fiscal year, and together they close the largest single-site gap and the largest structural gap at once.

The design rules are specific to Phoenix, not borrowed from milder climates. Shade, lighting, cameras, restrooms, water, and indoor refuge are requirements, not extras, at any site where drivers wait more than 15 minutes. Equipment has to hold output when the cabinet sees 122 degrees Fahrenheit and the asphalt runs hotter. Uptime has to be measured against a summer-weighted baseline, because a failed charge on an August afternoon costs a driver a shift, not an inconvenience. These are the standards that decide whether early sites earn driver trust or lose it, since word of mouth moves fast through peer networks.

Delivering the Near- and Medium-Term actions alone would be substantial, visible progress: the airport hub built, multifamily retrofits scaling citywide, a destination network filling in at Downtown, Old Town Scottsdale, ASU and Mill Avenue, Westgate, and Arrowhead, and a curbside pilot testing the last gap for renters. The Long Term makes that progress durable by building the workforce, financing, and AV-coordination structures that keep the network running after the first grants are spent. Because the autonomous fleet is already operating at scale in Phoenix, the City should begin that AV coordination now rather than treating it as a distant concern.

If the Plan succeeds, the outcomes are concrete and countable: more HMV drivers in electric vehicles, more ports where drivers actually live and work, lower operating costs for the drivers who log the most miles, cleaner air in the neighborhoods those miles pass through, and a charging network that a driver without a garage can actually rely on. Progress is tracked against the five goals through annual public reporting and a biennial review, so the City and its partners can answer the same question each year: are we closer than we were last year? As Phoenix builds, it can share what works and what does not with peer cities through C40 and other networks, positioning the city as a leader on a challenge many others are only beginning to face.

Phoenix has never waited for the future. This Plan is how the city builds the next part of it, one site at a time, with drivers at the center.



Appendix A: Charging Demand Model Assumptions and Methodology

Data sources

Data	What it is	Used for
EV registrations 2023 to 2026*	Vehicle registration counts by ZIP	Spatial distribution of EVs
Land use 2024 (57k parcels by type)	Parcel level land use classification	Multifamily and renter share for near home; commercial, schools, and transit hubs for near destination
Job Centers	High job concentration areas	Near destination charging demand
Census ACS 5 year	Income, households, renters	Public charging reliance and equity screening
Public charging stations**	Public L2 and DCFC ports	Netting out existing supply
Uber EVIE (pending)	Ride hail near trip and near home charging demand	Refines near destination and home demand when available

** S&P Global EV Registration Data*
***Department of Energy, Alternative Fuel Data Center*

Choice of analysis geography

This Plan reports demand and gaps at the ZIP code level because ZIP is the coarsest of the decision and data resolutions, which avoids false precision. The unit follows the phenomenon: near-home demand is inherently residential and registration-based, and EV registration and Census tenure data are only reliable at the ZIP level, so reporting at a finer resolution (such as census block or parcel) would imply accuracy the source data does not support. Near-destination demand is modeled on a finer H3 hex grid to capture activity clusters, then rolled up to ZIP so both lenses report on a common geography. ZIP is also the scale at which the City, utilities, and funding partners actually make siting and budget decisions, which keeps the analysis directly usable for prioritization.

Demand type definitions

- Near home charging. Where EVs sleep. Overnight Level 2 within 15 minute walk, plus some DCFC. Driver profile: residents who lack private home charging (multifamily, renters). Reported by ZIP code. Refined by Uber EVIE near home data when available.
- Near destination charging. Where EVs go. DCFC for fast turnaround mid shift. Trip attractors include airport, transit hubs, and commercial. Modeled on H3 resolution 8 hex grid (roughly 0.73 square kilometers) then consolidated to ZIP.

Near-destination methodology

Trip attractor	Weight	Source / definition
Commercial and employment land	40%	Parcel-level land use classification (2024 land use data)
Job centers	25%	High job-concentration areas (2024 Maricopa County land use parcel dataset)
Airport proximity	20%	5-mile buffer around Sky Harbor
Schools	15%	School parcel locations

Full scenario parameters

Parameter	Conservative	Moderate (baseline)	Aggressive
EV adoption growth	16,870 per year	24,100 per year (2023 to 2026 average)	32,330 per year
Share of charging done at destinations vs home	10%	20%	30%
Apartment residents relying on public charging	30%	50%	70%
Single family house renters relying on public charging	5%	12%	22%
EVs sharing one Level 2 port (fewer means more ports)	8	5	3
EVs sharing one fast charger (fewer means more ports)	25	15	8
EVs added per year (rounded)	16,900	24,100 (2023 to 2026 trend)	31,300
2030 total EVs	~207,000	~236,000	~265,000
2030 HMV EVs (5% share)	~10,400	~11,800	~13,300

Model rules and grid

- Commercial registration cap. ZIPs above 4 vehicles per household are treated as fleet heavy and their EVs are scaled by residential share (airport reduced, downtown kept).
- Near home demand. Level 2 and DCFC split of 85 percent Level 2 and 15 percent DCFC. Analysis grid is ZIP.
- Near destination demand. Driving assumption of 35 miles per day at 0.30 kWh per mile. Destination energy split of 70 percent DCFC and 30 percent Level 2. Port power of 150 kW for DCFC and 7.7 kW for Level 2, with Level 2 assumed at 6 hours per day.
- Trip attractor weights. Commercial, employment, and industrial land 40 percent; job centers 25 percent; airport within 5 miles 20 percent; schools 15 percent. Weights will be refined when Uber EVIE data are integrated.
- Analysis grid. H3 resolution 8 hexes (roughly 0.73 square kilometers) consolidated to ZIP.
- Data sources for scenario calibration. DOE National EV Charging Network, UCLA Institute of Transportation Studies (2025), NREL 2030 National Charging Network.

Endnotes

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